A COMPLETE BOOK ON DATA INTERPRETATION AND ANALYSIS

For Banking & Insurance Examinations like IBPS, SBI, RBI, LIC, UIIC & Others

PREFACE

'**A Complete Book on Data Interpretation and Analysis**' is an effort to assist all the government job aspirants with a comprehensive, reliable and satisfactory source of offline practice materials to improve their proficiency in **Quantitative Aptitude**. This book is a unique approach towards fulfilling the needs of our dedicated aspirants who wish to clear any obstacle with ease. We should never be confined by the limits of our brain and this Book which is thoroughly revised and covers every crucial aspect of all the Banking and Insurance examinations assures you that it will help you in transcending your limits.

As it is already known to all the aspirants that **DATA INTERPRETATION** belongs to the most important part of the **BANKING EXAMINATIONS** as they carry the highest weightage among all the topics. So, considering all the significance that this portion carries, **A COMPLETE BOOK ON DATA INTERPRETATION AND ANALYSIS** would provide all the necessary help and guidance in clearing the given section comprehensively and smoothly.

The book comprises **more than 300 DIs which include 1500+ Questions** covering all the patterns and topics that the IBPS, SBI and other banking exams have been surprising us with for last few years. The book is elegantly divided into different chapters namely **Table, Bar Graph, Line Graph, Pie Graph, Mixed Graph, Arithmetic and Caselets**. Each chapter is further categorized into **four parts – Solved Examples, Previous years' exercises, Level 1 exercise (Basic to Moderate) and Level 2 exercise (Advance)**. There are **new methods and approach** to solve **the latest pattern questions** within a short time limit. **Detailed solutions** are provided to every question for a **better CONCEPTUAL learning**. The questions are duly framed and prepared by our best faculties in this field. While preparing, all the necessary including minute details have been taken care of. The questions are preferably selected based on their quality, inculcating different levels and types that are being asked in the banking and insurance examinations. The book will be extremely helpful in preparing for **all the Banking and Insurance examinations like IBPS PO, SBI PO, BANK OF BARODA PO, SYNDICATE BANK PO, RBI ASSISTANT, OICL, UIIC, etc**.

ADDA 247 expresses its deepest gratitude to all the aspirants who have chosen this product as their companion to work towards their goal. It has been our endeavor to provide a large number of Practice and Revision exercises to help you in brushing up your skills. The innovative, systematic and lucid style adopted in the presentation of this book would definitely captivate our readers towards our constructive move. The aim of this book is to help students learn, analyze and fathom the pattern of questions being asked in the Banking and Insurance exams which will effectively help them in maximizing their overall scores. We hope that our concerned efforts do find a positive response.

CONTENTS

Chapter 1

Introduction to Data Interpretation

Data: A series of observations, measurements or facts associated with any event (Physical, Social or Economic). Data can be in the form of figures or statements.

Data interpretation: Act of organizing and interpreting data to get meaningful information.

In Data interpretation, a large volume of data is organized and is represented into a compact and precise form which is easier to interpret than the raw data. Students are required to draw conclusions and inferences from a comprehensive data presented numerically in these organized forms by means of a table or a graphical image (Graphs, Pie-Chart etc.). It tests speed as well as understanding, analytical and decision making capabilities of the students.

Basic tools to solve Data Interpretation:

- Calculation
- Percentage
- Ratio
- Average

1. **Calculation:** Below are some essential tools whichhelp in faster calculations. Students must learn these by heart as much as they can:
   (i) Tables
   (ii) Squares and Cubes
   (iii) Square roots & cube root
   (iv) ReciprocalValues

2. **Percentage:** Percentage means every hundred. It is a ratio with base of 100. Percentage calculation is the most important aspect in the representation as well as in the interpretation of the data. Students must know about various basic properties of percentage and tricks involved in the faster calculation of percentages.

   Some important formula:

   $$\text{Percentage Increase} = \frac{\text{Final Value} - \text{Initial Value}}{\text{Initial Value}} \times 100$$

   $$\text{Percentage Decrease} = \frac{\text{Initial Value} - \text{Final Value}}{\text{Initial Value}} \times 100$$

   $$\text{Quantity I is how much percent of Quantity II} = \frac{\text{Quantity I}}{\text{Quantity II}} \times 100$$

   $$\text{Quantity I is how much percent more than Quantity II} = \frac{\text{Quantity I} - \text{Quantity II}}{\text{Quantity II}} \times 100$$

   $$\text{Quantity I is how much percent less than Quantity II} = \frac{\text{Quantity II} - \text{Quantity I}}{\text{Quantity II}} \times 100$$

Students must learn by heart the fractional values of some important frequently used percentages:

$5\% = \frac{1}{20}$ $10\% = \frac{1}{10}$ $20\% = \frac{1}{5}$

$40\% = \frac{2}{5}$ $50\% = \frac{1}{2}$ $60\% = \frac{3}{5}$

$75\% = \frac{3}{4}$ $80\% = \frac{4}{5}$ $120\% = \frac{6}{5}$

$125\% = \frac{5}{4}$ $150\% = \frac{3}{2}$

Fractional values of some important frequently used fractional percentages:

$33\frac{1}{3}\% = \frac{1}{3}$ $16\frac{2}{3}\% = \frac{1}{6}$ $11\frac{1}{9}\% = \frac{1}{9}$

$14\frac{2}{7}\% = \frac{1}{7}$ $7\frac{1}{7}\% = \frac{1}{14}$

$12\frac{1}{2}\% = \frac{1}{8}$ $6\frac{1}{4}\% = \frac{1}{16}$

$9\frac{1}{11}\% = \frac{1}{11}$ $8\frac{1}{3}\% = \frac{1}{12}$ $6\frac{2}{3}\% = \frac{1}{15}$

Students can also learn some other percentages based on the above tables:
For example:

$\frac{1}{20}$=5%

$\because$ $15\% = 3 \times 5\% = 3 \times \frac{1}{20} = \frac{3}{20} \Rightarrow \frac{1}{3} = 33\frac{1}{3}\%$

$\because$ $66\frac{1}{2}\% = 2 \times 33\frac{1}{3}\% = 2 \times \frac{1}{3} = \frac{2}{3} \Rightarrow \frac{1}{8} = 12\frac{1}{2}\%$

$\because$ $37\frac{1}{2}\% = 3 \times 12\frac{1}{2}\% = 3 \times \frac{1}{8} = \frac{3}{8}$

Note: If the percentage value is increased by 100%, then the equivalent fraction value will also be increased by 1.
For example:

$25\% = \frac{1}{4}$

$\therefore 125\% = 1 + \frac{1}{4} = \frac{5}{4} \Rightarrow 33\frac{1}{3}\% = \frac{1}{3}$

$\therefore 133\frac{1}{3}\% = 1 + \frac{1}{3} = \frac{4}{3} \Rightarrow 8\frac{1}{3}\% = \frac{1}{12}$

$\therefore 108\frac{1}{3}\% = 1 + \frac{1}{12} = \frac{13}{12}$

Must know: If any quantity doubles itself then it is 200% of its previous value.
If any quantity triples itself then it is 300% of its previous value.
If any quantity becomes 5 times of itself then it is 500% of its previous value.
But
If any quantity doubles itself then it is increased by 100%.
If any quantity triples itself then it is increased by 200%.
If any quantity becomes 5 times of itself then it is increased by 400%.

Note: Alwaysbreak the single percentage into easier percentages wherever possible.
For example:

65% = 50% + 10% + 5% $\Rightarrow$ 45% = 50% - 5%

95% = 100% - 5% $\Rightarrow$ $87\frac{1}{2}\% = 100\% - 12\frac{1}{2}\%$

$43\frac{1}{3}\% = 50\% - 6\frac{2}{3}\%$

3. **Ratio:** It is defined as the reduced form of values of quantities to lowest integers for the purpose of comparison between the values of quantities. It is the result of value of one quantity divided by another. Ratios can be expressed as fractions, decimals or even as percentages. It is necessary that the two figures compared should have the same characteristics and should be expressed either in same unit or in comparable units. For the calculation of ratios, students must learn tables, divisibility of numbers and simplification of expressions etc.

$\text{Ratio} = \frac{\text{Quantity I}}{\text{Quantity II}}$

4. **Average:** It is defined as the central value of values of all the quantities taken into consideration. It is the result of sum of values of all the quantities divided by the number of quantities. Average is always between the highest and the lowest values among the values of all the quantities. It is necessary that the quantities taken in consideration should have the same characteristics and should be expressed either in same unit or in comparable units. For the calculation of averages, students must learn the various properties related to average.

$$\text{Average} = \frac{\text{Sum of values of all quantities}}{\text{Number of quantities}}$$

Important Points to Remember:

1. **Read the question carefully:** The first and the most important step in solving any Data Interpretation question is to read the question carefully. You should read all the data that comes with the graphs or table in the question. Many a times, the data given above/below the graph (additional instructions) turn out to be more important than most of the numbers in the graphs.
2. **Analyze the data carefully:** The next step is to analyze the given graph/data carefully. Do not try to see the questions first and find out the answers accordingly. You will waste your time following that method. Try to understand the graph. Look at the type of data given in each graph, chart, table or pie chart. Look carefully at the labels.

3. **Don't worry about too much data:** Try to understand the question. Sometimes, the question contains lots of data that is unrelated and is not required for answering the questions. When you look at the question you may get discouraged by the lengthy tables or by the amount of information given above/below the graphs. But, if you try to understand what the data is about and then look at the question, you may find that you only have to use part of the data. Hence, it is important that you do not get disheartened by the size of the data and skip the question without looking closely at it.

4. **Learn to skim through data:** Some graphs have a lot of data associated with them and not all of which is required to solve the questions. Skimming through the data and avoiding mess is an important part of the process. So, just focus on what is required in the question, rather than on all the data at one time.

5. **Avoid unnecessary calculations:** We have a habit from our school days to solve questions in a step by step method. This is a very good habit for school exams but a really bad habit when it comes to the competitive exams. There are many unnecessary calculations that we do while attempting the questions which cost us a precious few seconds per question. Sometimes, there are many steps that can be skipped but we still do it as we are trained to solve in a step by step method. Learn to skip those steps.

6. **Learn to approximate:** You do not need to calculate the exact answer for every question. Many a times, the options given are far enough from each other to give you enough room for approximation. So, instead of finding the accurate answer, try to find an approximate answer. This will give you the correct answer more often than not. If however, the options are close, you will still be able to eliminate 1 or 2 options easily.

7. **Pay close attention to the units used:** Sometimes, the questions may use a different unit for the question and another unit for the data. If you do not pay close attention to the unit, you may be ended up choosing the wrong answer. Always convert the units into the ones which are asked in the question.

8. **Skip questions that need too much calculation:** Some questions ask too much from you. They require lots of calculation in order to be solved. These questions are known as the speed-breakers. Such questions are best left alone, at least in the first round of attempt. Once you have finished solving all the easy questions and still have time left for the section, you should attempt these questions. If you try such questions, you will lose your precious time on them and may not be able to attempt some simple questions that may follow.

9. **Don't assume anything:** Sometimes there are questions which need to find out some data which cannot be calculated even with the help of the data given in the graph and the question. Always be alert enough to see whether the data given is enough to answer the question or not and do not go forward with answering the questions based on assumptions. Sometimes, 'cannot be determined' can also be the correct answer.

Classification: Data interpretation is broadly classified as follow:

- Table
- Line Graph
- Bar Graph
- Pie Chart
- Radar Graph
- Mixed Graph
- Caselet

Table (Tabulation): It is the most fundamental and the most versatile way of representing data and an easier format to comprehend. Data is arranged in columns and rows in a table ineither alphabetic or chronologic order (as A, B, C or month wise, year wise). Either the columns or the rows will represent different values to describe the variables. Other different kind of data representation formats like bar graph, line graph, pie chart etc., originate from the table. In other words, representing the data in a tabular format is the first step in forming other types of data representation formats.

Example:

Directions (1-8): Following table shows the percentage of population below poverty line out of the total population of a particular state for six states and the ratios of male and female below and above poverty line in these states:

State	Percentage population below poverty line	Proportion of male and female	
		Below poverty line M : F	Above poverty line M : F
A	16	5 : 3	4 : 3
B	10	3 : 7	5 : 4
C	22	6 : 5	7 : 6
D	28	3 : 4	5 : 7
E	12	1 : 3	6 : 5
F	20	2 : 3	3 : 5

Types of question asked:

1. Find the population of males above poverty line in state C if the total population of the state is 60 lakh.

Sol; Percentage of population above poverty line in state C = 100 – 22 = 78%

Percentage of males above poverty line in state C out of total population = $\frac{7}{13} \times 78 = 42\%$

Population of males above poverty line in state C = 42% of 60 lakh = 25.2 lakh

2. Find the difference of population of males below poverty line and females above poverty line in state A if the total population of the state is 35 lakh.

Sol; Percentage of males below poverty line in state A out of total population = $\frac{5}{8} \times 16 = 10\%$

Percentage of population above poverty line in state A = 100 – 16 = 84%

Percentage of females above poverty line in state A out of total population = $\frac{3}{7} \times 84 = 36\%$

Required Difference = (36% - 10%) of 35 lakh = 26% of 35 lakh = 9.1 lakh

3. If the population of males above poverty line in state D is 13.5 lakhthen find the total population of the state.

Sol. Percentage of population above poverty line in state D = 100 – 28 = 72%

Percentage of males above poverty line in state D out of total population = $\frac{5}{12} \times 72 = 30\%$

Population of males above poverty line in state D = 30% of total population = 13.5 lakh

Total population = $\frac{100}{30} \times 13.5 = 45$ lakh

4. Find the ratio of population of females below poverty line and males above poverty line in state F.

Sol; Percentage of females below poverty line in state F out of total population = $\frac{3}{5} \times 20 = 12\%$

Percentage of population above poverty line in state F = 100 – 20 = 80%

Percentage of males above poverty line in state F out of total population = $\frac{3}{8} \times 80 = 30\%$

Required Ratio = 12% of total population : 30% of total population = 2 : 5

5. Find the ratio of population of males below poverty line in state C and females above poverty line in state D if the ratio of total populations of state C and D is 7 : 4.

Sol; Let the total populations of state C and D be 7x and 4x respectively.

Percentage of males below poverty line in state C out of total population = $\frac{6}{11} \times 22 = 12\%$

Percentage of population above poverty line in state D = 100 – 28 = 72%

Percentage of females above poverty line in state D out of total population = $\frac{7}{12} \times 72 = 42\%$

Required Ratio = 12% of total population of state C : 42% of total population of state D

= 12% of 7x : 42% of 4x = 1 : 2

6. Find the difference of population of males below poverty line in state C and females above poverty line in state D if the ratio of total populations of state C and D is 7 : 4.

Sol; The difference of populations cannot be determined because only the ratio of the populations of states is given, not the actual populations.

7. Population of females below poverty line in state Bis how much percent ofmales above poverty line in state F if the ratio of total populations of state B and F is 6 : 7?

Sol; Let the total populations of state B and F be 6x and 7x respectively.

Percentage of females below poverty line in state B out of total population = $\frac{7}{10} \times 10 = 7\%$

Percentage of population above poverty line in state F = 100 – 20 = 80%

Percentage of males above poverty line in state F out of total population = $\frac{3}{8} \times 80 = 30\%$

Required Percentage = $\frac{7\% \text{ of } 6x}{30\% \text{ of } 7x} \times 100 = 20\%$

8. For which state, the population of females below poverty line is the maximum?

Sol. The state with maximum female below poverty line population cannot be determined because only the percentages and ratios for below poverty line populations are given, not the actual populations of each state.

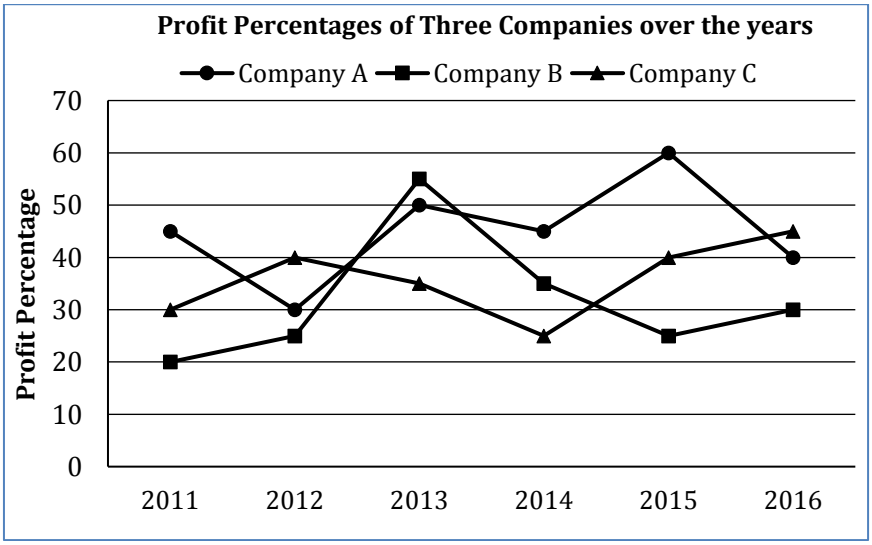
Line Graph: It is a type of graph in which the variable does not change according to any law but changes abruptly (broken off suddenly). It indicates the variation of one parameter with respect to another (X-axis, Y-axis). It determines trends and rate of change over the time. We can easily see data movement in case of line graph.

This graph can be classified into following categories.

(i) Simple line graph
(ii) Multiple lines graph

(i) Simple line graph: It is also known as single dependent variable graph. It is plotted against the independent factor. The former is plotted on Y-axis while the latter is plotted on the X-axis.

(ii) Multiple lines graph: In this graph more than one dependent variable is plotted against the independent variable. The Y-axis is common to all the variables.

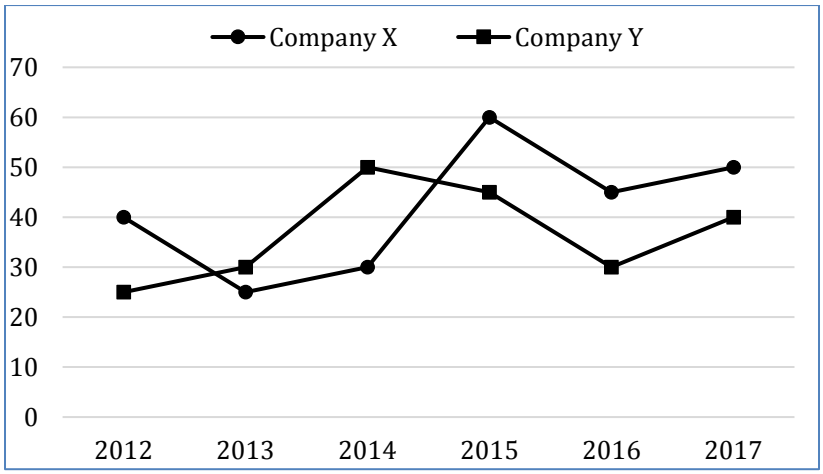


Example:

Directions (1-7): study the following graph to answer the given questions.

$$Profit\ \% = \frac{Income - Expenditure}{Expenditure} \times 100$$

Percent profit earned by two companies over the given years:



Types of question asked:

1. If the expenditure of Company X in 2015 was equal to the expenditure of Company Y in that year, then what was the ratio of their respective incomes?

   Sol; Let the expenditure of Company X and Y in 2015 be Rs.x
   Ratio of Income of Company X and Y in 2015 = (100% + 60%) of x : (100% + 45%) of x
   = 160% of x : 145% of x = 32 : 29

2. For Company Y, the income in 2012 was equal to the expenditure in 2014. What was the ratio of its respective incomes in these two years?

   Sol; Let the income in 2012 and expenditure in 2014 of Company Y be Rs.x
   Income of Company Y in 2014 = (100% + 50%) of x = 150% of x = Rs.1.5x
   Ratio of Income of Company Y in 2012 and in 2014 = x : 1.5x = 2 : 3

3. In 2017, the income of Company Y was Rs.35 crore. What was the expenditure of the company in that year?

   Sol; Expenditure of Company Y in 2017 = $\frac{35}{100+40} \times 100 = \frac{35}{140} \times 100$ = Rs.25 crore

4. In 2016, the income of Company Y was Rs.52 crore and the expenditures for both the companies were same in that year. What was the average of incomes of both the companies in that year?

   Sol; Expenditure of Company Y in 2016 = $\frac{52}{100+30} \times 100 = \frac{52}{130} \times 100$ = Rs.40 crore
   Expenditure of Company X in 2016 = Rs.40 crore
   Income of Company X in 2016 = (100% + 45%) of 40 = Rs.58 crore
   Average of incomes of both the companies in 2016 = $\frac{58+52}{2} = \frac{110}{2}$ = Rs.55 crore

5. For which year, the actual profit amount for Company X is the maximum?

   Sol; Actual profit amount cannot be determined because only the profit percentages are given but the actual amounts of expenditure or income for the company are not given.

6. For which year, the difference in the actual profit amount for both the companies is the maximum?

   Sol; Difference in the actual profit amounts for the companies cannot be determined because only the profit percentages are given but the actual amounts of expenditure or income for the companies are not given.

7. If the ratio of expenditures of Company X in 2013 and 2017 is 4 : 3 respectively, then the income of Company X in 2013 is how much percent more/less than the income of Company X in 2017?

Sol; Let the expenditures of Company X in 2013 and 2017 be Rs.4x and Rs.3x respectively.

Income of Company X in 2013 = (100% + 25%) of 4x = Rs.5x

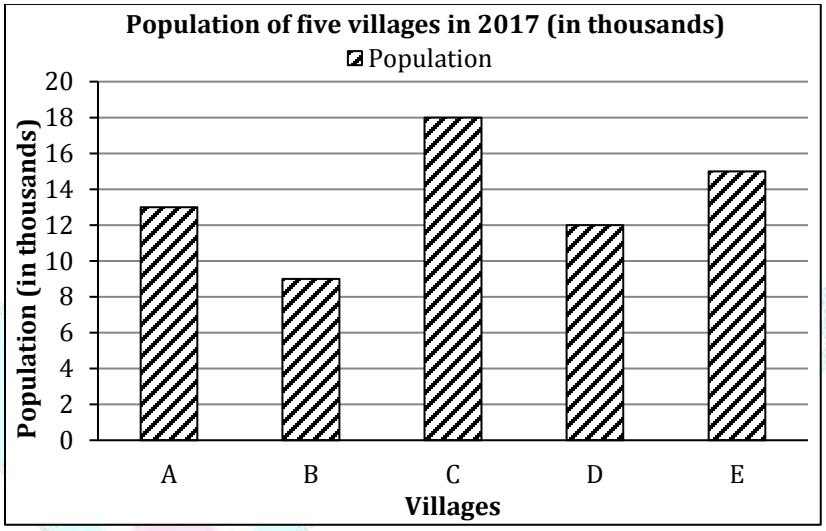
Income of Company X in 2017 = (100% + 50%) of 3x = Rs.4.5x

Required Percentage = $\frac{5x - 4.5x}{4.5x} \times 100 = \frac{0.5x}{4.5x} \times 100 = 11\frac{1}{9}\%$ more

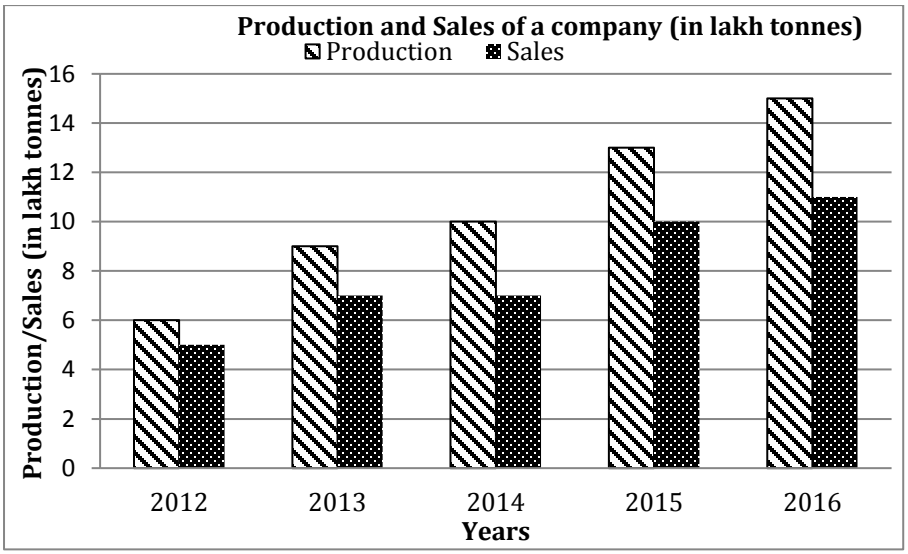
Bar Graph: Bar Graph is the most commonly used method of representing data among the graphs. It is drawing the form of rectangular bars of uniform width with equal spaces between them where the length of the bars is proportional to the values they represent. It can be drawn either horizontally or vertically. Effective representation of Bar graph is mainly classified into the followings categories:

(i) Simple bar group
(ii) Multiple Bar graph
(iii) Sub–dividend Bar graph or cumulative Bar graph

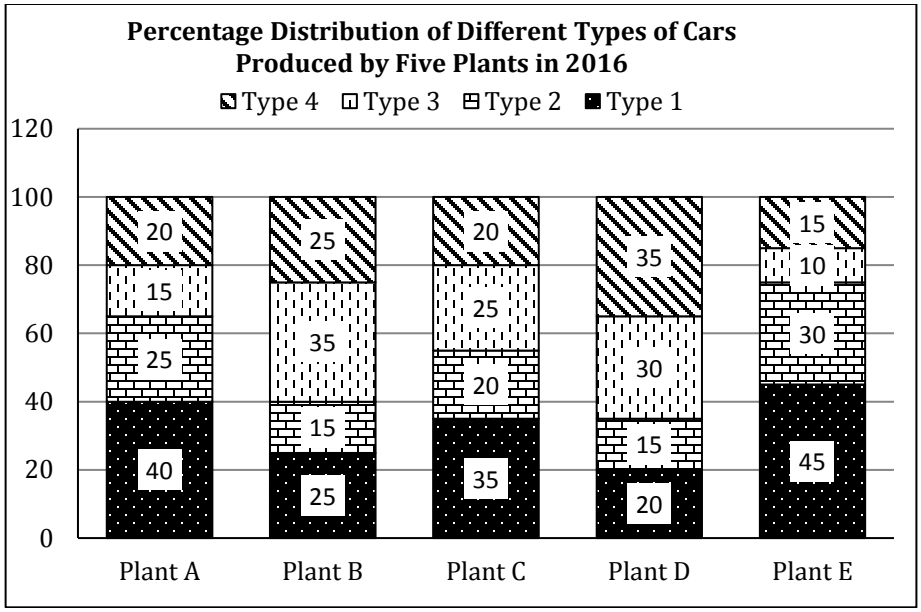
(i) Simple Bar graph: It represents only one variable with equal width but of varying heights in proportion to the values of the variable.



(ii) Multiple Bar group: In this graph, two or more bar graphs are constructed adjoining one another in a single graph, to represent either different multiple variables or different components of a single variable.

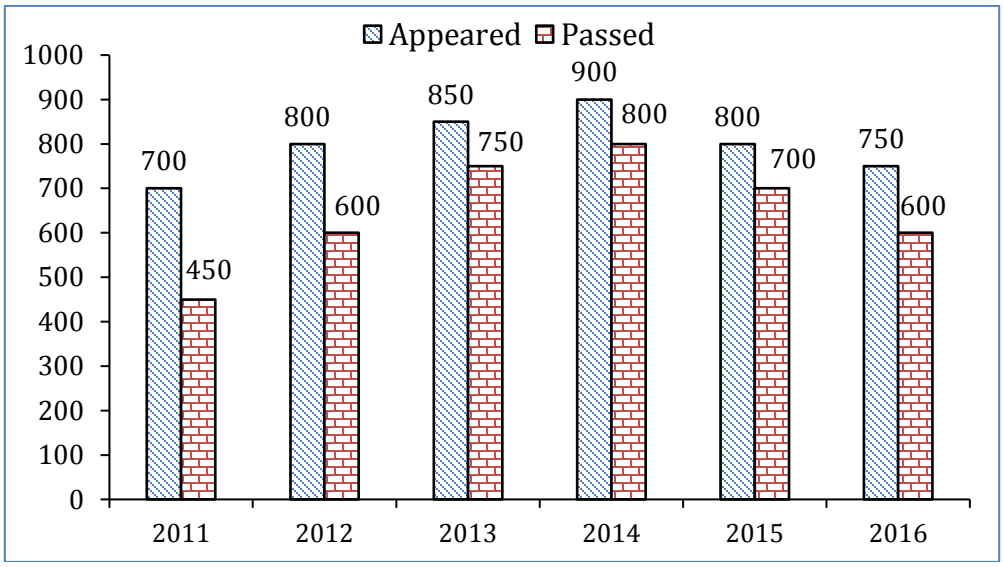


(iii) Sub-dividend or cumulative Bar graph: In this graph, total value as well as individual component values of a variable are pictorially represented as a single bar. The variable is to be divided into various components. It is drawn proportionally in length to the total and divided in the ratios of their components.



Example:

Directions (1-6): Study the following bar graph carefully and answer the questions given below:
Number of students appeared and passed in an exam over the years:



Types of question asked:

1. What was the average number of candidates appeared in the exam over the years?
   Sol; Required Average = $\frac{700+800+850+900+800+750}{6} = \frac{4800}{6} = 800$

2. What is the ratio of number of students who did not pass the exam in 2011 to that in 2016?
   Sol; Required Ratio = (700 – 450) : (750 – 600) = 250 : 150 = 5 : 3

3. For which year, the percentage of students who passed the exam is the maximum?
   Sol; Percentage of passed students:
   In 2011 = $\frac{450}{700} \times 100 = 64\frac{2}{7}\%$
   In 2012 = $\frac{600}{800} \times 100 = 75\%$
   In 2013 = $\frac{750}{850} \times 100 = 88\frac{4}{17}\%$
   In 2014 = $\frac{800}{900} \times 100 = 88\frac{8}{9}\%$
   In 2015 = $\frac{700}{800} \times 100 = 87\frac{1}{2}\%$
   In 2016 = $\frac{600}{750} \times 100 = 80\%$
   Hence, the percentage of passed students is the maximum for the year 2014.

4. For which year, the percentage increase/decrease in the number of passed students from the previous year is the minimum?

Sol; Percentage increase/decrease in the number of passed students:

In 2012 = $\frac{150}{450} \times 100 = 33\frac{1}{3}\%$

In 2013 = $\frac{150}{600} \times 100 = 25\%$

In 2014 = $\frac{50}{750} \times 100 = 6\frac{2}{3}\%$

In 2015 = $\frac{100}{800} \times 100 = 12\frac{1}{2}\%$

In 2016 = $\frac{100}{700} \times 100 = 14\frac{2}{7}\%$

Hence, the percentage increase/decrease in the number of passed students is the minimum for theyear 2014.

5. What is the total number of students who did not pass the exam over the years?

Sol; Total number of students who did not pass the exam
= 250 + 200 + 100 + 100 + 100 + 150 = 900

6. The total number of students who passed the exam from 2011 to 2013 is how much percent more/less than the total number of students who passed the exam from 2014 to 2016?

Sol; Number of students passed from 2011 to 2013 = 450 + 600 + 750 = 1800
Number of students passed from 2014 to 2016 = 800 + 700 + 600 = 2100
Required Percentage = $\frac{2100 - 1800}{2100} \times 100 = 14\frac{2}{7}\%$ less

Pie Chart: It is circular representation of data where the data is represented as a part of a circle. The total quantity is distributed over a total angle of 360°. The circle represents the total value (360° or 100%) and the different parts or sectors represent certain proportions (degree or percentage value) of the total.The value of each component is in proportion to the circular area (or central angle) representing the component. It may be classified in the following categories:

(i) Simple Pie chart
(ii) Multiple Pie Charts

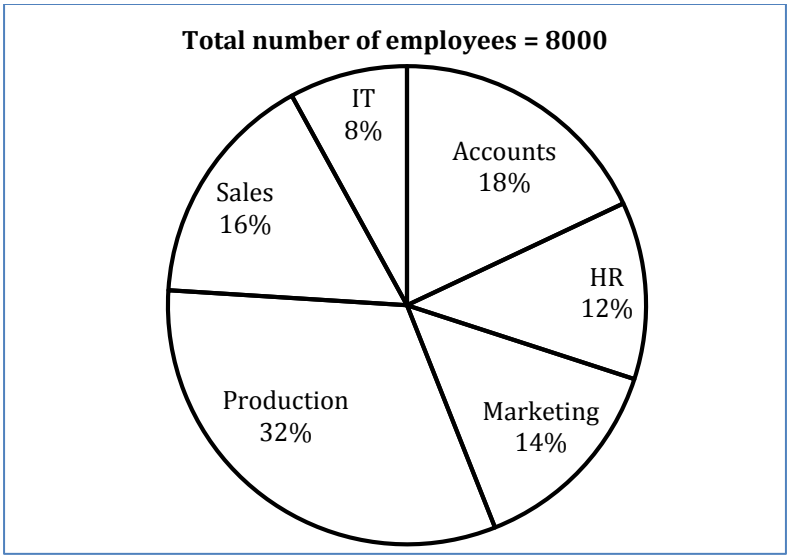
Note: The sector of circle is divided mainly into two ways:

(a) In degrees: In this representation, the given data is distributed over a total angle of 360°. Each part makes a certain angle called central angle.
∴ Central angle of a sector = (Value of sector) / (Total value) × 360°

(b) In percentage – In this representation, the given data is distributed over a total of 100%. For solution we take base 100.
∴ Percentage value of a sector = (Value of sector) / (Total value) × 100

Example:

Directions (1-8): Study the following Pie Chart carefully and answer the questions given below:
Percentage Distribution of Employees in Different Departments of a Company:



Types of question asked:

1. What is the total number of employeesinAccounts and Marketing departments together?
   Sol; Number of employees in Accounts and Marketing together = (18% + 14%) of total employees
   = 32% of 8000 = 2560

2. What is the difference between the number of employees in Production and Sales departments?
   Sol; Difference between number of employees in Production and Sales = (32% - 16%) of total employees = 16% of 8000 = 1280

3. What is the ratio of number of employees in IT and HR department together to the number of Sales and Marketing departments together?
   Sol; Required ratio = (8% + 12%) of total employees : (16% + 14%) of total employees = 2 : 3

4. The number of employees in HR department is how much percent more/less than the number of employees in Production department?
   Sol; Required percentage = $\frac{32\% \text{ of total employees } - 12\% \text{ of total employees}}{32\% \text{ of total employees}} \times 100 = \frac{20}{32} \times 100 = 62.5\%$ less

5. What is the average of total number of employees in Accounts, HR,Marketing and Production departments together?
   Sol; Total number of employees in Accounts, HR, Marketing and Production together
   = (18% + 12% + 14% + 32%) of total employees = 76% of total employees
   Required average = $\frac{76\% \text{ of total employees}}{4}$ = 19% of total employees = 19% of 8000 = 1520

6. If number of employees in Sales department is increased by 25% in the next year, then what is number of employees in the department in the next year?
   Sol; Number of employees in Sales department in next year
   = (100% + 25%) of number of employees in Sales department this year
   = 125% of 16% of 8000 = 20% of 8000 = 1600

7. If numbers of employees in IT and Marketing departments are increased by 60% and 20% respectively in the next year, then what is the ratio of numbers of employees in these departments in the next year?
   Sol; Required Ratio = 160% of 8% of total employees : 120% of 14% of total employees
   = 16 : 21

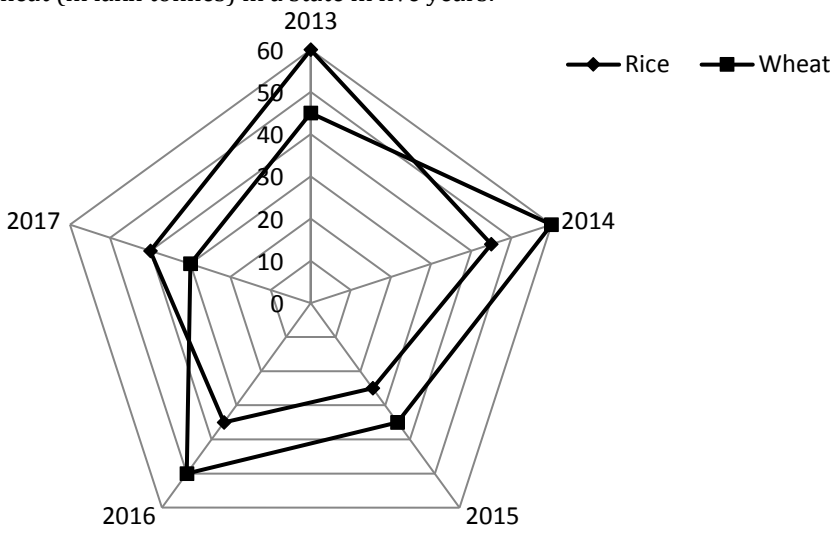
8. If the ratio of numbers of male and female employees in Accounts department is 5 :4 and 60% of the employees in the HR department are females, then what is the total number of male employees in these departments together?
   Sol; Number of male employees in Accounts department = $\frac{5}{9} \times$ 18% of 8000 = 10% of 8000 = 800
   Number of male employees in HR department = (100% - 60%) of 12% of 8000
   = 40% of 12% of 8000 = 4.8% of 8000 = 384
   Total Number = 800 + 384 = 1184

Radar Graph: In this graph, the values of variables are represented with respect to a central point. The values are represented in proportion with the distances from this central point. This graph can be seen as a circular line graph. This graph is also known as spider or web graph.

Example:

Directions (1-5): Study the following radar graph carefully and answer the questions that follow:

The production of rice and wheat (in lakh tonnes) in a state in five years:



Types of question asked:

1. What is the average of total wheat production in the state over the years?
   Sol; Required Average = $\frac{45+60+35+50+30}{5} = \frac{220}{5}$ = 44 lakh tonnes

2. What is the ratio of productions of wheat and rice from year 2013 to 2016?
   Sol; Required Ratio = (45 + 60 + 35 + 50) : (60 + 45 + 25 + 35) = 190 : 165 = 38 : 33

3. Production of rice in 2016 is how much percent more/less than the production of wheat in the same year?
   Sol; Required Percentage = $\frac{50-35}{50} \times 100 = \frac{3}{10} \times 100$ = 30% less

4. For which year, the difference between the production of rice and wheat is the minimum?
   Sol; Difference between the production of rice and wheat:
   For 2013 = 15 lakh tonnes
   For 2014 = 15 lakh tonnes
   For 2015 = 10 lakh tonnes
   For 2016 = 15 lakh tonnes
   For 2017 = 10 lakh tonnes
   Hence, the difference is the minimum for the years 2015 and 2017.

5. For which year, the percentage increase/decrease in the production of rice from the previous year is the maximum?
   Sol; Percentage increase/decrease in the production of rice:
   For 2014 = 25% decrease
   For 2015 = $44\frac{4}{9}$% decrease
   For 2016 = 40% increase
   For 2017 = $14\frac{2}{7}$% increase
   Hence, the percentage increase/decrease is the maximum for the year 2015.

Mixed Graph: It is not based on a single graph but on a combination of two or more graphs. These graphs may or may not represent similar variables. If the variables represented by these graphs are not similar, then the relationship between these variables is mentioned in the question along with the other data which is useful in solving the questions.

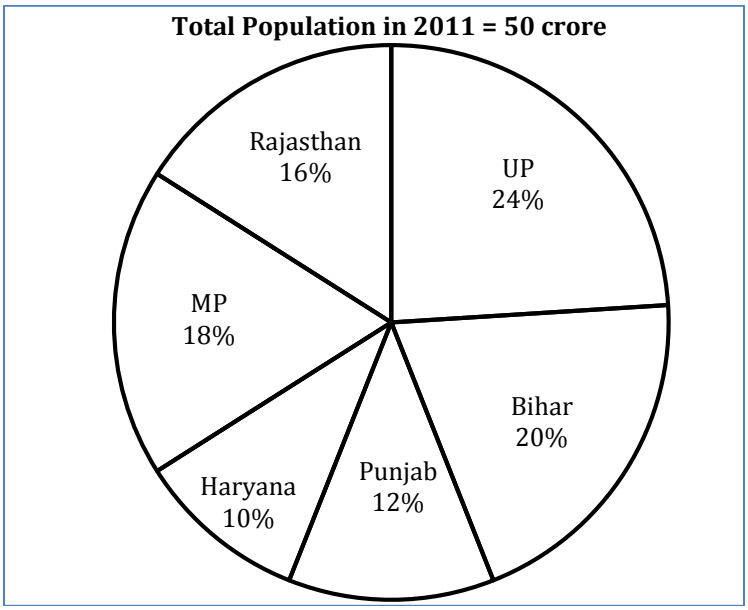
It can mainly be classified into the following categories:

(i) Table and Bar Graph
(ii) Table and Line Graph
(iii) Table and Pie Chart
(iv) Bar Graph and Line Graph
(v) Pie Chart and Bar Graph
(vi) Pie Chart and Line Graph

Example:

Directions (1-6): Study the pie chart and table carefully and answer the following questions:

Percentage Distribution of population of 6 states out of total population:



Ratio of male to female population and literate to illiterate population in these states:

State	Sex M : F	Literacy Literate : Illiterate
UP	7 : 5	3 : 5
Bihar	3 : 2	2 : 3
Punjab	5 : 7	3 : 1
Haryana	7 : 3	3 : 2
MP	4 : 5	1 : 2
Rajasthan	5 : 3	1 : 3

Types of question asked:

1. What is the total population of illiterate people in Punjab and Haryana together?

   Sol; Total population of illiterate people in Punjab and Haryana together
   $= \frac{1}{4}$ of population of Punjab + $\frac{2}{5}$ of population of Haryana
   $= \frac{1}{4}$ of 12% of 50 crore + $\frac{2}{5}$ of 10% of 50 crore
   = 3% of 50 crore + 4% of 50 crore
   = 7% of 50 crore = 3.5 crore

2. Total literate population in MP is how much percent of the total illiterate population in UP?

   Sol; Required percentage = $\frac{Total\ literate\ population\ in\ MP}{Total\ illiterate\ population\ in\ UP} \times 100$
   $= \frac{\frac{1}{3}\ of\ 18\%\ of\ total\ population}{\frac{5}{8}\ of\ 24\%\ of\ total\ population} \times 100 = \frac{6}{15} \times 100 = 40\%$

3. If the total population of Rajasthan and Bihar is increased by 20% and 25% respectively in comparison to the previous year, then what will be ratio of male population of these two states if the ratio of male to female population remains the same as previous year?

   Sol; Required Ratio = 120% of $\frac{5}{8}$ of 16% : 125% of $\frac{3}{5}$ of 20% = 12% : 15% = 4 : 5

4. What is the population of literate femalesin Bihar?

   Sol; Population of literate females in Bihar cannot be determined because ratio of literate to illiterate population is given for total population of the state, not for male or female population.

5. If 50% of male population is literate in MP, then what percent of female population in MP is literate?

   Sol; Percentage of literate population in MP = $\frac{1}{3}$ of 18% of total population = 6% of total population

Percentage of male population in MP = $\frac{4}{9}$ of 18% of total population = 8% of total population
Percentage of female population in MP = 18% of total population - 8% of total population
= 10% of total population
Percentage of literate male population in MP = 50% of 8% of total population
= 4% of total population
Percentage of literate female population in MP = 6% of total population - 4% of total population
= 2% of total population
Required Percentage = $\frac{literate\ female\ population\ in\ MP}{Total\ female\ population\ in\ MP} \times 100 = \frac{2\%\ of\ total\ population}{10\%\ of\ total\ population} \times 100 = 20\%$

6. What is the average male population of Bihar, Haryana and MP?
Sol; Total male population of Bihar, Haryana and MP
= ($\frac{3}{5}$ of 20% + $\frac{7}{10}$ of 10% + $\frac{4}{9}$ of 18%) of total population
= (12% + 7% + 8%) of total population
= 27% of total population
Required Average = 9% of total population = 9% of 50 crore = 4.5 crore

Caselet: It is a comprehensive type question where the information is given in the form of paragraphs or multiple sentences which provide the details of all the parameters involved including their inter-relationships. The informationcan beconverted into either tabular form or Venn-Diagram to solve the questions. In the recent patterns, caselets related to the various quantitative aptitude topics are also seen where a situation is described with in the form of a paragraph with data and conditions. We have to use the data and solve the questions according to the given conditions.

Example:

Directions (1-8): Study the following information carefully and answer the questions that follow:
There are four departments in a company – Production, Marketing, Sales and HR. 40% of the total employees in the company works in Production department and 60% of the total employees working the Production department are males. Half of the rest of the employees works in Marketing department and the ratio of male and female employees in the department is 3 : 7. The number of employees working in the Sales department is one-fifth of the total employees. Number of females working in Sales department is 16 less than number of females working in production department. Number of males working in HR department is 40% of the number of males working in Sales department. Total number of the employees working the company is 1600.

Sol; The information given above can be converted a table as follows:

Departments	Total Employees		Males		Females	
	Percentage	Number	Percentage	Number	Percentage	Number
Production	40%	640	24%	384	16%	256
Marketing	30%	480	9%	144	21%	336
Sales	20%	320	5%	80	15%	240
HR	10%	160	2%	32	8%	128

Note: Percentages are given out of total number of employees in the company.

Types of question asked:

1. What is the percentage of female employees working in the company?
Sol; Percentage of female employees in the company = 16% + 21% + 15% + 8% = 60%

2. What is the total number of female employees working in Marketing, Sales and HR departments?
Sol; Number of female employees working in Marketing, Sales and HR departments
= 336 + 240 + 128 = 704

3. What is the average of number of male employees working in all the departments together?
Sol; Number of male employees working in all the departments = 40% of total employees
Required Average = 10% of total employees = 160

4. What is the ratio of number of male employees working in Production department to the number of female employees working in Marketing department?
Sol; Required Ratio = 24% of total employees : 21% of total employees = 8 : 7

5. The number of male employees working in Sales department is how much percent more/less than the number of female employees working in HR department?
Sol; Required Percentage = $\frac{8\%\ of\ total\ employees\ -\ 5\%\ of\ total\ employees}{8\%\ of\ total\ employees} \times 100 = \frac{3}{8} \times 100 = 37.5\%$ less

6. In which department, the number of female employees working is the maximum?
   Sol; Marketing department

7. 40% of the female employees working in Sales department are postgraduates, then what is number of female employees working in Sales department who are not postgraduates?
   Sol; Number of female employees working in Sales department who are not postgraduates
   = (100% - 40%) of number of female employees working in Sales department
   = 60% of 240 = 144

8. 40% of the female employees working in Sales department are postgraduates, then what is number of male employees working in Sales department who are not postgraduates?
   Sol; The number of male employees working in Sales department, who are not postgraduates, cannot be determined because the information about the educational qualifications of male employees in the department is not given.

Chapter 2

Table

Tables are one of the most versatile methods of systematic representation of quantitative data where the data is represented through horizontal rows and vertical columns. In fact, the data that can be represented on any type of graph/chart can also be represented on a table, but the reverse is not always true. Also, the amount of data that can be represented on a table is much higher than that can be represented on any other graph/chart. But, tables are a little harder to interpret when the number of variables represented is higher, due to their less visual impact.

This chapter contains:

- Solved Examples
- Previous Year Questions
- Practice Set Level I
- Practice Set Level II

SOLVED EXAMPLES

Directions (1-5): Given below is the table which shows the total numbers of voters in 5 different villages, % of voters who did not vote and percentage of female out of total persons who have voted.

Villages	Total voters	% of voters who do not vote	% of females out of total persons who have voted
A	20000	12%	40%
B	18000	13%	60%
C	16000	20%	45%
D	13500	10%	30%
E	22500	8%	40%

1. Total people who have not voted from village A and C together is what % of total males who have voted from these village?

(a) $17\frac{2}{5}\%$ (b) $31\frac{9}{11}\%$ (c) $20\frac{2}{5}\%$ (d) $13\frac{14}{17}\%$ (e) $8\frac{2}{11}\%$

Sol. **(b);** Total persons who have not voted from A and C together = 12 × 200 + 20 × 160 = 5600

Total males who have voted from these villages $= \frac{88}{100} \times 20{,}000 \times \frac{60}{100} + \frac{80}{100} \times 16000 \times \frac{55}{100}$

$= 10560 + 7040 \ = 17600$

$Required\ percentage = \frac{5600}{17600} \times 100 = 31\frac{9}{11}\%$

2. What is the ratio of males who have voted from village D and E together to the females who have voted from village D and E together?

(a) 63 : 43 (b) 93 : 53 (c) 73 : 33 (d) 82 : 23 (e) 53 : 33

Sol. **(b);** $Required\ ratio = \frac{\frac{90}{100}\times13500\times\frac{70}{100}+\frac{92}{100}\times22500\times\frac{60}{100}}{\frac{90}{100}\times13500\times\frac{30}{100}+\frac{92}{100}\times22500\times\frac{40}{100}}$

$= \frac{8505+12420}{3645+8280} = \frac{20925}{11925} = \frac{93}{53}$

3. What is the difference between number of male from village A who have voted and female from village D who have voted?

(a) 6020 (b) 4200 (c) 6300 (d) 5585 (e) 6915

Sol. **(e);** $Required\ difference = \left(\frac{88}{100} \times 20000 \times \frac{60}{100} - \frac{90}{100} \times 13500 \times \frac{30}{100}\right)$

$= 10560 - 3645 \ = 6915$

4. If ratio of male to female who do not vote is 5 : 3 from village C then what is the ratio of total male voters and total female voters from village C ?

(a) 113 : 87 (b) 96 : 53 (c) 83 : 43 (d) 104 : 101 (e) 117 : 97

Sol. **(a);** $Total\ males\ who\ voted = \frac{80}{100} \times 16000 \times \frac{55}{100} = 7040$

$Total\ females\ who\ voted = \frac{80}{100} \times 16000 \times \frac{45}{100} = 5760$

$Total\ male\ voters = 7040 + \frac{20}{100} \times 16000 \times \frac{5}{8} = 9040$

$Total\ female\ voters = 5760 + \left(\frac{20}{100} \times 16000 \times \frac{3}{8}\right) = 6960$

$Required\ ratio = \frac{9040}{6960} = \frac{113}{87}$

5. What is the average number of voters who have not voted from village A, C and D together?

(a) $1526\frac{1}{3}$ (b) $1820\frac{2}{3}$ (c) $2316\frac{2}{3}$ (d) $1015\frac{3}{5}$ (e) $2112\frac{2}{3}$

Sol. **(c);** $Required\ average = \frac{12\times200+20\times160+10\times135}{3}$

$= \frac{2400+3200+1350}{3} \ = 2316\frac{2}{3}$

Directions (6-10): Study the table carefully to answer the questions that follow:
Total number of students = 32500
The percentage distribution of students with respect to total number of students studying in various universities and within each university percentage of boys and girls is given.

Universities	Percentage of students	Percentage of boys	Percentage of girls
A	12	55	45
B	15	60	40
C	8	30	70
D	28	75	25
E	17	20	80
F	20	64	36

6. What is the ratio of total number of boys in University B and D together to the total number of girls in the same universities together?
(a) 25 : 19 (b) 35 : 21 (c) 20 : 7 (d) 30 : 13 (e) 5 : 3

Sol. **(d);** Total number of Boys in B $= \frac{15}{100} \times 32500 \times \frac{60}{100} = 2925$
Total number of Boys in D $= \frac{28}{100} \times 32500 \times \frac{75}{100} = 6825$
Total number of girls in B $= \frac{15}{100} \times 32500 \times \frac{40}{100} = 1950$
Total number of girls in D $= \frac{28}{100} \times 32500 \times \frac{25}{100} = 2275$
Req. Ratio $= (2925 + 6825) : (1950 + 2275) = 9750 : 4225 = 30 : 13$

7. The total number of students in the University A is what per cent of the total number of students in University F?
(a) 55% (b) 67% (c) 60% (d) 48% (e) 58%

Sol. **(c);** Req. % $= \frac{12 \times 32500}{20 \times 32500} \times 100 = 60\%$

8. What is the total number of boys from university A,C and E together?
(a) 6030 (b) 5030 (c) 7030 (d) 4030 (e) 3030

Sol. **(d);** Total number of boys from university A,C and E together
$= \frac{32500}{100 \times 100}[12 \times 55 + 8 \times 30 + 17 \times 20] = 4030$

9. The girls in the University B are what per cent of the boys in the University F?
(a) 39.88% (b) 46.875% (c) 49.23% (d) 42.63% (e) 51.02%

Sol. **(b);** Req. %$= \frac{15 \times 40}{20 \times 64} \times 100 = 46.875$

10. What is the ratio of the number of boys in the University C to the number of boys in the University D?
(a) 9 : 39 (b) 3 : 8 (c) 17 : 35 (d) 13 : 32 (e) 4 : 35

Sol. **(e);** Ratio $= \frac{8 \times 30}{28 \times 75} = 4 : 35$

Directions (11-15) : Study the table and answer the given questions.
Number of bangles sold by 6 stores during 5 months

Month	Stores				
	P	Q	R	S	T
May	154	129	87	89	165
June	121	120	87	89	172
July	145	88	105	133	104
August	169	102	130	114	129
September	128	177	94	220	131

11. Out of the total number of bangles sold by store R in June, July and August together, 35% were made of gold. What was the total number of gold bangles sold by store R in June, July and August together? (approx. value)
(a) 127 (b) 139 (c) 121 (d) 145 (e) 113

Sol. **(e);** Total number of gold bangles sold by store R in June, July and August together = 35% of (87 + 105 + 130)
= 35% of 322 = $\frac{35}{100} \times 322 = 112.7$
≈ 113

12. What is the difference between the total number of bangles sold by store S in June and July together and the total number of bangles sold by store P in the same months together?
(a) 72 (b) 58 (c) 44 (d) 64 (e) 62

Sol. **(c);** Reqd difference = (121 + 145) – (89 + 133) = 266 – 222 = 44

13. What is the average number of bangles sold by stores Q, R and T in May?
(a) 131 (b) 117 (c) 127 (d) 135 (e) 123

Sol. **(c);** Reqd average = $\frac{129+87+165}{3} = \frac{381}{3} = 127$

14. What is the ratio of the total number of bangles sold by stores S and T together in August to the total number of bangles sold by the same stores together in September?
(a) 9 : 13 (b) 7 : 9 (c) 11 : 13 (d) 9 : 11 (e) 7 : 11

Sol. **(a);** Reqd ratio = $\frac{(S+T)August}{(S+T)September}$
$= \frac{114+129}{220+131} = \frac{243}{351} = \frac{9}{13} = 9:13$

15. The number of bangles sold by store Q increased by what per cent from June to September?
(a) 42.5 (b) 45 (c) 40 (d) 47.5 (e) 44.5

Sol. **(d);** Reqd% increase = $\frac{177-120}{120} \times 100 = \frac{57}{120} \times 100 = \frac{57\times5}{6} = 47.5\%$

Directions (16-20): The table given below shows the profit earned by six friends in five different years. Study the table carefully to answer the question that follow.

Friends	2011	2012	2013	2014	2015
Rajat	8925	9310	7250	8200	6050
Sunny	9100	8172	7520	9100	8000
Harshit	6550	8500	6880	8000	10,200
Ritu	9170	7550	7250	5010	6520
Neetu	10520	7000	6580	6810	8050
Rajiv	6150	9005	8172	9015	8670

16. Harshit and Neetu earned their profit in 2012 by investing their money in a business for 8 months and 10 months respectively. Find the amount invested by Neetu if total profit was distributed in capital ratio and investment of Harshit was Rs. 20,400.
(a) Rs. 13,340 (b) Rs. 13,440 (c) Rs. 13,000 (d) Rs. 14,340 (e) Rs. 14,480

Sol. **(b);** Ratio of profit of Harshit & Neetu = 8500 : 7000 = 17 : 14
Let Neetu made an investment of x
$\therefore \frac{20400\times8}{10x} = \frac{17}{14}$ $Or,\ x = Rs.13{,}440$

17. Find the amount which when lend on C.I. at 20% interest being compounded annually for 3 years, gives total interest equal to profit earned by Sunny in 2014.
(a) Rs. 12550 (b) Rs. 15200 (c) Rs. 12500 (d) Rs. 12700 (e) Rs. 13000

Sol. **(c);** Profit earned by Sunny in 2014 = Rs. 9100
$\therefore 9100 + P = P\left(1 + \frac{20}{100}\right)^3 \Rightarrow 9100 + P = 1.728P$
or, P = Rs. 12500

18. Find the ratio of average profit earned by Rajat in 2012 and 2013 together to average profit earned by Ritu in 2011, 2014 and 2015 together.
(a) 5 : 6 (b) 6 : 7 (c) 7 : 5 (d) 6 : 5 (e) 7 : 6

Sol. **(d);** $Required\ ratio = \frac{\frac{1}{2}\times(9310+7250)}{\frac{1}{3}\times(9170+5010+6520)} = \frac{8280}{6900} = \frac{6}{5}$

19. Maximum profit of Rajiv is approximately what percent more than the 2nd minimum profit of Neetu in the given years?
(a) 30% (b) 55% (c) 42% (d) 28% (e) 32%

Sol. **(e);** $Required\ percentage = \frac{9015-6810}{6810} \times 100 \approx 32\%$

20. In which year Rajat earned a profit 5% more than 5/6th of Harshit's profit in year 2015?
(a) 2014 (b) 2011 (c) 2015 (d) 2013 (e) 2012

Sol. **(b);** $\frac{5}{6}$th of Harshit's profit in 2015 = 8500
$\therefore \frac{105}{100}$ of 8500 = 8925 which is equal to Rajat's profit in year 2011.

Directions (21-25): The following table shows the monthly income and various expenditures of six friends in absolute value or in percentage(in terms of total income). Some values are missing which you are expected to calculate if required.

Friends	Salary (in Rs.)	Incentive (in Rs.)	Expenditure (in Rs.) on			
			Travel	Parties	Accommodation	Marketing
Babu	46000	-	-	5480	10%	15%
Gaurav	-	7200	7640	8500	6200	-
Arunoday	-	6300	12%	8%	-	12%
Mohit	44000	-	-	7560	9%	8400
Kamal	40000	-	5%	-	4200	5620
Mohan	-	5700	4200	8%	-	6860

Note:

1. Incentive amounts to 15% of salary and all friends save 40% of their total income (salary + incentive)
2. here is no expenditure other than the given expenditures.

Solutions (21-25);

Friends	Salary (in Rs.)	Incentive (in Rs.)	Expenditure (in Rs.)				Saving (in Rs.)
			Travel	Parties	Accom.	Marketing	
Babu	46000	6900	13035	5480	5290	7935	21160
Gaurav	48000	7200	7640	8500	6200	10780	22080
Arunoday	42000	6300	5796	3864	13524	5796	19320
Mohit	44000	6600	9846	7560	4554	8400	20240
Kamal	40000	6000	2300	15480	4200	5620	18400
Mohan	38000	5700	4200	3496	11664	6860	17480

21. Find the total amount (in Rs) expended by all friends together on travelling?

(a) 42817 (b) 42871 (c) 41817 (d) 41781 (e) None of these

Sol. **(a);** Expenditure on travelling $= 13035 + 7640 + 5796 + 9846 + 2300 + 4200 = 42817$ Rs

22. Find the difference in the amount spent by Gaurav on parties and Marketing together and that of Arunoday on Accomodation?

(a) 5656 (b) 5776 (c) 5756 (d) 5576 (e) None of these

Sol. **(c);** Required difference $= 8500 + 10780 - 13524$ = Rs 5756

23. What amount is saved by all friends together?

(a) Rs 126880 (b) Rs 118680 (c) Rs 118860 (d) Rs 181680 (e) None of these

Sol. **(b);** Total saving $= 21160 + 22080 + 19320 + 20240 + 18400 + 17480 = Rs$ 118680

24. Total annual income of Mohit is by what amount less than that of Babu?

(a) Rs 2300 (b) Rs 23600 (c) Rs 27600 (d) Rs 2700 (e) None of these

Sol. **(c);** Required difference $= (52900 - 50600) \times 12 = Rs$ 27600

25. Expenditure by Babu on Travelling constitutes what percent (Approx.) of salary of Mohan?

(a) 30% (b) 38% (c) 32% (d) 34% (e) 40%

Sol. **(d);** Required percentage $= \frac{13035}{38000} \times 100 \approx 34\%$

Directions (26-30): Study the table and answer the given questions.

Data related to Human Resource Dept. of a multinational company (X) which has 145 offices across 8 countries in year 2016.

Countries	Offices	Total Employees	Respective Ratio of male & female employees	% of post graduate
A	16	2568	5 : 7	75
B	18	2880	11 : 5	65
C	14	2310	10 : 11	40
D	22	3575	3 : 2	60
E	13	2054	7 : 6	50
F	17	2788	20 : 21	75
G	24	3720	8 : 7	55
H	21	3360	8 : 6	80

26. The number of male post graduate employees in country H is 1800. If number of female post graduates increase by 50% in the next year, what percent of female employees in that particular country are post graduate in year 2017? (Given that total female remain same in next year)
(a) 76.8% (b)74% (c) 92.5% (d) 90% (e) 80%

Sol. **(c);** Number of post-Graduate in country H = $3360 \times \frac{4}{5} = 2688$
Female post-graduate = 2688 – 1800 = 888
Total Female employee = $3360 \times \frac{6}{14} = 1440$
Female graduate next year = $888 \times \frac{3}{2} = 1332$
% of female graduate $= \frac{1332}{1440} \times 100 = 92.5\%$

27. What is the average of post graduate employees of country A, B and H together ?
(a) 2262 (b) 2153 (c) 2162 (d) 2272 (e) 2252

Sol. **(c);** Required average $= \frac{2568 \times 0.75 + 2880 \times 0.65 + 3360 \times 0.80}{3} = \frac{6486}{3} = 2162$

28. What is the ratio between total number of male employees in countries B and H together and total number of post graduate employees in same countries?
(a) 76 : 65 (b)86:85 (c) 75 : 76 (d)65 : 76 (e)12 : 33

Sol. **(d);** $\frac{\frac{11}{16} \times 2880 + \frac{8}{14} \times 3360}{2880 \times \frac{65}{100} + 3360 \times \frac{4}{5}} = \frac{1980 + 1920}{1872 + 2688} = \frac{3900}{4560} = 65 : 76$

29. What is the difference between average number of post graduate employees in countries A, B and D together and average number of post graduate employees in countries F, G and H together ?
(a) 294 (b)282 (c) 284 (d) 280 (e) 200

Sol. **(a);** A ⇒ $2568 \times \frac{3}{4} = 1926$
B ⇒ $2880 \times \frac{65}{100} = 1872$
D ⇒ $3575 \times \frac{3}{5} = 2145$
Total post-graduate in A, B and D = 5943
F ⇒ $2788 \times \frac{3}{4} = 2091$
G ⇒ $3720 \times \frac{55}{100} = 2046$
H ⇒ $3360 \times \frac{4}{5} = 2688$
Total post-graduate in F, G and H = 6825
Difference = 6825 – 5943 = 882
Required average = $\frac{882}{3} = 294$

30. If the number of male employee which are not graduate in country C is 786. Then non-graduate male employees is what percent of non-graduate female employees ?
(a) 131% (b) 125% (c) 143% (d) 113% (e) 137%

Sol. **(a);** Non-graduate employees in country C = $2310 \times \frac{60}{100} = 1386$
∴ Non-graduate female employees in country C = 1386 – 786 = 600
∴ percentage required = $\frac{786}{600} \times 100 = 131\%$

Direction (31-35): Refer the following table and answer the questions based on it.
Total number of books and ratio of Indian and Foreign author books out of total books in six public libraries in a city in year 2016:

Libraries	Total No. of Books	Indian : Foreign
A	56250	7 : 8
B	48750	4 : 9
C	49500	11 : 7
D	31500	9 : 5
E	38250	4 : 13
F	52250	10 : 9

31. What is the average number of Indian author books in library A, C and F together?
(a) 28400 (b) 21000 (c) 26300 (d) 28000 (e) 24000

Sol. **(d);** Number of Indian author books in given libraries = 26250 + 30250 + 27500 = 84000
$Required\ Average = \frac{84000}{3} = 28000$

32. What will be the difference between number of Indian author books in libraries A and B in year 2017, if the total number of books in library A is decreased by 20% and that in library B is increased by 10% from the previous year while the ratio of Indian and foreign author books in both the libraries remains the same?
(a) 4000 (b) 4500 (c) 3500 (d) 3000 (e) 2500

Sol. **(b);** Number of Indian author books in library A in 2017 = 26250 – 20% of 26250 = 21000
Number of Indian author books in library B in 2017 = 15000 + 10% of 15000 = 16500
Required difference = 21000 – 16500 = 4500

33. The number of foreign author books in library C is how much percent less than the number of Indian author books in library F?
(a) 40% (b) 35% (c) 30% (d) 25% (e) 20%

Sol. **(c);** Number of foreign author books in library C = 19250
Number of Indian author books in library F = 27500
$Required\ percentage = \frac{27500-19250}{27500} \times 100 = 30\%$

34. What is the ratio of number of Indian author book in libraries C and D together to the number of foreign author books in libraries E and F together?
(a) 101 : 108 (b) 108 : 101 (c) 103 : 105 (d) 105 : 103 (e) 101 : 109

Sol. **(a);** Number of Indian author book in libraries C and D = 30250+ 20250= 50500
Number of foreign author books in libraries E and F = 29250 + 24750 = 54000
$Required\ Ratio = \frac{50500}{54000} = \frac{101}{108} = 101 : 108$

35. For which library, the difference between Indian and foreign author books is the maximum.
(a) B (b) E (c) B and E (d) C and E (e) C

Sol. **(b);** Difference between number of Indian and foreign author books:
For Library A = 3750
For Library B = 18750
For Library C = 11000
For Library D = 9000
For Library E = 20250
For Library F = 2750
Hence, maximum difference is for the Library E.

Directions (36-40): The table given below shows production of five types of Cars (in thousands) by a company in years 2011 to 2015. Study the table of answer the given question.

Cars / Years	A	B	C	D	E	Total
2011	20	15	25	12	18	90
2012	18	20	10	12	20	80
2013	—	10	—	20	—	75
2014	12	23	15	18	10	78
2015	22	18	20	25	15	100

Note: Few values are missing in table, candidate is expected to calculate the missing values if it is required to answer the given questions.

36. If Car A and Car D manufactured in 2012 increases by $11\frac{1}{9}\%$ and $8\frac{1}{3}\%$ respectively. Then what will be percentage change in total car manufactured in 2012.
(a) 2.75% (b) 3.75% (c) 4.75% (d) 3% (e) 3.25%

Sol. **(b);** $Increase in production of\ Car A = 18{,}000 \times \frac{1}{9} = 2{,}000$
$Increase in production of\ Car D = 12{,}000 \times \frac{1}{12} = 1{,}000$
Total increase = 2,000 + 1,000 = 3,000 cars
$Desired\ percentage = \frac{3{,}000}{80{,}000} \times 100 = 3.75\%$

37. What will be the average of car A, B and C manufactured in 2013, If the ratio of number cars A, C and E manufactured in 2013is 2 : 3 : 4 respectively.
(a) 12,666.67 (b) 14,167.67 (c) 12,167.67 (d) 11,666.67 (e) 16,167.67

Sol. **(d);** Number of cars A,C and E manufactured in 2013= 75,000 – 20,000 – 10,000 = 45,000

A : C : E = $2x : 3x : 4x$
$9x = 45{,}000$
$x = 5{,}000$
Number of cars manufactured in 2013
A = 2 × 5,000 = 10,000
C = 3 × 5,000 = 15,000
B = 10,000
$Average = \frac{10{,}000+15{,}000+10{,}000}{3} = 11{,}666.67$

38. Car A and B manufactured together in 2011 is how much % less or more than Cars A and B manufactured together in 2015.
(a) 12.5% less (b) 12.5% more (c) 14.5% less (d) 10% less (e) 12% more

Sol. **(a);** Car produced by (A + B) in 2011 = 20,000 + 15,000 = 35,000
Car produced by (A + B) in 2015 = 22,000 + 18,000 = 40,000
$percentage\ change = \frac{40{,}000-35{,}000}{40{,}000} \times 100$
$= \frac{5{,}000}{40{,}000} \times 100 = 12.5\%$ less

39. Among 5 cars, which car is the 2nd highest manufactured car in the duration of five year If the ratio of number cars A, C and E manufactured in 2013 is 4 : 3 : 2 ?
(a) C (b) A (c) B (d) E (e) D

Sol. **(e);** Number of cars A ,C and E manufactured in 2013= 75,000 – 30,000 = 45,000
A : C : E = $4x : 3x : 2x$
Total = $9x$ = 45,000
x = 5,000
A = 4 × 5,000 = 20,000
C = 3 × 5,000 = 15,000
E = 2 × 5,000 = 10,000
Total Cars manufacture A = 92,000
Total Cars manufacture B = 86,000
Total Cars manufacture C = 85,000
Total Cars manufacture D = 87,000
Total Cars manufacture E = 73,000
2nd highest D = 87,000

40. Total cars manufactured in 2013 is how much percent more than the number of cars B and D manufactured together in 2013.
(a) 160% (b) 120% (c) 150% (d) 130% (e) 140 %

Sol. **(c);** Total cars in 2013 = 75,000
Total cars B & D in 2013 = 30,000
$percentage\ change = \frac{75{,}000-30{,}000}{30{,}000} \times 100 = 150\%$

Directions (41-45): The following table shows the percentage of marks obtained by five students in six different subjects. Answer the following questions based on this table.

Students	Maths (200)	Biology (75)	Hindi (100)	English (100)	Physics (75)	Chemistry (50)
Ajay	67%	42%	49%	72%	84%	32%
Kavita	58%	84%	77%	79%	68%	66%
Neeraj	63%	78%	56%	89%	62%	74%
Rohit	72%	60%	46%	92%	72%	56%
Mamta	66%	54%	68%	63%	54%	44%

41. What is the half of average marks scored by all students in Physics?
(a) 25.5 (b)26 (c) 26.5 (d) 28.5 (e) 30

Sol. **(a);** Total Marks obtained by all students in Physics $= 84 \times \frac{3}{4} + 68 \times \frac{3}{4} + 62 \times \frac{3}{4} + 72 \times \frac{3}{4} + 54 \times \frac{3}{4} = \frac{3}{4}[340] = 255$
Average Marks = $\frac{255}{5} = 51$
Required Answer = 25.5

42. Marks scored by Ajay in Maths and Hindi is what percent of maximum marks of Maths and Hindi together ?
(a) 68% (b)42% (c) 61% (d) 71% (e) 53%

Sol. **(c);** Required percentage= $\frac{67\times2+49}{200+100}\times 100 = \frac{183}{300}\times 100 = 61\%$

43. What is 25% of the difference between the total marks obtained by Neeraj in Maths & Biology together and that obtained by Rohit in Hindi and English together?
(a) 11.12 (b)11.625 (c) 12.225 (d) 12 (e) 13

Sol. **(b);** Neeraj in (M + B) = 126 + 58.50 = 184.5
Rohit in (H + E) = 46 + 92 = 138
25% of Difference = $\frac{46.5}{4} = 11.625$

44. What is the ratio between maximum marks and overall marks obtained by Mamta and Kavita together?
(a) 115 : 157 (b)120:115 (c) 120 : 155 (d)120 : 157 (e)157 : 120

Sol. **(d);** Maximum Marks = 600
Kavita's in Marks = 116 + 63 + 77 + 79 + 51 + 33 = 419
Mamata's Marks = 132 + 40.5 + 68 + 63 + 40.5 + 22 = 366
Required Ratio = $\frac{600}{366+419} = \frac{600}{785} = \frac{120}{157}$

45. Marks scored by Rohit in Chemistry is approximately how many times of the marks scored by him in Physics?
(a) 2 (b)0.5 (c) 1.5 (d) 3 (e) 1

Sol. **(b);** $\frac{28}{54} = 0.5$ times(approximately)

Directions (46-50): The following table shows the total number of students appeared in an entrance exam from six different schools in different years, and the ratio of passed to failed students among them. Answer the given questions based on this table.
Note: Total appeared in any year = Total pass + Total fail.

School	2010		2011		2012	
	Total Appeared	Pass : Fail	Total Appeared	Pass : Fail	Total Appeared	Pass : Fail
A	646	11 : 8	754	7 : 6	672	3 : 5
B	847	4 : 7	845	8 : 5	952	9 : 8
C	810	8 : 7	792	7 : 4	637	4 : 3
D	876	7 : 5	828	11 : 7	988	7 : 12
E	870	3 : 2	726	7 : 4	715	8 : 5
F	986	17 : 12	867	12 : 5	924	8 : 13

46. What is the difference between total number of passed students from school D in the year 2010 and three fourth of failed students from school B in the year 2012.
(a) 165 (b)176 (c) 175 (d) 180 (e) 111

Sol. **(c);** School D, Passed in 2010, $876 \times \frac{7}{12} = 511$
School B, year 2012, failed = $952 \times \frac{8}{17} = 448$
Required value = $511 - \frac{3}{4}\times 448 = 175$

47. What is the total number of failed students from school A and D in all three years together?
(a) 1036 (b)1311 (c) 2351 (d) 2446 (e) 1600

Sol. **(c);** A : Failed = $646 \times \frac{8}{19} + 754 \times \frac{6}{13} + 672 \times \frac{5}{8} = 1040$
D: Failed = $876 \times \frac{5}{12} + 828 \times \frac{7}{18} + 988 \times \frac{12}{19} = 1311$
Total failed = 2351

48. What is the difference between the number of passed students from A, B and D together in 2011 and the number of failed students from A, C and F together in 2012?
(a) 167 (b)177 (c) 217 (d) 157 (e)180

Sol. **(a);** A : 2011 : Passed = $754 \times \frac{7}{13} = 406$
B : 2011 : Passed = $845 \times \frac{8}{13} = 520$

D : 2011 : Passed $= 828 \times \frac{11}{18} = 506$

Total pass = 1432

Failed in 2012

A = $672 \times \frac{5}{8} = 420$

C = $637 \times \frac{3}{7} = 273$

F = $924 \times \frac{13}{21} = 572$

Total failed = 1265

Required Difference = $1432 - 1265 = 167$

49. By what percent (approx) the failed students from school D are more or less than the passed students from E in all three years together ?

(a) 10% more (b) 15% less (c) 12% more (d) 5% less (e) 8% less

Sol. **(e);** Failed; D :

$2010 : 876 \times \frac{5}{12} = 365$

$2011 : 828 \times \frac{7}{18} = 322$

$2012 : 988 \times \frac{12}{19} = 624$

Total failed = 1311

Passed; E:

$2010 : 870 \times \frac{3}{5} = 522$

$2011 : 726 \times \frac{7}{11} = 462$

$2012 : 715 \times \frac{8}{13} = 440$

Total passed = 1424

Required percentage = $\frac{113}{1424} \times 100 \approx 8\%$ less

50. The total number of passed students from school E in 2010 is approximately what percent of the total number of failed students from school C in 2012?

(a) 191.2% (b)190% (c) 188.4% (d) 178% (e) 185%

Sol. **(a);** Required % $= \frac{522}{273} \times 100 = 191.2\ \%$

Directions (51-55): Given below is the table showing the data related to sales of chips packets of different brands by a shopkeeper in 6 months. Some of the values are missing which you are expected to calculate, if necessary and answer the following questions.

Months→ Brands↓	July	August	September	October	November	December	Total
Lay's	—	6531	6690	1820	3334	4545	28540
Ruffles	5890	—	6050	2018	—	4382	24100
Pringles	4320	4690	—	1990	5835	7830	28700
Utz	6130	3500	3862	3965	3413	—	29850
Kettle	—	—	—	—	4931	7997	29082
Popchips	1928	3032	3164	3640	8882	—	25772
Total	29520	24800	27735	—	28875	38860	

51. Find the difference between total number of Lay's Chips sold in July and August together and that of Lay's and Ruffles together in November.

(a) 6737 (b) 6337 (c) 3667 (d) 6037 (e) None of these

Sol. **(b);** Total Lay's in July and August together = 28,540 – 6,690 – 1,820 – 3,334 – 4,545 = 12151

Lay's and Ruffles in November = 3334 + 2480 = 5814

∴Required difference = 6,337

52. Find the total number of sold packets of Kettle chips in July, August and September together.

(a) 13133 (b) 23333 (c) 11333 (d) 13333 (e) None of these

Sol. **(d);** Kettle chips in July, August and September = 5632 + 3767 + 3934 = 13,333

53. Pringles Chips sold in September are what percent of Lay's chips sold in July (approximately)?
(a) 72% (b) 75% (c) 65% (d) 70% (e) 80%

Sol. **(a);** Required percentage = $\frac{4035}{5620} \times 100 \approx 72\%$

54. Utz chips packets sold in August are by what percent more or less than kettle chips sold in September (approximately)?
(a) 13% (b) 11% (c) 15% (d) 21% (e) 8%

Sol. **(b);** Required percentage = $\frac{3934-3500}{3934} \times 100 \approx 11\%$

55. What is the ratio between Pringles chips sold in July and Lay's chips sold in December?
(a) 9 : 11 (b) 101 : 96 (c) 96 : 101 (d) 11 : 9 (e) None of these

Sol. **(c);** Required ratio = $\frac{4320}{4545} = \frac{96}{101}$

Directions (56-60): Study the following table carefully to answer the questions that follow.
The table given below provides the incomplete data related to monthly earning & expenditure of five friends. Find the missing value if required to answer the questions.
Income = Expenditure + Savings

Friends	Total Income (In Rs)	Ratio of Savings & Expenditure S : E	Expenditure(in Rs) on		
			Rent	Food	Others
Soha	–	5 : 6	20%	15%	7800
Ruchi	28000	5 : 9	–	16%	62%
Suchi	22000	– : –	2000	2200	58%
Meenu	26000	– : 6	15%	25%	7200
Teena	–	8 : 9	4000	4000	10000

56. Find the annual income of soha.
(a) Rs 26,400 (b) Rs 2,65,000 (c) Rs 26,500 (d) Rs 2,64,000 (e) None of these

Sol. **(d);** $Total\ expenditure\ of\ soha\ = \frac{100}{65} \times 7800 = Rs\ 12000$

$\therefore\ Total\ annual\ salary\ = \frac{11}{6} \times 12000 \times 12 = Rs\ 2{,}64{,}000$

57. Find the difference in the monthly savings of Suchi and Meenu.
(a) Rs 1200 (b) Rs 2200 (c) Rs 2000 (d) Rs 1800 (e) None of these

Sol. **(c);** $Total\ expenditure\ of\ Suchi\ = \frac{100}{42} \times 4200 = Rs\ 10{,}000$

$\therefore\ Savings\ of\ Suchi\ = 22000 - 10000 = Rs\ 12{,}000$

$Total\ expenditure\ of\ Meenu\ = \frac{100}{60} \times 7200 = Rs\ 12000$

$\therefore Savings\ of\ Meenu = 26000 - 12000 = Rs\ 14000$

So, required difference = Rs 2000

58. Expenditure made by Ruchi on rent is what percent of expenditure made by Meenu on food?
(a) 32% (b) 132% (c) 88% (d) 120% (e) None of these

Sol. **(b);** $Expenditure\ of\ Ruhi\ on\ rent\ = \frac{22}{100} \times \frac{9}{14} \times 28000 = Rs\ 3960$

$Expenditure\ of\ Meenu\ on\ food\ = \frac{25}{60} \times 7200 = Rs\ 3000$

$\therefore Required\ percentage = \frac{3960}{3000} \times 100 = 132\%$

59. The savings of Ruchi is what percent more or less than that of Teena?
(a) 32% (b) 37% (c) 38% (d) 40% (e) None of these

Sol. **(e);** Savings of Ruhi = $\frac{5}{14} \times 28000 = Rs\ 10000$

$Savings\ of\ Teena = \frac{8}{9} \times 18000 = Rs\ 16000$

$\therefore Required\ percentage = \frac{6000}{16000} \times 100 = 37.5\%$

60. Find the average of monthly income of Soha, Suchi and Teena.
(a) Rs 26500 (b) RS 26000 (c) Rs 25600 (d) Rs 22500 (e) None of these

Sol. **(b);** $Required\ average\ = \frac{1}{3}(22000 + 22000 + 34000) = Rs\ 26000$

Directions (61 -65): The following table shows the percentage of population of six states below poverty line and the proportion of male and female population in below and above poverty line. Read the following questions and answer them carefully

State	Percentage population below poverty line (in %)	Proportion of male and female	
		Below poverty line M : F	Above poverty line M : F
Ahmedabad	12	3 : 2	4 : 3
Bangalore	15	5 : 7	3 : 4
Chennai	25	4 : 5	2 : 3
Delhi	26	1 : 2	5 : 6
Hyderabad	10	6 : 5	3 : 2
Kolkata	32	2 : 3	4 : 5

61. The number of male in Ahemdabad below poverty line is what percent of the no. of female above poverty line in same state? (approximately)

(a) 18% (b) 21% (c) 19% (d) 25% (e) 29%

Sol. **(c);** Let Population $= x$

According to question,

$\frac{\frac{12x}{100}\times\frac{3}{5}}{\frac{88x}{100}\times\frac{3}{7}} \times 100 \approx 19\%$

62. In Delhi, if 780000 people live below poverty line, then what is the ratio of difference between Male and female below poverty line and difference between Male and female above poverty line in same state?

(a)143 : 111 (b) 43 : 11 (c) 243 : 222 (d) 43 : 22 (e)None of these

Sol. **(a);** Given 26% → 780000

$\therefore Required\ ratio = \frac{780000\times\frac{(2-1)}{3}}{\frac{780000}{26}\times 74\times\frac{(6-5)}{11}} = \frac{143}{111}$

63. The number of People above poverty line in Chennai is approximately what percent more or less than the no. of female in Delhi if the no of people in Chennai is 85% of the population in Delhi which is 1,00,0000 ? (approximately)

(a) 17% (b) 10% (c) 15% (d) 7% (e) 22%

Sol. **(b);** Population in Chennai = 850000

$Above\ poverty\ line\ in\ Chennai = \frac{3}{4}\times 8{,}50{,}000 = 6{,}37{,}500$

Population of Delhi = 10,00,000

$Females = 2{,}60{,}000\times\frac{2}{3} + 7{,}40{,}000\times\frac{6}{11}$

$\approx 1{,}73{,}333 + 403636 \approx 576969 \approx 577000$

$Desired\% = \frac{60500}{577000}\times 100 \approx 10\%$

64. If in a certain year, the total population of all metros is 8,00,000, then what is the ratio of Male below Poverty line to the Female above Poverty line in all Metro cities ?

(a) 2 : 5 (b) 5 : 2 (c) 7 : 5 (d)Cannot determined (e)None of these

Sol. **(d);** Since, individual population of metros is not given we cannot determine the required value.

65. People below poverty line in Kolkata is what percent of Males in Kolkata? (approximately)

(a) 80% (b) 85% (c) 74% (d) 90% (e) 65%

Sol. **(c);** Let total population in kolkata be x

Given population below poverty line = 32%x

$Males\ in\ Kolkata = 32\%\times\frac{2}{5}x + 68\%\times\frac{4}{9}x$

$= 12.8\%x + 30.2\%x = 43\%x$

$\therefore required\ percentage = \frac{32}{43}\times 100$

$\approx 74\%$

Directions (66-70): Read the following table and solve the following questions:
In the following table number of student appeared and percentage of students passed in the given exam (P & Q) in different years.

Years ⇩	P		Q	
	Total No. of students appeared	% of students passed	Total No. of students appeared	% of students passed
2011	350	40%	250	32%
2012	250	26%	320	45%
2013	240	30%	280	30%
2014	400	25%	300	25%
2015	320	60%	420	20%

66. What is the average number of students passed in exam 'P' in year 2011, 2013 and 2014.
(a) 100 (b) 104 (c) 108 (d) 112 (e) 116

Sol. **(b);** $Desired\ average = \frac{350\times\frac{40}{100}+240\times\frac{30}{100}+400\times\frac{25}{100}}{3} = \frac{140+72+100}{3} = \frac{312}{3} = 104$

67. What is the ratio of total number of students passed in 2013 in both the exams to total number of students passed in 2014 in both the exam?
(a) 172 : 153 (b) 153 : 172 (c) 175 : 153 (d) 175 : 156 (e) 156 : 175

Sol. **(e);** Total no. of students passed in P & Q together in 2013 $= 240 \times \frac{30}{100} + 280 \times \frac{30}{100}$
$= (240 + 280) \times \frac{30}{100} = 52 \times 3 = 156$
Total no. of students passed in P & Q together in 2014 $= 400 \times \frac{25}{100} + 300 \times \frac{25}{100}$
$= (400 + 300) \times \frac{25}{100} = 700 \times \frac{25}{100} = 175$
$Desired\ Ratio = \frac{156}{175}$

68. Find the difference between the number of students passed in exam 'P' in 2011 and 2012 together to number of students passed in exam 'Q' in 2014 and 2015.
(a) 40 (b) 42 (c) 44 (d) 46 (e) 48

Sol. **(d);** Total no. of students passed in exam P in 2011 and 2012 $= 350 \times \frac{40}{100} + 250 \times \frac{26}{100}$
$= 140 + 65 = 205$
Total no. of students passed in exam Q in 2014 and 2015 $= 300 \times \frac{25}{100} + 420 \times \frac{20}{100}$
$= 75 + 84 = 159$
Desired difference = 205 – 159 = 46

69. What is the average number of students appeared in exam 'Q'?
(a) 305 (b) 310 (c) 318 (d) 325 (e) 314

Sol. **(e);** $Desired\ Average = \frac{250+320+280+300+420}{5} = \frac{1570}{5} = 314$

70. Total number of students appeared in exam 'P' in 2012 and 2013 together is how much percentage more than the number of students appeared in 2014 in exam 'P'?
(a) 20% (b) 22.5% (c) 25% (d) 27.5% (e) 30%

Sol. **(b);** Total no. of students appeared in exam P in 2012 and 2013 together = 250 + 240 = 490
Total no. of students appeared in exam P in 2014 = 400
$Desired\ \% = \frac{490-400}{400} \times 100 = \frac{90}{400} \times 100 = 22.5\%$

Directions (71 - 75): Refer to the table given below and answer the given questions.
Data related to the number of employees in 5 different companies in December 2008

		Out of total number of employees		
Company	Total number of employees	Percentage of Arts graduates	Percentage of Science graduates	Percentage of commerce graduates
X	–	30%	30%	–
Y	–	–	40%	20%
Z	–	35%	50%	–
K	1000	32%	–	–
L	600	–	42%	30%

Note: Some values are missing, you have find out these value according to the question.
Note: Suppose that all the employees are graduated.

71. What is the difference between the number of commerce graduates employees and Arts graduates employees in company L?
(a) 12 (b) 18 (c) 10 (d) 22 (e) 15

Sol. **(a);** Number of commerce graduates employees $= 30\%\ of\ 600 = \frac{30}{100} \times 600 = 180$
Number of arts graduates employees $= 28\%\ of\ 600 = 168$
∴ Difference = 180 – 168 = 12

72. The average number of commerce graduates employees and science graduate employees in company Z was 338. What was the total number of employees in company Z?
(a) 1020 (b) 1140 (c) 1040 (d) 1240 (e) 940

Sol. **(c);** Average number of commerce graduate employees and science graduate employees in company Z = 338
Total number of commerce and science graduate employees in company Z = 676
Total number of employees in Z $= 676 \times \frac{100}{65} = 1040$

73. If the respective ratio between the number of science graduate and commerce graduate employees in company K was 10 : 7. What was the number of commerce graduate employees in K?
(a) 180 (b) 280 (c) 380 (d) 80 (e) 250

Sol. **(b);** Number of Arts graduate employees $= \frac{32}{100} \times 1000 = 320$
Number of science graduate and commerce graduate employees $= 1000 - 320 = 680$
∴ Number of commerce graduate employees in K $= 680 \times \frac{7}{17} = 280$

74. Total number of employees in company L increased by 20% from December 2008 to December 2009. If 20% of the total number of employees in company L in December 2009 was Arts graduate, what was the number of Arts graduate employees in company L in December 2009?
(a) 144 (b) 169 (c) 244 (d) 104 (e) 124

Sol. **(a);** Total employees in company L in 2009 $= 600 \times \frac{120}{100} = 720$
Arts Graduate in company L in December 2009 $= \frac{20}{100} \times 720 = 144$

75. Total number of employees in company X was three time the total number of employees in company Y. If the difference between number of commerce graduate employees in company Y and that of science graduate employees in same company was 120, what was the total number of employees in company X?
(a) 600d (b) 1200 (c) 1800 (d) 3000 (e) 2400

Sol. **(c);** (40% – 20%) of number of employees in company Y = 120
∴ Number of employees in company Y = 600
∴ Total number of employees in company X = 1800

PREVIOUS YEAR QUESTIONS

Directions (1-5): Study the table and answer the given questions.
Data related to candidates appeared and qualified from State 'x' in a competitive exam during 5 years
Note: Total appeared candidates = Total qualified candidates+ Total Unqualified candidates

Years	No. of appeared candidates	% of appeared candidates who unqualified	Respective ratio of number of qualified male and number of qualified female candidates
2006	700	––	3 : 2
2007	––	50%	2 : 3
2008	480	40%	––
2009	––	70%	4 : 5
2010	900	36%	––

Note: Some values are missing. You have to calculate these value as per data given in the questions.

1. In 2007, number of males who qualified were 50% of the number of males who qualified in 2010. Find total number of appeared candidates in 2007 if respective ratio of number of qualified male and female candidates is 13 : 11 in 2010 .
   (a) 760 (b) 728 (c) 720 (d) 740 (e) 780
2. If the ratio between number of qualified male in 2007 and the number of qualified male in 2009 is 4 : 3 and total number of male qualified in 2007 and 2009 together are 392 then number of candidates appeared in 2007 are what percent of the number of candidates appeared in 2009 ?
   (a) $89\frac{1}{3}\%$ (b) $84\frac{3}{4}\%$ (c) $88\frac{8}{9}\%$ (d) $87\frac{3}{7}\%$ (e) $88\frac{7}{9}\%$
3. If the ratio between number of qualified female in 2008 and number of qualified female in 2010 is 3 : 7 and the number of qualified male in 2008 is same as number of qualified male in 2010. Then find the total number of qualified female candidates in 2008 and 2010 together?
   (a) 756 (b) 688 (c) 725 (d) 720 (e) 696
4. If in 2011 Number of appeared candidates are 125% of the number of qualified candidates in 2008 then find the number of unqualified females in 2011 if the ratio of number of unqualified male and number of unqualified female candidates is 7: 3 . Number of appeared candidates who qualified in 2011 are 376 less than the number of appeared candidates who qualified in 2010
   (a) 48 (b) 36 (c) 56 (d) 72 (e) 64
5. Number of qualified candidates in 2008 are what percent more/less than the number of qualified candidates in 2010?
   (a) 60% (b) 55% (c) 25% (d) 40% (e) 50%

Directions(6-10): Given below is the table which shows the number of appeared and percentage of appeared candidates who qualify the examination from two given states A and B in different years.

Year	State A		State B	
	Number of appeared candidates	% of appeared candidates who qualified	Number of appeared candidates	% of appeared candidates who qualified
2010	900	60%	760	30%
2011	1200	43%	—	40%
2012	—	60%	520	60%
2013	960	70%	400	70%
2014	760	—	660	—

Note: Some values are missing in table. You have to calculate these value if required to answer these question.

6. Out of number of qualified candidates from state A in 2012 the ratio of male to female candidates is 7 : 5 and difference between qualified male and qualified female from state A in 2012 is 102 then what is the total number of candidates who appeared from state A in 2012.
   (a) 900 (b) 850 (c) 770 (d) 880 (e) 1020
7. If number of appeared candidates from state B in 2011 is $33\frac{1}{3}\%$ more than appeared candidates from state B in 2014 and ratio of passed candidates from same state and same years i.e. 2011 and 2014 is 11 : 12 then what is the sum of total passed candidates from same state and same years.
   (a) 545 (b) 660 (c) 736 (d) 884 (e) 568
8. What is the ratio of candidates passed from state A in 2010, 2011 and 2013 together to the ratio of candidates passed from state B in 2010, 2012 and 2013 together.
   (a) 432 : 331 (b) 423 : 205 (c) 432 : 205 (d) 200 : 343 (e) 254 : 255

9. Number of candidates qualified from state A in year 2010 is what percent more or less than number of candidates qualified from state B in year 2013
(a) $70\frac{2}{3}\%$ (b) $66\frac{2}{3}\%$ (c) $92\frac{6}{7}\%$ (d) $88\frac{3}{5}\%$ (e) $88\frac{1}{3}\%$
10. If from state A sum of candidates who qualified in 2013 and 2014 is 1356 then what percent of candidates remain unqualified from state A in 2014
(a) 10% (b) 5% (c) 8% (d) 15% (e) 12%

Directions (11-15): Study the following table carefully and answer the following question.
The table represents the cost of production and profit percentages of sports utility companies Adidas and Nike over the years from 2001 to 2005

Year	Adidas		Nike	
	Cost of production (Rs. in lakh)	Profit%	Cost of production (Rs. in lakh)	Profit%
2001	320	40%	—	40%
2002	—	30%	—	25%
2003	420	20%	440	35%
2004	460	45%	470	20%
2005	510	30%	580	—

Note: A few values are missing. It is expected that the candidate should calculate the missing values, if it is required to find answer for the questions given below.
Profit = Sales – cost of production
Profit % $= \left(\frac{Profit}{Cost\ of\ production}\right) \times 100\ \%$

11. If total sale of Adidas and Nike together in 2001 is 798 lakh, then find the cost of production of Nike ?
(a) 250 lakh (b) 300 lakh (c) 200 lakh (d) 300 lakh (e) 225 lakh
12. If total sales of Adidas and Nike together in 2002 is 1150 lakh, and cost of production of Adidas to that of Nike is 5 : 4, then find the difference in the cost of production of the two companies in 2002 ?
(a) 300 lakh (b) 100 lakh (c) 400 lakh (d) 200 lakh (e) 150 lakh
13. The average sales of Adidas in years 2004 and 2005 together is approximately what percent of the average sales of Nike in years 2003 and 2004 together?
(a) 120% (b) 104% (c) 114% (d) 121% (e) 108%
14. If total sales of Adidas and Nike together in 2005 is 1330 lakh, then find the profit% of Nike in 2005 ?
(a) 18% (b) 21% (c) 12% (d) 15% (e) 20%
15. What is the ratio of sales of Adidas in 2003 to that of Nike in 2004 ?
(a) 41 : 43 (b) 42 : 47 (c) 39 : 47 (d) 43 : 41 (e) 43 : 47

Directions (16-20): Given below is the table which shows the total students in 5 classes from which some participate in two cultural activities i.e. Quiz and Painting. It also shows the students who do not participates in cultural activities and ratio of students who participate in Quiz and painting.
Note : Students participate only in these two activities.

Class	Total students	Students who do not participate	Ratio of students in Quiz and Painting
A	420	119	4 : 3
B	330	88	7 : 4
C	240	110	8 : 5
D	125	45	2 : 3
E	390	130	8 : 5

16. What is the total students who participate in Quiz from class B, C and E together
(a) 370 (b) 394 (c) 268 (d) 352 (e) 270
17. What is the ratio of students who participate in Painting from class B and C together to the students who participate in Quiz from class A and D together.
(a) 19 : 35 (b) 20 : 37 (c) 23 : 34 (d) 22 : 35 (e) 20 : 33
18. What is the average number of students who participate in Quiz from class A, B and C together
(a) $117\frac{1}{3}$ (b) $125\frac{1}{3}$ (c) $124\frac{1}{3}$ (d) $130\frac{2}{3}$ (e) $135\frac{1}{3}$

19. Students who participate in both cultural activities from ass E is what percent more or less than the students who participate in Quiz from class C and D together.
(a) $117\frac{1}{7}\%$ (b) $132\frac{1}{7}\%$ (c) $131\frac{2}{7}\%$ (d) $215\frac{3}{7}\%$ (e) $120\frac{1}{7}\%$

20. If students who do not participate in cultural activities from class A is increased by $\frac{300}{17}\%$, then students who participate in Quiz from class A is decreased by what percent. Ratio of students who participate in Quiz and Painting remains same.
(a) $\frac{200}{43}\%$ (b) $\frac{300}{41}\%$ (c) $\frac{300}{43}\%$ (d) $\frac{400}{47}\%$ (e) $\frac{200}{57}\%$

Directions (21-25): Study the table carefully and answer the given questions. Data related to number of employees in 5 different organisations in April 2013

Companies	Total number of employees	Out of the total number of employees		
		Percentage of science graduate	Percentage of commerce graduates	Percentageof arts graduates
A	—	40%	30%	—
B	—	40%	—	25%
C	900	—	44%	35%
D	1300	48%	—	—
E	—	30%	—	50%

Note :
(i) Employees of the given companies can be categorized only in three types — Science graduates, Commerce graduates and Arts graduates.
(ii) Few values are missing in the table (indicated by —). A candidate is expected to calculate the missing value, if it is required to answer the given question, on the basis of the given data and information.

21. The average number of science graduate employees and Commerce graduate employees in Company A was 518. What is the total number of employees in Company A ?
(a) 1480 (b) 1520 (c) 1560 (d) 1580 (e) 1440

22. Total number of employees in Company E was 3 times the total number of employees in Company B. If the difference between number of Commerce graduate employees in Company E and that in Company B was 300, what was the total number of employees in Company B ?
(a) 900 (b) 1500 (c) 1200 (d) 1320 (e) 1290

23. If the respective ratio between number of Arts graduate employees and Commerce graduate employees in Company D was 4 : 9, what was the number of Arts graduate employees in Company D ?
(a) 236 (b) 232 (c) 208 (d) 224 (e) 216

24. Total number of employees in Company C increased by 40% from April, 2013 to April, 2014. If 50% total number of employees in Company C in April, 2014 were Commerce graduates, what was the number of commerce graduate employees in Company C in April 2014 ?
(a) 650 (b) 630 (c) 590 (d) 570 (e) 510

25. What was the difference between number of Science graduate employees and Arts graduate employees in Company C ?
(a) 136 (b) 132 (c) 128 (d) 122 (e) 126

Directions (26-30): Study the following table carefully to answer the questions that follow. The table shows the population of four villages and ratio of male to female among those who voted in Panchayat election.

Villages	Total villagers	Total villagers who voted	Ratio of male to female who voted
A	6000	90%	5 : 4
B	4800	60%	2 : 1
C	15000	50%	1 : 1
D	12500	80%	2 : 3

26. Total population of village B and D together is approximately what percent of total population of village C ?
(a) 120% (b) 125% (c) 115% (d) 154% (e) 118%

27. What is the ratio of females who voted in village B and males who voted in village D ?
(a) 6 : 25 (b) 7 : 10 (c) 8 : 25 (d) 9 : 20 (e) 25: 4

28. Total number of villagers who voted in village A and C together is
(a) 11900 (b) 12900 (c) 10000 (d) 9000 (e) 11000

29. Males who voted in village 'D' are what % of population of village 'A' who did not vote ?
(a) $654\frac{1}{3}\%$ (b) $666\frac{2}{3}\%$ (c) $625\frac{4}{5}\%$ (d) $525\frac{2}{3}\%$ (e) $620\frac{2}{5}\%$

30. What is the total sum of difference b/w males & females who voted in villages B & A together?
(a) 1500 (b) 1560 (c) 1600 (d) 1650 (e) 1620

Directions (31-35): Study the following data related to the sales distribution of mobiles phones by five shopkeepers in June, 2017. Total sells of all five shopkeepers in June, 2017 is considered to be 100%.

Shopkeeper	Total sold mobiles	Windows Phone: Android Phone
P	22%	7:11
Q	24%	3:7
R	1350	7:8
S	18%	11:9
T	21%	9:5

31. Find the total number of Windows phone sold by P and Q together ?
(a) 1814 (b) 1418 (c) 1481 (d) 1148 (e) 1344
32. Android phones sold by S are by what number more or less than the windows phones sold by R (rounded upto two decimal places)?
(a) 20.05% (b) 12.21% (c) 18.54% (d) 15.71% (e) 23.35%
33. The sells of Q and S increased by $5\frac{5}{9}\%$ and $3\frac{19}{27}\%$ respectively in July 2017 than previous month. Find the total mobiles sold by Q and S in July, 2017 ?
(a) 3690 (b) 3660 (c) 3960 (d) 3990 (e) 3820
34. Find the ratio of number of Windows phones sold by P to that of Window phones sold by R.
(a) 11 : 9 (b) 4 : 9 (c) 5 : 9 (d) 5 : 8 (e) 4 : 7
35. Find the difference in the average of Windows phones sold by P and Q and average of Android phones sold by S and T.
(a) 20 (b) 30 (c) 40 (d) 5 (e) 7

Directions (36-40): Table given below shows the total population of 5 cities in 5 different years. Another table show percentage rise of population in these cities every years. Study the table and solve the given questions:

	2012	2013	2014	2015	2016
A	—	—	—	3,04,175	—
B	—	—	1,45,200	—	—
C	—	1,80,000	—	—	—
D	1,60,000	—	—	—	—
E	—	—	—	—	5,37,824

	A	B	C	D	E
Percentage rise of population every year	15%	10%	20%	25%	40%

Note:-
- Percentage rise is in population is consistent every year.
- Some data is missing in the table. Find the data according to the question.

36. Find the ratio of population of city D in 2013 to population of city A in the same year?
(a) 23 : 20 (b) 21 : 20 (c) 20 : 21 (d) 19 : 17 (e) 20 : 23
37. Population of city B in 2016 is approximately what percent more than the population of city C in 2012 ?
(a) 11% (b) 17% (c) 22% (d) 27% (e) 32%
38. Population of city C in 2014 is what percentage of the population of city B in 2012?
(a) 80% (b) 120% (c) 180% (d) 240% (e) 300%
39. What is the average population of city C, D and E in year 2012 ?
(a) 1,40,000 (b) 1,45,000 (c) 1,48,000 (d) 1,50,000 (e) 1,52,000
40. What is the ratio of the population of city B and C together in 2012 to the city D and E together in 2013?
(a) 22 : 15 (b) 15 : 22 (c) 14 : 23 (d) 23 : 14 (e) 15 : 23

Directions (41-45): Study the following table and answer the questions that follow:-
The table shows the data related to investment made by five friends in two schemes A and B for different time periods and at different rate of interest.

Scheme / Name	A		B	
	Time (Years)	Rate (PCPA)	Time (Years)	Rate (PCPA)
Sameer	3	5	5	8
Sanjeev	6	x	4	x
Saahil	2	10	4	12
Saket	4	18	3	5
Sarash	2	12	2	10

41. Find the difference in the compound interest and simple interest earned by Saket through scheme B if he invested Rs 12000 in scheme B.
(a) Rs 89.5 (b) Rs 91.5 (c) Rs 108.2 (d) Rs 102.8 (e) Rs 97.5

42. The amount obtained by Sanjeev by investing same sum of money in scheme A & B at compound interest are in ratio 25 : 16. Find the value of x.
(a) 15% (b) 10% (c) 20% (d) 25% (e) 18%

43. Saahil invested a sum of money(x) in scheme A at SI while Sarash invested three-seventh of x in scheme B at CI. Total interest earned by Saahil and Sarash is what percent of amount invested by Saahil in scheme A ?
(a) 31% (b) 29% (c) 23% (d) 28% (e) 20%

44. From a total of Rs 12,000 Sarash invested three-fifth in Scheme A and rest in scheme B at SI. Find the difference in the interest earned.
(a) Rs 786 (b) Rs 789 (c) Rs 586 (d) Rs 867 (e) Rs 768

45. Saket invested an amount (P) in A at SI and Saahil an amount of Q in B at SI and earn interest in ratio of 5 : 4. Which one of the following is false statement?
(a) P is $16\frac{2}{3}$% less than Q (b) Q is 20% more than P
(c) Sum of P & Q is 220% of P (d) Difference of P & Q is 22% of P
(e) None of these

Directions (46-50): Refer to the table given below and answer the given questions. Table shows the total population, percentage of males, females and transgenders of 5villages in year 2000. Some data are missing, find the missing data to answer the given questions.

Village	Total Population	Percentage of Males	Percentage of Females	Percentage of Transgenders
P	2400	25%	-	-
Q	–	–	40%	20%
R	–	50%	20%	–
S	800	-	–	16%
T	–	–	24%	36%

46. If the ratio of population of females and transgenders in village P in year 2000 is 3 : 7. And females in village P in year 2001 is increased by 20% from that of year 2000. Then find the total number of males and transgenders in village P in year 2001 so that overall population in year 2001 is same as in year 2000?
(a) 1752 (b) 1852 (c) 2752 (d) 3200 (e) None of these

47. If number of transgenders in village R in year 2000 is 180. And ratio of males and females in village S in year 2000 is 1:2. Then find the difference of males in village R and village S?
(a) 96 (b) 86 (c) 76 (d) 55 (e) None of these

48. If total population of village Q and village R together in year 2000 is 25% more than the total population of village P in year 2000. And ratio of total population of village Q and village R in year 2000 is 2 : 3. Then find the ratio of males in village Q to transgenders in village R in year 2000?
(a) 9 : 8 (b) 8 : 9 (c) 2 : 3 (d) 3 : 5 (e) None of these

49. If ratio of males of village S in year 2000 to the females in village P in year 2000 is 2 : 5 and population of transgenders in village P is increased by 20% in year 2001 from year 2000. Then find the total population of transgenders in year 2001 in village P?
(a) 2000 (b) 1200 (c) 1500
(d) Cannot be determined (e) None of these

50. If ratio of total population of village R to village T in year 2000 is 5: 4. Then number of males in village T in year 2000 is approximately what percent more or less than the number of transgenders in village R in year 2000?
(a) 5.667% (b) 12% (c) 10% (d) 3.334% (e) 6.667%

Directions (51-55): Study the following table carefully and answer the questions that follow.
The table shows the data related top six schools of India. Some values are missing which you need to find out and answer the questions accordingly.

Schools	Number of teachers	Ratio of male to female teachers	Ratio of teachers to students	Percentage of non-teaching staff
Vasant valley	480	15:17	_ : _	15%
Woodstock	450	_ : _	1:6	10%
DPS	—	3:2	3:20	—
Rishi Valley	510	8:7	3:10	—
Pathways	—	2:7	2:5	20%
DAV	—	_ : _	2:7	15%

Note: Total strength of school = Number of teachers + Number of students + Number of non-teaching staff

51. If female teachers of school Vasant valley are 17% of total strength of school, then what is the ratio of teachers to students in that school ?
(a) 32 : 55 (b) 5 : 11 (c) 32 : 53 (d) 23 : 53 (e) 5 : 13
52. The female students of Pathways school are $15\frac{5}{9}$% more than male teachers of school Vasant valley while ratio of male to female students of Pathways school is 14 : 13. Find the number of non-teaching staff of Pathways school.
(a) 180 (b) 192 (c) 210 (d) 189 (e) None of these
53. If strength of all school is same, then find the number of non-teaching staff of school DAV.
(a) 420 (b) 525 (c) 580 (d) 630 (e) None of these
54. If total strength and number of students of schools Woodstock and DPS are same, then teachers of DPS are what percent less than students of Woodstock ?
(a) 80% (b) 85% (c) 72% (d) 92% (e) None of these
55. Find the difference in total strength of school Woodstock and that of Rishi valley.
(a) 980 (b) 840 (c) 780 (d) can't be determined (e) None of these

Direction (56-60): Study the given table carefully and answer the following questions. Table shown below shows the ratio of literate and illiterate population of five cities

Cities	Percentage of Literate population	Ratio of illiterate Male & Female	Ratio of Literate male and Females
A	48%	8 : 7	7 : 5
B	60%	7 : 5	7 : 8
C	72%	7 : 5	5 : 4
D	64%	5 : 4	9 : 7
E	52%	7 : 9	9 : 4

56. If the number of literate male in city B is 34,440 and that of illiterate female in city D is 24,000. Then by what percentage population of city B is less than population of city D.
(a) 12% (b) 14% (c) 16% (d)18% (e)20%
57. Find the difference between the illiterate male in city C to the literate female in same city if the difference between the literate and illiterate population is 52800.
(a) 17,800 (b) 18,800 (c) 18,830 (d) 19,300 (e) 20,290
58. By what percentage population of city E is more than population of city A if illiterate male in city A is 31200 whereas literate female in city E is 36000.
(a) 50% (b)75% (c) 100% (d) 125% (e) 150%
59. Find the ratio of population of literate male in city C to illiterate female in city E if illiterate female in city C is 14,000 and literate male in city E is 81,000.
(a) $\frac{81}{64}$ (b)$\frac{64}{81}$ (c) $\frac{93}{67}$ (d) $\frac{67}{93}$ (e) *None of these*
60. Find the population of illiterate females in city B if the difference between the population of literate male and illiterate males is 5740.
(a) 24,200 (b) 22,250 (c) 18,750 (d)20,500 (e) *None of these*

Directions (61-65): Given below is the table which shows the various items purchased by shopkeeper from wholesaler, % mark up price per kg by shopkeeper, List price per kg marked by shopkeeper and % discount offered by shopkeeper on list price.

Items	Quantity	% mark up	List price per kg	% discount
Wheat	80 Kg	$33\frac{1}{3}\%$	20	15%
Rice	90 kg	40%	35	$\frac{100}{7}\%$
Maize	40 kg	$\frac{200}{7}\%$	45	$\frac{100}{6}\%$
Jowar	60 kg	$33\frac{1}{3}\%$	60	$\frac{100}{6}\%$
Bajra	30 kg	$\frac{400}{9}\%$	52	$\frac{300}{13}\%$

61. What is the ratio of total profit obtained on selling whole quantity of rice to the total profit obtained on selling whole quantity of Maize.
(a) 3 : 4 (b) 7 : 2 (c) 9 : 2 (d) 5 : 2 (e) 7 : 3

62. If shopkeeper mixes 5 kg of impurity free of cost in Wheat then his total profit increases by what percent.
(a) $42\frac{2}{7}\%$ (b) $64\frac{2}{3}\%$ (c) $60\frac{1}{3}\%$ (d) $53\frac{1}{8}\%$ (e) $50\frac{1}{7}\%$

63. Cost price of Maize and Bajra together are what percent more or less than the cost price of Rice and Jowar together.
(a) $\frac{20}{3}\%$ (b) $\frac{10}{7}\%$ (c) $\frac{9}{7}\%$ (d) $\frac{25}{3}\%$ (e) $\frac{50}{3}\%$

64. If 12 kg of Jowar is spoiled then by what percent be should increase his initial List price per kg so that there is no profit and no loss.
(a) 12.5% (b) 22.5% (c) 8.5% (d) 16.5% (e) 13.75%

65. If shopkeeper uses faulty weight of 800 gm instead of 1 kg while selling than what will be the total profit in selling Jowar
(a) 850 (b) 625 (c) 1250 (d) 1050 (e) 900

Directions (66-70): Read the given data carefully and answer the given questions.
Given below is the table which shows the different types of work A, B, C, D and E, ratio of efficiency to do these work of a man, a woman and a child respectively and total time taken by a child to complete these different works.

Work	Ratio of Efficiency	Time taken by a child to complete work
A	5: 3: 4	20 days
B	4: 3: 2	10 days
C	8: 7: 6	21 days
D	3: 2 : 1	15 days
E	6: 4: 3	16 days

66. Time taken to complete work A by 3 men, 2 women and 1 child together is what % more or less than time taken by 1 man, 3 women and 2 children together to complete work D.
(a) $\frac{400}{3}\%$ (b) $\frac{200}{3}\%$ (c) $\frac{404}{3}\%$ (d) $\frac{100}{3}\%$ (e) $\frac{100}{6}\%$

67. What is the ratio of time taken by a man and a woman to complete work C together to the time taken by 3 women and a child to complete work E together.
(a) 20 : 13 (b) 21 : 8 (c) 17 : 18 (d) 12 : 11 (e) 13 : 9

68. If a man, a women and a child works alternatively starting from child on day 1, man on day 2 and women on day 3 then, in how many days will they complete work E working alternatively.
(a) 8 days (b) 6 days (c) 9 days (d) 11 days (e) 10 days

69. Time taken by a women to complete work C is what percent more or less than time taken by man to complete work D.
(a) 180% (b) 140% (c) 220% (d) 240% (e) 260%

70. Working together they get 4500 Rs. in total for completing work B and 1800 Rs. for completing work D, then share received by man in completing work B is what percent more as less than share received by man in completing work D.
(a) $98\frac{2}{9}\%$ (b) $122\frac{2}{9}\%$ (c) $110\frac{2}{9}\%$ (d) $115\frac{2}{9}\%$ (e) $125\frac{2}{9}\%$

Directions (71-75): Given below is the percent of number of students from 5 different colleges attended different number of seminars.

	No. of seminars Attended - 1	No. of seminars Attended – 2	No. of seminars Attended – 3	No. of seminars Attended – 4	No. of seminars Attended – 5	No. of seminars Attended – 6
P	19	16	21	9	—	12
Q	—	18	24	—	—	20
R	10	18	29	—	—	—
S	—	—	29	11	24	10
T	16	—	25	—	31	6

Note: Every student attended at least 1 seminar so there is no student from every college who did not attend the seminars.

71. If the number of students from college R who attended at most 3 seminars is equal to number of students from college S who attended at least 3 seminars and the total number of students from College S is 11400. Then find total the number of students from college R.
(a) 14800 (b) 41900 (c) 15300 (d) 12400 (e) 13000

72. Total no. of students from college P who attended at most 2 seminars is equal to the sum of number of students from college T who attended 1 seminar and the number of students from the same college who attended 6 seminars. Then the total number of students from college P is what percent of total no. of student from college T ?
(a) $57\frac{1}{7}\%$ (b) $62\frac{6}{7}\%$ (c) $62\frac{4}{7}\%$ (d) $57\frac{6}{7}\%$ (e) $47\frac{3}{7}\%$

73. The number of students from college P who attended more than 2 seminars is approximately what percent less than the number of students from college S who attended at least 3 seminars if the number of student who attended 2 seminars from college P is 48 and the number of students of college S who attended 6 seminars is 48 more than the number of students from college P, who attended 1 seminar?
(a) 77% (b) 74% (c) 71% (d) 75% (e) 73%

74. If the difference between number of students from college T who attended 3 seminars and students who attended 5 seminars is 60, and the total students from college R is 60% of the total students from college T then find the number of students of college R who are attending 2 seminars.
(a) 116 (b) 104 (c) 136 (d) 108 (e) 105

75. No. of students who attended at most 2 seminars from college S are what percent more/less than the no. of students who attended at least 3 seminars from the same college ?
(a) $184\frac{11}{13}\%$ (b) $184\frac{7}{13}\%$ (c) $184\frac{8}{13}\%$ (d) can't be determined (e) None of these

PREVIOUS YEAR SOLUTIONS

1. (e); $No.\ of\ male\ candidates\ who\ qualified\ in$ 2010
$= \frac{(100-36)}{100} \times 900 \times \frac{13}{24} = 312$
$No.\ of\ males\ who\ qualified\ in$ 2007
$= 312 \times \frac{50}{100} = 156$
$Total\ no.\ of\ appeared\ candidates\ who\ qualified\ in$ 2007
$= \frac{156}{2} \times 5 = 390$
$Total\ no.\ of\ appeared\ candidates\ in$ 2007
$= \frac{390}{50} \times 100 = 780$

2. (c); $No.\ of\ qualified\ male\ in$ 2007 $= \frac{4}{7} \times 392 = 224$
$No.\ of\ qualified\ male\ in$ 2009 $= \frac{3}{7} \times 392 = 168$
$No.\ of\ appeared\ candidates\ in$ 2007
$= \frac{224}{2} \times 5 \times \frac{1}{50} \times 100 = 1120$
$No.\ of\ appeared\ candidates\ in$ 2009
$= \frac{168}{4} \times 9 \times \frac{1}{30} \times 100 = 1260$
$Required\% = \frac{1120}{1260} \times 100 = 88\frac{8}{9}\%$

3. (d); Let no. of qualified male in 2008 and 2010 = x
Let no. of qualified female in 2008 and 2010 $3y\ and\ 7y\ respectively$
Then, $x + 3y = 288$ ... (i)
and $x + 7y = 576$ ... (ii)
from (i) and (ii) $y = 72$
No. of qualified female candidates in 2008 and 2010 together = $72(3 + 7) = 720$

4. (a); $No.\ of\ appeared\ candidates\ in$ 2011
$= \frac{125}{100} \times \frac{60}{100} \times 480 = 360$
$No.\ of\ appeared\ candidates\ who\ qualified\ in$ 2011
$= 576 - 376 = 200$
$No.\ of\ unqualified\ females\ in$ 2011
$= \frac{3}{10}(360 - 200) = \frac{3}{10} \times 160 = 48$

5. (e); $Required\ \% = \frac{576-288}{576} \times 100 = 50\%$

6. (e); Let qualified male from state A in 2012 = $7x$
And qualified female from state A in 2012 = $5x$
According to question $2x = 102$
$x = 51$
$Total\ appeared\ candidates = \frac{12 \times 51}{60} \times 100$
$= \frac{12 \times 51 \times 5}{3} = 1020$

7. (c); Number of appeared candidate from state B in 2011
$= \frac{4}{3} \times 660 = 880$
$According\ to\ question$
$= 880 \times \frac{40}{100} \times \frac{1}{11} \times (11+12) = 736$

8. (c); $Required\ ratio = \frac{9 \times 60 + 12 \times 43 + 96 \times 7}{76 \times 3 + 52 \times 6 + 4 \times 70}$
$= \frac{540+516+672}{228+312+280}$
$= \frac{1728}{820} \Rightarrow = 432 : 205$

9. (c); $Required\% = \frac{9 \times 60 - 4 \times 70}{4 \times 70} \times 100$
$= \frac{260}{280} \times 100 = \frac{13}{14} \times 100 = 92\frac{6}{7}\%$

10. (a); $Total\ passed\ candidate\ from\ state\ A\ in$ 2014
$= 1356 - 96 \times 7 = 684$
$Required\% = \frac{760-684}{760} \times 100 = \frac{76}{760} \times 100$
$= 10\%$

11. (a); Sales of Adidas in 2001 = $320 \times \frac{140}{100} = 448$ lakh
Sale of Nike in 2001 = $798 - 448 = 350$ lakh
Cost of production of Nike = $350 \times \frac{100}{140} = 250$ lakh

12. (b); Let cost of production of Adidas be $5x$ lakh
And cost of production of Nike be $4x$ lakh
Then,
$5x \times \frac{130}{100} + 4x \times \frac{125}{100} = 1150$
or, $\frac{1150x}{100} = 1150 \Rightarrow x = 100$
Req. Difference = $5x - 4x \Rightarrow x = 100$

13. (c); Req. percentage = $\frac{\frac{1}{2} \times \left(460 \times \frac{145}{100} + 510 \times \frac{130}{100}\right)}{\frac{1}{2} \times \left(440 \times \frac{135}{100} + 470 \times \frac{120}{100}\right)} \times 100$
$\approx 114\%$

14. (d); Sales of Nike in 2005 = $1330 - 510 \times \frac{130}{100}$
$= 1330 - 663 = 667$ lakh
Profit % of Nike = $\frac{667-580}{580} \times 100 = \frac{87}{580} \times 100$
$= 15\%$

15. (b); Required Ratio = $\frac{420 \times \frac{120}{100}}{470 \times \frac{120}{100}} = \frac{42}{47}$

16. (b); Students who participate in Quiz from B
$= (330 - 88)\frac{7}{11} = 154$
Students who participate in Quiz from C
$= (240 - 110) \times \frac{8}{13} = 80$
Students who participate in Quiz from E
$= (390 - 130)\frac{8}{13} = 160$
Required sum = 154 + 80 + 160 = 394

17. (c); Students who participate in painting from B and C
$= (330 - 88)\frac{4}{11} + (240 - 110) \times \frac{5}{13}$
$= 88 + 50 = 138$
Students who participate in Quiz from A and D
$= (420 - 119)\frac{4}{7} + (125 - 45)\frac{2}{5}$
$= 172 + 32 = 204$
Required ratio $= \frac{138}{204} \Rightarrow = \mathbf{\frac{23}{34}}$

18. (e); Students who participate in Quiz from A, B and C together
= 172 + 154 + 80 = 406
$Required\ average = \frac{406}{3} = 135\frac{1}{3}$

19. (b); Students who participate in both activities from E = 390 – 130 = 260
Students who participates in quiz from C and D
$= (240 - 110) \times \frac{8}{13} + (1250 - 45) \times \frac{2}{5}$
$= 80 + 32 = 112$
$Required\ percentage = \frac{260-112}{112} \times 100$
$= 132\frac{1}{7}\%$

20. (c); Students who do not participate in cultural activities from A after increase
$= \left(1 + \frac{3}{17}\right) \times 119 = 140$

Now, students in Quiz from
$= (420 - 140) \times \frac{4}{7}$
$= 280 \times \frac{4}{7} = 160$
Required percentage
$= \frac{172-160}{172} \times 100$
$= \frac{12}{172} \times 100 = \frac{300}{43}\%$

21. (a); Required employees $= \frac{1036}{70} \times 100$
$= 1480$

22. (c); Let total employees in Company B $= x$
Let total employees in Company E $= 3x$
$\therefore (100 - 50 - 30)\%$ of $3x - (100 - 40 - 25)\%$ of $x = 300 \quad x = 1200$

23. (c); Arts and Commerce graduate employees
$= \frac{52}{100} \times 1300 = 676$
Arts graduate employees $= \frac{4}{13} \times 676$
$= 208$

24. (b); Total number of employee in Company C in April 2014 $= \frac{900 \times 140}{100} = 1260$
$\therefore$ Required employees $= \frac{1260}{2} = 630$

25. (e); % of Science graduate employees in company C
$= (100 - 44 - 35)\% = 21\%$
Required difference $= (35 - 21)\%$ of $900 = 126$

26. (c); Required % $= \frac{(4800+12500)}{15000} \times 100$
$\therefore 115.33 \Rightarrow \approx 115\%$

27. (a); Required ratio
$= \frac{4800 \times \frac{60}{100} \times \frac{1}{3}}{12500 \times \frac{80}{100} \times \frac{2}{5}} = 6 : 25$

28. (b); Required no. of villagers
$= \left(6000 \times \frac{90}{100}\right) + \left(15000 \times \frac{50}{100}\right)$
$= 5400+7500 = 12900$

29. (b); Required % $= \frac{12500 \times \frac{80}{100} \times \frac{2}{5}}{6000 \times \frac{10}{100}} \times 100$
$= 666\frac{2}{3}\%$

30. (b); Required sum
$= \left[4800 \times \frac{60}{100} \times \frac{2}{3} - 4800 \times \frac{60}{100} \times \frac{1}{3}\right] +$
$\left[6000 \times \frac{90}{100} \times \frac{5}{9} - 6000 \times \frac{90}{100} \times \frac{4}{9}\right]$
$= 960 + 600 \Rightarrow = 1560$

31. (b); Required number of windows phones
$= \frac{7}{18} \times \frac{22}{100} \times 9000 + \frac{3}{10} \times \frac{24}{100} \times 9000$
$= 770 + 648 = 1418$

32. (d); *Android phones sold by S* $= \frac{9}{20} \times \frac{18}{100} \times 9000 = 729$
Windows phones sold by R $= \frac{7}{15} \times 1350 = 630$
$\therefore$ *Required percentage* $= \frac{729-630}{630} \times 100 \approx 15.71\%$

33. (c); *Sales of Q in July* $= \left(100 + \frac{50}{9}\right)\%$ *of* $\frac{24}{100} \times 9000$
$= \frac{950}{900} \times \frac{24}{100} \times 9000 = 2280$
Sales of S in July $= \left(100 + \frac{100}{27}\right)\%$ *of* $\frac{18}{100} \times 9000$
$= \frac{2800}{2700} \times \frac{18}{100} \times 9000 = 1680$
$\therefore$ Total phones sold $= 2280 + 1680 = 3960$

34. (a); *Required ratio* $= \frac{\frac{7}{18} \times \frac{22}{100} \times 9000}{\frac{7}{15} \times \frac{15}{100} \times 9000} = 11 : 9$

35. (e); Average of windows phones sold by P and Q
$= \frac{1}{2} \times 1418 = 709$
Average of android phones sold by S & T
$= \frac{1}{2}\left(729 + \frac{5}{14} \times \frac{21}{100} \times 9000\right)$
$= \frac{1}{2}(729 + 675) = 702$
$\therefore$ Required difference $= 709 - 702 = 7$

36. (e); *Population of city D in* 2013 $= 1{,}60{,}000 \times \frac{125}{100}$
$= 2{,}00{,}000$
Population of city A in 2013 $= 3{,}04{,}175 \times \frac{100}{115} \times \frac{100}{115}$
$= 2{,}30{,}000$
Desired Ratio $= \frac{2{,}00{,}000}{2{,}30{,}000} = \frac{20}{23}$

37. (b); Population of city B in 2016
$= 1{,}45{,}200 \times \frac{110}{100} \times \frac{110}{100}$
$= 1{,}75{,}692$
Population of city C in 2012
$= 1{,}80{,}000 \times \frac{100}{120} = 1{,}50{,}000$
Desired percentage $= \frac{1{,}75{,}692 - 1{,}50{,}000}{1{,}50{,}000} \times 100$
$= \frac{25{,}692}{1{,}50{,}000} \times 100 \Rightarrow = 17.128 \approx 17\%$

38. (c); Population of city C in 2014
$= 1{,}80{,}000 \times \frac{120}{100} = 2{,}16{,}000$
Population of city B in 2012
$= 1{,}45{,}200 \times \frac{100}{110} \times \frac{100}{110} \Rightarrow = 1{,}20{,}000$
Desired percentage $= \frac{2{,}16{,}000}{1{,}20{,}000} \times 100 = \frac{216}{120} \times 100$
$= 180\%$

39. (d); Population of city C in 2012
$= 1{,}80{,}000 \times \frac{100}{120}$
$= 1{,}50{,}000$
Population of city D in 2012 = 1,60,000
Population of city E in 2012
$= 537824 \times \left[\frac{100}{140}\right]^4 \Rightarrow = 1{,}40{,}000$
Desired average $= \frac{1{,}50{,}000 + 1{,}60{,}000 + 1{,}40{,}000}{3}$
$= 1{,}50{,}000$

40. (b); Population of B = 2012 = 1,20,000
Population of C in 2012 = 1,50,000
Population of B and C together in 2012 = 2,70,000
Population of D in 2013 $= 1{,}60{,}000 \times \frac{125}{100}$
$= 2{,}00{,}000$
Population of E in 2013 $= 5{,}37{,}824 \times \left[\frac{100}{140}\right]^3$
$= 1{,}96{,}000$
Population of D and E together in 2013 = 3,96,000
Required Ratio $= \frac{2{,}70{,}000}{3{,}96{,}000} = \frac{15}{22}$

41. (b); Difference $= \frac{Pr^2(300+r)}{100^3}$
$= \frac{12000 \times 25 \times 305}{100^3} \Rightarrow = Rs\ 91.5$

42. (d); $\frac{P\left(1+\frac{x}{100}\right)^6}{P\left(1+\frac{x}{100}\right)^4} = \frac{25}{16}$

$\Rightarrow \left(1+\frac{x}{100}\right)^2 = \frac{25}{16}$

$\Rightarrow \frac{x}{100} = \frac{1}{4} \Rightarrow x = 25\%$

43. (b); Interest earned by Saahil $= \frac{20}{100} \times x = 0.2x$

Interest earned by Sarash $= \frac{21}{100} \times \frac{3}{7} \times x = 0.09x$

$\therefore$ Required percentage $= \frac{0.29x}{x} \times 100 = 29\%$

44. (e); Difference in interest

$= \frac{24}{100} \times \frac{3}{5} \times 12000 - \frac{20}{100} \times \frac{2}{5} \times 12000$

$= (72-40) \times 24 \Rightarrow = Rs\ 768$

45. (d); $\frac{P \times 18 \times 4}{Q \times 12 \times 4} = \frac{5}{4} \Rightarrow \frac{P}{Q} = \frac{5}{6}$

46. (a); Total population of females and transgenders in village P in 2000 = 75% of 2400 = 1800

$\therefore$ Number of females in village P in 2000

$= \frac{3}{10} \times 1800 = 540$

Females in 2001 in village P $= 540 \times \frac{120}{100} = 648$

$\therefore$ Total males & transgenders in 2001 in village P

= 2400 – 648 = 1752

47. (c); Percentage transgenders in village R in year 2000 = 30%

$\therefore$ Total population of village R in 2000

$= \frac{180}{30} \times 100 = 600$

$\therefore$ males in village R in 2000 = 600 × 50% =300

Males in village S in 2000 $= \frac{84}{100} \times 800 \times \frac{1}{3} = 224$

$\therefore$ Required difference = 300 – 224 = 76

48. (b); Total population of village Q and Village R in 2000

$= 2400 \times \frac{125}{100} = 3000$

$\therefore$ Total population of village Q in 2000 $= \frac{2}{5} \times 3000$

$= 1200$ and

total population of village R in 2000

$= \frac{3}{5} \times 3000 \Rightarrow = 1800$

$\therefore$ Required ratio $= \frac{\frac{40}{100} \times 1200}{\frac{30}{100} \times 1800} = \frac{4 \times 2}{3 \times 3} = \frac{8}{9}$

$= 8:9$

49. (d); Cannot be determined

50. (e); Let the population of R=5x

And the population of T = 4x

$\text{Required percentage} = \frac{(4x) \times \frac{40}{100} - (5x) \times \frac{30}{100}}{(5x) \times \frac{30}{100}} \times 100$

$= \frac{(1.6-1.5)x}{(1.5)x} \times 100 = \frac{0.1 \times 100}{1.5}$

$= 6.667\%$

51. (c); Number of female teachers

$= \frac{17}{32} \times 480 = 255$

$\therefore$ Total strength of school

$= \frac{100}{17} \times 255 = 1500$

Number of students

$= 1500 - 480 - \frac{15}{100} \times 1500 = 795$

$\therefore$ Required ratio $= \frac{480}{795} = \frac{32}{53}$

52. (d); Number of female students of Pathways

$= \frac{1040}{900} \times 225 = 260$

Number of male students $= 260 \times \frac{14}{13} = 280$

Number of teachers

$= (260+280) \times \frac{2}{5} = 540 \times \frac{2}{5} = 216$

Required number of non-teaching staff

$= (540+216) \times \frac{20}{80} = 756 \times \frac{20}{80} = 189$

53. (b); Since strength of all schools is same.

Students in Woodstock = 450 × 6 = 2700

$\therefore$ 90% of strength = 2700 + 450

$\therefore$ total strength of Woodstock $= 3150 \times \frac{100}{90} = 3500$

So, required number of non-teaching staff

= 15% of 3500 = 525

54. (b); Total strength = 3500

$Teachers\ in\ DPS = 2700 \times \frac{3}{20} = 405$

$\therefore$ Required percentage $= \frac{2700-405}{2700} \times 100 = 85\%$

55. (d); We can't find the strength of school Rishi Valley with given data.

56. (d); Let population of city B = x

$x \times \frac{60}{100} \times \frac{7}{5} = 34{,}440$

$x = 1{,}23{,}000$

Let population of city D = y

$y \times \frac{36}{100} \times \frac{4}{9} = 24{,}000$

$y = 1{,}50{,}000$

$\text{Required Percentage} = \frac{1{,}50{,}000 - 1{,}23{,}000}{1{,}50{,}000} \times 100$

$= \frac{27{,}000}{1{,}50{,}000} \times 100 = 18\%$

57. (b); Let the total population of city C = a

72% of a – 28% of a = 52,800

44% of a = 52800

a = 1,20,000

Required difference

$= \frac{7}{12} \times \frac{28}{100} \times 120000 \sim \frac{4}{9} \times \frac{72}{100} \times 1{,}20{,}000$

$= 19600 \sim 38400 \Rightarrow = 18{,}800$

58. (c); Let total population in city A = x

$x \times \frac{8}{15} \times \frac{52}{100} = 31{,}200$

$x = 1{,}12{,}500$

Let total population of city E = y

$y \times \frac{4}{13} \times \frac{52}{100} = 36000$

$y = 225000$

$\text{Required percentage}$

$= \frac{2{,}25{,}000 - 1{,}12{,}500}{1{,}12{,}500} \times 100 \Rightarrow = 100\%$

59. (b); Let total population in city C = x

$x \times \frac{28}{100} \times \frac{5}{12} = 14{,}000$

$x = 1{,}20{,}000$

Literate male in city C

$= 1{,}20{,}000 \times \frac{72}{100} \times \frac{5}{9} \Rightarrow = 48{,}000$

Let total population in city E = y

$y \times \frac{52}{100} \times \frac{9}{13} = 81{,}000$

$y = 2{,}25{,}000$

Illiterate female in city E

$= 2{,}25{,}000 \times \frac{48}{100} \times \frac{9}{16} \Rightarrow = 60{,}750$

$\text{Required Ratio} = \frac{48{,}000}{60{,}750} = \frac{64}{81}$

60. (d); Let the total population in city B = x

$5740 = x \times \frac{60}{100} \times \frac{7}{15} - x \times \frac{40}{100} \times \frac{7}{12}$

$5740 = \frac{168x-140x}{600}$

$x = \frac{5740\times600}{28} = 1{,}23{,}000$

$Illiterate\ females\ in\ city\ B = 1{,}23{,}000 \times \frac{40}{100} \times \frac{5}{12}$

$= 20{,}500$

61. (c); $Cost\ price\ of\ Rice = \frac{35\times100}{140} = 25$

Selling price of rice = 35 – 35 × 1/7 = 30

Total profit in selling rice = 5 × 90 = 450

$Cost\ price\ of\ Maize = \frac{45}{\left(100\% + \frac{200}{7}\%\right)}$

$= \frac{45\times7}{9} \Rightarrow = 35$

Selling price of Maize = 45 – 45 × 1/6

= 37.5

Total profit in selling Maize = 2.5 × 40

= 100

Required ratio = 9 : 2

62. (d); Cost price of wheat = ¾ × 20 = 15

$Selling\ price\ of\ wheat = 20 - \frac{15}{100} \times 20 = 17$

Total Profit = 80 × 2 = 160

New Total profit = 80 × 2 + 5 × 17

= 160 + 85 = 245

$Required\ percentage = \frac{85}{160} \times 100$

$= \frac{425}{8}\% \Rightarrow = 53\frac{1}{8}\%$

63. (b); Cost price Maize and Bajra together

$= 45 \times \frac{7}{9} + 52 \times \frac{9}{13}$

$= 35 + 36 \Rightarrow = 71$

$Cost\ price\ of\ Rice\ and\ Jowar = \frac{35\times100}{140} + 60 \times \frac{3}{4}$

$= 25 + 45 = 70$

$Required\% = \frac{1}{70} \times 100 \Rightarrow = \frac{10}{7}\%$

64. (a); $Cost\ price\ of\ Jowar = 60 \times \frac{3}{4} = 45$

Total cost price = 60 × 45 = 2700

But 12 kg Jowar is spoiled

Let new List price per kg is x then

$2700 = 48 \times x \times \frac{5}{6} \Rightarrow x = 67.5$

$Required\ percentage = \frac{7.5}{60} \times 100 = 12.5\%$

65. (d); $Cost\ price\ of\ Jowar = 60 \times \frac{3}{4} = 45$

Total cost price in selling 60 × 1000 gm of Jowar

$= 45 \times 60 \Rightarrow = 2700$

Original selling price of Jowar per kg = 50

But due to use of faulty weight

He sells 800 gm for Rs. 50

$So\ selling\ price\ of\ 60 \times 1000\ gm = \frac{60\times1000}{800} \times 50$

$= 3750$

Required profit = $3750 - 2700 = 1050$

66. (c); Let a child completes 4x unit of work in one day.

Then,

In 20 days total units of work = 80x

And

3 men, 2 women and 1 child can complete

$= (3 \times 5x + 2 \times 3x + 4x)$ units/day

Total time taken by them to complete work A

$= \frac{80x}{25x}\ days \Rightarrow = \frac{16}{5}\ days$

Similarly,

Time taken by 1 man, 3 women and 2 children to complete work D

$= \frac{15}{(3+6+2)}$ days $\Rightarrow = \frac{15}{11}$ days

Required % = $\frac{\frac{16}{5} - \frac{15}{11}}{\frac{15}{11}} \times 100 \Rightarrow = \frac{404}{3}\%$

67. (b); Total time taken by a man and a women to Complete work C = $\frac{6\times21}{(8+7)} = \frac{126}{15}$ days

Total time taken by 3 women and a child to complete work E = $\frac{16\times3}{(3\times4+3)}$ days = $\frac{16}{5}$ days

Required ratio= 21 : 8

68. (d); Let child completes 3x units in one day

So, in 16 days he will complete = $16 \times 3x$= 48 x units

In 3 days (6x + 4x + 3x) unit will be completed

In 9 days 13x ×3 unit will be completed

On 10th day 3x more units will be completed by child

Remaining 6x units will be completed by man on 11th day

69. (e); Time taken by women to complete work C

= $\frac{21\times6}{7}$= 18 days

Time taken by man to compete work D = $\frac{15\times1}{3}$= 5 days

Required % = $\frac{18-5}{5} \times 100$

= 13 × 20 = 260%

70. (b); Share of man in completing work B = $\frac{4500}{9} \times 4 = 2000$

Share of man in completing work D = $\frac{1800}{6} \times 3 = 900$

Required % = $\frac{2000-900}{900} \times 100 \Rightarrow \frac{1100}{9}\%$

= $122\frac{2}{9}\%$

71. (a); $\frac{(10+18+29)}{100} \times R = \left(\frac{29+11+24+10}{100}\right) S$

$\frac{57}{100}R = \frac{74}{100} \times S$

57R = 74S $\Rightarrow \frac{R}{S} = \frac{74}{57}$

Given $57 \rightarrow 11400$

$74 \rightarrow \frac{11400}{57} \times 74 = 14800$

72. (b); (19 + 16)% of P = (16 + 6)% of T

35 × P = 22 T $\Rightarrow \frac{P}{T} = \frac{22}{35}$

Required % = $\frac{22}{35} \times 100 = 62\frac{6}{7}\%$

73. (d); P = $\frac{48}{16} \times 100 = 300$

S $\rightarrow = \left(\frac{48+57}{10}\right) \times 100 = 1050$

No. of students who attended more than 2 Seminar from college P = $\frac{100-19-16}{100} \times 300 = 195$

No. of students who attended at least 3 seminars from college S = $\frac{29+11+24+10}{100} \times 1050 = 777$

Required % = $\frac{777-195}{777} \times 100 \approx 75\%$

74. (d); $\frac{31-25}{100} \times T = 60$

$\frac{6}{100} \times T = 60 \Rightarrow$ T = 1000

R = $\frac{60}{100} \times 1000 = 600$

Required No. of students = $\frac{18}{100} \times 600 = 108$

75. (c); Required % = $\frac{74-26}{26} \times 100$

$= \frac{48}{26} \times 100 = 184\frac{8}{13}\%$

PRACTICE SET (LEVEL–I)

Directions (1-5): Given below is a table which gives the number of students who participated in an inter-school competition in different sports.

Sport	Total students	Boys : Girls
Cricket	350	4 : 3
Football	400	11 : 9
Volleyball	250	7 : 3
Table Tennis	200	12 : 13
Badminton	375	9 : 16
Basketball	425	3 : 2

1. What is the average of the no. of girls who participated in Cricket, Football and Volleyball?
   (a) 135 (b) 145 (c) 132 (d) 156 (e) none of these
2. The no. of boys who participated in Basketball is what % more/less than the number of boys who participated in Volleyball?
   (a) $44\frac{5}{7}\%$ (b)$45\frac{5}{7}\%$ (c) $35\frac{5}{7}\%$ (d) $45\frac{3}{7}\%$ (e) none of these
3. What is the difference between the number of girls who played Volleyball and the number of boys who played Badminton?
   (a) 45 (b) 55 (c) 60 (d) 75 (e) none of these
4. What is the ratio of average of number of boys who played Football and Cricket to the average of number of girls who played Volleyball, Badminton and Basketball ?
   (a) 129 : 31 (b) 129 : 41 (c) 123 : 93 (d) 126 : 97 (e) none of these
5. What is the sum of number of boys who played Volleyball, Badminton and Football ?
   (a) 530 (b) 430 (c) 320 (d) 640 (e) none of these

Directions (6-10): Read the following table and answer the following question.
The table given bellows gives the total number of children that took birth in different districts in year 2005 and percentage of boys out of these children.

Districts	No. of children that took birth	Percentage of boys out of total children
A	450	30%
B	500	64%
C	470	50%
D	350	36%
E	650	48%
F	525	32%

6. Total number of baby boys from district A and B together is how much more/less than total number of baby girls from district E and F together?
   (a) 240 (b) 230 (c) 250 (d) 300 (e) None of these
7. The average number of children from district E, C and D together is approximately what percent less/more than the no. of baby boys from districts D,E and F together?
   (a) 33.33% (b) 19.14% (c) 26.66% (d) 16.66% (e) none of these
8. Find the ratio of the baby boys from district D and E together to the baby girls from district D, E and F together?
   (a) 410 : 931 (b) 431 : 941 (c) 438 : 919 (d) 419 : 919 (e) None of these
9. The no. of baby girls from district C is what percent more/less than the baby boys from district A? (rounded off to nearest integer)
   (a) 64.07% (b) 54.07% (c) 44.07% (d) 74.07% (e) None of these
10. Find the ratio of no. of children from districts B and E to the no. of baby girls from districts C and A?
   (a) 21:43 (b) 21:23 (c) 23:11 (d) 23:12 (e) None of these

Direction (11-15): Study the given table and answer the questions based on it.
Sells of major flowers used in decoration purpose (in kg)

Months	Freesia	Jasmine	Marigold	Orchids	Roses
January	69	91	71	15	100
February	75	88	75	18	120
March	81	97	79	21	102
April	98	107	88	25	131
May	93	110	92	24	143
June	99	116	97	20	154
July	105	122	103	25	163

11. Which flower witnessed the 2nd maximum sell from January to March together?
(a) Marigold (b) Roses (c) Jasmine (d) Freesia (e) Orchids
12. What is the difference between the average sells (in kg) of Freesia, Marigold and Roses in February, June and May respectively and the average sells of Jasmine and Roses in April and July respectively ?
(a) 35 (b) 20 (c) 30 (d) 25 (e) None of these
13. What is the ratio of total sells of Marigold in April and July together to that of Jasmine in March and June together ?
(a) 17:19 (b) 15:17 (c) 3:5 (d) 11:13 (e) None of these
14. Sells of Jasmine in May is what percent of sell of Freesia in February and July together?
(a) $60\frac{1}{9}\%$ (b) $61\frac{1}{9}\%$ (c) $55\frac{2}{3}\%$ (d) $52\frac{1}{9}\%$ (e) None of these
15. In August the sells of Roses increases by $33\frac{1}{3}\%$ as compared to that in February and the sells of Jasmine decreases by $18\frac{2}{11}\%$ as compared to that of in May. Find the ratio between sells of Roses and Jasmine in August ?
(a) 16:9 (b) 15:7 (c) 6:9 (d) 5:2 (e) None of these

Directions(16 - 20): Read the following table and answer the questions.

Cities	Population	Percentage of women out of total Population
A	53000	44
B	49000	45
C	65000	40
D	60000	55
E	75000	50

16. What is the ratio of total women from cities D, B and E to the total men from remaining cities?
(a)9255 : 6868 (b)9155 : 6868 (c) 92 : 69 (d)79 : 64 (e)None of these
17. What is the difference between the total population from top three populous cities to the total no. of Men in those cities?
(a)90000 (b)95500 (c)65500 (d)95600 (e) 96500
18. No. of males in Cities D and E is approximately how many times of the no. of females from A and B.?
(a)1.2 (b)1.4 (c)1.6 (d)2 (e)2.4
19. No of females in C is what percent more or less than no of females from E?
(a)30.66% less (b)32% more (c)30.66% more (d)32% less (e)None of the above
20. What is the two-third of total women population?
(a)93580 (b)92580 (c)94580 (d)95580 (e)90000

Directions (21-25): There are six students A, B, C, D, E and F. The following table shows the marks given to these students from Monday to Friday in a subject. Study the following table and answer the questions given below it.

	Mon	Tue	Wed	Thu	Fri
A	175	205	350	450	355
B	180	285	410	485	395
C	165	190	315	495	575
D	145	210	405	470	675
E	110	295	490	490	650
F	210	145	340	465	910

21. What is percentage increase of marks taken by A from Monday to Friday? (Rounded off to two decimal points)
(a) 107.68% (b) 102.86% (c) 98.82% (d) 68.71% (e) None of these
22. What is the difference between marks taken by A, B and D together on Wednesday to the average marks taken by C, E and F together on Friday?
(a) $463\frac{1}{3}$ (b) $453\frac{2}{3}$ (c) $463\frac{2}{3}$ (d) $453\frac{1}{3}$ (e) None of these
23. If on Saturday there is an increase of 20% marks as compared to Monday and 15% marks as compared to Tuesday of B and C respectively. Then find the total marks taken by B and C on Saturday?
(a) 453.5 (b) 415.25 (c) 434.5 (d) 433.5 (e) None of these
24. What is the ratio of all the marks taken by C from Monday to Thursday to the marks taken by E from Tuesday to Friday?
(a) 233 : 285 (b) 285 : 233 (c) 11 : 17 (d) 17 : 11 (e) None of these
25. Total marks taken by the students on Wednesday is approximately what percentage more/less than the total marks taken by all of the students on Monday ?
(a) 135% (b) 140% (c) 125% (d) 130% (e) 150%

Directions (26 – 30): Given below the table which shows the total population of children in (Lakh) who attends school in five different states and percentage of boys in these students. Table also shows the total number of school in these five states. Some values are missing in the table. You have to calculate these values if required to answer the question.

States	Total children who attend school	% of boys	Number of schools
West Bengal	48	$62\frac{1}{2}\%$	960
UP	–	$46\frac{3}{7}\%$	1400
Orissa	–	50%	2000
Bihar	–	$55\frac{5}{9}\%$	–
Karnataka	–	$66\frac{2}{3}\%$	2400

26. If average number of students per school in Orissa is 4000 and for Karnataka is 2500 then find the total number of girls in these two states who attend school.
(a) 70Lakh (b) 60Lakh (c) 50Lakh (d) 45Lakh (e) 65Lakh
27. Total number of girls who attend school in west Bengal are what percent of total boys in UP who attend school if average number of students per school in UP is 4000.
(a) $69\frac{3}{13}\%$ (b) $68\frac{4}{13}\%$ (c) $53\frac{4}{13}\%$ (d) $55\frac{11}{12}\%$ (e) None of these
28. By what percent number of schools in Karnataka should be decreased so that number of students per school in Karnataka becomes equal to number of students per school in West Bengal if total students who attended school in Karnataka is 25% more than total students who attend school in west Bengal.
(a) 60% (b) 40% (c) 45% (d) 55% (e) 50%
29. What is the average number of school in all five states if total boys who attend school in bihar is 40 lakh and average number of students per school in Bihar is 4000.
(a) 1780 (b) 1630 (c) 1712 (d) 1535 (e) 1820
30. If average student per school in West Bengal, U.P., Orissa and Karnataka are in the ratio 10 : 8 : 8 : 5 and total girls in Bihar who attend school are 32Lakh then find the total students in all five states who attend school.
(a) 280Lakh (b) 316Lakh (c) 392Lakh (d) 345Lakh (e) 290Lakh

Directions (31-35): Study the given table carefully to answer the following questions.
In the given table there are five colleges in which total student and percentage of engineering students and ratio of arts and commerce students are given.
There are only three types of streams in each college.
Note → some data are missing, calculate the missing data if necessary.

Colleges	Total no. of Students	Percentage of Engineering students	Ratio of arts to commerce students
P	1250	28%	–
Q	–	25%	–
R	–	–	5:8
S	2100	–	5:2
T	1440	–	–

31. If the ratio of boys and girls in college P for commerce student is 2 : 5 and the commerce student are 40% more than arts student. Then find the difference of boys and girls in Commerce?
(a) 225 (b) 275 (c) 250 (d) 325 (e) 215
32. If the total engineering student in college T is 360 and student in arts are 25% more then the student in commerce and engineering student in college S is 630. Then find ratio of arts student in college S to college T?
(a) 2 : 3 (b) 4 : 7 (c) 4 : 9 (d) 7 : 4 (e) 7 : 8
33. If Engineering students in college P is 150 less than engineering student in college Q. Then total student in college S is what percent more or less than total student in college Q?
(a) 1% (b) 3% (c) 9% (d) 7% (e) 5%
34. If total student in college R is 2600 and total engineering student in college R is equal to the total students in arts and commerce . And ratio of boys and girls in college R in engineering 5 : 8. If 20% of boys are transferred to college T. Then find total student in college T?
(a) 1640 (b) 1840 (c) 1920 (d) 1540 (e) 1640
35. Suppose there is another college A in which engineering students are $2/5^{th}$ of the engineering student of college P and arts student in college A is $33\frac{1}{3}\%$ more than engineering student in college Q . And commerce student in college A is 25% more than commerce student of college S. Then find the total number of students in college A [Given that engineering student in college S is 700 and total student is called Q is 1260].
(a) 1120 (b) 1020 (c) 1060 (d) 1080 (e) 1050

Directions (36-40): Study the table carefully to answer the questions that follow:
Table below shows the runs scored, Number of matches played, average of runs per innings, total number of 4' and 6's hit and ratio of number of fours and sixes hit by five batsman in Indian Premiere League (IPL) 2016
Note – (No batsman, remained not out in any innings)
Few values are missing in table, a candidate is expected to calculate the missing values if it is required to answer the given questions.

Batsman	Total Runs	No. of Matches played	Average	Total number of 4's and 6's	Ratio of 4's and 6's hit
Virat Kohli	—	16	60	121	—
David Warner	—	20	—	119	—
AB-de-Villiers	848	—	—	—	7:5
G. Gambhir	—	15	—	60	—
S. Dhawan	570	—	—	—	—

36. What is the total runs made by all five batsman in IPL 2016 if average of David warner is $33\frac{1}{3}$% less than average of Virat Kohli and runs scored by S. Dhawan is equal to runs scored by G. Gambhir ?
(a) 3748 (b) 4840 (c) 3642 (d) 3580 (e) 3492
37. What percent of runs are made by AB de Villiers by hitting fours and sixes if total fours and sixes hit by AB-de-Villiers is 60% more than that of total fours and sixes hit by G. Gambhir. (approximately)
(a) 60% (b) 65% (c) 70% (d) 45% (e) 55%
38. What is the difference in average of runs made by S. Dhawan and AB de Villiers if average of AB de Villiers is $11\frac{4}{6}$% less than average of Virat Kohli and number of innings played by G. Gambhir and S. Dhawan are equal.
(a) 20 (b) 15 (c) 23 (d) 18 (e) 12
39. What is the difference between the number of fours hit by Virat Kohli to the number of fours hit by AB-de-Villier if total four and sixes hit by AB-de-Villier is 60% more than four and sixes hit by G. Gambhir and ratio of number of fours to sixes hit by Virat Kohli is 8 : 3.
(a) 48 (b) 52 (c) 28 (d) 32 (e) 38
40. What is the sum of percentage of runs made by G. Gambhir and Virat Kohli (except runs made by fours and sixes) if ratio of fours and sixes hit by G. Gambhir and Virat Kohli is 5 : 1 and 8 : 3 respectively and average of G. Gambhir is 38 (approximately)
(a) 98% (b) 88% (c) 92% (d) 68% (e) 76%

Directions (41-45): Study the table carefully to answer the questions that follow Monthly Bill (in rupees) of paid by three People. Monthly bills paid by three different people in five different months

Month	Monthly Bills											
	Recharge Metro Card			Cab			Mobile Phones			Parking-Charge		
	Ram	Suresh	Raj	Ram	Suresh	Raj	Ram	Suresh	Raj	Ram	Suresh	Raj
January	2340	1900	1130	1450	2450	3150	1930	3230	6500	1440	2340	3450
Feb	1240	2340	3210	2700	2200	1350	1510	1340	3500	1640	2210	3250
March	1560	4320	2110	8600	1500	9800	2320	4420	1320	1430	5320	3320
April	870	1230	1240	1240	1500	1160	2130	3240	1840	2450	1340	1250
May	2210	1040	1560	2350	1030	1310	1430	5320	1430	3240	4320	5430

41. If monthly income of Ram is 10000/3% of his bill on metro card in month of March and monthly income of Suresh is $\frac{20000}{3}$% of his bill on Cab in March then find the difference between their monthly income.
(a) 50,000 (b) 48,000 (c) 52,000 (d) 36,000 (e) 38,000
42. Average bill of Ram in month of April is what percent more or less than the average bill of Raj in month of Feb (approximately)
(a) 35% (b) 48% (c) 52% (d) 41% (e) 32%
43. If expenditure on these bills for Suresh in February month is 20% of his total expenditure in February and total expenditure in February month is half of his income for February month then his income in February is?
(a) 72000 (b) 80520 (c) 80900 (d) 64500 (e) None of these

44. What is the difference in total bill of Raj for Recharge of metro and total bill of Ram for February month in these bills.
(a) 2160 (b) 2450 (c) 2020 (d) 3010 (e)2260

45. Consider these all bills are for year 2016. If in year 2017 bill for metro card, Cab and mobile phone are increased by 10%, $33\frac{1}{3}$% and $\frac{100}{11}$% respectively then what will be bill far Raj in march 2017? (approximately)
(a) 24500 (b) 23200 (c) 19150 (d) 20150 (e) 21150

Direction (46-50): Study the given table carefully to answer the questions that follow:
Number of people Staying in Five Different Localities and the percentage Breakup of Men, Women and Children in Them.

Locality	Total No. of People	Percentage		
		Men	Women	Children
F	5640	55	35	10
G	4850	34	44	22
H	5200	48	39	13
I	6020	65	25	10
J	4900	42	41	17

46. Total number of children staying from locality H and I together are approximately what percent of total number of people staying from all localities together?
(a) 3% (b) 5% (c) 8% (d) 12% (e) 15%

47. Average number of people from all locality staying together are approximately what percent more than the total children staying from loacality G and H together?
(a) 165% (b) 185% (c) 225% (d) 205% (e) 195%

48. What will be the ratio of number of women and children from locality G and H together to the total number of people from locality I and J together?
(a) $\frac{1181}{2184}$ (b) $\frac{1221}{1331}$ (c) $\frac{1440}{1443}$ (d) $\frac{3}{5}$ (e) None of these

49. If number of men, women and children who are working are in the ratio 5 : 3 : 2 from locality I and number of women who are working from locality I is 903 then what percentage of people from I are not working?
(a) 40% (b) 50% (c) 60% (d) 55% (e) 65%

50. If $\frac{1100}{17}$% of men from locality G are added to locality F then what will be the percentage of women in locality F (approximately).
(a) 26% (b) 42% (c) 30% (d) 22% (e) 48%

Directions (51-55): Given below is the table which shows the total number of car in 5 different states, percentage of cars in good condition and number of cars in bad condition

State	Total number of cars	Percentage of cars in Good condition	Cars in Bad condition
A	80,000	60%	20,000
B	90,000	75%	15,000
C	1,20,000	80%	12,000
D	70,000	75%	10,000
E	1,50,000	65%	20,500

Note: Total cars = cars in Good condition + car in Bad condition + others

51. What is the difference between 'other' types of car in state B and E together and cars in bad condition from state A and D together.
(a) 10500 (b) 9500 (c) 8000 (d) 8500 (e) 9000

52. If $\frac{3}{8}$ of cars in good condition, $\frac{2}{5}$ of cars in bad condition and $\frac{1}{6}$ of cars of other type from state A are driven by females then percentage of cars driven by females in state A is
(a) 35% (b) 40% (c) 32% (d) 42% (e) 38%

53. What is the difference of average of cars in bad condition from state A, B and D together and average of other types of car from state B, C and E together
(a) $\frac{5000}{3}$ (b) $\frac{6200}{3}$ (c) $\frac{4850}{3}$ (d) $\frac{6500}{3}$ (e) None of these

54. What is the ratio of cars in good condition from state A and B together to the cars in good condition from state D and E together.
(a) 231 : 300 (b) 243 : 300 (c) 253 : 257 (d) 197 : 200 (e) 191 : 200

55. What is the average of cars in good condition from all states taken together
(a) 76800 (b) 65300 (c) 66280 (d) 72300 (e) 75000

.

Directions (56-60): Study the following table carefully to answer these questions.

Number of workers employed in six units of a factory during the years.						
Unit Year	**A**	**B**	**C**	**D**	**E**	**F**
1998	145	88	115	120	140	135
1999	128	76	122	112	152	132
2000	136	96	132	124	158	140
2001	183	92	125	135	166	126
2002	160	107	140	118	170	146
2003	152	110	148	128	175	150

56. Find the difference between total workers employed by all units in 2001 and total workers employed by all units in 2003.
(a) 34 (b) 30 (c) 46 (d) 36 (e) None of these
57. Find ratio of workers employed in C and D together in 2001 and workers employed in A and F together in 1998.
(a) 13 : 14 (b) 14 : 13 (c) 11 : 13 (d) 13 : 11 (e) None of these
58. Total workers employed in unit C throughout years is what approximate percent more or less than the number of workers employed in unit E throughout the years.
(a) 12.82% (b) 18.6% (c) 11.2% (d) 13 % (e) 14 %
59. In 2000 average number of candidates employed by all the unit together.
(a) 130 (b) 131 (c) 132 (d) 133 (e) None of these
60. Total number of workers employed by unit B in all the years is approximately what percent of total number of candidates employed in all units in year 2003.
(a) 66% (b) 70% (c) 71% (d) 69% (e) 85%

Directions (61-65): Study the following table carefully and answer the questions that follow:
Number of different types of models produced in different years of a mobile company and percentage of defective mobile of these models is also given:

	Model A		**Model B**		**Model C**		**Model D**	
	Production	**% Defective**	**Production**	**% Defective**	**Production**	**% Defective**	**Production**	**% Defective**
2011	18,500	6%	17,000	7.5%	23,200	8%	23,500	5%
2012	21,600	5%	21,900	6%	25,000	5.5%	24,600	4.5%
2013	19,700	9%	27,000	4%	19,200	6%	28,500	3%
2014	25,800	4.5%	26,200	5%	28,000	9.5%	21,200	7%
2015	15,800	9%	21,800	7.5%	25,200	11%	18,400	8%
2016	17,100	11%	24,200	8%	26,800	4%	16,000	6%

61. What is the difference between defective model A in 2016 and defective model C in 2013.
(a) 537 (b) 729 (c) 1039 (d) 1029 (e) None of these
62. Defective mobiles of model A and model C together in 2012 is what percent of total production of model C in 2012.
(a) 9.82% (b) 11% (c) 11.36% (d)10.32% (e) None of these
63. The approximate average number of defective mobiles produced in 2014 of all the models together.
(a) 1652 (b) 1655 (c) 1654 (d) 1656 (e) 1658
64. Find ratio of defective mobiles of model A in 2014, 2015, 2016 together and defective mobiles of model B in 2011, 2012, 2013 together
(a) 744 : 601 (b) 1223 : 991 (c) 4 : 3 (d) 3 : 4 (e) None of these
65. In which year defective mobiles of model B is maximum.
(a) 2016 (b) 2011 (c) 2013 (d) 2015 (e) 2014

Direction (66-70): Study the following table and answer the questions that follow.

Colleges→	**A**		**B**		**C**	
Year ↓	**Total Students Registered**	**Male out of those Students**	**Total Students Registered**	**Male out of those Students**	**Total Students Registered**	**Male out of those Students**
1995	2500	2250	8000	7600	4400	4250
2000	3800	3250	6250	5800	5000	4600
2005	3400	3000	5900	5400	8720	6750
2010	3000	2800	7500	6900	5500	5300
2015	4600	4100	9000	8100	6600	5500

66. If total students registered in 1995 from college B were 25% more than total students registered in 1990. In 1990 there were 20% less female registered in college B than the total female registered in 1995 and 2000 together from same college. Find the total number of registered male in 1990 from college B.
(a) 2900 (b) 5300 (c) 4800 (d) 5720 (e) 4410

67. Find the ratio between the total number of female registered from college C in 1995 and 2000 together to the total number of female registered from college A in 2005 and 2010 together.
(a) 13 : 11 (b) 12 : 11 (c) 11 : 12 (d) 11 : 13 (e) none of these

68. Average number of students registered in 2010 and 2015 together from college A is what percent less/more than the average number of students registered in 2005 and 2010 together from college B?
(a) $43\frac{19}{67}$ (b) $41\frac{53}{67}$ (c) $43\frac{43}{67}$ (d) $43\frac{53}{67}$ (e) none of these

69. Find the difference between the total number of students registered from college C in all of the given years to that of college B?
(a) 6430 (b) 5575 (c) 6650 (d) 6230 (e) none of these

70. Total female registered from college B in 2015 are what percent of the total female registered from the same college in 2010?
(a) 100% (b) 50% (c) 125% (d) 140% (e) 150%

Directions (71 – 75) : The following table shows cities and post wise number of candidates appeared in competitive exam conducted by IBPS in 2016, study it carefully and answer the following questions

Post→ Centre↓	Officer	Clerks	Field Officer	Supervisor	Specialist Officer
Bangalore	11000	26750	1290	11150	5995
Delhi	15500	38790	1680	7550	8232
Mumbai	22580	32000	1920	8950	3120
Hyderabad	14900	52525	2125	4385	4822
Kolkata	11360	33225	2375	5795	3980
Lucknow	35500	42650	2570	9725	2282
Chennai	9550	15370	2980	4320	4554

71. The difference between the candidates appeared for clerk in Delhi and Mumbai together and candidates appeared for specialist officer in Banglore, Delhi and Mumbai together.
(a) 53543 (b) 45443 (c) 53443 (d) 55443 (e) None of these

72. Find the average of candidates who appeared for field officers in all the cities together. (approx.)
(a) 2134 (b) 3217 (c) 2029 (d) 2190 (e) 2120

73. Total number of candidates who appeared in exam from Hyderabad is what percent of total number of candidates who appeared from Lucknow approximately.
(a) 70% (b) 80% (c) 85% (d) 90% (e) 75%

74. Ratio of number of candidates who appeared for field officer in Mumbai and number of candidates who appeared for specialist officer in Kolkata is
(a) 100 : 199 (b) 96 : 109 (c) 96 : 199 (d) 196 : 99 (e) None of these

75. Find the number of total candidates who appeared for specialist officer in all the given cities.
(a) 33775 (b) 32985 (c) 31735 (d) 32885 (e) None of these

PRACTICE SET (LEVEL–I) SOLUTIONS

1. (a); Average $= \frac{350\times\frac{3}{7}+400\times\frac{9}{20}+250\times\frac{3}{10}}{3} = \frac{150+180+75}{3} = \frac{405}{3}$
$= 135$

2. (b); No. of boys who played Basketball $= \frac{3}{5}\times 425 = 255$
No. of boys who played Volleyball $= \frac{7}{10}\times 250 = 175$
Req. % $= \frac{255-175}{175}\times 100 = \frac{80}{175}\times 100 = 45\frac{5}{7}\%$

3. (c); No. of girls who played Volleyball $= \frac{3}{10}\times 250 = 75$
No. of who played Badminton $= \frac{9}{25}\times 375 = 135$
Req. Difference = 135 – 75 = 60

4. (d); Req. ratio $== \frac{\frac{200+220}{2}}{\frac{75+240+170}{3}} = \frac{\frac{420}{2}}{\frac{485}{3}} = \frac{126}{97}$

5. (a); Req. sum $= 400\times\frac{11}{20}+250\times\frac{7}{10}+375\times\frac{9}{25}$
$= 220 + 175 + 135 = 530$

6. (a); Baby boys from district A & B $= \frac{30}{100}\times 450 + \frac{64}{100}\times 500$
$= 135 + 320 = 455$
Baby girls from district E and F
$= \frac{52}{100}\times 650 + \frac{68}{100}\times 525$
$= 338 + 357 = 695$
Required Difference = 695 – 455 = 240

7. (b); Average no. of children from E, C & D
$= \frac{650+470+350}{3}$
$= \frac{1470}{3} = 490$
No. of baby boys from D, E and F
$= 350\times\frac{36}{100} + 650\times\frac{48}{100} + 525\times\frac{32}{100}$
= 606
Required % $= \frac{606-490}{606}\times 100 = 19.14\%$

8. (c); No. of Baby boys from D & E
$= 350\times .36 + 650\times .48$
$= 126 + 312 = 438$
No. of Baby girls from D, E & F
$= 350\times .64 + 650\times .52 + 525\times .68$
= 919
Ratio $= \frac{438}{919}$

9. (d); No. of Baby boys from A = 450 × .30 = 135
No. of Baby girls from C = 470 × .50 = 235
Required % $= \frac{235-135}{135}\times 100 = 74.07\%$

10. (c); No. of Baby girls from C & A = 470 × .50 + 450 × .70
= 235 + 315 = 550
Required ratio $= \frac{500+650}{550} = \frac{1150}{550} = \frac{23}{11}$

11. (c); Sell of Freesia≈ 220
Sell of Jasmine≈ 280
Sell of Marigold≈ 220
Sell of Orchids≈ 50
Sell of Roses≈ 320

12. (c); Required difference $= \frac{107+163}{2} - \frac{75+97+143}{3}$
= 30kg

13. (e); Required ratio $= \frac{88+103}{97+116} = \frac{191}{213}$

14. (b); Required percentage $= \frac{110}{180}\times 100 = 61\frac{1}{9}\%$

15. (a); Sells of Roses $= \frac{4}{3}\times 120 = 160$
Sells of Jasmine $= \frac{9}{11}\times 110 = 90$
So, required ratio = 16: 9

16. (a); Desired ratio $= \frac{600\times55+490\times45+750\times50}{530\times56+650\times60}$
$= \frac{33000+22050+37500}{29680+39000}$
$= \frac{92550}{68680} = \frac{9255}{6868}$

17. (e); Top three population cities = E, C, D respectively
Total population in C, D and E = 200000
Total men in those cities = 39000 + 27000 + 37500
= 103500
Difference = 200000 – 103500 = 96500

18. (b); Desired value $= \frac{27000+37500}{530\times44+490\times45} = \frac{64500}{45370} \approx 1.4$ times

19. (a); Female in C = 650 × 40 = 26,000
Female from E = 37,500
Difference = 11,500
Desired % $= \frac{11500}{37500}\times 100 = 30.66\%$ less

20. (c); Two-third of total women population
$= \frac{2}{3}(23320 + 22050 + 26000 + 33000 + 37500)$
$= \frac{2}{3}(141870) = 94580$

21. (b); Required % $= \frac{355-175}{175}\times 100 = 102.86\%$

22. (d); Required difference
$= (350 + 410 + 405) - \frac{575+650+910}{3}$
$= 1165 - \frac{2135}{3}$
$= \frac{1360}{3} = 453\frac{1}{3}$

23. (c); Required marks $= \frac{120}{100}\times 180 + \frac{115}{100}\times 190$
$= 216 + 218.5$
= 434.5

24. (e); Required Ratio = 1165 : 1925
= 233:385

25. (a); Required % $= \frac{2310-985}{985}\times 100$
$= 134.51 \Rightarrow \approx 135\%$

26. (b); Total students in Orissa = 2000 × 4000
= 8000000 = 80 lakh
Total students in Karnataka = 2500 × 2400
= 60 lakh
Required number of girls
$= \frac{1}{2}\times 80 + \frac{1}{3}\times 60 = 60$ lakh

27. (a); Total girls in west Bengal $= \frac{3}{8}\times 48$ L
= 18 lakh
Total students in UP = 4000 × 1400
= 56 lakh
Total boys in UP $= \frac{325}{7}\%$ of 56
$= \frac{325}{100\times7}\times 56 = 26$ lakh
Required percentage $= \frac{18}{26}\times 100$
$= \frac{9}{13}\times 100 \Rightarrow = \frac{900}{13}\%$
$= 69\frac{3}{13}\%$

28. (e); Number of students per school in West Bengal
$= \frac{4800000}{960} \Rightarrow = 5000$
Total students in Karnataka
$= \frac{5}{4} \times 48 = 60$ lakh
Let new number of schools = x
So, $\frac{60,00000}{x} = 5000$
x = 1200
Required percentage $= \frac{2400-1200}{2400} \times 100$
= 50%

29. (c); $\frac{500}{9}\% \rightarrow 40$ lakh
$100\% \Rightarrow \frac{40\times9}{500} \times 100$
$\Rightarrow$ 72 lakh
Total schools in Bihar $= \frac{7200000}{4000}$
= 1800
Required average
$= \frac{960+1400+2000+1800+2400}{5} = 1712$

30. (b); Students per school in West Bengal
$= \frac{4800000}{960} = 5000$
Students per school in UP $= \frac{5000}{10} \times 8 = 4000$
Students per school in orissa $= \frac{5000}{10} \times 8 = 4000$
Students per school in Karnataka = 2500
Total students from all states
= 48 + 56 + 80 + 72 + 60
= 316 Lakh

31. (a); Total arts and commerce student in college P
$= 1250 \times \frac{72}{100} = 900$
Let arts student be x
ATQ,
$x + \frac{140x}{100} = 900$
240x = 90000 $\Rightarrow$ x = 375
$\therefore$ Commerce student $= 375 \times \frac{140}{100} = 525$
$\therefore$ Required difference $= \frac{3}{7} \times 525$
= 225

32. (d); Percentage of engineering student in college T
$= \frac{360}{1440} \times 100 = 25\%$
Let commerce student in college T be x
ATQ,
$x + \frac{125}{100}x = 1080$
Arts student in school T $= \frac{125}{100} \times 480 = 600$
Arts student in college S
$= \frac{5}{7} \times 1470 \Rightarrow = 1050$
$\therefore$ Required ratio $= \frac{1050}{600} = 7:4$

33. (e); Total engineering student in college Q
$= \frac{28}{100} \times 1250 + 150 = 350 + 150 = 500$
$\therefore$ Total student in college Q
$= \frac{500}{25} \times 100 = 2000$
$\therefore$ Required percentage
$= \frac{2100-2000}{2000} \times 100 \Rightarrow = 5\%$

34. (d); Let arts student and commerce student in college R be 5x & 8x
$\therefore 2 \times 13x = 2600$
x = 100
Total engineering student in R = 1300
Boys in engineering $= \frac{5}{13} \times 1300 \Rightarrow = 500$
$\therefore$ Total student in College T
$= 500 \times \frac{20}{100} + 1440$
= 100 + 1440 = 1540

35. (c); Total student in college A
$= \frac{2}{5} \times \frac{28}{100} \times 1250 + \frac{400}{300} \times \frac{25}{100} \times 1260 + \frac{125}{100} \times 1400 \times \frac{2}{7}$
= 140 + 420 + 500
= 1060

36. (a); Runs made by V. Kohli = 16 × 60
= 960
Runs made by David Warner
$= 20 \times \left(100 - 33\frac{1}{3}\right)\% \times 60$
$= 20 \times \left(66\frac{2}{3}\right)\% \times 60$
$= 20 \times \frac{200}{3\times100} \times 60 \Rightarrow = 800$
Total runs made by all batsman
= 960 + 800 + 848 + 570 + 570
= 3748

37. (e); Total 4's and 6's hit by De Villiers = $\frac{160}{100} \times 60 = 96$
Total runs made by 4's and 6's
$= 96 \times \frac{7}{12} \times 4 + 96 \times \frac{5}{12} \times 6$
= 224 + 240 $\Rightarrow$ = 464
Required percentage = $\frac{464}{848} \times 100 \approx 55\%$

38. (b); Average of De Villiers = $\left(100 - \frac{70}{6}\right)\%$ 60
$= \frac{530}{6\times100} \times 60 = 53$
Average of Shikhar Dhawan $= \frac{570}{15} = 38$
Required difference = 53 – 38 = 15

39. (d); 4's and 6's hit by de Villiers = $\frac{160}{100} \times 60 = 96$
Number of 4's hit by de Villiers = $96 \times \frac{7}{12} = 56$
Number of 4's hit by Virat Kohli = $121 \times \frac{8}{11} = 88$
Required difference = 88 – 56 = 32

40. (a); Runs made By V. Kohli through 4's and 6's
$= \frac{8}{11} \times 121 \times 4 + \times \frac{3}{11} \times 121 \times 6$
= 352 + 198 = 550
% of runs made except runs made by 4's and 6's
$= \frac{16\times60-550}{16\times60} \times 100 \approx 43\%$
Runs made by G. Gambhir through 4's and 6's
$= 60 \times \frac{5}{6} \times 4 + 60 \times \frac{1}{6} \times 6$
= 20s0 + 60 = 260
% of runs made except runs made by 4's and 6's
$= \frac{15\times38-260}{15\times38} \times 100$
Required sum = 55% + 43% = 98%

41. (b); Income of Ram in march = $1560 \times \frac{10000}{3\times100}$
= 52,000
Income of Suresh in march = $1500 \times \frac{20000}{100\times3}$
= 100,000
Required difference = 100,000 – 52,000
= 48,000

42. (d); Average bill for Ram in April
$= \frac{870+1240+2130+2450}{4}$
$= 1672.5$
Average bill of Raj in Feb
$= \frac{3210+1350+3500+3250}{4} = 2827.5$
Required % $= \frac{1155}{2827.5} \times 100$
$\approx 41\%$

43. (c); Bill for Suresh in February month
$= 2340 + 2200 + 1340 + 2210 = 8090$
Total Expenditure in February $= \frac{8090 \times 100}{20}$
$= 40450$
Income in February = 80900

44. (a); Total bill of Raj for metro recharge
$= 1130 + 3210 + 2110 + 1240 + 1560 = 9250$
Total bill of Ram for February month
$= 1240 + 2700 + 1510 + 1640 = 7090$
Required difference = 9250 – 7090= 2160

45. (d); Bill for Raj in march 2017
$= \frac{110}{100} \times 2110 + \frac{4}{3} \times 9800 + \frac{12}{11} \times 1320 + 3320$
$\approx 2321 + 13066 + 1440 + 3320$
$\approx 20147 \Rightarrow \approx 20150$

46. (b); Total children from H and I together
$= 0.13 \times 5200 + 0.1 \times 6020$
$= 676 + 602 \Rightarrow = 1278$
Total people from all localities
$= 5640 + 4850 + 5200 + 6020 + 4900$
$= 26610$
Required percentage $= \frac{1278}{26610} \times 100 = 4.8\%$
$\approx 5\%$

47. (d); Average of people from all localities together
$= \frac{26610}{5} = 5322$
Total children from G and H together
$= 0.22 \times 4850 + 0.13 \times 5200$
$= 1067 + 676 = 1743$
Required percentage $= \frac{5322-1743}{1743} \times 100$
$= 205.3\% \Rightarrow \approx 205\%$

48. (a); Number of women and children from G
$= .66 \times 4850 \Rightarrow = 3201$
Number of women and children from H
$= .52 \times 5200 \Rightarrow = 2704$
Total people from I and J = 6020 + 4900
= 10920
Required ratio $= \frac{3201+2704}{10920}$
$= \frac{1181}{2184}$

49. (b); Total number of working people from I
$= \frac{903}{3} \times 10$
$= 3010$
Required percentage $= \frac{6020-3010}{6020} \times 100$
$= 50\%$

50. (c); Total people in F after addition
$= 5640 + \frac{11}{17} \times .34 \times 4850$
$= 5640 + 1067 = 6707$
Required percentage $= \frac{0.35 \times 5640}{6707} \times 100$
$= 29.43\%$
$\approx 30\%$

51. (b); Required difference $= \left(\frac{25}{100} \times 90{,}000 - 15{,}000\right) + \left(\frac{35}{100} \times 1{,}50{,}000 - 20{,}500\right) - (20{,}000 + 10{,}000)$
$= 39500 - 30000 = 9500$

52. (a); Total female who drove in state A $= \frac{3}{8} \times \frac{60}{100} \times 80{,}000 + \frac{2}{5} \times 20{,}000 + \frac{1}{6}\left(\frac{40}{100} \times 80{,}000 - 20{,}000\right)$
$= 18000 + 8000 + 2000 = 28{,}000$
Required % $= \frac{28}{80} \times 100 = 28 \times \frac{5}{4} = 35\%$

53. (d); Average of cars in bad conditions from state A, B and D
$= (20{,}000 + 15{,}000 + 10{,}000)\frac{1}{3}$
$= 15{,}000$
Average of other types of car from state B, C and E together
$= \frac{1}{3}(25 \times 900 - 15000 + 20 \times 1200 - 12000 + 35 \times 1500 - 20500) = \frac{51500}{3}$
Required Difference $= \frac{51500}{3} - 15000 = \frac{6500}{3}$

54. (a); Cars in good condition from A and B together
$= 800 \times 60 + 75 \times 900$
$= 48{,}000 + 67{,}500 = 1{,}15{,}500$
Cars in good condition from state D and E together
$= 75 \times 7{,}00 + 65 \times 1{,}500$
$= 52{,}500 + 97{,}500$
$= 1{,}50{,}000$
Required ratio = 231 : 300

55. (d); Required average $= \frac{1}{5}(48000 + 67500 + 96000 + 52500 + 97500) = 72{,}300$

56. (d); Total workers employed in all units in 2001
$= 183 + 92 + 125 + 135 + 166 + 126 = 827$
Total workers employed in all units in 2003
$= 152 + 110 + 148 + 128 + 175 + 150 = 863$
Required difference = 863 – 827 = 36

57. (a); Required Ratio $= \frac{125+135}{145+135} = \frac{260}{280} = \frac{13}{14}$

58. (b); Total workers employed in unit C throughout years
$= 115 + 122 + 132 + 125 + 140 + 148 = 782$
Total workers employed in E throughout years
$= 140 + 152 + 158 + 166 + 170 + 175 = 961$
Required percentage $= \frac{(961-782)}{961} \times 100 \approx 18.6\%$

59. (b); Required average $= \frac{136+96+132+124+158+140}{6} = 131$

60. (a); Total workers employed by B
$= 88 + 76 + 96 + 92 + 107 + 110 = 569$
Total worker employed by all units in 2003
$= 152 + 110 + 148 + 128 + 175 + 150 = 863$
Required percentage $= \frac{569}{863} \times 100 \simeq 66\%$

61. (b); Defective model A in 2016 $= 17100 \times \frac{11}{100} = 1881$
Defective model C in 2013 $= 19200 \times \frac{6}{100} = 1152$
Required difference = 1881 – 1152 = 729

62. (a); Defective mobiles of model A and model C in 2012
$= 21600 \times \frac{5}{100} + 25000 \times \frac{5.5}{100}$
$= 1080 + 1375 = 2455$

Required percentage $= \frac{2455}{25000} \times 100 = 9.82\%$

63. (c); Total defective mobiles in 2014 $= 25800 \times \frac{4.5}{100} + 26200 \times \frac{5}{100} + 28000 \times \frac{9.5}{100} + 21200 \times \frac{7}{100}$
$= 1161 + 1310 + 2660 + 1484 = 6615$
Required average $= \frac{6615}{4} = 1653.75 \simeq 1654$

64. (e); Defective mobiles of model A in 2014, 2015 and 2016 together
$= 25800 \times \frac{4.5}{100} + 15800 \times \frac{9}{100} + 17100 \times \frac{11}{100}$
$= 4464$
Defective mobiles of model B in 2011, 2012 and 2013 together
$= 17000 \times \frac{7.5}{100} + 21900 \times \frac{6}{100} + 27000 \times \frac{4}{100}$
$= 3669$
Required Ratio = 4464 : 3669
= 1488 : 1223

65. (a); It is clearly visible that defective mobile of model B in 2016 is maximum.

66. (d); Let total students registered in 1990 = x
$\therefore \frac{125x}{100} = 8000$
$x = 6400$
In 990, total no. of females registered from College B
$= \frac{80}{100}(400 + 450) = 680$
∴ Total no. of registered male in 1990 from college B
= 6400 – 680 = 5720

67. (c); Required Ratio = (150 + 400) : (400 + 200)
= 550 : 600
= 55 : 60
= 11 : 12

68. (a); Average no. of students registered in 2010 and 2015 together from college A
$= \frac{3000+4600}{2} = \frac{7600}{2} = 3800$
Average no. of students registered in 2005 and 2010 together from college B $= \frac{5900+7500}{2} = 6700$
Required percentage $= \frac{6700-3800}{6700} \times 100 = 43\frac{19}{67}\%$

69. (a); From college B = (8000 + 6250 + 5900 + 7500 + 9000)
= 36650
From college C = (4400 + 5000 + 8720 + 5500 + 6600)
= 30220
Required difference = 36650 – 30220 = 6430

70. (e); Female registered from college B in 2015
= 9000 – 8100 = 900
Female registered from college B in 2010
= 7500 – 6900 = 600
Required percentage $= \frac{900}{600} \times 100 = 150\%$

71. (c); Number of candidates appeared for clerk in Delhi and Mumbai = 38790 + 32000 = 70790
Number of candidates appeared for specialist officer in Bangalore, Delhi and Mumbai
= 5995 + 8232 + 3120
= 17347
Required difference = 70790 – 17347
= 53443

72. (a); Total candidates who appeared for field officer
= 1290 + 1680 + 1920 + 2125 + 2375 + 2570 + 2980
= 14940
Required average $= \frac{14940}{7} \approx 2134$

73. (c); Total number of candidates who appeared in exam in Hyderabad
= 14900 + 52525 + 2125 + 4385 + 4822
= 78757
Total number of candidates who appeared in Lucknow
= 35500 + 42650 + 2570 + 9725 + 2282 = 92727
Required percenage $= \frac{78757}{92727} \times 100 \approx 85\%$

74. (c); Candidates who appeared for field officer in Mumbai = 1920
Candidates who appeared for specialist officer in Kolkata = 3980
Required Ratio $= \frac{1920}{3980} = 96 : 199$

75. (b); Required number of candidates
= 5995 + 8232 + 3120 + 4822 + 3980 + 2282 + 4554
= 32985

PRACTICE SET (LEVEL-II)

Directions (1-5): Table given below show the distribution of diaries of two companies (X and Y) sold by five sellers. In this some are work diaries and remaining are school diaries. Study the data carefully and answer the following question.

Sellers	Total Diaries Sold	Work diaries sold (in %)	X:Y (work diaries)	X:Y (school diaries)
A	14000	55%	6:5	5:4
B	8000	65%	7:6	4 : 3
C	5250	40%	5:9	11:4
D	9000	48%	7:5	5: 8
E	12000	64%	9:7	8:7

1. Total work diaries of company 'X' sold by A is what percent more than total school diaries of company 'Y' sold by E ?
(a) $110\frac{1}{3}\%$ (b) $108\frac{1}{3}\%$ (c) $106\frac{2}{3}\%$ (d) $112\frac{1}{3}\%$ (e) $105\frac{1}{3}\%$
2. Find the difference between the number of work diaries of company 'X' sold by B and C together to the number of school diaries of same company sold C and D together.
(a) 480 (b) 540 (c) 450 (d) 560 (e) None of these
3. Total work diaries sold by A, B together of company Y is approximately what percent more than the total school diaries sold by E, D together of company 'X'.
(a) 51% (b) 48% (c) 37% (d) 41% (e) 44%
4. Average number of school diaries of company 'X' sold by A and B together is how much less than average number of work diaries of company 'Y' sold by D and E together?
(a) 60 (b) 15 (c) 30 (d) 45 (e) 10
5. If B sold 40% defective work diary and 60% defective school diaries then what is the total number of non-defective diary sold by B.
(a) 4240 (b) 4430 (c) 3680 (d) 3880 (e) 4520

Directions (6-10): Given below is the table which shows total number of people who board on and deboard from train at 6-different railway stations.

Railway station	Board	Deboard
Kurukshetra	22800	16000
Gurugram	18400	12000
Panipat	18300	13000
New Delhi	21000	19000
Agra	32000	28000
Mathura	17000	11000

Percentage of male out of total people who board on and deboard from train at each station.

Railway station	% of male in Boarding	% of male in deboarding
Kurukshetra	50	45
Gurugram	60	55
Panipat	45	65
New Delhi	60	70
Agra	55	45
Mathura	70	60

6. Ratio of Sum of number of females deboard from train at Kurukshetra and Panipat to the sum of number of males boarding on train from Mathura and New Delhi is:-
(a) 3283 : 9201 (b) 3329 : 7209 (c) 267 : 490 (d) 113 : 169 (e) None of these
7. 'x' is the number of male deboarded at Panipat and 'y' is the number of female boarded at Agra.Then 'x' is what percent of 'y'. (Rounded off to two decimal places)
(a) 61.34% (b) 55.44% (c) 52.46% (d) 58.68% (e) 49.46%
8. Number of male who board at Panipat railway station is what percent more than the number of male who deboard from train at Kurukshetra railway station.
(a) 14.375% (b) 6.55% (c) 5.58% (d) 4.49% (e) 10.235%

9. Ratio of difference between the number of females boarding at Kurukshetra and Gurugram to the difference between the numbers of male deboard from train at Panipat and New Delhi.
(a) 404 : 485 (b) 361 : 371 (c) 264 : 229 (d) 461 : 231 (e) None of these
10. Average of number of female who board on train at Mathura and number of males board on Grugram railway station is.
(a) 8360 (b) 8260.5 (c) 8070 (d) 9651.5 (e) 8270

Direction (11-15): Given below is the information about candidates who not appeared and candidates qualified/not qualified out of those who appeared in 2 exams IBPS PO PRE and SBI PO PRE in different years from 2006 to 2010.

Years	IBPS PO PRE			SBI PO PRE		
	No. of Candidate who not appeared	% of candidate who not appeared	% of appeared candidates who Qualified	No. of Candidates who not appeared	% of candidate who not appeared	% of appeared Candidates who are not Qualified
2006	50	10%	60%	–	–	70%
2007	200	25%	43%	–	–	55%
2008	–	–	60%	120	30%	40%
2009	480	50%	70%	450	45%	50%
2010	120	24%	–	100	20%	–

Note: - Few values are missing in table, candidate is expected to calculate the missing values if it is required to answer the given questions on the basis of given information in the question.

11. Out of the number of qualified candidates in IBPS PO pre in 2008, the ratio of male to female candidate is 1 : 7. If the number of Female qualified candidates in IBPS PO pre in 2008 is 126. What is the number of appeared candidates (both Male & Female) in IBPS PO PRE in 2008.
(a) 144 (b) 236 (c) 240 (d) 250 (e) 244
12. The number of appeared candidates in SBI PO PRE is increased by 100% from 2006 to 2007. If total number of qualified candidates in SBI PO PRE in 2006 and 2007 together is 408 then number of appeared candidates in SBI PO PRE in 2006 is what percent of total number of candidates appeared in SBI PO PRE in 2006 to 2010? {Rounded off to 2 decimal places}
(a) 15.31% (b) 15.11% (c) 15.51% (d) 15.71% (e) 15.91%
13. If 65% candidates in IBPS PO PRE and 35% candidates in SBI PO PRE qualified in 2010, then find the difference between Candidates qualified in IBPS PO PRE in 2009 and 2010 together and candidates qualified in SBI PO PRE in the same years?
(a) 248 (b) 348 (c) 448 (d) 254 (e) 168
14. If number of appeared candidates in 2006 in IBPS PO PRE was increased by 25% as compared to previous year (2005) and the percentage of qualified candidates for the same is increased by 20% in 2006 as compared to 2005, then find the ratio of qualified candidates in IBPS PO PRE in 2005 to appeared candidates of the same in 2006.
(a) 2:3 (b) 3:5 (c) 4:5 (d) 2:5 (e) 1 : 2
15. Qualified candidates in IBPS PO PRE in 2006 and 2007 together is approximately what percent more than qualified candidates in SBI PO PRE in 2008 and 2009 together?
(a) 19% (b) 29% (c) 17% (d) 23% (e) 26%

Direction- (16-20) Given table shows the number of laptop manufactured & percentage of laptop sold by the company P & Q in difference Months. Read the table & find the solution of the given questions.

	Laptops manufactured By Company P	% sold	Laptop manufactured by Company Q	% sold
Jan	450	20%	–	30%
Feb	300	25%	400	20%
March	–	30%	–	40%
April	540	–	650	20%
May	240	15%	350	–

Note: Some data is missing in the table. You have to find out that data according to question.

16. If the total no. of laptop manufactured by P & Q in March is 1000 and total no. of laptop sold by P & Q in March is 340. Then find the difference b/w the no. of laptop manufactured by company P and company Q in March.
(a) 100 (b) 150 (c) 200 (d) 250 (e) 300
17. Laptop sold by company P in January is how much % less than the laptop sold by company Q in April?
(a) $10\frac{3}{13}\%$ (b) $30\frac{10}{13}\%$ (c) $44\frac{4}{9}\%$ (d) $44\frac{1}{9}\%$ (e) $30\frac{9}{13}\%$

18. Find out the no. of laptops manufactured by company Q in March if no. of laptops sold by company Q in March is equal to no. of laptops sold by company P in January & May together?
(a) 305 (b) 310 (c) 314 (d) 316 (e) 315
19. What is the ratio between no. of laptop sold by company P and Q together in February to no. of laptop sold by company P and Q together in Jan if laptop manufactured by company Q in Jan is 320?
(a) 6 : 5 (b) 5 : 6 (c) 7 : 5 (d) 5 : 7 (e) 5 : 4
20. If the average no. of laptop manufactured by P from Jan to May is 426 then what is no. of laptops manufactured in March?
(a) 400 (b) 450 (c) 500 (d) 550 (e) 600

Directions (21-25): Study the following table carefully and answer the given questions.

Company	Employees	Male: Female	Senior: Junior	Indian: foreigner	% of employees who got promoted (among senior employees)
Facebook	1200	14:11	18:7	3:1	50%
TCS	1400	13:15	17:11	5:2	36%
Wipro	1600	27:5	5:3	2:3	45%
HCL	1250	17:8	13:12	7:3	34%
L&T	1525	35:26	14:11	4:1	50%
Oracle	1300	9:4	8:17	8:5	50%
Google	1150	17:29	19:4	16:7	20%

Note- No junior employee got promoted from either of the company.

21. Number of employees who got promoted from Google are approximately what percent more/less than one fifth of the number of male employees from TCS, L&T and Oracle together?
(a) 69% (b) 61% (c) 58% (d) 55% (e) 65%
22. Half of the number of senior employees who got promoted are how much less than the foreigner employees from Wipro, L&T and Google together?
(a)500 (b)495 (c)498 (d)505 (e)508
23. If out of female employees from HCL, $53\frac{1}{4}$% are less than 25 years then find the ratio of the number of female employees who are more than 25 years and number of female employees from Facebook.
(a) 13:47 (b) 47: 13 (c) 48:17 (d) 17:48 (e) 17 : 53
24. Number of employees from all of the companies together are what % of the Indian employees of all of the companies together? {Rounded up to 2 decimal places}
(a) 131.31% (b) 156.76% (c) 157.76% (d) 149.24% (e) 151.16%
25. Male employees of all of the companies are how much more than the female employees of all of the companies together?
(a)2019 (b)2557 (c)2575 (d)1715 (e)2757

Directions (26 – 30): Study the table & answer the questions that follow:

	Rs. (in millions)				
	1999	2000	2001	2002	2003
OPBDIT	110	285	395	520	380
Interest	30	80	80	110	145
Depreciation	5	20	50	80	120
Net Profit	75	165	205	245	10
Tax	0	20	60	85	105
Other income	1	2	4	10	6

Net Profit = OPBDIT – Depreciation – Interest – Tax
OPBDIT: Operating profit before depreciation, interest & tax

26. For which year is the operating profit after interest and tax but before depreciation the highest?
(a) 2002 (b) 2003 (c) 2001 (d) 2000 (e) None of these
27. What is the approximate difference between the percentage increase in net profit for the period 1999-2000 and the OPBDIT for the period 1999-2000?
(a) 30% (b) 39% (c) 23% (d) 27% (e) 49%
28. Which of the following has witnessed a growth across all the years?
(a) Depreciation & OPBDIT (b) Depreciation & net profit (c) Tax and Depreciation
(d) Net profit & other income (e) Tax and net-profit

29. Assuming that the amount depreciated in any year is a percentage of the OPBDIT acquired by the company in the previous year, in which year did the company see the maximum percentage of depreciation?
(a) 2003 (b) 2001 (c) 2002 (d) 2000 (e) Can't determine

30. The average net profit for the period 1999-2003 is what % of the average interest for the same period? (Calculate up to two decimal points)
(a) 147.28% (b) 140.35% (c) 126.46% (d) 157.30% (e) 152.3%

Directions (31-35): Percentage of people of different age group who cast their vote in the election of five different states. Some values are missing. You have to calculate these values as per given data:

People → States ↓	**Age Group**				
	(18-25)	**(26-35)**	**(36-50)**	**(51-70)**	**(71-100)**
Uttar Pradesh	42%	—	18%	12%	—
Goa	—	38%	—	19%	6%
Uttarakhand	47%	31%	17%	—	4%
Manipur	—	35%	19%	17%	8%
Punjab	40%	22%	—	18%	12%

Note: No other age group cast their vote in these five states.

31. If the no. of people who are more than 50 years of age cast their votes from Goa, are 0.5 times the total number of people who are less than 51 years of age cast their vote from Uttarakhand. Then Total number of people who cast their vote from Goa in all age group are what percent of the total number of people who cast their vote from Uttarakhand in all age group?
(a) 170% (b) 190% (c) 210% (d) 150% (e) 130%

32. If the number of people who cast their vote from U.P. in the age group of (51-70) years are 36 lakhs and the number of people who cast their vote in the age group of (18-25) years from Punjab are 100 lakh then find the ratio of the number of people who cast their vote from UP in age group (18-25) years and the total number of people who are more than 35 years of age cast their vote from Punjab.
(a) 126 : 95 (b) 85 : 126 (c) 125 : 13 (d) 13 : 126 (e) 17 : 9

33. If total number of people who cast their vote from Punjab are 425 lakhs then number of people of more than 35 years of age who cast their vote from the Punjab are what percent more/less than the total number of people of less than 36 years of age who cast their vote from Punjab? (calculate upto two decimal points)
(a) 47.24% (b) 43.53% (c) 44.28% (d) 45.16% (e) 38.71%

34. If the number of people who cast their vote from Manipur in the age group of 18-25 are 10.5 lakh and the no. of people who cast their vote from Goa in the age group of 51-70 are 30% more than the total number of people who cast their vote from Manipur. Then find the approximate total number of people who cast their vote from Goa in all age group ?
(a) 360 lakh (b) 288 lakh (c) 342 lakh (d) 328 lakh (e) 400 lakh

35. Out of the total number of people who cast their vote from UP, 55% of them are female then find the number of female who cast their vote from UP in the age group of (71-100) if total number of people who cast their vote from UP are 300 lakh ?
(a) 75 lakhs (b) 85 lakhs (c) 95 lakhs (d) Can't determined (e) None of these

Directions(36-40) : The table below shows the data regarding the production and sale of different crops in India in year 2004.

Crops	**Production (in %)**	**Ratio of amount exported and consumed within India**	**Ratio of sales of amount exported to sales of amount consumed in India**	**Total sale (in Rs.)**
Wheat	37.5%	7 : 8	—	—
Rice	25%	2 : 3	9 : 11	6,00,000
Maize	12.5%		7 : 13	4,00,000
Barley	12.5%	4 : 1	—	5,00,000
Sugar			4 : 5	—
Jute	6.25%	1 : 1	2 : 3	3,12,500

Note: The amount of production of each crop is given as a percentage of total production of all the given crops.
Total production of given crops = 20000 metric tones.

36. If the total sale of wheat in 2004 was Rs. 5719000 and the ratio of selling price of one unit of wheat exported to selling price of one unit of wheat consumed within India is 2 : 3, then Find the selling price of one unit of wheat exported from India.
(a) Rs. 602 (b) Rs. 402 (c) Rs. 301 (d) Rs. 502 (e) Rs. 903

37. If the selling price of one unit of Barley exported is equal to selling price of one unit of Rice consumed in India, then find the total sale from Barely exported from India ?
(a) Rs. 2,10,000 (b) Rs. 2,20,000 (c) Rs. 2,50,000 (d) Rs. 2,30,000 (e) Rs. 2,22,000

38. The selling price of one unit of Jute exported is what percent of total sales from Maize exported from India in 2004 ? (approximate)
(a) 0.28% (b) 0.33% (c) 0.14% (d) 0.66% (e) 0.24%

39. The amount of production of sugar is what percent of the sales from Jute consumed within India ? {Rounded up to 2 decimal places}
(a) 0.28% (b) 0.33% (c) 0.16% (d) 0.66% (e) 0.86%

40. If amount of Maize exported is 25% of amount of Maize consumed in India then price per tonne of maize consumed in India is what percent of price per tonne of Jute consumed in India.
(a) $66\frac{2}{3}\%$ (b) $33\frac{1}{3}\%$ (c) $43\frac{1}{3}\%$ (d) $53\frac{1}{3}\%$ (e) $45\frac{1}{3}\%$

Directions (41-45): Study the table given below and answer the following questions. The table gives the details about bowling performances of six bowlers.

Bowlers	Overs	Maidens	Runs conceded	Wickets Taken
Lee	20	5	120	15
Bond	18	4	72	9
Steyn	-	6	-	20
Asif	12	-	-	-
Amir	24	-	-	32
Roch	16	3	96	20

Note: Maiden over is one in which a bowler doesn't not concede any run.

41. If the no. of wickets taken by Asif is $16\frac{2}{3}\%$ of total no. of wickets taken by all the remaining bowlers and he conceded 7 runs per over, then find his strike-rate? {strike-rate is defined as the no. of runs conceded per wicket}
(a) 5.25 (b) 4.25 (c) 6.25 (d) 7.25 (e) 5.5

42. How many more maiden overs should Roch have bowled in order to equal the economy rate of Bond? (Economy rate is defined as the no. of runs conceded per over)
(a) 4 (b) 6 (c) 2 (d) 8 (e) 10

43. If Amir bowls a maiden for every 3 overs he bowls and concedes $33\frac{1}{3}\%$ more runs that lee did then find the ratio of his maidens per wicket to the runs conceded by him per overs?
(a) 5 : 71 (b) 3 : 71 (c) 3 : 80 (d) 5 : 81 (e) 3 : 76

44. If lee and steyn collectively bowled 36 overs and conceded 280 runs, then find the ratio of their strike rates. (use information from previous questions if needed)
(a) 2 : 1 (b) 1 : 1 (c) 3 : 1 (d) 1 : 4 (e) 1 : 2

45. Strike-rate of Amir is what percent of the economy rate of Roch if Runs conceded by Amir is 150% more than runs conceded by Bond? (use information from previous questions if needed)
(a) 90% (b) 93.75% (c) 95.25% (d) 98.75% (e) 99.95%

Directions (46-50): Study the table and answer the following questions
Given below is the table which shows the books published and sold by two company X and Y.

	Books Published by Company X	% of books sold	Books published by company Y	% of books sold
Jan	–	25%	–	25%
Feb	–	40%	500	22%
Mar	250	40%	300	35%
April	–	25%	–	20%
May	300	–	240	60%

46. What is the average no. of books sold by company Y in the month of Jan, March & April if total books published in Jan & April by company Y is 540 and books sold by Y in Jan & April is equal?
(a) 72.5 (b) 77.5 (c) 80 (d) 70 (e) 75

47. If books sold by company X in Feb is equal to books sold by company Y in May. Then, what is total no. of books sold by company X & Y in the month of Feb?
(a) 250 (b) 252 (c) 254 (d) 256 (e) 258

48. What is the total no. of books sold in the month of March & April by company X & Y if there is an increment of 20% & 25% in books published by X & Y in April relative to the previous month respectively?
(a) 350 (b) 355 (c) 340 (d) 345 (e) 360

49. What will be the average no. of books sold by company X in Jan, Feb & March if the average no. of books published by X in Jan, Feb & March is 450 and books sold in Jan is equals to books sold in March.?
(a) 150 (b) 155 (c) 165 (d) 160 (e) 170

50. If the total books sold by company Y in March, April & May are 300, then what is the ratio of books published in the month of March & April by company Y.?
(a) 17 : 20 (b) 20 : 17 (c) 20 : 13 (d) 6 : 5 (e) None of these

Directions (51-55): Study the following table carefully and answer the question below it
The table given below shows the total number of people in 6 villages, percentage of female who are literate, number of illiterate female and total number of male in year 2016
Some values are missing in table, you have to calculate these values if required to answer the question given below.

Villages	Total Persons (Male + Female)	% of literate Female	Illiterate Female	Total males
A	22,000	40%	6000	12,000
B	18000	55%	4500	–
C	35000	35%	–	15,000
D	21,000	–	3500	11,000
E	12,000	80%	1000	–
F	–	60%	2000	6000

51. What is the average of males from all the villages taken together?
(a) $\frac{29500}{3}$ (b) $\frac{19700}{6}$ (c) $\frac{25800}{3}$ (d) $\frac{29000}{6}$ (e) None of these

52. What is the ratio of illiterate female from village A, B and C together to the literate female from village D, E and F together?
(a) 23 : 43 (b) 43 : 23 (c) 27 : 47 (d) 47 : 27 (e) 53 : 43

53. Total literate female from village D is what percent more or, less than total illiterate female from village C
(a) 25% (b) 40% (c) 45% (d) 50% (e) 35%

54. Total person (Male + female) from village F and E together are what % more or less than total female from village A, B and C together.
(a) 32.75% (b) 41.5% (c) 42.5% (d) 44% (e) 40%

55. If the illiterate female from village C decreases by $\frac{200}{13}$% and literate female from same village increases by $\frac{150}{7}$% in year 2017 but total person (Male + female) remains same in village C in year 2017 then number of male in village C is decreased or increased by what percent.
(a) $3\frac{1}{3}$% (b) $16\frac{2}{3}$% (c) $2\frac{6}{7}$% (d) $3\frac{3}{4}$% (e) None of these

Directions (56-60): Given below is a table which gives details about the students of a school ABC in different years. The table gives the ratio of no. of students who play cricket to that of football. The table also gives the ratio of no. of boys to girls.

Year	Total students	Boys : Girls	Boys	Girls
			Cricket : Football	Cricket : Football
2000	600	5 : 7	3 : 2	3 : 4
2001	700	13 : 12	3 : 1	1 : 3
2002	825	3 : 2	4 : 5	4 : 7
2003	650	7 : 6	3 : 4	7 : 3
2004	550	5 : 6	1 : 1	8 : 7

56. What is the difference between the no. of girls playing cricket in 2001 and the no. of boys playing football in 2002?
(a) 191 (b) 198 (c) 178 (d) 154 (e) None of these

57. What is the sum of average no. of boys playing cricket in 2000, 2002 and 2003 and the average no. of girls playing football in the same years?
(a) 350 (b) 340 (c) 360 (d) 370 (e) None of these

58. In 2005, the total no. of students increased by $72\frac{8}{11}$% as compared to 2004, and the ratio of boys to girls becomes 9 : 10, then find the no. of girls playing football in 2005 if 40% of the girls played cricket in 2005?
(a) 450 (b) 400 (c) 300 (d) 350 (e) None of these

59. What is the average no. of boys in the school in those years where no. of boys is less than no. of girls?
(a) 200 (b) 350 (c) 300 (d) 250 (e) None of these

60. Find the ratio of no. of girls playing cricket in 2000, 2002 & 2004 to the no. of boys playing cricket in 2001 and 2003?
(a) 430 : 423 (b) 430 : 432 (c) 432 : 423 (d) 419 : 423 (e) None of these

Directions (61-65): The following tables show the total number of candidates appeared (in hundred) and percentage of candidates qualified in the written test of IBPS PO mains from 5 different examination centers in different years. Study the tables carefully and answer the following questions:

Centre	Chandigarh	Delhi	Lucknow	Kanpur	Bhopal
IBPS PO I	351	651	451	511	373
IBPS PO II	172	582	523	502	489
IBPS PO III	248	633	564	523	514
IBPS PO IV	283	703	712	541	523
IBPS PO V	365	692	696	583	554
IBPS PO VI	291	592	641	482	573
IBPS PO VII	324	613	563	491	584

Percentage of candidates qualified in the written test from five centers over the years

Centre	Chandigarh	Delhi	Lucknow	Kanpur	Bhopal
IBPS PO I	12	24	18	17	9
IBPS PO II	10	28	12	21	12
IBPS PO III	15	21	23	25	10
IBPS PO IV	11	27	19	24	8
IBPS PO V	13	23	16	23	13
IBPS PO VI	14	20	21	19	11
IBPS PO VII	16	19	24	20	14

61. What percent of total candidates appeared from Chandigarh in all 7 year PO exams, qualified in the written exam ? (rounded off to two decimal points)
(a) 13.16% (b) 15.32% (c) 15.16% (d) 14.16% (e)15.56%

62. If 12.5% of the candidates who qualified in the written exam from Delhi in IBPS PO II,finally selected for the job after qualifying in the interview also. Ratio of candidates finally selected for job in PO II from Delhi to that in PO III from Bhopal is 679 : 257. Then what percent of candidates qualifying in the written test in PO III from Bhopal, finally got the job ?
(a) 12% (b) 16% (c) 15% (d) 20% (e) 14%

63. Total how many candidates qualified the written test of IBPS PO V from all the cities together ?
(a) 52405 (b) 51805 (c) 52105 (d) 52408 (e) 52608

64. If the ratio of boys to girls in the candidates qualified from Delhi to PO VI is 23 : 17. Then find the boys qualified from Delhi in PO VI is how much more than the girls qualified from the same ?
(a) 1777 (b) 1776 (c) 1717 (d) 1771 (e)1756

65. From which city the total number of candidates qualified in written exam of IBPS PO I, PO II and PO III together is 2nd maximum ?
(a) Chandigarh (b) Delhi (c) Lucknow (d) Kanpur (e) Bhopal

Directions (66-70): Given below is the percent of number of persons from 5 different countries who attended different number of international summits.

	Percentage of people attending summit-1 times	Percentage of people attending summit-2 times	Percentage of people attending summit-3 times	Percentage of people attending summit-4 times	Percentage of people attending summit-5 times	Percentage of people attending summit-6 times
India	18	14	25	7	—	17
Brazil	—	18	22	—	—	12
Russia	18	24	21	—	—	—
South Africa	—	—	28	11	26	9
China	19	—	21	—	37	4

Note: Some values are missing, you have to calculate these values as per given data in the following questions.

66. Number of people from China who attended 2 summits are $11\frac{1}{9}\%$ more than the number of people from the same country who attended 4 summits then no. of people from china who attended at most 2 summits are what percent more/less than the number of people from China who attended at least 4 summits ?
(a) 40% (b) 42% (c) 44% (d) 46% (e)48%

67. If the number of people from Russia who attended at most 3 summits is equal to number of people from South Africa who attended at least 3 summits and the total number of people from South Africa in these summits are 25200. Then find the number of people from Russia who attended 3 summits.
(a) 6216 (b) 6345 (c) 6298 (d) 6275 (e) 6616

68. Total no. of people from India who attended at most 2 summits is equal to the sum of number of people from China who attended 1 summit and the number of people from the same country who attended 6 summits. Then the total number of people in all these summits from India is what percent of total no. of people from China in all these summits?
(a) $71\frac{5}{8}\%$ (b) $71\frac{7}{9}\%$ (c) $71\frac{3}{8}\%$ (d) $71\frac{7}{8}\%$ (e) $71\frac{1}{8}\%$

69. The number of people from India who attended more than 2 summits is approximately what percent of the number of people from South Africa who attended at least 3 summits if the number of people who attended 3 summits from India is 4800 and the number of people of South Africa who attended 4 summits is 700 more than the number of people from India who attended 3 summits?
(a) 37% (b) 44% (c) 30% (d) 38% (e) 35%

70. If the difference between number of people from China who attended 3 summits and people who attended 5 summits is 2400, and the total people from Russia in these summits are 60% more than the total no. of people from China in these summits then find the number of people from Russia who are attended 2 summits.
(a) 6150 (b)5760 (c)5280 (d) 5340 (e) 5660

Directions (71-75): Given data show the gross revenue, amount for commission, amount for discount and net revenue of magazine A during 5 month`
Note:
Net revenue = gross revenue − amount allocated for commission − amount allocated for discount and others.
Some value are missing you have to calculate these values according to queastion.

Revenue data of Magazine A during 5 month

Month	Gross revenue (In Rs.)	Amount allocated for commission	Amount allocated for discount and others (in Rs.)	Net Revenue In (In Rs.)
March	3,60,000	31,200		
April	3,20,000		16,000	
May			36,000	3,36,000
June		42,000		3,30,000
July		40,000	28,000	

71. In July, if 40% of the gross revenue of magazine was collected from advertisement, what was the amount of gross revenue collected from advertisement in the july month. Given that Net Revenue in July is 7/8th of the Net revenue in May.
(a) 1,48,000 (b) 1,44,800 (c) 1,44,000 (d) 1,72,000 (e) 144600

72. In March, if Net Revenue of the magazine was 85% of its gross revenue, what was the amount allocated for discount and others?
(a) 23,200 (b) 24,200 (c) 22,400 (d) 22,800 (e) 21,600

73. Amount collected for commission in March is what percent more or less than Amount allocated for commission in April if net revenue in April is 13.75% less than the gross revenue of April (Approx).
(a) 11% (b) 13% (c) 15% (d) 20% (e) 10%

74. What is the difference b/w net revenue of magazine in pril and its gross revenue in June, if commission in April is 10% of its Gross revenue in April month and discount allocated in June 1/11th of the net Revenue of this june.
(a) 200000 (b) 130000 (c) 100000 (d) 500000 (e) 135000

75. In May, the respective ratio of amount allocated for commission and amount allocated for discount and other was 4 : 3 then, what was the gross revenue of the magazine in May?
(a) 4,24,000 (b) 4,40,000 (c) 3,86,000 (d) 4,20,000 (e) 4,39,000

PRACTICE SET (LEVEL–II) SOLUTIONS

1. (b); Work diaries of company 'X' sold by A
$= 14000 \times \frac{55}{100} \times \frac{6}{11} \Rightarrow = 4200$
School diaries of company 'Y' sold by E
$= 12000 \times \frac{36}{100} \times \frac{7}{15} \Rightarrow = 2016$
Required percentage
$= \frac{4200-2016}{2016} \times 100 = 108\frac{1}{3}\%$

2. (d); Work diaries of company 'X' sold by B and C together
$= 8000 \times \frac{65}{100} \times \frac{7}{13} + 5250 \times \frac{40}{100} \times \frac{5}{14}$
$= 2800 + 750 \Rightarrow = 3550$
School diaries of company 'X' sold C and D together
$= 5250 \times \frac{60}{100} \times \frac{11}{15} + 9000 \times \frac{52}{100} \times \frac{5}{13}$
$= 2310 + 1800 = 4110$
Required difference = 4110 – 3550 = 560

3. (e); Total work diaries sold by A, B together of company 'Y'
$= 14000 \times \frac{55}{100} \times \frac{5}{11} + 8000 \times \frac{65}{100} \times \frac{6}{13}$
$= 3500 + 2400 = 5900$
Total school diaries sold by E and D together of company X
$= 9000 \times \frac{52}{100} \times \frac{5}{13} + 12000 \times \frac{36}{100} \times \frac{8}{15}$
$= 2304 + 1800 = 4104$
Required percentage $= \frac{5900-4104}{4104} \times 100$
$= 43.76\% \approx 44\%$

4. (c); School diaries of company 'X' sold by A and B together
$= 14000 \times \frac{45}{100} \times \frac{5}{9} + 8000 \times \frac{35}{100} \times \frac{4}{7}$
$= 3500 + 1600 = 5100$
Work diaries of company 'Y' sold by D and E together
$= 9000 \times \frac{48}{100} \times \frac{5}{12} + 12000 \times \frac{64}{100} \times \frac{7}{16}$
$= 1800 + 3360 \Rightarrow = 5160$
Required difference
$= \frac{5160-5100}{2} = 30$

5. (a); Required value
$= 8000 \times \frac{65}{100} \times \frac{60}{100} + 8000 \times \frac{35}{100} \times \frac{40}{100}$
$= 3120 + 1120 \Rightarrow = 4240$

6. (c); No. of females deboard from train at Kurkshetra and Panipat
$= 16000 \times \frac{55}{100} + 13000 \times \frac{35}{100}$
$= 8800 + 4550 = 13350$
No. of males Boarding on train from Mathura and New Delhi
$= \frac{17000 \times 70}{100} + 21000 \times \frac{60}{100}$
$= 11900 + 12600 = 24500$
$Required\ ratio = \frac{13350}{24500} = \frac{267}{490}$

7. (d); $x = 13000 \times \frac{65}{100} = 8450$

$y = 32000 \times \frac{45}{100} = 14400$

Required percentage $= \frac{8450}{14400} \times 100 = 58.68\%$

8. (a); No. of male board at Panipat
$= \frac{18300 \times 45}{100} = 8235$
No. of male deboard at Kurukshetra
$= \frac{16000 \times 45}{100} = 7200$
$Required\ \% = \frac{(8235-7200)}{7200} \times 100 = 14.375\%$

9. (a); Difference between the no. of females boarding at Kurkshetra and Gurugram
$= \frac{22800 \times 50}{100} - \frac{18400}{100} \times 40 \Rightarrow = 4040$
Difference between the no. of males deboard at Panipat and New Delhi
$= 19000 \times \frac{70}{100} - 13000 \times \frac{65}{100}$
$= 13300 - 8450 = 4850$
Required ratio $= \frac{4040}{4850} = \frac{404}{485}$

10. (c); Required Average
$= \frac{5100+11040}{2} \Rightarrow = 8070$

11. (c); Let number of appeared candidates in IBPS PO PRE = x
No. of qualified candidates $\frac{60}{100} \times x$
No. of female candidates who qualified = $\frac{7}{(1+7)} \times \frac{60}{100} \times x = 126$
$x = 126 \times \frac{8}{7} \times \frac{100}{60} = 240$

12. (b); Let no. of appeared candidates in 2006 = x
No. of appeared candidates in 2007 = $\frac{(100+100)}{100} \times x = 2x$
$\frac{30}{100}x + \frac{45}{100} \times 2x = 408, x = 340$
Required percentage = $\frac{340}{(340+680+280+550+400)} \times 100$
$= 15.11\%$

13. (e); Candidates qualified from in IBPS PO PRE in 2009 and 2010 together $= \left(\frac{70}{100} \times 480\right) + \left(\frac{65}{100} \times 380\right)$
$= 583$
Candidates qualified in SBI PO PRE in 2009 and 2010 together = $\left(\frac{50}{100} \times 550\right) + \left(\frac{35}{100} \times 400\right)$
$= 275 + 140 = 415$
Difference = 583 – 415 = 168

14. (d); No. of appeared candidates in 2005 in IBPS PO PRE
$= 450 \times \frac{100}{125} = 360$
% of qualified candidates in 2005 in IBPS PO PRE
$60 \times \frac{100}{120} = 50\%$
No. of qualified candidates $\frac{50}{100} \times 360 = 180$
Required ratio $= \frac{180}{450} = 2:5$

15. (a); Qualified candidates in 2006 and 2007 in IBPS PO PRE = $\left(450 \times \frac{60}{100}\right) + \left(600 \times \frac{43}{100}\right)$
$= 270 + 258 = 528$
Qualified candidates in SBI PO PRE in 2008, and 2009= $\left(280 \times \frac{60}{100}\right) + \left(\frac{550 \times 50}{100}\right)$
$= 168 + 275 = 443$

Required percentage = $\frac{528-443}{443} \times 100 \approx 19\%$

16. (c); Let, Laptop manufactured by P, (in March) = x
Laptop manufactured by Q, (in March) = y
Given
$\rightarrow$ x + y = 1000
And , 30% x + 40% y = 340
3x + 4y = 3400 ...(i)
& x + y = 1000 ...(ii)
On solving (i) & (ii)
We get, x = 600 = laptop manufactured By P (March)
y = 400 = Laptop manufactured by Q (March)
Desired difference = 600 – 400 = 200

17. (b); Laptop sold by P in Jan = 450 ×20%
= 90
Laptop sold by Q in April = 650 ×20% = 130
Desired% = $\frac{130-90}{130} \times 100 = \frac{40}{130} \times 100 = 30\frac{10}{13}\%$

18. (e); Let, laptop manufactured by Q in march = x
Given data
x ×40% = 450 × 20% + 240 × 15%
$x \times 40\% = 90 + 36$
$x \times 40\% = 126$
$x = \frac{126}{40} \times 100 = 315$

19. (b); Desired ratio = $\frac{300\times25\%+400\times20\%}{450\times20\%+320\times30\%} = \frac{75+80}{90+96} = \frac{155}{186} = \frac{5}{6}$

20. (e); No. of laptops manufactured in March By P
= 426 × 5 – 450 – 300 – 540 – 240
= 600

21. (b); No. of employees who promoted from Google
= $1150 \times \frac{19}{23} \times \frac{20}{100} = 190$
$\frac{1}{5}th.$ of male employees from TCS, L&T and Oracle
$= \left(1400 \times \frac{13}{28} + 1525 \times \frac{35}{61} + 1300 \times \frac{9}{13}\right)\frac{1}{5}$
$= (650 + 875 + 900)\frac{1}{5}$
$= \frac{2425}{5}$
= 485
Required % = $\frac{485-190}{485} \times 100$
= 60.82% ≈ 61%

22. (c); No. of senior employees who got promoted
= $1200 \times \frac{18}{25} \times 0.50 + 1400 \times \frac{17}{28} \times 0.36 + 1600 \times \frac{5}{8} \times 0.45 + 1250 \times \frac{13}{25} \times 0.34 + 1525 \times \frac{14}{25} \times 0.50 + 1300 \times \frac{8}{25} \times 0.5 + 1150 \times \frac{19}{23} \times 0.20$
= 432 + 306 + 450 + 221 + 427 + 208 + 190
= 2234
Foreign employees from Wipro, L&T and Google together = $1600 \times \frac{3}{5} + 1525 \times \frac{1}{5} + 1150 \times \frac{7}{23}$
= 960 + 305 + 350
= 1615
Required employees = $1615 - \frac{2234}{2}$
= 1615 – 1117 ⇒ = 498

23. (d); Required ratio = $\frac{(400-213)}{400} \times 1250 \times \frac{8}{25} : 1200 \times \frac{11}{25}$
= 187 : 528 ⇒ = 17 : 48

24. (e); No. of employees from all of the companies together
= 9425
Indian employees of all of the companies together
= 900 + 1000 + 640 + 875 + 1220 + 800 + 800
= 6235
Required% = $\frac{9425}{6235} \times 100$ ⇒ = 151.16%

25. (a); Male employees from all of the companies = $1200 \times \frac{14}{25} + 1400 \times \frac{13}{28} + 1600 \times \frac{27}{32} + 1250 \times \frac{17}{25} + 1525 \times \frac{35}{61} + 1300 \times \frac{9}{13} + 1150 \times \frac{17}{46}$
= 672 + 650 + 1350 + 850 + 875 + 900 + 425
= 5722
∴ female employees = 9425 – 5722 ⇒ = 3703
Required no. of employees = 2019

26. (a);

Year	Operating profit after interest of tax but before depreciation
1999	110–30–0 = 80
2000	285–80-20= 185
2001	395–80–60 = 255
2002	520–110–85 = 325
2003	380–145–105= 130

27. (b); Percentage increase in net profit for the period 1999-2000 = $\frac{165-75}{75} \times 100$
= $\frac{90}{75} \times 100$ ⇒ = 120%
Percentage increase in net OPBDIT for the period 1999-2000 = $\frac{285-110}{110} \times 100$
= $\frac{175}{110} \times 100$ ⇒ = 159.09%
Difference = 159.09 – 120 = 39.09%

28. (c); It can be clearly observed form the table.

29. (e); Since we don't know the OPBIDT of 1998 so we cannot get the answer.
For other years we can calculate percentage depreciation-

Year	% depreciation
2000	$\frac{20}{110} \times 100 = 18.18\%$
2001	$\frac{50}{285} \times 100 = 17.54\%$
2002	$\frac{80}{395} \times 100 = 20.25\%$
2003	$\frac{120}{520} \times 100 = 23.07\%$

30. (d); Average net-profit for period 1999-2003
= $\frac{75+165+205+245+10}{5}$
= $\frac{700}{5} = 140$
Average interest for period 1999-2003
= $\frac{30+80+80+110+145}{5}$ ⇒ = $\frac{445}{5} = 89$
Required percentage = $\frac{140}{89} \times 100 = 157.30\%$

31. (b); Let total no. of people who cast their vote from Goa = x
Let total no. of people who cast their vote from Uttarakhand = y
$\therefore (19 + 6)\%$ of $x = \frac{1}{2}(47 + 31 + 17)\%$ of y
$\frac{1}{4} \times x = \frac{1}{2} \times \frac{95}{100} \times y$
$\frac{x}{2} = \frac{95}{100} \times y$
$100x = 190y$
$20x = 38y \Rightarrow 10x = 19y$
$\frac{x}{y} = \frac{19}{10}$
Required% = $\frac{19}{10} \times 100$
= 190%

32. (a); Total no. of people who cast their vote from U.P.
$= \frac{360}{12} \times 100 = 300$ lakh
Total no. of people who cast their vote from Punjab
$= \frac{100}{40} \times 100 = 250$ lakh
Required Ratio $= \left(\frac{42}{100} \times 300\right) : \left(\frac{100-40-22}{100}\right) \times 250$
$= (42 \times 3) : 95 \Rightarrow = 126 : 95$

33. (e); Total no. of people who cast their vote from Punjab
= 425 lakhs
Required% $= \frac{(40+22)-(100-40-22)}{(40+22)} \times 100$
$= \frac{62-38}{62} \times 100$
$= \frac{24}{62} \times 100 \Rightarrow = 38.71\%$

34. (c); Total no. of people who cast their vote from Goa
$= \frac{100}{19}\left(\frac{130}{100} \times \frac{10.5}{(100-35-19-17-8)} \times 100\right)$
$= 342.10 \Rightarrow \approx 342$ lakhs

35. (d); Since we don't know the percentage of female in individual age group so we can't determine the required no. of females.

36. (a); Amount of wheat exported $= \frac{7}{15} \times \frac{37.5}{100} \times 20000$
$= 3500$ mt
Amount of wheat consumed $= \frac{8}{15} \times \frac{37.5}{100} \times 20000$
$= 4000$ mt.
Let, selling price of one unit of wheat exported be Rs. $2x$ and that consumed be Rs. $3x$
Then, $3500 \times 2x + 4000 \times 3x = 5719000$
or, $19000x = 5719000$
or, $x = 301$
Selling price of one unit of wheat
Exported from India = Rs. $2x$ = Rs. 2×301 = Rs. 602

37. (b); Amount of rice consumed $= \frac{3}{5} \times \frac{1}{4} \times 20000$
$= 3000$ mt.
Amount of rice exported $= \frac{2}{5} \times \frac{1}{4} \times 20000 = 2000$ mt.
Price of one unit of Rice consumed $= \frac{\frac{11}{20} \times 600000}{3000}$
= Rs. 110
Total sale from Barley exported
$= \left(\frac{4}{5} \times \frac{1}{8} \times 20000\right) \times 110$
= Rs. 2,20,000

38. (c); Total sales from Maize exported $= \frac{7}{20} \times 400000$
Rs. 1,40,000
Amount of jute exported $= \frac{1}{2} \times \frac{1}{16} \times 20000 = 625$ mt
Selling price of one unit of Jute exported
$= \frac{\frac{2}{5} \times 312500}{625} =$ Rs. 200
Req.% $= \frac{200}{140000} \times 100 = 0.14\%$

39. (d); Amount of sugar produced $= \frac{1}{16} \times 20000 = 1250$ mt
Sales from Jute consumed within India
$= \frac{3}{5} \times 312500 =$ Rs. 187500
Req. % $= \frac{1250}{187500} \times 100 = 0.66\%$

40. (c); Let amount of maize consumed in India =x
$x + \frac{25}{100}x = \frac{12.5}{100} \times 20,000$
= 2500
$\frac{125x}{100} = 2500 \Rightarrow x = 2000$
Total sale of maize in India $= \frac{65}{100} \times 400000$
= 260,000
Per tonne price of maize in consumed in India
$= \frac{2,60,000}{2,000} = 130$ Rs/ tonne
Total sale of Jute in India $= \frac{3}{5} \times 3,12,500$
= 1,87,500
Amount of jute consumed in India
$= \frac{6.25}{100} \times \frac{1}{2} \times 20,000 = 625$
Price per tonne of jute consumed in India
$= \frac{1,87,500}{625} = 300\ Rs/\ tonne$
Required percentage $= \frac{130}{300} \times 100$
$= 43\frac{1}{3}\%$

41. (a); Wickets taken by Asif=$\frac{1}{6} \times 96 = 16$
Runs conceded by him=$12 \times 7 = 84$
Strike rate of Asif=$\frac{84}{16} = 5.25$

42. (d); Economy rate of Bond = $\frac{72}{18} = 4$ runs/over
Roch's economy rate = $\frac{96}{16} = 6$ runs/over
To equal Bond's rate, Roch needed to bowl 8 more maidens, as
$\frac{96}{16+8} = \frac{96}{24} = 4$ runs/over

43. (c); No. of maidens bowled by Amir = $\frac{24}{3} = 8$
Runs conceded by Amir = $\frac{4}{3} \times 120 = 160$
Req. Ratio = $\frac{Maidens/Wicket}{Runs/over} = \frac{8/32}{160/24} = \frac{3}{80}$

44. (b); overs bowled by steyn = 36 – 20 = 16
Runs conceded by steyn = 280 – 120 = 160
Strike rate of Lee = $\frac{120}{15}$ = 8 runs/wicket
Strike – rate of Steyn = $\frac{160}{20} = 8$ runs/wicket
Ratio = 1 : 1

45. (b); Economy rate of Roch = $\frac{96}{16} = 6$
Strike rate of Amir = $\frac{72 \times \frac{250}{100}}{32} = 5.625$
$Required\ \% = \frac{5.625}{6} \times 100 = 93.75\%$

46. (e); Let, books published in Jan = x
Books published in April = y
Given, x + y = 540 ...(i)
& 25% of x = 20% of y
5x = 4y
Put in eq. (i)
$\frac{4y}{5} + y = 540$
$\Rightarrow y = 300$
$\Rightarrow x = 240$
$Average\ books\ sold$
$= \frac{240 \times 25\% + 300 \times 35\% + 300 \times 20\%}{3}$
$= \frac{60+105+60}{3} = 75$

47. (c); Books published in Feb by Company X = a
a × 40% = 240 × 60%
a = 360

Total books sold by X & 4 in Feb = 360× 40% + 500× 22% ⇒ = 254

48. (b); Books published by X in April $= 250 + 250 \times \frac{20}{100}$
$= 300$
Books published by Y in April = 300+ $300 \times \frac{25}{100}$
$= 375$
Total no. of books sold in March & April by X & Y
$= 250 \times 40\% + 300 \times 35\% + 300 \times 25\% + 375 \times 20\%$
$= 100 + 105 + 75 + 75 = 355$

49. (d); Books published in Jan = x
Books published in Feb = y
$\frac{x+y+250}{3} = 450$
$x + y = 450 \times 3 - 250 = 1100$
$x \times 25\% = 250 \times 40\%$
$\Rightarrow x = 400$
$\Rightarrow y = 700$
$Average = \frac{400\times25\%+700\times40\%+250\times40\%}{3}$
$= \frac{100+280+100}{3} = 160$

50. (b); $300 \times 35\% + 240 \times 60\% + x \times 20\% = 300$
$x \times 20\% = 51$
$x = 255$
$Ratio = \frac{300}{255} = \frac{20}{17}$

51. (a); Total male from all villages together
$= 12000 + \left(18000 - \frac{4500}{45} \times 100\right) + 15000 + 11000 + \left(12000 - \frac{1000}{20} \times 100\right) + 600$
$= \frac{59000}{6} = \frac{29500}{3}$

52. (d); Illiterate female from village A, B and C together
$= 6000 + 4500 + \left(\frac{65}{100} \times 20000\right)$
$= 6000 + 4500 + 13000$
$= 23500$
Literate female from village D, E and F together
$= (21{,}000 - 11000 - 3500) + \frac{1000}{20} \times 80 + \frac{2000}{40} \times 60$
$= 6500 + 4000 + 3000$
$= 13500$
Required ratio = 47 : 27

53. (d); Required % $= \frac{\frac{20000}{100}\times65-6500}{\frac{20000}{100}\times65} \times 100$
$= \frac{6500}{13000} \times 100$
$= 50\%\ less$

54. (c); Total person in village F & E together
$= 12000 + 6000 + \frac{2000}{40} \times 100$
$= 23000$
Total female in village A, B and C together
$= 10{,}000 + 10{,}000 + 20{,}000$
$= 40{,}000$
$Required\% = \frac{17000}{40000} \times 100$
$= \frac{170}{4}\% = \frac{85}{2}\% = 42.5\%$

55. (a); Total illiterate female in 2017 from village C
$= \left(1 - \frac{2}{3}\right) \times 13000 = 11{,}000$
Total literate female in C in year 2017
$= \left(1 + \frac{3}{14}\right) \times 7000$
$= \frac{17}{14} \times 7000 = 8500$
Total male in village C in 2017 = 35000 – 19500= 15500
Required increase in % $= \frac{500}{15000} \times 100 = \frac{10}{3}\%$

56. (a); No. of girls playing cricket in 2001 = $700 \times \frac{12}{25} \times \frac{1}{4} = 84$
No. of boys playing football in 2002 = $825 \times \frac{3}{5} \times \frac{5}{9} = 275$
Difference = 275 – 84 = 191

57. (b); Average no. of boys playing cricket in 2000, 2002 & 2003
$= \frac{150+220+150}{3}$
$= \frac{520}{3}$
Average no. of girls playing football in 2000, 2002 & 2003
$= \frac{200+210+90}{3}$
$= \frac{500}{3}$
Sum = $\frac{500+520}{3} = \frac{1020}{3} = 340$

58. (c); No. of students in 2005 = $550 + 550 \times \frac{800}{1100}$
$= 550 + 400$
$= 950$
No. of girls playing football in 2005 = $\frac{10}{19} \times 950 \times \frac{60}{100}$
$= 300$

59. (d); Such years are 2000 & 2004
Average no. of boys in these two years
$= \frac{250+250}{2} = 250$

60. (a); No. of girls playing cricket in 2000, 2002 & 2004
$= 600 \times \frac{7}{12} \times \frac{3}{7} + 825 \times \frac{2}{5} \times \frac{4}{11} + 550 \times \frac{6}{11} \times \frac{8}{15}$
$= 150 + 120 + 160 = 430$
No. of boys playing cricket in 2001 & 2003
$= 700 \times \frac{13}{25} \times \frac{3}{4} + 650 \times \frac{7}{13} \times \frac{3}{7}$
$= 273 + 150 \Rightarrow = 423$
Required Ratio = 430 : 423

61. (a); Total candidates appeared
$= (351+172+248+283+365+291+324) \times 100$
$= 203400$
Total candidates qualified in written test
$= (351\times\frac{12}{100}+172\times\frac{10}{100}+248\times\frac{15}{100}+283\times\frac{11}{100}+365\times\frac{13}{100}+291\times\frac{14}{100}+324\times\frac{16}{100})\times100 = 26768$
Required percentage $= \frac{26768}{203400} \times 100 = 13.16\%$

62. (c); Candidates who got job from Delhi in PO II
$= \frac{12.5}{100} \times \frac{28}{100} \times 58200 = 2037$
Candidates who got job from Bhopal in PO III
$= \frac{257}{679} \times 2037 = 771$
Required percentage = $\frac{771}{5140} \times 100 = 15\%$

63. (d); Total candidates qualified in IBPS PO V
$= \left(36500 \times \frac{13}{100}\right) + \left(69200 \times \frac{23}{100}\right) + \left(69600 \times \frac{16}{100}\right) + \left(58300 \times \frac{23}{100}\right) + \left(55400 \times \frac{13}{100}\right) = 52408$

64. (b); Total candidate qualified in written test in PO VI from Delhi $= 59200 \times \frac{20}{100} = 11840$

Required difference $= \frac{23-17}{23+17} \times 11840 = 1776$

65. (d); Total candidates qualified from Chandigarh

$= (351 \times \frac{12}{100} + 172 \times \frac{10}{100} + 248 \times \frac{15}{100}) \times 100 = 9652$

From Lucknow

$= (451 \times \frac{18}{100} + 523 \times \frac{12}{100} + 564 \times \frac{23}{100}) \times 100 = 27366$

From Delhi

$= (651 \times \frac{24}{100} + 582 \times \frac{28}{100} + 633 \times \frac{21}{100}) \times 100 = 45213$

From Kanpur

$= (511 \times \frac{17}{100} + 502 \times \frac{21}{100} + 523 \times \frac{25}{100}) \times 100 = 32304$

From Bhopal

$= (375 \times \frac{9}{100} + 489 \times \frac{12}{100} + 514 \times \frac{10}{100}) \times 100 = 14365$

66. (b); Let no. of people (as percentage) from China who attended 4 seminar = x%

Then no. of people (as percentage) from China who attended 2 seminar

$= \left(100 + 11\frac{1}{9}\right)\%$ of x

$= \frac{1000}{900} \times x = \frac{10}{9}x\%$

$\therefore x + \frac{10}{9}x = (100 - 19 - 21 - 37 - 4)$

$= \frac{19x}{9} = 19 \Longrightarrow x = 9$

Required % $= \frac{(9+37+4)-(19+10)}{9+37+4} \times 100$

$= \frac{50-29}{50} \times 100$

$= \frac{21}{50} \times 100 = 42\%$

67. (a); Let total no. of people from Russia = x

(18 + 24 + 21)% of $x = \frac{(28+11+26+9)}{100} \times 25200$

$\frac{63}{100} \times x = \frac{74}{100} \times 25200$

$x = 74 \times 400 \Rightarrow x = 29600$

Required no. of people = 296 × 21 = 6216

68. (d); Let from India = x

From China = y

(18 + 14)% of x = (19 + 4)% of y

$32 \times x = 23y \quad \Rightarrow \quad \frac{x}{y} = \frac{23}{32}$

Required % $= \frac{23}{32} \times 100 = 71\frac{7}{8}\%$

69. (e); India $= \frac{4800}{25} \times 100$

$= 4800 \times 4 = 19200$

South Africa $= \frac{(4800+700)}{11} \times 100 = 5000$

Required % $= \frac{\frac{(100-32)}{100} \times 19200}{\frac{(28+11+26+9)}{10} \times 50{,}000} \times 100$

$= \frac{13056}{370} \approx 35\%$

70. (b); China $= \frac{2400}{16} \times 100 = 15000$

Russia = 1.6 × 15000 $\Rightarrow$ = 24000

Required no. of people $= \frac{24}{100} \times 24000 = 5760$

71. (b); Net revenue in July $= \frac{7}{8} \times 336000 = 294000$

Gross revenue in July = Net Revenue + Commission + Discount

= 294000 + 40,000 + 28,000 = 362000

Gross revenue from ads.

$= \frac{40}{100} \times 362000 = 144800$

72. (d); Net revenue

$= \frac{85}{100} \times 360000 = 306000$

Amount allocated for discount and others

= 360,000 – 306000 – 31200 $\Rightarrow$ = 22800

73. (a); Net revenue in april

$= \frac{320{,}000 \times 86.25}{100}$

= 276000

Commission in April = 28,000

Required % $= \left(\frac{31200-28000}{28000}\right) \times 100$

≈ 11%

74. (b); Net revenue in April

$= 320000 - 16000 - \frac{10}{100} \times 320000$

= 272000

Gross revenue in June = 330000 + 42000 + 30000

= 402000

Required difference = 130000

75. (d); Amount allocated for commission in May

$= \frac{4}{3} \times 36000 = 48{,}000$

Gross revenue = 48000 + 36000 + 336000

= 420000

Chapter 3

Bar Graph

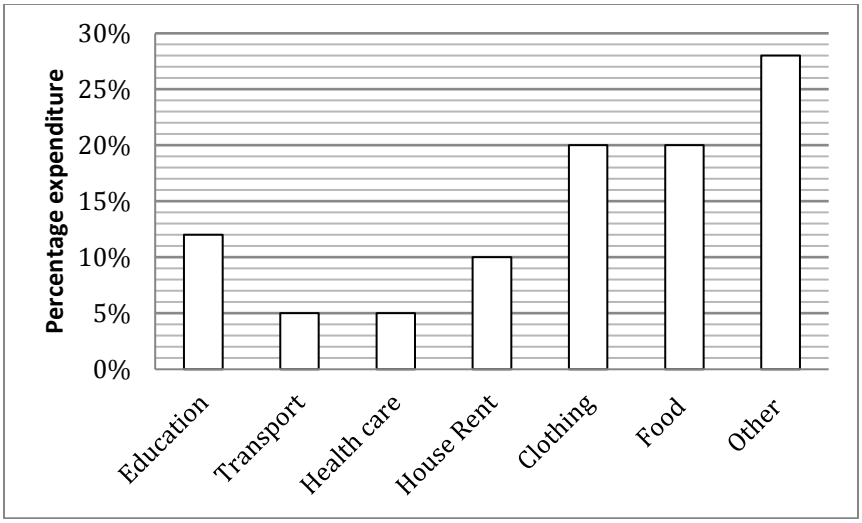
Bar Graphs are the most commonly used method of representing data among the graphs which are drawn in the form of rectangular bars of uniform width with equal spaces between them. The length/height of the bars is proportional to the values they represent. These graphs are easy to understand and facilitate comparisons as they have greater visual impact because of the use rectangular bars and their proportional lengths/heights. Bars are easier to distinguish between due to the use colors, shades, dots, dashes etc. to represent them.

This chapter contains:

- Solved Examples
- Previous Year Questions
- Practice Set Level I
- Practice Set Level II

SOLVED EXAMPLES

Directions (1-5): Bar graph shown below shows the percentage of expenditure of a person in year 2016 on various things. Total expenditure in 2016 is 10 Lakh



1. If total expenditure of the person in 2016 is 80% of its Earnings then expenditure on Food is what percent of its total earnings.

(a) 10% (b) 12% (c) 14% (d) 15% (e) 16%

Sol. **(e);** $Total\ earnings = \frac{10}{80} \times 100 = 12.5\ L$

$Required\ \% = \frac{\frac{20}{100} \times 10L}{12.5} \times 100 = 2 \times 8 = 16\%$

2. What is the ratio of total expenditure on Food and House Rent together to the total expenditure on Education and transport together.

(a) 30 : 17 (b) 12 : 11 (c) 25 : 23 (d) 22 : 19 (e) 30 : 19

Sol. **(a);** Required ratio = (20% + 10%) : (12% + 5%) = 30 : 17

3. If house rent increase by 20% then expenditure on clothing should be reduced by what percent so that overall expenditure remains constant. (consider changes takes place only on expenditure on Clothing and House rent, All other expenditure remain constant)

(a) 8% (b) 7% (c) 9% (d) 10% (e) 12%

Sol. **(d);** $Increase\ in\ House\ rent = \frac{20}{100} \times \frac{10}{100} \times 10 = \frac{1}{5} \times \frac{1}{10} \times 10 = 0.2\ L$

Percentage decrease in expenditure on Clothing$= \frac{0.2}{\frac{20}{100} \times 10} \times 100 = 10\%$

4. Average of expenditure on Clothing and Food together is what percent of average of expenditure on 'others' and Education together.

(a) 75% (b) 100% (c) 805 (d) 90% (e) 95%

Sol. **(b);** Expenditure of Clothing and Food together = (20% + 20%) of 10 L

Expenditure of Other & Education = (20% + 20%) of 10 L

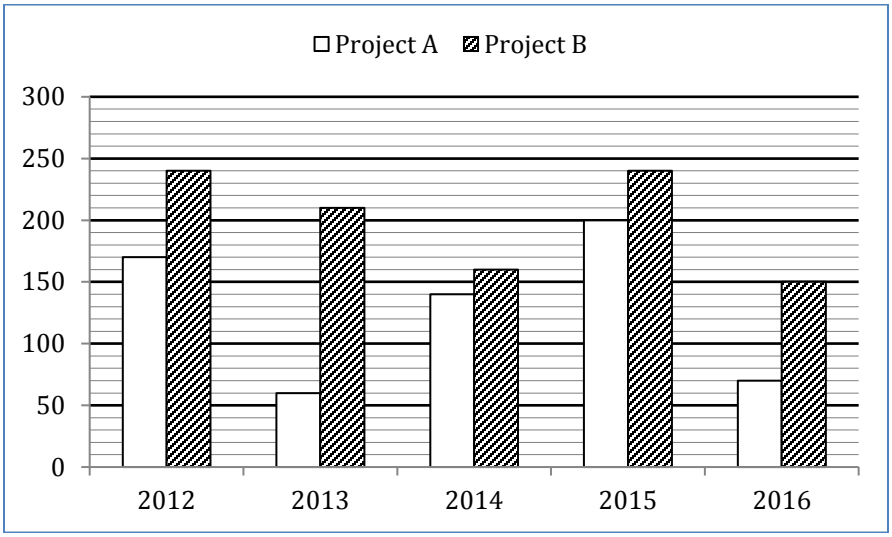
$Required\ percentage = \frac{\frac{40\%\ of\ 10L}{2}}{\frac{40\%\ of\ 10\ L}{2}} \times 100 = 100\%$

5. What will be the average of expenditure on all thing except Transport and Healthcare.

(a) 2L (b) 1.5 L (c) 1.8 L (d) 1 L (e) 2.5 L

Sol. **(c);** $Required\ average\ expenditure = \frac{90\%\ of\ 10L}{5} = \frac{90 \times 10}{100 \times 5} = 1.8\ L$

Directions (6-10): The bar-chart shows the total number of members enrolled in different years from 2012 to 2016 in two projects A and B. Based on this bar chart, solve the following questions.



6. If in the year 2017, there is 60% increase in the total number of members enrolled in 2016 in both Projects, then find the total number of members enrolled in 2017.

(a) 282 (b) 296 (c) 292 (d) 352 (e) None of these

Sol. **(d);** Total number of member enrolled in 2017 = 160% of (150 + 70) $\frac{220\times160}{100} = 352$

7. The ratio of the total number of members of both project in 2013 to the total number of members in 2016 of both project.

(a) 22 : 27 (b) 21 : 11 (c) 11 : 21 (d) 25 : 13 (e) 27 : 22

Sol. **(e);** $Reqd\ ratio = \frac{No.of\ members\ in\ Project\ \ A\ and\ B\ in\ 2013}{No.of\ members\ in\ Project\ A\ and\ B\ in\ 2016}$

$= \frac{60+210}{70+150} = \frac{270}{220} = \frac{27}{22} = 27 : 22$

8. The number of members of Project A in 2013 is what per cent of the number of members of project B in 2016 ?

(a) 60% (b) 55% (c) 58% (d) 62% (e)40%

Sol. **(e);** $Reqd.\% = \frac{No.of\ members\ in\ Project\ A\ in\ 2013}{No.of\ members\ in\ Project\ B\ in\ 2016} \times 100$

$= \frac{60}{150} \times 100 = 40\%$

9. The number of members enrolled in Project A from 2013 to 2016 together is what per cent more than the number of members enrolled in Project B in 2015 and 2016 together ? (Rounded off to two-digit decimal places)

(a) 10.51% (b) 20.51% (c) 15.51% (d) 17.51% (e)22.51%

Sol. **(b);** Total number of members enrolled in Project A from 2013 to 2016 = 60 + 140 + 200 + 70 = 470

Total number of members enrolled in Project B in 2015 and 2016 together = 240 + 150 = 390

∴ Difference = 470 – 390 = 80

∴ $Reqd\ \%\ more = \frac{80}{390} \times 100 = 20.51\%\ more$

10. The total number of members enrolled in project B in 2015 and 2016 together is what per cent more or less than the number of members enrolled in project A in 2012 and 2016 together ?

(a) 60% (b) 65% (c) 62.5% (d) 61.5% (e) 60.5%

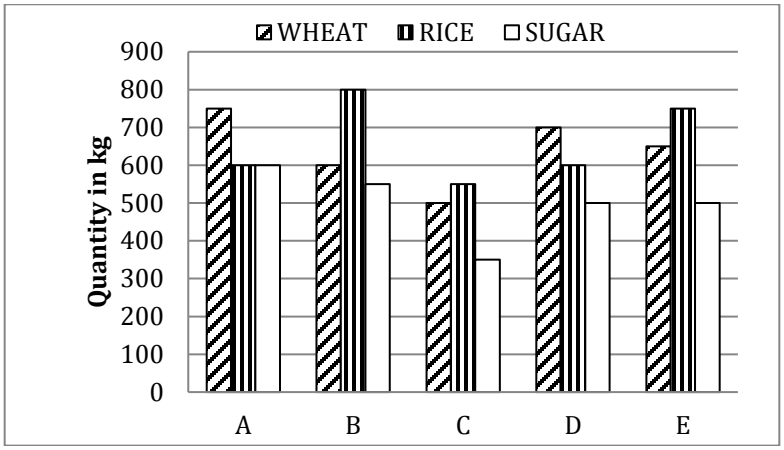
Sol. **(c);** Total number of members enrolled in Project B in 2015 and 2016 together = 240 + 150 = 390

Total number of members enrolled in Project A in 2012 and 2016 = 170 + 70 = 240

∴ Difference = 390 – 240 = 150

∴ $Reqd\ \% = \frac{150}{240} \times 100 = 62.5\%$

Directions (11-15): Study thefollowing graph and answer the question that follow
Given below is the amount of rice, wheat and sugar in (kg) sold by 5 different shopkeepers in year 2015



11. What is the ratio of total quantity of rice & wheat together sold by shopkeeper C together to the total quantity of sugar and wheat together sold by shopkeeper E together?
(a) 11 : 12 (b) 20 :13 (c) 22 : 29 (d) 21 : 23 (e) 5 : 6

Sol. **(d);** Rice and wheat sold by C = 550+500 = 1050
Sugar and wheat sold by E = 500+600 = 1150
Required ratio $= \frac{1050}{1150} = \frac{21}{23}$

12. Amount of rice sold by shopkeeper A & B together is what percent more or less than the amount of wheat sold by shopkeeper C and E together ?
(a) $22\frac{3}{5}\%$ (b) $29\frac{13}{17}\%$ (c) $21\frac{17}{23}\%$ (d) $19\frac{2}{7}\%$ (e) $20\frac{2}{7}\%$

Sol. **(c);** Amount of rice sold by shopkeeper A and B = 1400
Amount of wheat sold by shopkeeper C and E = 1150
Required $\% = \frac{250}{1150} \times 100$
$= \frac{2500}{115} = 21\frac{17}{23}\%$

13. Which quantity out of the three quantity sold by all the 5 shopkeepers together is maximum ?
(a) Wheat (b) Rice (c) Sugar (d) Both a & b (e) None of these

Sol. **(b);** Total quantity of wheat sold by all = 3200 kg
Total quantity of rice sold by all = 3300 kg
Total quantity of sugar sold by all = 2500 kg

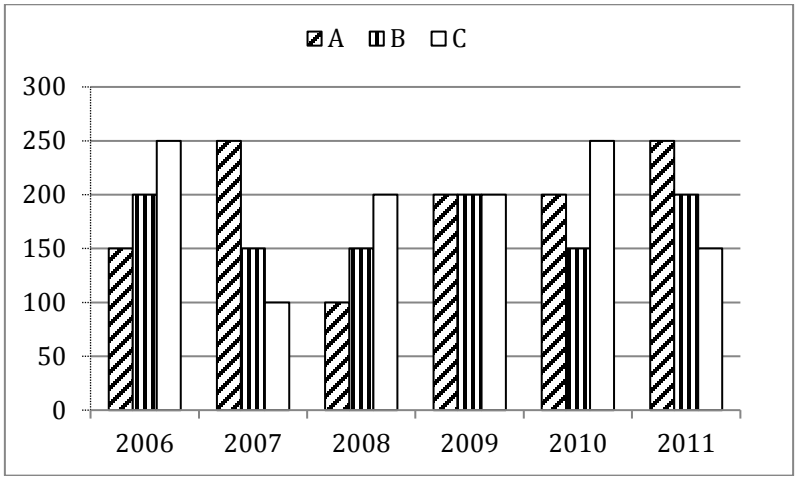
14. If total quantity of wheat and rice sold by all the shopkeeper together increases by 25% and $\frac{200}{33}\%$ respectively in year 2016 then in 2016 what is the difference between total quantity of wheat & rice sold by all shopkeeper ?
(a) 200 kg (b) 100 kg (c) 400 kg (d) 100 kg (e) 500 kg

Sol. **(e);** Total wheat sold by all in 2016 $= \frac{125}{100} \times 3200 = 4000\ kg$
Total rice sold by all in 2016 $= \left(100 + \frac{200}{33}\right)\% \ 3300$
$= \frac{35}{33} \times 3300 = 3500\ kg$
Required difference = 500 kg

15. If the selling price per Kg of wheat and rice are in the ratio 3 : 5 (in Rs) in 2015 for shopkeeper A and selling price of wheat increases by 25% next year then what quantity of wheat was sold in 2016 by A if total amount obtained in selling wheat in 2016 by A is 11250 Rs. and amount obtained in selling rice by A in 2015 is 12000 ?
(a) 750 kg (b) 600 kg (c) 500 kg (d) 800 kg (e) 350 kg

Sol. **(a);** Let selling price of wheat in 2015 = 3x Rs/kg
Let selling price of rice in 2015 = 5x
Selling price of wheat in 2016 = $\frac{5}{4} \times 3x \Rightarrow = \frac{15x}{4}$
According to question$5x \times 600 = 12000 \Rightarrow x = 4$
Required value $= \frac{11250}{\frac{15}{4} \times 4} = 750\ kg$

Direction(16-20); Study the following table and answer the questions accordingly
Table shows Income of the three companies A, B and C in different years (in lakh).



Note : $Profit\ \% = \frac{Income - Expenditure}{Expenditure} \times 100$

16. Profit of company A in 2006 is equal to the profit of company B in 2011, if expenditure of company B in 2011 is 64% of the income of B then find out the profit % of company A in 2006. (Round up to two decimal)
(a) 96.57% (b) 90.13% (c) 92.31% (d) 95.48% (e)91.79%

Sol. **(c);** Profit of B in 2011 = 200 – 200 × 64% = 72 lakh
Profit of A in 2006 =72 lakh
Now profit percent $= \frac{72}{150-72} \times 100 = 92.31\%$

17. What is the average of the expenditure of the company C, B and A in 2008 if they earn a profit of $33\frac{1}{3}\%$, 50% and 100% respectively.
(a) 100 lakh (b) 150 lakh (c) 120 lakh (d) 90 lakh (e) None of these

Sol. **(a);** Expenditure of A $= \frac{100\times100}{200} = 50$ lakh
Expenditure of B $= \frac{150}{150} \times 100 = 100$ lakh
Expenditure of C $= \frac{200\times300}{400} = 150$ lakh
Required average $= \frac{50+100+150}{3} = 100\ lakh$

18. If profit of company C in 2009 is 20% of the income of that company, then find the ratio of income of company C in 2008 and expenditure of company C in 2007 ?
(a) 8 : 5 (b) 5 : 4 (c) 3 : 2 (d) Can't determined (e) None of these

Sol. **(d);** Expenditure of C in 2007 is not given
Can't determined

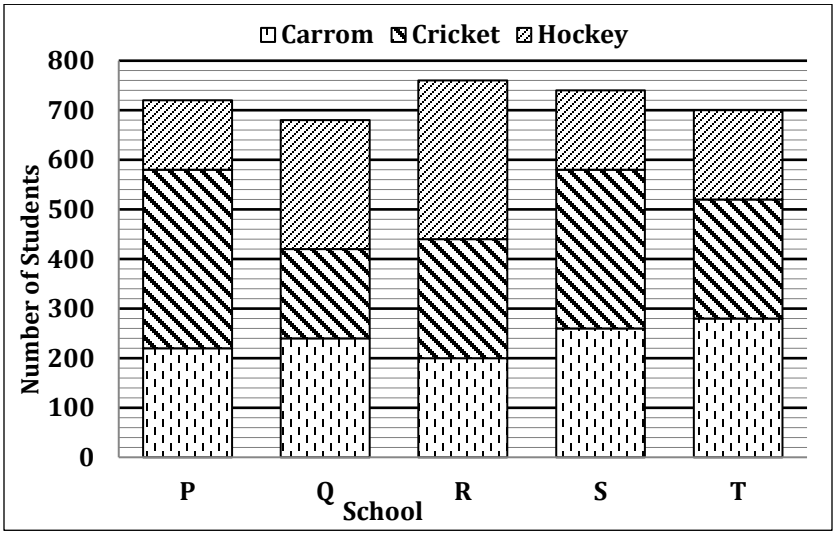
19. Income of B and C in 2010 together is what percent of the expenditure of B in 2006 in which it earn a profit of 25%
(a) 175% (b) 150% (c) 140% (d) 180% (e) 250 %

Sol. **(e);** Income of B & C in 2010 = 250 + 150 = 400 lakh
Expenditure of B in 2006
$= \frac{200}{125} \times 100 = 160$ lakh
Required percentage $= \frac{400}{160} \times 100 = 250\%$

20. What is the difference between the total income of the B and total income of C throughout the six years.
(a) 200 lakh (b) 105 lakh (c) 150 lakh (d) 100 lakh (e)175 lakh

Sol. **(d);** Income of B = (200+ 150 + 150 + 200+ 150 + 200)= 1050 lakh
Income of C = (250 + 100+ 200 + 200 + 250 + 150)= 1150 lakh
Required difference = 100 lakh

Directions (21 – 25): Study the following graphs and answer the given questions.
Number of Students Playing Carrom, Cricket and Hockey from five Different Schools.



21. Total number of students playing Carrom and Hockey together from school P is what percent of the total number of students playing these two games together from school R?
(a) $68\frac{3}{16}\%$ (b) $64\frac{3}{13}\%$ (c) $69\frac{3}{13}\%$ (d) $63\frac{3}{13}\%$ (e) $62\frac{3}{13}\%$

Sol. **(c);** Number of students playing Carrom and Hockey together from school P=$220 + 140 = 360$
Number of students playing Carrom and Hockey together from school R=$200 + 320 = 520$
Required %= $\frac{360}{520} \times 100 = 69\frac{3}{13}\%$

22. If the number of students playing each game in school S is increased by 15% and the number of students playing each game in school Q is decreased by 5%, then what will be the difference between number of students in schools S and Q?
(a) 54 (b) 218 (c) 356 (d) 224 (e) 205

Sol. **(e);** Total number of students in school S=260+320+160=740
Total number of students in school Q=$240 + 180 + 260 = 680$
Required Difference = $\frac{115}{100} \times 740 - \frac{95}{100} \times 680$
$= 851 - 646 = 205$

23. If out of the students playing Cricket from schools Q, S and T 40%, 35% and 45% respectively got selected for state level competition, what was the total number of students playing cricket got selected for State level competition from these schools together?
(a) 346 (b) 241 (c) 292 (d) 284 (e) 268

Sol. **(c);** Number of students playing cricket from,
School Q=180
School S=320
School T=240
Required Students = $\frac{40}{100} \times 180 + \frac{35}{100} \times 320 + \frac{45}{100} \times 240$
$= 72 + 112 + 108 = 292$

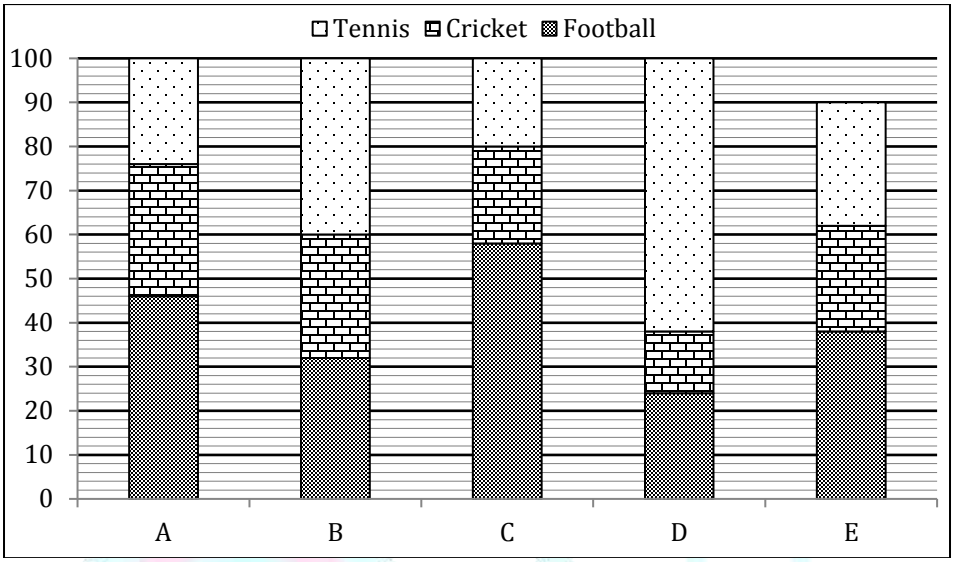
24. Total number of students playing Hockey from all schools together is approximately what percent of the total number of students playing Cricket from all schools together?
(a) 84% (b) 74% (c) 72% (d) 79% (e) 70%

Sol. **(d);** Total number of students playing Hockey from all school=140+260+320+160+180=1060
Total number of students playing cricket from all school=360+180+240+320+240=1340
Required % = $\frac{1060}{1340} \times 100 \approx 79\%$

25. From school P, out of the students playing Carrom, 40% got selected for State level competition. Out of which 25% further got selected for National level competition. From school T, out of the students playing Carrom, 45% got selected for State level competition, out of which two-third further got selected for National level competition. What is the total number of students playing Carrom from these two schools who got selected for National level competition?
(a) 106 (b) 98 (c) 112 (d) 108 (e) 96

Sol. **(a);** Number of students playing Carrom from
school P=220
school T=280
Required students $= \frac{25}{100} \times \frac{40}{100} \times 220 + \frac{2}{3} \times \frac{45}{100} \times 280$
$= 22 + 84 = 106$

Directions (26-30):Bar graph shows Percentage distribution of number of students playing three different games in five different schools. Study the following bar graph and answer the following questions:



26. If the total number of students in college B are 4600 and the number of students in college C are $5\frac{1}{23}\%$ more than the number of students in college B then find the ratio of the students who play cricket from college B to the number of students who play football from college C ?
(a) 4125 : 8889 (b) 4025 : 8758 (c) 8758 : 4025 (d) 8889 : 4125 (e) 8758:4015

Sol. **(b);** Number of students in college C $= 105\frac{1}{23}\%$ of 4600 = 4832
Required ratio $= \left(\frac{28}{100} \times 46000\right) : \left(\frac{58}{100} \times 4832\right)$
= 128800:280256 = 4025 : 8758

27. Number of students who play Cricket from college B are what % less than the number of students who play Tennis and Footbal from the same college
(a) $59\frac{2}{3}\%$ (b) $61\frac{1}{9}\%$ (c) $63\frac{4}{9}\%$ (d) $62\frac{2}{3}\%$ (e) $60\frac{1}{9}\%$

Sol. **(b);** Required% $= \frac{72-28}{72} \times 100 = 61\frac{1}{9}\%$

28. Number of males who likes football from college D is same as number of females who likes Football from same college then find number of females who play football are what % of number of students who play Tennis from the same college?
(a) 21% (b) 23% (c) 20% (d) 14% (e) $19\frac{11}{31}\%$

Sol. **(e);** No. of females who play football from college D $= \frac{24}{2}\% = 12\%$
Required% $= \frac{12}{62} \times 100 = 19\frac{11}{31}\%$

29. Find the average of the number of students who likes football and cricket from school C together if total number of students from college C are $81\frac{11}{69}\%$ of 6900.
(a) 2240 (b) 2245 (c) 2255 (d) 2250 (e) 2247

Sol. **(a);** Total no. of students from college C = $81\frac{11}{69}\%$ of 6900 = 5600
Required average $= \frac{1}{2}\left[\frac{58+22}{100} \times 5600\right] = \frac{1}{2}[4480] = 2240$

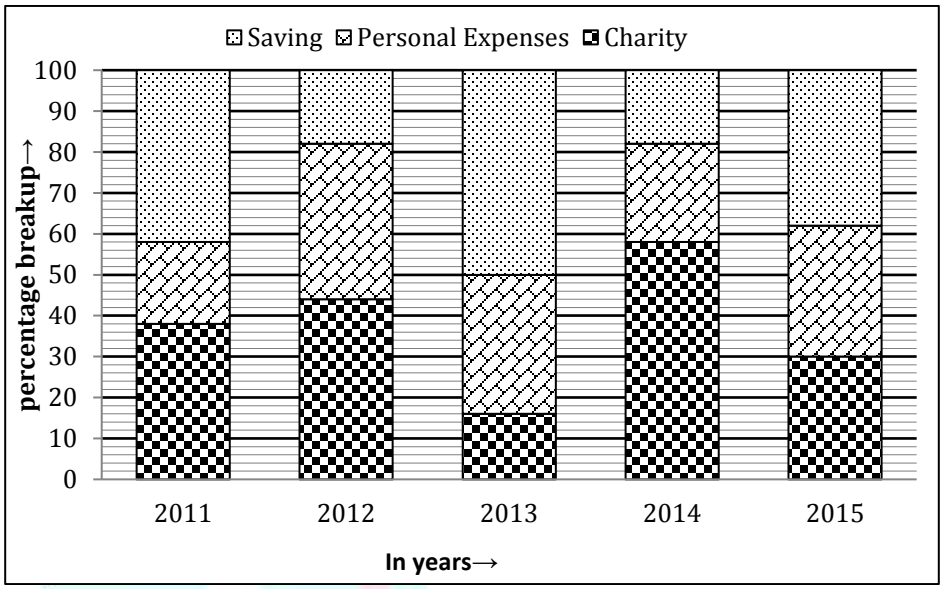
30. Average number of student from college A and college E are 1240 and the ratio of the number of students from college A and college E are 3 : 2. Then number of students who likes football from college A are approximately what percent of the number of students who likes Tennis from college E ?
(a) 240% (b) 237% (c) 246% (d) 256% (e) 250%

Sol. **(c);** No. of students from college A = $\frac{3}{5} \times (1240 \times 2) = 1488$

No. of students from college E = $\frac{2}{5} \times (1240 \times 2) = 992$

Required % = $\frac{\frac{46}{100} \times 1488}{\frac{28}{100} \times 992} \times 100 = 246.43\%$

Directions (31-35): The following bar graph shows the percentage break-up of a person's salary from year 2011 to 2015. With the given information, find the following questions.



31. If the ratio on Charity in the year 2013 and 2015 are in the ratio 7 : 5. Then what is the ratio of personal expenses in the year 2015 to 2013 ?
(a) 85 : 112 (b) 42 : 17 (c) 77 : 112 (d) 112 : 77 (e) 128:357

Sol. **(e);** Let Charity $_{2013}$ = 700 $\therefore Total_{2013} = 4375$

Let Charity $_{2015}$ = 500 $\therefore Total_{2013} = 5000/3$

Required ratio = $\frac{\frac{5000}{3} \times \frac{32}{100}}{4375 \times \frac{34}{100}}$

$= \frac{8 \times 16}{7 \times 17 \times 3} = 128:357$

32. If every year their is a increase of 50% in monthly salary as compared to previous year's monthly salary from year 2012, then what is the ratio of saving in 2014 to the charity in 2012 ?
(a) 81 : 88 (b) 88 : 81 (c) 48 : 41 (d) 41 : 48 (e) 81:87

Sol. **(a);** Let total $_{2012}$ = 1000

$\therefore$ Total $_{2013}$ = 1500

$\therefore$ Total $_{2014}$ = 2250

Required Ratio = $\frac{\frac{18}{100} \times 2250}{\frac{44}{100} \times 1000} = \frac{18 \times 225}{44 \times 100} = 81 : 88$

33. If the total salary in 2011 is 13 lakh and the total salary in 2013 is $30\frac{10}{13}\%$ more than that of 2011 the find the average of the personal expenses and saving together (in Rs.) in 2013 ?
(a) 1515000 Rs. (b) 1431000 Rs (c) 1512000 Rs (d) 1428000 Rs (e) 714000 Rs.

Sol. **(e);** Total $_{2011}$= 13 lakhs

Total $_{2013}$= $13 + 30\frac{10}{13}\%$ of B = 13 + 4 = 17 lakhs

$$\text{Required average} = \frac{\frac{(34+50)}{100}\times 17 lakh}{2}$$

$$\text{Required average} = \frac{1428000}{2}$$

$$= 714000 Rs.$$

34. If the Charity in 2014 is $\frac{3}{5}$th of the saving in 2015. what is the approximately total personal expenses in 2014 and 2015 together if total personal expense in 2015 is Rs. 150,000.

(a) 198550 Rs. (b) 189250 Rs (c) 194225 Rs (d) 191000 Rs (e) 161000 Rs

Sol. **(c);** Given – Personal Expense $_{2015}$ = 150,000 Rs.

Total $_{2015} = \frac{150000}{32} \times 100$

Saving 2015 $= \frac{150000}{32} \times 100 \times \frac{38}{100}$

$= \frac{38}{32} \times 150000$

Charity $_{2014} = \frac{3}{5} \times \frac{38}{32} \times 150000$

Personal expense $_{2014} = = \frac{1}{58} \times \frac{3}{5} \times \frac{38}{32} \times 150000 \times 24 \approx 44225$ Rs.

Required personal expenses $= 150{,}000 + 44{,}225 = 194{,}225$ Rs.

35. If saving in 2013 is 25000Rs, and ratio between saving in 2013 to charity in 2015 is 5:7. then find the sum of total personal expenses in 2013 and personal expenses in 2015?

(a) $\frac{163000}{3} Rs.$ (b) $\frac{166000}{3} Rs.$ (c) $\frac{156000}{3} Rs.$ (d) $\frac{146000}{3} Rs.$ (e) $\frac{136000}{3} Rs.$

Sol. **(a);** Charity in 2015$= \frac{25000}{5} \times 7 = 35000$

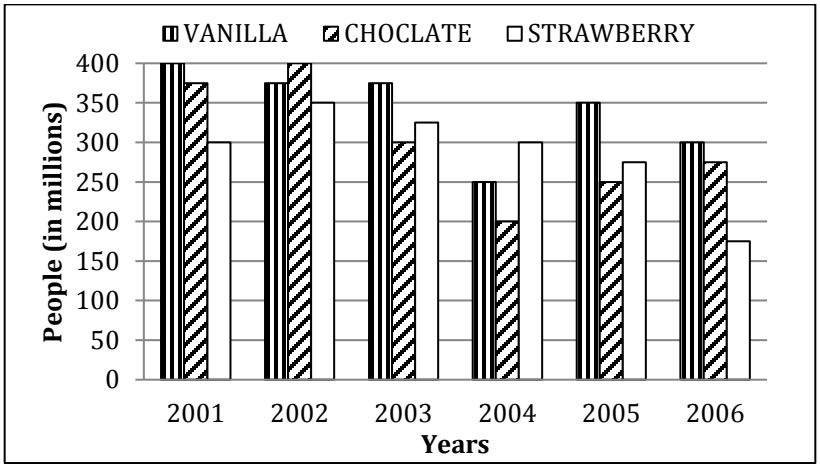
Total personal expenses in 2013+2015 together

$$\frac{25000}{50}\times 34 + \frac{35000}{30}\times 32$$

$$= \frac{510000 + 1120000}{30}$$

$$= \frac{163000}{3} Rs.$$

Directions (36 – 40): Study the following graph carefully and answer the following questions
Preferences of people (man and children) in buying different ice creams flavors over the years



36. People buying chocolate flavor ice cream in year 2002 and 2003 together are approximately what percent more are less than people buying vanilla flavor ice-cream in 2005 and 2006 together?

(a) 5% (b) 8% (c) 12% (d) 15% (e) 11%

Sol. **(b);** People buying chocolate flavor in 2002 and 2003 together= 400 + 300 = 700
People buying vanilla flavor ice – cream in = 2005 *and* 2006 = 350 + 300 = 650
Required percentage = $\frac{50}{650} \times 100 = 7.69$
~ 8% less

37. If ratio of man to children buying strawberry flavor ice cream in 2004 is 7 : 5 and children buying vanilla flavor ice cream in 2002 are 120% of children buying strawberry flavor in 2004 then what number of people except children buy vanilla flavor in 2002
(a) 150 (b) 175 (c) 200 (d) 225 (e) None of these

37. **(d);** People buying vanilla flavor in 2002 except children= 375 − 150
= 225

38. People buying vanilla flavor ice cream in 2003 are approximately what percent less than people buying all three flavors in 2005?
(a) 35% (b) 57% (c) 47% (d) 63% (e) 38%

Sol. **(b);** People buying vanilla flavor in 2003 = 375
People buying all three flavor in 2005 = 350+ 250 + 275= 875
Required percentage = $\frac{875-375}{875} \times 100 \sim 57\%$

39. What is the ratio of people buying vanilla flavor in 2001, 2004 and 2006 together to the people buying strawberry flavor over all year
(a) $\frac{38}{69}$ (b) $\frac{13}{69}$ (c) $\frac{31}{29}$ (d) $\frac{53}{23}$ (e) None of these

Sol. **(a);** People buying vanilla flavor ice-creams in 2001, 2004 and 2006 = 400 +250 + 300
= 950
People buying strawberry flavor over all years
= 300 + 350 + 325 + 300 + 275 + 175 = 1725
Required ratio = $\frac{950}{1725} = \frac{38}{69}$

40. Average of people buying vanilla flavor in 2004 and 2006 together is X and if people buying chocolate flavor in 2007 are $\frac{100}{11}$%percent more than X. Find number of people buying chocolate flavor in 2007
(a) 300 (b) 400 (c) 350 (d) 500 (e) 250

Sol. **(a);** X= $\frac{550}{2} = 275$
Number of people buying chocolate in 2007 = $\left(100 + \frac{100}{11}\right)\% \, 275$
= $\frac{1200}{11\times100} \times 275 = 300$

Directions (41-45): Study the following bar graph and answer the questions that follow.
Given below is the bar graph which shows the number of voters in five different villages A, B, C, D and E in three different years i.e. year 2014, 2015 and 2016.

41. If $\frac{110}{3}$% of voters 2016 from village A are female then number of male votersin 2016from village A are what percent of male voters in village C in 2015 if female voters in 2015 from village C are $\frac{200}{3}$% more than male voters in 2015 from village C.

(a) $125\frac{1}{3}$% (b) $126\frac{2}{3}$% (c) $118\frac{5}{7}$% (d) $115\frac{2}{7}$% (e) $110\frac{1}{3}$%

Sol. (b); Females voters in 2016from village A= $\frac{110}{100\times3}\times 300 = 110$

Let males voters in 2015 from village C = x

So,

$x + \left(x + \frac{2}{3}x\right) = 400$

$\frac{8}{3}x = 400 \implies x = 150$

$Requiredpercentage = \frac{300-110}{150}\times 100$

$= \frac{19}{15}\times 100 \implies = \frac{380}{3}\%$

$= 126\frac{2}{3}\%$

42. If total number of female voters in 2016 from all villages together is 47.5% of total voters in 2014 from all villages together then what is the ratio of total male voters to total female votersin 2016 from all villages together.

(a) 22 : 19 (b) 23 : 18 (c) 25 : 19 (d) 24 : 17 (e) 22 : 15

Sol. **(a);** Total females voters in 2016 from all villages together = $\frac{47.5}{100}\times 2000 = 950$

Required ratio = (2050 – 950) : 950

= 1100 : 950 = 22 : 19

43. What is the difference between total voters in 2015 from all villages together to the total voters in 2016 from all villages together.

(a) 50 (b) 75 (c) 100 (d) 200 (e) 150

Sol. **(c);** Required difference = 2150 – 2050 = 100

44. If $\frac{100}{3}$% of total votersin all the three years from village A left the village and number of votersin all the three years(i.e.) 2014, 2015 and 2016 who leave the village A are in the ratio 23 : 21 : 26 respectively, then remaining voters in 2016 from village A are what percent of voters in 2015 from village D.

(a) 41.25% (b) 46.5% (c) 36.25% (d) 43.5% (e) 42.5%

Sol. **(e);** Total voters in all the three years together who leave village A= $\frac{1}{3}\times 1050$

$= 350$

Voters in 2014., 2015 and 2016 who leave village A are

$\frac{350}{70}\times 23,\ \frac{350}{70}\times 21\ and\ \frac{350}{70}\times 26\ respectively$

Remaining voters in 2016 from village A = $300 - \frac{350}{70}\times 26$

$= 300 - 130 = 170$

$Requiredpercentage = \frac{170}{400}\times 100 = \frac{170}{4}\% = 42.5\%$

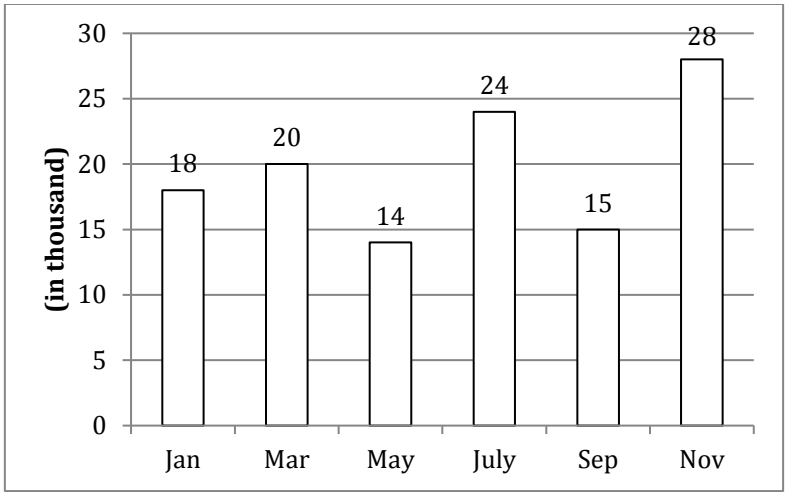
45. Total voters in all the three yearsfrom village A and C together are what percent of total voters in all the three years from village D and E together.

(a) $\frac{2350}{27}$% (b) $\frac{2450}{27}$% (c) $\frac{2850}{23}$% (d) $\frac{2430}{27}$% (e) $\frac{2122}{23}$%

Sol. **(a);** $Requiredpercentage = \frac{1050+1300}{1250+1450}\times 100 = \frac{2350}{2700}\times 100 = \frac{2350}{27}\%$

Directions (46-50): Study the bar-graph and table and find solution of given question.

Bar-graph given below shows the number of laptops sold (in thousands) in different months and table shows the ratio between two types of Laptop sold in these months.



	Dell	:	HP
Jan	5	:	4
Mar	2	:	3
May	4	:	3
July	3	:	5
Sept	7	:	3
Nov	2	:	5

Note: Only two types of laptop (Dell and HP) are selling in these given months.

46. Find the ratio between the Dell laptop sold in May and November together to HP laptop sold in Jan and July together ?
(a) 23 : 16 (b) 16 : 23 (c) 15 : 23 (d) 23 : 15 (e) 16 : 15

Sol. **(b);** Dell laptop sold in May and November together $= \frac{4}{7} \times 14{,}000 + \frac{2}{7} \times 28{,}000$
$= 8{,}000 + 8{,}000 \;\; = 16{,}0000$
HP laptop sold in Jan and July together $= \frac{4}{9} \times 18{,}000 + \frac{5}{8} \times 24{,}000$
$= 8{,}000 + 15{,}000 = 23{,}000$

$$DesiredRatio = \frac{16{,}000}{230000} = \frac{16}{23}$$

47. Number of HP laptops sold in Nov. is how much percentage more or less than the number of Dell laptop sold in March and May together ?
(a) 10% (b) 20% (c) 30% (d) 40% (e) 25%

Sol. **(e);** $HPlaptopsoldinNov. = \frac{5}{7} \times 28{,}000 = 20{,}000$
Dell laptop sold in March and May$= \frac{2}{5} \times 20{,}000 + \frac{4}{7} \times 14{,}000$
$= 8{,}000 + 8{,}000 = 16{,}000$
$Desired\% = \frac{20{,}000 - 16{,}000}{16{,}000} \times 100 \;\; = 25\%$

48. If in the month of August, sale of Dell laptop increases by $33\frac{1}{3}\%$ and sale of HP Laptop also increase by $33\frac{1}{3}\%$ as compare to previous month, then find the number of laptop sold in August ?
(a) 24,000 (b) 32,000 (c) 30,000 (d) 28,000 (e) 35,000

Sol. **(b);** Dell laptop sold in August$= \frac{3}{8} \times 24{,}000 \times \frac{4}{3}$
$= 12{,}000$
HP Laptop sold in August
$= \frac{5}{8} \times 24{,}000 \times \frac{4}{3} \;\; = 20{,}000$
Total laptop sold in August = 12,000 + 20,000
= 32,000

49. If due to some reasons, 10% of Dell laptops and 20% of HP laptops not sold in the month of Jan then what is the total number of laptops sold in Jan ?
(a) 14,600 (b) 14,500 (c) 15,800 (d) 15,400 (e) 15,100

Sol. **(d);** Dell Laptop sold in Jan

$= \frac{5}{9} \times 18{,}000 \times \frac{90}{100} = 9{,}000$

$HPlaptopsoldinJan = \frac{4}{9} \times 18{,}000 \times \frac{80}{100} = 6400$

Total laptop sold in Jan = 9,000 + 6,400 = 15,400

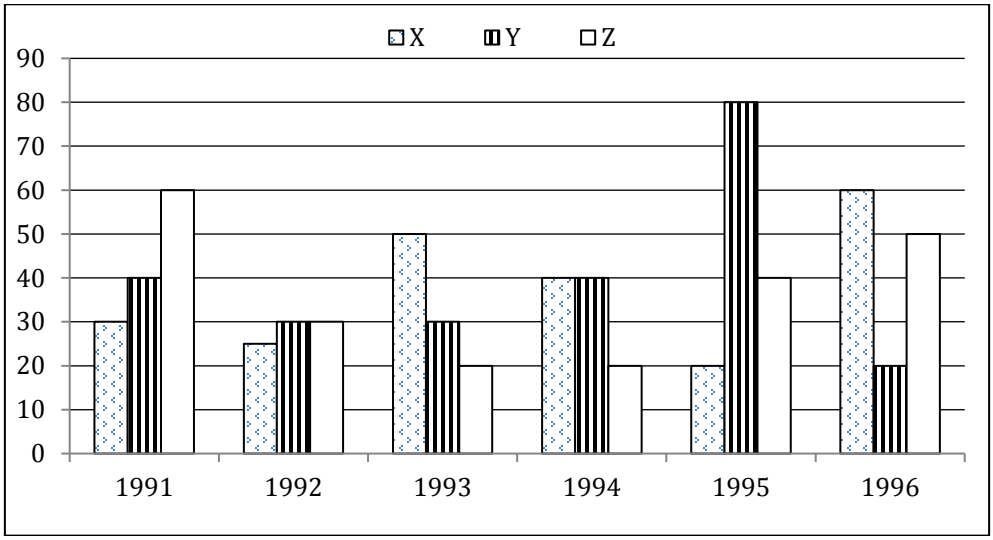
50. How much percentage increase in sale of number of laptops from July to Nov. ?

(a) $16\frac{1}{3}\%$ (b) $16\frac{2}{3}\%$ (c) $14\frac{1}{3}\%$ (d) $14\frac{2}{3}\%$ (e) $15\frac{2}{3}\%$

Sol. **(b);** $Desired\ \% = \frac{28{,}000-24{,}000}{24{,}000} \times 100 = \frac{4}{24} \times 100 = \frac{100}{6}\% = \frac{50}{3}\% = 16\frac{2}{3}\%$

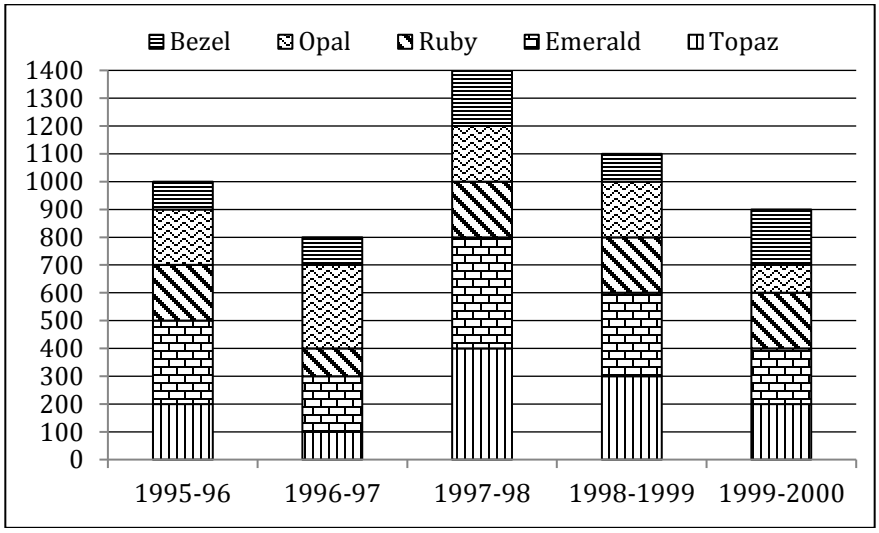
PREVIOUS YEAR QUESTIONS

Directions(1-5): The following chart represent the percentage of profit by companies X, Y and Z in given six years



1. If Income of X in 1992 is equal to expenditure of Y in 1994, what is the profit of X in 1992 if income of Y in 1994 is Rs. 7 Lac.
   (a) 2,00,000 (b) 3,00,000 (c) 1,00,000 (d) 1,54,000 (e) None of these
2. What is the average income (in lakh approx) of X in all these years if expenditure of X in 1991 is Rs 1 Lac and it increases by Rs. 50,000 every year (approx)?
   (a) 2.14 (b) 3.146 (c) 2 (d) 3.5 (e) 4.2
3. In 1995, expenditure of x,y and z are in ratio 2:3:5. What will be the ratio of their profits?
   (a) 1:6:5 (b) 2:5:6 (c) 1:3:2 (d) 2:3:2 (e) 1:6:8
4. Income of X in 1993 is Rs. 4,00,000 which is 20% less than the expenditure of Z in the same year. What is the approximate difference between their profits in that year?
   (a) 45000 (b) 15050 (c) 50000 (d) 40000 (e) 33333
5. In which of the following year, the average of profit percent of all three together are minimum?
   (a) 1991 (b)1992 (c)1993 (d)1994 (e)1995

Directions (6-10): The following questions are based on the stacked Bar Chart given below.
Sale of various precious stones (in Thousands) in India for the period of 1995-1996 to 1999-2000



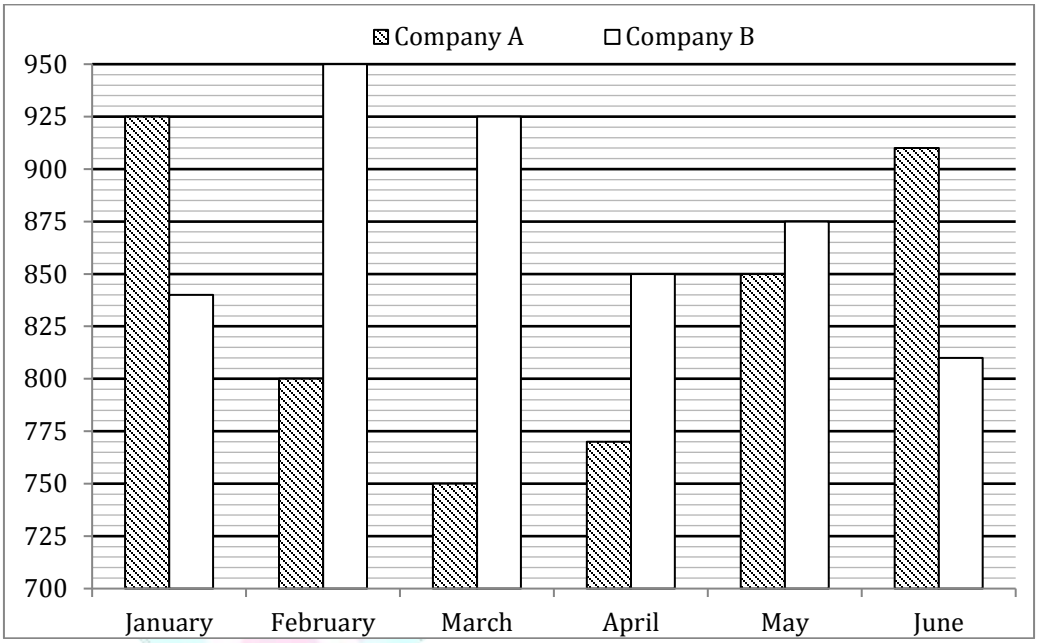
6. Total sales of Ruby is what percent of the total sales of all precious stones for the given period of 1995-2000?
   (a) 17.3% (b) 19.23% (c) 23.1% (d) 25.93 % (e) 18.8%
7. By what per cent is the average annual sales of Emerald for the given period more than the sales of Opal in 1998-99?
   (a) 120% (b) 50% (c) 25% (d) 40% (e) none of these

8. For how many years is the total sales of Bezel as a percentage of the total sales of precious stones is less than that of Topaz?
(a) 1 (b) 2 (c) 3 (d) 4 (e) none of these

9. If the sales of Topaz increased from 1994-95 to 1995-96 by 25% and increased from 1999-2000 to 2000-01 by 50%, then what is the difference between the sales of Topaz in1994-95 and that in 2000-01 ?
(a) 50000 (b) 100000 (c) 140000 (d) 160000 (e)150000

10. Which of the given precious stones experienced the highest percentage growth in its sales in any year over that of the previous year for the period 1996-97 to 1999-2000?
(a) Topaz (b) Emerald (c) Ruby (d) Bezel (e) opal

Directions (11-15): The following bar graph shows the production of cars in 6 months by 2 companies (A and B). Read the graph carefully and answer the following questions



11. If in July there is an increase of $8\frac{72}{91}\%$ in the production of car of company A with respect to that of in June and there is a decrease of $13\frac{47}{81}\%$ in the production of car of company B with respect to that of in June then find the difference between the production of car of company A in July to that of company B in July.
(a) 290 (b) 300 (c) 275 (d) 270 (e) None of these

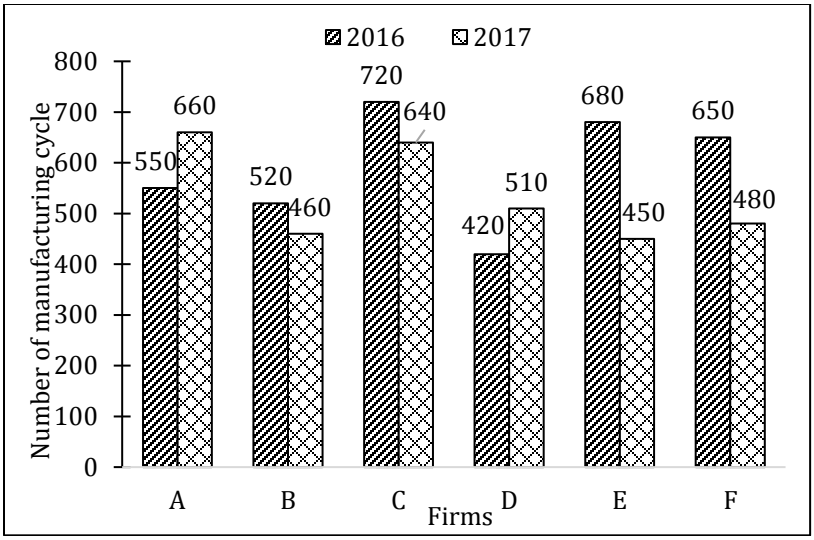
12. Find the ratio between the total production of cars of company A from Feb to Apr and the total production of cars of company B from Apr to June.
(a) 507 : 464 (b) 464 : 507 (c) 275 : 119 (d) 507 : 23 (e) None of these

13. The total production of cars of company B in Jan and June together are what percentage more/less than the total production of cars of company A in Apr and May together?
(a) $1\frac{26}{27}\%$ (b) $1\frac{13}{27}\%$ (c) $1\frac{23}{29}\%$ (d) $1\frac{23}{27}\%$ (e) None of these

14. Out of the total production of cars of company A from Jan to June together, 2450 cars are defective then the defective cars of company A from Jan to June together is what percent of the total production of cars of company B from Jan to June together?
(a) $48\frac{1}{3}\%$ (b) $48\frac{2}{3}\%$ (c) $46\frac{2}{3}\%$ (d) $46\frac{1}{3}\%$ (e) None of these

15. Find the ratio between the average of total production of cars of company A and company B in Mar to the average of cars of company A and company B in June.
(a) 507 : 464 (b) 464 : 507 (c) 275 : 119 (d) 507 : 239 (e) 335 : 344

Directions (16-20): Given below is the bar graph showing the production of cycles by 6 firms A, B, C, D, E and F in two consecutive year 2016 and in 2017.



16. What is difference between average production of cycle by all six firms in 2016 and 2017 ?
(a) $53\frac{1}{3}$ (b)$56\frac{2}{3}$ (c)$71\frac{2}{3}$ (d)$55\frac{5}{6}$ (e)$57\frac{1}{6}$

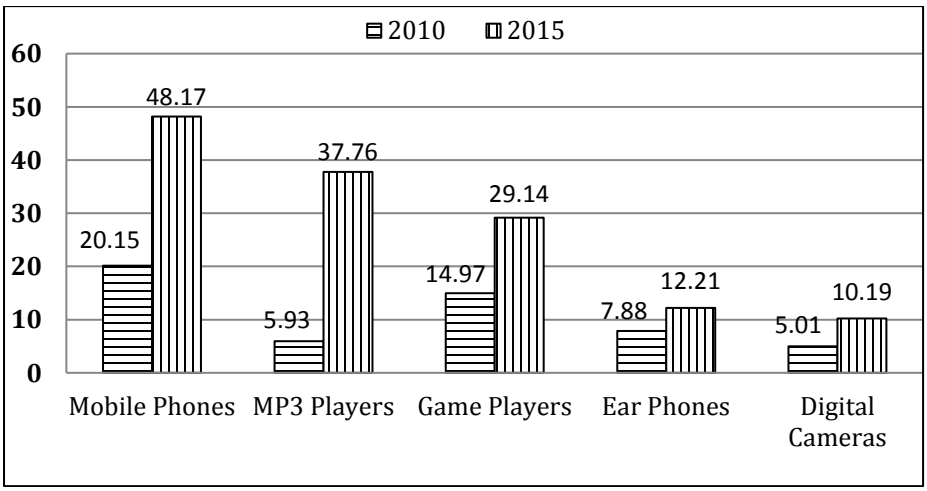
17. If production of cycles of firm C in 2018 increase by 37 ½% in comparison to previous yearand production of firm D in 2018 increases by $17\frac{11}{17}$% in comparison to previous year then what is the sum of production of firm C and D together in 2018 ?
(a) 1140 (b) 1320 (c) 1480 (d) 1460 (e) 1840

18. If $17\frac{13}{11}$% of total productionof firm A in 2016 and $36\frac{4}{11}$% of total production of firm A in 2017 are unsold and ratio between total sold to unsold cycle of firm C in both the years together is 109 : 27. Then total unsold cycle from both the firmis what percent of total sold cycle from both the firm taken together? (approximately)
(a) $31\frac{6}{49}$% (b) $35\frac{6}{49}$% (c) $21\frac{6}{49}$% (d) 33% (e) $23\frac{6}{49}$%

19. What is ratio of production by firm B in 2016 and firm F in 2017 together to the production of firm B in 2017 and C in 2017 together ?
(a) 10 : 17 (b) 10 : 13 (c) 9 : 10 (d) 10 : 11 (e) 5 : 6

20. Total production cost of firm D in 2016 is Rs. 787500 and firm cost Rs. 125 ontransportper cycle. In 2017 the total cost price per cycle is increases by $21\frac{7}{8}$% with respect to year 2016, then find cost price per cycle in 2017 of firm D?(inRs.)
(a) 2437.5 (b) 2337.5 (c) 2415.5 (d) 2435.5 (e) None of these

Directions (21-25): A company produces five different electronics products. The sales of these five products (in lakh number of packs) during 2010 and 2015 are shown in the following bar-graph. The questions given below are based on this graph.
Sales (in lakh no. of packs) of five different products of a company during 2010 and 2015



21. Find average of sales (in lakh no. of packs) of five different product of company during 2010.
(a) 10.788 (b) 11.088 (c) 11.688 (d) 9.788 (e) None of these

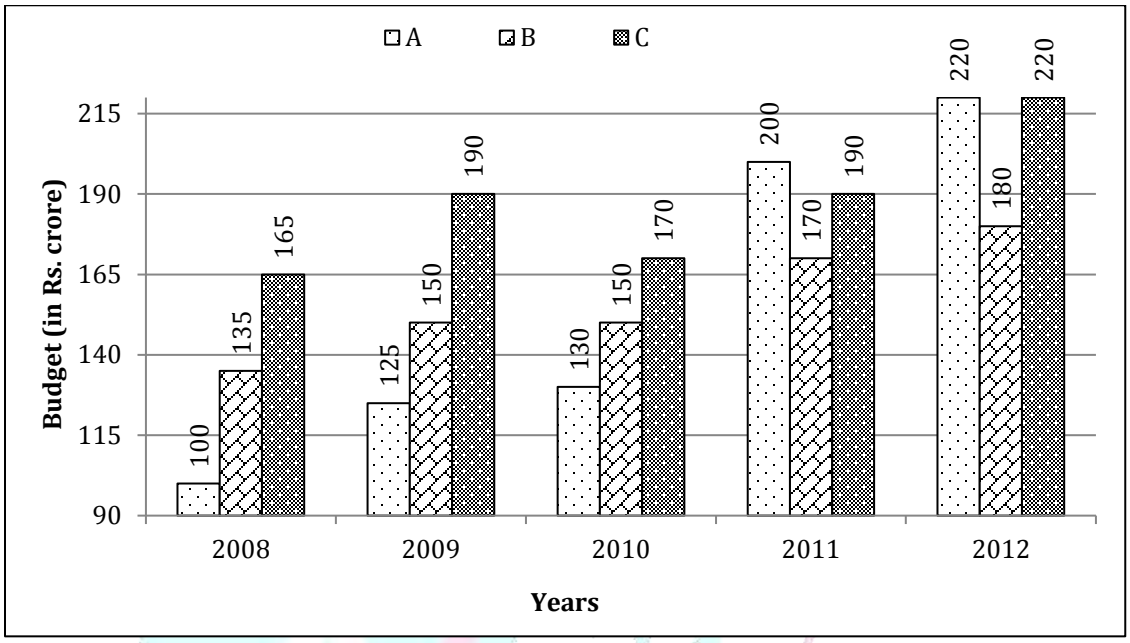
22. Find the product which records minimum increase in sales from 2010 to 2015.
(a) Digital cameras (b) Game-player (c) Earphones (d) MP3 player (e) Mobile Phones

23. Find the ratio of sales of MP3 players and Game players together in 2010 and that of in 2015.
(a) 669 : 209 (b) 209 : 667 (c) 211 : 671 (d) 209 : 669 (e) None of these

24. Find difference between average of sales recorded in Mobile phone, Ear phones and digital cameras together in 2010 and average of sales of Mobiles Phones, MP3 players and Game players in 2015. (approximately)
(a) 2734300 (b) 2533400 (c) 2637300 (d) 2735300 (e) 2834300

25. Find ratio of percentage increase in sales of Earphones and digital cameras from 2010 to 2015.
(a) 1 : 3 (b) 3 : 4 (c) 5 : 6 (d) 5 : 4 (e) None of these

Directions (26-30): Study the following graph carefully and answer these questions.
The following bar graph shows the budget allocation (in Rs. crore) for education in three states A, B and C from year 2008 -12.



26. Average budget of B during 2008 to 2012 is what percent of average budget of A through all these years ?(approximate)
(a) 108% (b) 95% (c) 97% (d) 100% (e) 105%

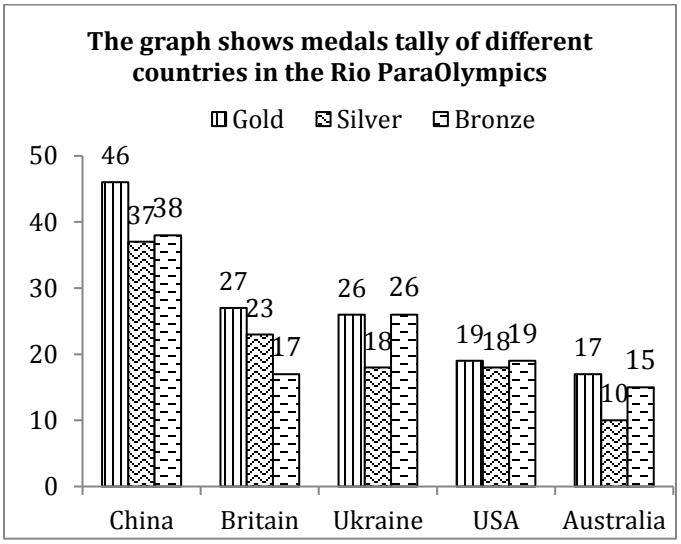
27. In 2012, in state B, 35% of the budget is allocated for boys. In 2013, this was proposed to be increased by 25% of the allocation for boys in 2012. With no other change, what is the percentage increase in budget allocation of state B for 2013 with reference to that of 2012 ?
(a) 35% (b) 8.75% (c) 75% (d) 25% (e) None of these

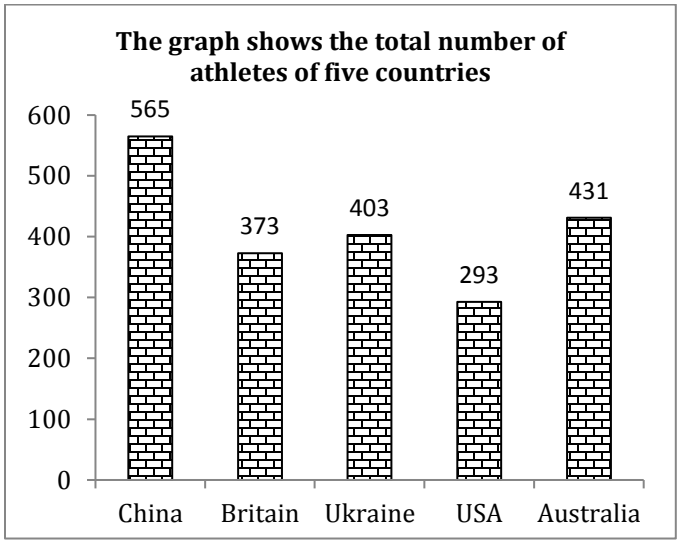
28. In 2011, state A spent three-fourth of the allocated budget for girls education. From this amount, money spent for school education and higher education of girls was in the ratio 7 : 8. How much money was spent for higher education of girls ?
(a) Rs. 60 crore (b) Rs. 80 crore (c) Rs. 63 crore (d) Rs. 42 crore (e) None of these

29. There is an increase of 13% in the budget allocation of state C in 2013 as compared to the average budget allocation from 2009 to 2012 for state C. Find increase/ decrease in the allocation of budget from 2012 ?
(a) Decrease by Rs. 2.475 crore (b) Increase by Rs. 2.475 crore
(c) Decrease by Rs. 8.464 crore (d) Increase by Rs. 6.1925 crore
(e) None of these

30. A total of Rs. 67 crore was spent on primary education in state B in 2008. This included 20% of the total allocated amount for 2008 for state B and the remaining amount was borne by NGOs. The amount shared by NGOs is 125% of its previous year share in state B. About how much did the NGOs contributed in the previous year ?
(a) Rs. 47 crore (b) Rs. 32 crore (c) Rs. 28 crore (d) Rs. 36 crore (e) Rs 40 crore

Directions (31-35): Study the bar graph carefully and answer the questions given below:





31. The total number of athletes except from the China, who bagged medals is what per cent of the total number of athletes from those countries?
(a) $15\frac{2}{3}\%$ (b) $16\frac{2}{3}\%$ (c) $17\frac{2}{3}\%$ (d) $18\frac{2}{3}\%$ (e) $14\frac{2}{3}\%$

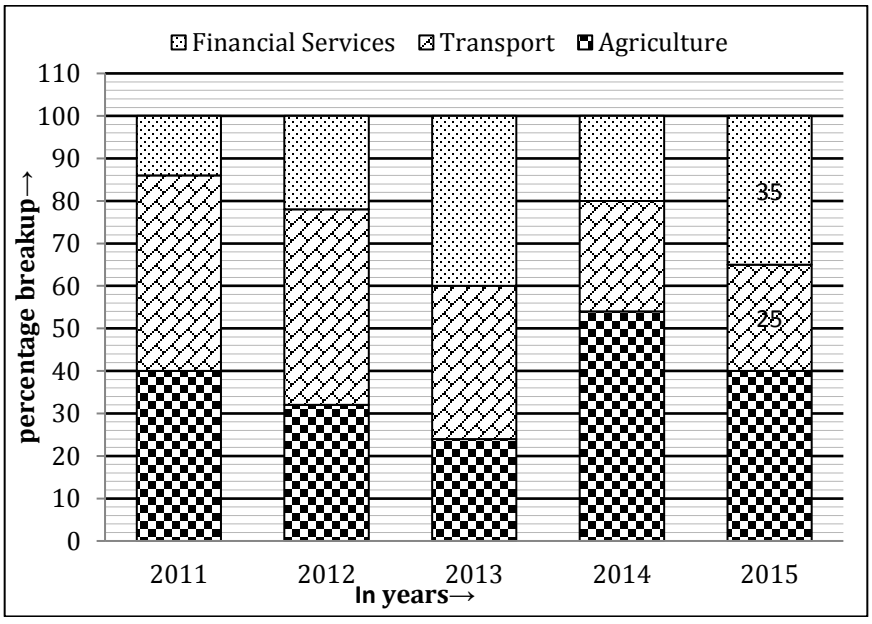
32. If the total number of medals bagged by USA in the previous ParaOlympics was less by 25% in comparison to the Rio ParaOlympics, then what was the total number of medals bagged by USA in the previous ParaOlympics ?
(a) 40 (b) 56 (c) 50 (d) 42 (e) 48

33. The total number of athletes from the China who bagged medals is approximately what per cent of the total number of athletes from the China ?
(a) 12% (b) 28% (c) 21% (d) 19% (e) 24%

34. If in USA each gold medalist received $ 180000, each silver medalist received $90000 and each bronze medalist received $45000 then what is the sum of the total amount received by USA athletes ?
(a)$6000000 (b) $5695000 (c) $5800000 (d) $5895000 (e) $5985000

35. What is the ratio of the total number of athletes from the China who did not bag medals to the total number of athletes from Ukraine who did not bag medals ?
(a) 3 : 4 (b) 4 : 3 (c) 2 : 3 (d) 3 : 5 (e) 3:4

Directions (36-40): The following bar graph shows the percentage break-up of expenditure of India by department of economic affairs from year 2011 to 2015. With the given information, find the following questions.



36. If the total expenditure in year 2014 is 150 crore and expenditure on transport in year 2013 is 10% more than expenditure on financial services in year 2015 the find the total expenditure on Agriculture in year 2013 if there is a increase of $26\frac{2}{3}\%$ in total expenditure in 2015 as compare to 2014. (Rounded off to two decimal points)
(a) 48.76 (b) 63.67 (c) 43.37 (d) 46.76 (e) 42.37

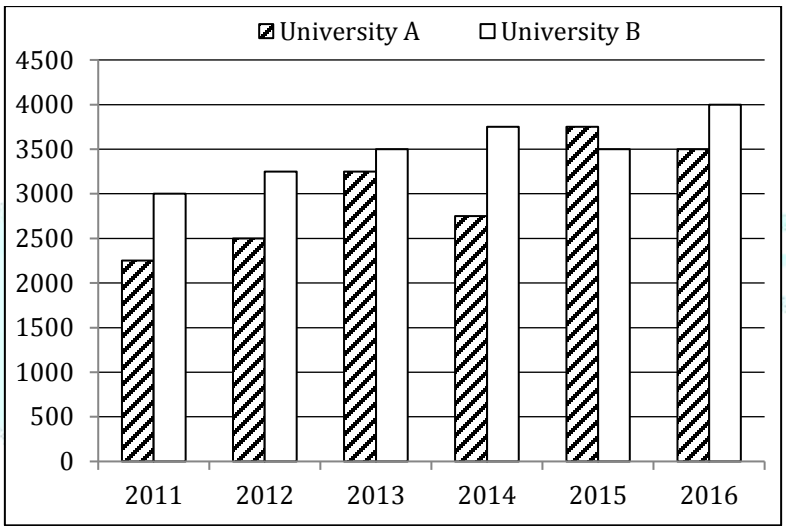
37. Expenditure on financial services in year 2013 is what percent more/less than the expenditure on Agriculture in the same year ?
(a) $133\frac{1}{3}\%$ (b) $33\frac{1}{3}\%$ (c) $66\frac{2}{3}\%$ (d) $62\frac{1}{2}\%$ (e) $67\frac{1}{3}\%$

38. If the ratio of expenditure on financial services in the year 2012 and 2015 are in the ratio 7 : 5. Then what is the ratio of expenditure on Transport in the year 2012 to 2015.
(a) 1123 : 271 (b)1129 : 413 (c)1133 : 353 (d)1127 : 275 (e)275:1127

39. If the expenditure on financial services in 2012 is $\frac{3}{2}$th of the expenditure on Agriculture in 2014. Then what is the approximately total expenditure on transport in 2012. (Given that total expenditure in 2014 is Rs. 300 crore)
(a) 524 crore (b) 512 crore (c) 498 crore (d) 508 crore (e) 580 crore

40. In every year there is an increase of 40% in total expenditure as compared to previous total expenditure then what is the ratio of total expenditure in 2015 to the expenditure on financial services in 2013 ?
(a) 49:10 (b) 47:11 (c) 53:17 (d) 11:43 (e) 10:49

Direction (41-45): Refer the following bar graph and table and answer the questions based on them.
Number of students applied for universities A and B from year 2011 to 2016:



Ratio of boys to girls applied for universities A and B from year 2011 to 2016:

Years	University ABoys : Girls	University B Boys : Girls
2011	5 : 4	7 : 5
2012	3 : 7	5 : 8
2013	7 : 6	1 : 1
2014	6 : 5	2 : 3
2015	7 : 8	3 : 4
2016	4 : 3	9 : 7

41. What is the ratio of number of boys applied for university A in 2011, 2013 and 2015 together to the number of girls applied for university B in 2012, 2014 and 2016 together?
(a) 17 : 24 (b) 24 : 17 (c) 24 : 19 (d) 19 : 24 (e) 19:27

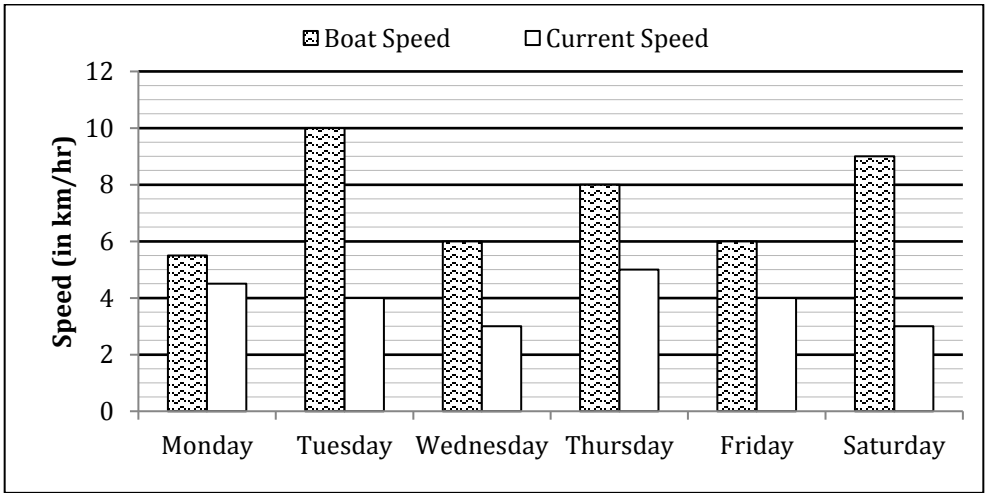
42. What will be the difference between number of students applying for both the university in 2017, if the number of student applying for university A in 2017 is increased by 15% from the previous year while for university B in 2017is decreased by 5% from the previous year?
(a) 175 (b) 225 (c) 325 (d) 275 (e)250

43. Total number of students applied for both university A and B in 2016 is how much percent more than the total number of students applied for both universities in 2014?
(a) $14\frac{5}{13}\%$ (b) $16\frac{5}{13}\%$ (c) $15\frac{5}{13}\%$ (d) $18\frac{5}{13}\%$ (e) $17\frac{5}{13}\%$

44. What is the difference between the average number of students applied for both universities for the given years?
(a) 500 (b) 600 (c) 450 (d) 550 (e)525

45. For which year, the difference between number of student applied for both the universities is maximum.
(a) 2016 (b) 2014 (c) 2012 (d) 2011 (e) None of these

Directions (46-50): The following Line Chart represents the speed of current and boat for week days except Sunday for a person going to various places after travelling partially in river and partially on land . The table shows the places he visited on weekdays. (Assume Speed for Crossing river on return journey is downstream speed)



Places	Total Distance from the persons place (in kms.)	Distance Covered by Boat (in kms.)
Meena Bazar	50	30
Bara Imambara	100	75
Janeshwar Park	85	80
Secretariat	130	81

46. If the person visited Meena Bazar and Secretariat on Monday and Wednesday respectively, the time he takes to cross the river both ways on Wednesday is how many times the time he takes to cross the river on return journey on Monday ?
(a)12 (b)6 (c)9 (d) 13 (e) 15

47. What is the difference between the total time taken by the person while visiting and returning from BaraImambara on Monday and visiting the Janeshwar Park on Friday?(Land Area covered by Bus @ 40 kmph)
(a)40.635 (b)45.525 (c)43.625 (d) 33.725 (e) 42.325

48. On which day, variation in speed of boat is maximum as compared to previous day?
(a) Tuesday (b) Wednesday (c) Friday (d) Saturday (e) Thursday

49. What is the ratio of time spent on boat while going to Secretariat and Meena Bazar?
(a) 19:31 (b) 11:25 (c) 11:27 (d) 27:10 (e) Can't be determined

50. Distance covered on land while going to Janeshwar Park is what percent of distance covered on land while going to Secretariat?
(a) $8\frac{10}{49}\%$ (b) $10\frac{10}{49}\%$ (c)16% (d) $12\frac{10}{49}\%$ (e) Can't be determined

PREVIOUS YEAR SOLUTIONS

1. (c); Income X_{92} = Exp. Y_{94} = $700000 \times \frac{100}{140} = 5$ Lac

Expenditure X_{92} = $500000 \times \frac{100}{125} = 4lac$

Profit = 5 Lac – 4 Lac = Rs. 1 lac

2. (b); Given Exp. X_{1991} = Rs. 1 lac.

∴Avg. Expenditure of X in all these years = $\frac{1}{6}\left[1 \times \frac{130}{100} + 1.5\left(\frac{125}{100}\right) + 2\left(\frac{150}{100}\right) + 2.5\left(\frac{140}{100}\right) + 3\left(\frac{120}{100}\right) + 3.5\left(\frac{160}{100}\right)\right]$

$= \frac{1}{600}[130+187.5+300+350+360+560]$

= 3.146 Lacs

3. (a); Given, expenditures of X, Y and Z in 2 : 3 : 5 in 1995

Assume, Exp. Of X = 200 ∴ Income X = $200\left(\frac{120}{100}\right)$ = 240, Profit = 40

Exp. Of Y = 300 ∴ Income Y = $300\left(\frac{180}{100}\right) = 540$, Profit = 240

Exp. Of Z = 500 ∴ Income Z = $500\left(\frac{140}{100}\right) = 700$, Profit = 200

∴ Ratio of their profit = 40 : 240 : 200 = 1 : 6 : 5

4. (e); Income X_{93} = 4,00,000

∴ Exp. Z_{93} = $400000\left[\frac{100}{80}\right] = 5{,}00{,}000$

Profit Z_{93} = $5{,}00{,}000\left[\frac{20}{100}\right] = 1{,}00{,}000$

Profit X_{93} = $400000 - \frac{800000}{3} = 133333.33\ lakh$

∴ required difference ≈ 33333

5. (b); Clearly from the graph;

In 1991,avg. Of 30+40+60= $\frac{130}{3}$

1992, Avgof 25 + 30 + 30 = $\frac{85}{3}$

1993, Avgof 50 + 30 + 20 = $\frac{100}{3}$

1994, Avgof 40 + 40 + 20 = $\frac{100}{3}$

1995 Avg of 20+80+40= $\frac{140}{3}$

1996, Avgof 60 + 20 + 50 = $\frac{130}{3}$

Hence, years 1992 have minimum avg of profit of all three together.

6. (a); Total sales of all the stones = 1000 + 800 + 1400 + 1100 + 900 = 5200

Total sale of Ruby = 200 + 100 + 200 + 200 + 200 = 900

Required % = $\frac{900}{5200} \times 100 = 17.3\%$

7. (d); Average sales of Emerald = $\frac{1400}{5} = 280$

Sales of Opal in 1998-99 = 200

∴Required % = $\frac{280-200}{200} \times 100 = 40\%$

8. (c); The production of Bezel is less than that of Topaz during 1995-96, 1997-98 and 1998-99.

∴ Required No. of years → 3

9. (c); Sale of Topaz in 1994-95 = $\frac{200000}{1.25} = 160000$

Sale of Topaz in 2000-2001 = 200000 × 1.5 = 300000

∴ Required difference in sales = 3,00,000 − 1,60,000 = 1,40,000

10. (a); From the chart we can easily see that Topaz is the required stone which experienced the highest % growth.

11. (a); $8\frac{72}{91}\% = \frac{8}{91}$

$13\frac{47}{81}\% = \frac{11}{81}$

Production of car of company A in July

$= 910 + \frac{8}{91} \times 910$

$= 910 + 80 = 990$

Production of car of company B in July

$= 810 - \frac{11}{81} \times 810$

= 810 – 110= 700

Required difference = 990 – 700 = 290

12. (b); Required Ratio = (800 + 750 + 770) : (850 + 875 + 810) = (2320) : (2535) = 464 : 507

13. (d); Total production of Cars of company B in Jan and June together = 840 + 810 = 1650

Total production of Cars of company A in April and May together = 770 + 850 = 1620

$Required\ \% = \frac{1650-1620}{1620} \times 100 = 1\frac{23}{27}\%$

14. (c); Defectives Cars of company A from Jan to July = 2450

$Required\ \% = \frac{2450}{5250} \times 100 = 46\frac{2}{3}\%$

15. (e); Required Ratio = $\frac{1675}{2} : \frac{1720}{2}$ = 1675 : 1720 = 335 : 344

16. (b); Average production in 2016

$= \frac{(550+520+720+420+680+650)}{6}$

Average production in 2017

$= \frac{(660+460+640+510+450+480)}{6}$

$Required\ difference = \frac{3540}{6} - \frac{3200}{6}$

$= \frac{340}{6} = 170/3 = 56\frac{2}{3}$

17. (c); Firm C production in 2018

$= 640 \times \frac{137.5}{100} = 880$

Firm D production in 2018

$= 510 + 510 \times \frac{300}{17} \times \frac{1}{100}$

= 510 + 90 = 600

Required sum = 880 + 600 = 1480

18. (a); Unsold cycle in 2016 of firm A

$= 550 \times \frac{200}{11} \times \frac{1}{100} = 100$

Unsold cycle in 2017 of firm A

$= 660 \times \frac{400}{11} \times \frac{1}{100} = 240$

Total production of firm C in both year

= 720 + 640 = 1360

Total unsold cycle of firm C in both year together

$= \frac{1360}{(109+27)} \times 27 = 270$

$Required\ \% = \frac{(100+240+270)}{(550-100)+(660-240)+(1360-270)} \times 100$

$= \frac{610}{1960} \times 100 = 31\frac{6}{49}\%$

19. (d); $Required\ ratio = \frac{520+480}{460+640}$
$= \frac{1000}{1100} = 10 : 11$

20. (a); Per cycle production cost of firm D in 2016
$= \frac{787500}{420} = 1875\ Rs.$
Per cycle cost price in 2016 = 1875 + 125 = 2000 Rs.
Per cycle cost price in 2017 of firm D
$= 2000 + 2000 \times \frac{175}{8} \times \frac{1}{100}$
= 2000 + 437.5= 2437.5 Rs.

21. (a); $Required\ average = \frac{20.15+5.93+14.97+7.88+5.01}{5}$
$= 10.788\ lakh\ packs$

22. (c); It is clearly visible in bar-graph that sales of Earphone increased minimum.

23. (d); $Required\ Ratio = \frac{5.93+14.97}{37.76+29.14} = \frac{209}{669}$

24. (a); Average of sales of mobile phone, Earphone and Digital Camera in 2010
$= \frac{20.15+7.88+5.01}{3} = \frac{33.04}{3}$
Average of sales of mobile phone, MP3 Players and Game players in 2015
$= \frac{48.17+37.76+29.14}{3} = \frac{115.07}{3}$
$Required\ Difference = \frac{115.07-33.04}{3}$
$= 27.343\ or\ 2734300\ packs$

25. (e); $Required\ Ratio = \frac{\left(\frac{12.21-7.88}{7.88}\right)\times 100}{\left(\frac{10.19-5.01}{5.01}\right)\times 100} = \frac{433\times 501}{788\times 518}$

26. (d); Average Budget of B during 2008-12 $= \frac{785}{5} = 157$
Average budget of A during 2008-12 $= \frac{775}{5} = 155$
Required % $= \frac{157}{155} \times 100 = 100\%\ approximately$

27. (b); Budget allocated for boys in 2012 = 35% of 180
= 63 crore
Now in 2013, 25% more was increased
Then, increase in budget for boys in 2013
= 25% of 63= 15.75
Required % $= \frac{15.75}{180} \times 100$= 8.75%

28. (b); Budget allocated for girls education in 2011 from state A $= \frac{3}{4} \times 200$ = 150 crore
Amount spent on higher education $= \frac{8}{15} \times 150$
= 80 crore

29. (a); Average budget of C from 2009 to 2012
$= \frac{770}{4} = 192.5$ crore
Now budget in 2013 = 113% of 192.5
= 217.525 crore
Decrease in budget = 220 − 217.525
= 2.475 crore

30. (b); Share allocated from budget = 20% of 135
= 27 crore
Shares of NGOs = 67 − 27 = 40 crore
Now, let the share of NGOs in previous year be x
∴ 125% of x = 40
x = 32 crore

31. (a); Total number of athletes except from who china who bagged medals
Medals = 67 + 70 + 56 + 42 = 235
Total number of athlets participated except from China
= 373 + 403 + 293 + 431= 1500
Required percent = $\frac{235}{1500} \times 100 = 15\frac{2}{3}\%$

32. (d); Total Number of medals bagged by USA in the previous paraOlympics
$= \frac{75}{100} \times (19 + 18 + 19) = \frac{3}{4} \times 56$ = 42

33. (c); Required percentage = $\frac{46+37+38}{565} \times 100$
$= \frac{121}{565} \times 100 = 21\%$

34. (d); Total amount received by USA athletes
= 180000 × 19 + 90000 × 18 + 45000 × 19
= 3420000 + 1620000 + 855000
= 5895000

35. (b); Required ratio = $\frac{565-(46+37+38)}{403-(26+26+18)}$
$= \frac{444}{333} = \frac{4}{3}$

36. (a); Total expenditure in 2015 = $126\frac{2}{3}\%$ of 150
= 190 crore
Expenditure on financial services in 2015 = $\frac{35}{100} \times 190 = 66.5$ crore
Expenditure on Transport in 2013 = $\frac{110}{100} \times 66.5$
= 73.15 crore
Required expenditure = $\frac{73.15}{36} \times 24$
$= \frac{2}{3} \times 73.15$
= 48.76 crore

37. (c); Required % = $\frac{40-24}{24} \times 100 = 66\frac{2}{3}\%$

38. (d); Let exp. on financial services in 2012 = 700
Let exp. on financial services in 2015 = 500
Required ratio = $\left(\frac{700}{22} \times 46\right) : \left(\frac{500}{35} \times 25\right)$
$= \frac{7\times 46}{22} : \frac{25}{7} = 1127 : 275$

39. (d); Exp on Agriculture in 2014 = $\frac{54}{100} \times 300 = 162$ crore
Exp. on financial services in 2012 = $162 \times \frac{3}{2}$
= 243 crore
Required exp. = $\frac{243}{22} \times 46 \approx 508$ crore

40. (a); Let exp. in 2013 = 1000
∴ exp. in 2014 = 1400
∴ exp. in 2015 = $\frac{140}{100} \times 1400 = 1960$ crore
Required ratio = $(1960) : \left(\frac{40}{100} \times 1000\right)$
= 1960 : 400
= 49 : 10

41. (d); Number of boys applied for university A in 2011, 2013 and 2015
$= \frac{5}{9} \times 2250 + \frac{7}{13} \times 3250 + \frac{7}{15} \times 3750$
= 4750
Number of girls applied for university B in 2012, 2014 and 2016
$= \frac{8}{13} \times 3250 + \frac{3}{5} \times 3750 + \frac{7}{16} \times 4000$
= 6000
$Required\ Ratio = \frac{4750}{6000} = \frac{19}{24}$

42. (b); Number of students applied for university A in 2017
$= 3500 + \frac{15}{100} \times 3500 = 4025$
Number of students applied for university B in 2017
$= 4000 - \frac{5}{100} \times 4000 = 3800$
Required difference = 4025 – 3800 = 225

43. (c); Total number of students applied for both universities in 2014 = 2750 + 3750 = 6500
Total number of students applied for both universities in 2016 = 3500 + 4000 = 7500
$Required\ percentage = \frac{7500-6500}{6500} \times 100 = 15\frac{5}{13}\%$

44. (a); Total number of student applied for university A = 18000
Total number of students applied for university B = 21000
$Difference\ of\ averages = \frac{21000-18000}{6} = 500$

45. (b); Difference between number of students applied for both the universities:
For 2011 = 750
For 2012 = 750
For 2013 = 250
For 2014 = 1000
For 2015 = 250
For 2016 = 500
Hence, the maximum difference is for the year 2014.

46. (a); MONDAY : $\frac{30}{5.5+4.5} = 3$ hrs
Wednesday : $\frac{81}{6-3} + \frac{81}{6+3} = \frac{81}{3} + \frac{81}{9} = 36$
Required value = $\frac{36}{3} = 12$ times

47. (c); MONDAY: River Area, $\frac{75}{5.5-4.5} + \frac{75}{5.5+4.5} = 75 + 7.5 = 82.5$ hrs
Land Area= $\frac{100-75}{40} \times 2 = \frac{25}{20} = 1.25$ hrs
FRIDAY: $\frac{80}{6-4} = 40$ hrs [water route]
$\frac{5}{40} = \frac{1}{8}$ hrs. = 0.125 hrs [Land route]
Required Diff. = (82.5 + 1.25) – (40 + 0.125)
= 42.5 + 1.25 – 0.125
= 43.625 hrs.

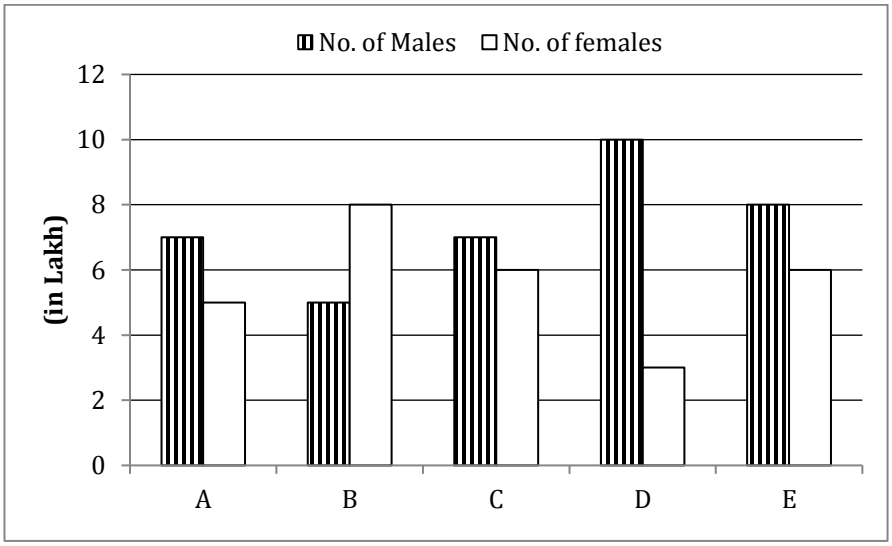
48. (a); It is clearly visible from the graph that speed of the boat vary maximum on Tuesday as compared to previous day.

49. (e); There is no mention of day of the journey. Hence the answer can't be determined.

50. (b); Required percent= $\frac{5}{49} \times 100 = 10\frac{10}{49}\%$

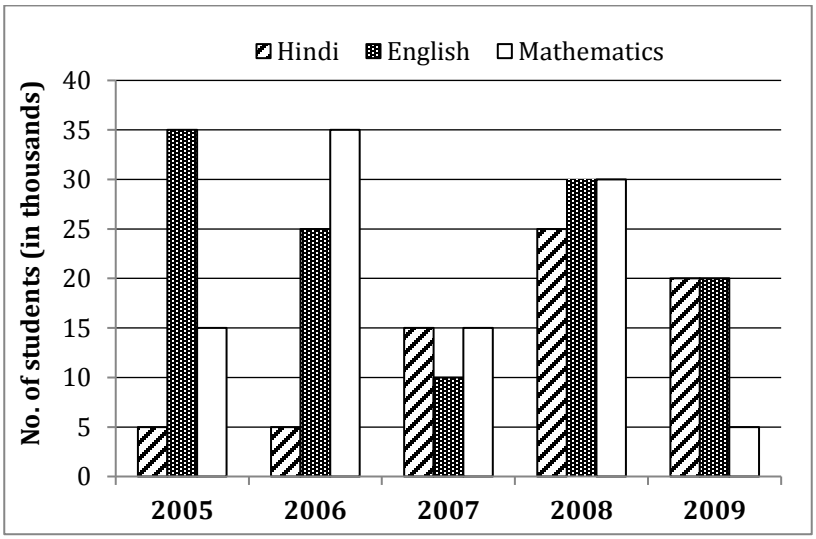
PRACTICE SET (LEVEL–I)

Direction (1-5):-The bar graph shown below shows the number of males and females in five cities A,B,C,D and E. Read the graph and answer the given questions.



1. Which city has the minimum population among the five cities?
   (a) E (b) D (c) C (d) B (e) A
2. If no. of males in city A & B increase by 10% & 20% respectively then what will be the difference in total population of A & B?
   (a) 1 lakh (b) 1.1 lakh (c) 1.2 lakh (d) 1.3 lakh (e) 1.4 lakh
3. Find the ratio of the average no. of males in B, C, D to average no. females in C, D, E ?
   (a) 15 : 23 (b) 15 : 22 (c) 22 : 15 (d) 23 : 15 (e)25:13
4. What is % of females (approximate) in total population?
   (a) 35% (b) 43% (c) 50% (d) 30% (e) 55%
5. If the population of D & B increases by 10% & 15% respectively then what will be the ratio of no. of males in D to no. of females in B?
   (a) 7 : 13 (b) 2 : 1 (c) 1 : 2 (d) Can't be determined (e) None of these

Directions (6-10): No. of students (in thousands) who opted for three different specialization during the given five years in a university.



6. Out of total number of students who opted for the given three subjects, in year 2009 , 38% were girls. How many boys opted for Maths in the same year?
(a) 1124 (b) 1536 (c) 1316 (d) Cannot be determined (e) None of these

7. If the total number of students in the university in the year 2007 was 455030, then the total number of students who opted for the given three subjects were approximately what percent of the total students?
(a) 17% (b) 9% (c) 14% (d) 7% (e) 21%

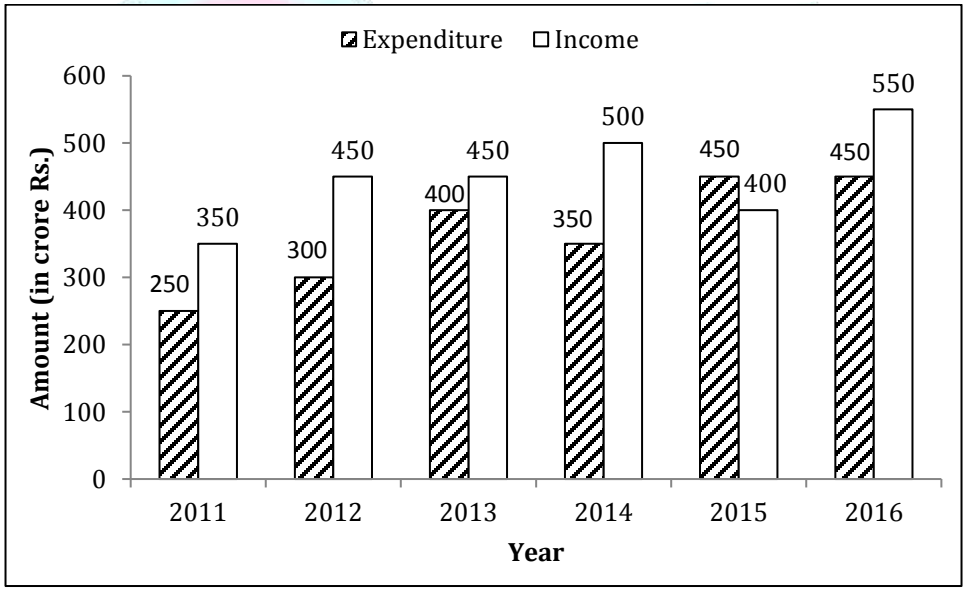
8. What is the total number of students who opted for Hindi and who opted for maths in the years 2006, 2007 and 2009 together?
(a) 97000 (b) 93000 (c) 85000 (d) 96000 (e)95000

9. The total number of students who opted for maths in the years 2005 and 2008 together are approximately what percent of the total number of students who opted for all three subjects in same years?
(a) 36% (b) 24% (c) 44% (d) 32% (e) 46%

10. What is the respective ratio between the number of students who opted for English in the years 2006 and 2008 together to the number of students who opted for Hindi in the years 2005 and 2009 together?
(a) 11 : 5 (b) 11 : 9 (c) 11 : 7 (d) 14 : 3 (e)13:7

Direction (11-15): Study the following graph carefully and answer the questions that follow.
Income and Expenditure of a company during the period 2011 to 2016

Profit/Loss% = $\frac{Income-expenditure}{expenditure} \times 100$



11. What is the overall profit (in crore Rs.) is earned by the company from year 2014 to 2016?
(a) 200 (b) 215 (c) 250 (d) 205 (e) None of these

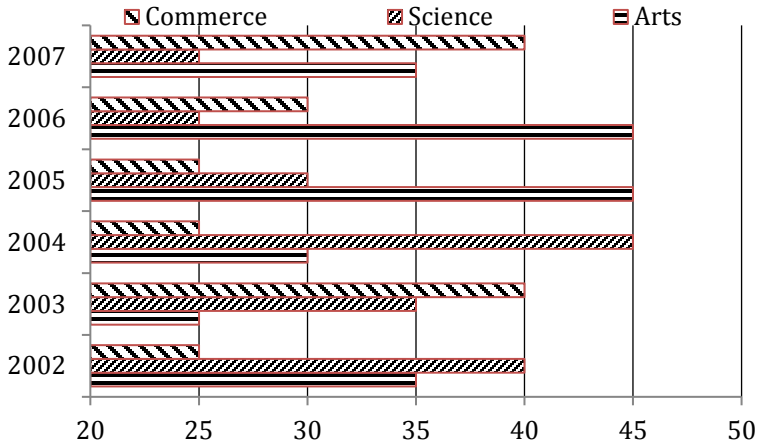
12. What is the average of profit (in crore Rs) earned in even years among the given years ?
(a) 133 (b) 135 (c) 120 (d) 125 (e) None of these

13. In which year is the ratio of difference of income and expenditure to the expenditure maximum?
(a) 2011 (b) 2012 (c) 2013 (d) 2014 (e) None of these

14. Profit in 2012 is what percent more than that in 2016?
(a) 55% (b) 58% (c) 50% (d) 60% (e) None of these

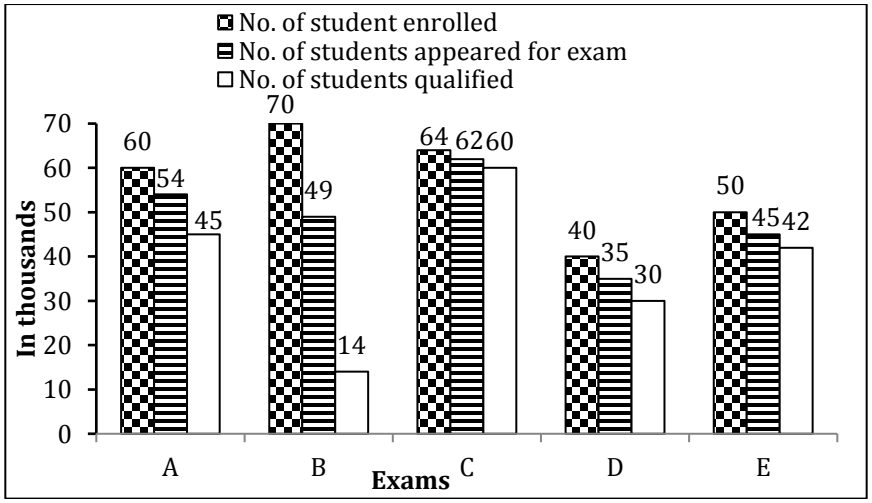
15. By about what percent total income from 2011 to 2013 is more than the total expenditure from 2013-2015 ?
(a) $5\frac{1}{6}\%$ (b) $4\frac{1}{6}\%$ (c) $5\frac{2}{3}\%$ (d) $4\frac{1}{12}\%$ (e) None of these

Directions (16-20) Study the following graph carefully & answer accordingly
The following graph shows the percentage of total number of students in three different disciplines in a certain college for the years 2002-2007



16. The total no. of science student in 2004 was 900 and that of commerce students in 2007 was 700. Find the diff b/w the total number of students in the college in these two years.
(a) 350 (b) 250 (c) 275 (d) 400 (e) 325
17. The average of numerical values of percentage of arts students is approximately how many times the average of numerical values of percentage of commerce students?
(a) 3 (b) 1.5 (c) 2.15 (d) 2 (e) 1.16
18. From 2005 to 2006, there was increment of 20% in total no. of students. If no. of science student in 2006 is 600 then find the total no. of students in arts stream in 2005.
(a) 900 (b) 1000 (c) 950 (d) 800 (e) 700
19. If number of students in arts stream in 2003 was 800. Then find the average number of students in science & Commerce stream in 2003.
(a) 950 (b) 1050 (c) 800 (d) 1200 (e) 1000
20. In 2004, there was 300 students in science stream then find the ratio of no. of students in commerce to the number of students in arts in that year.
(a) 2 : 3 (b) 3 : 5 (c) 5 : 6 (d) 6 : 5 (e) 3 : 2

Directions (21-25): In the following table, detail of five exams (A, B, C, D, and E) is given in which number of students enrolled, number of students appeared out of the enrolled students and number of students qualified out of the appeared students in the given exam is shown. Read the table carefully and answer the given questions.



21. Total number of students qualified in all the five exams is approximately what Percentage of the total students enrolled in all the five examination.
(a) 62% (b) 67% (c) 80% (d) 58% (e) 73%
22. What is the ratio between students enrolled in the exam C & D together to the students appeared for the exam D & E together?
(a) 13 : 9 (b) 9 : 13 (c) 7 : 13 (d) 10 : 13 (e) 13 : 10

23. What is the difference between the Percentage of students appeared for exam 'B'to the Percentage of students appeared for exam 'C'

[Note:- $Percentage of appeared students = \frac{Appeared students}{Enrolled students} \times 100$]

(a) 24.875% (b) 26.875% (c) 28.875% (d) 30.875% (e) 32.875%

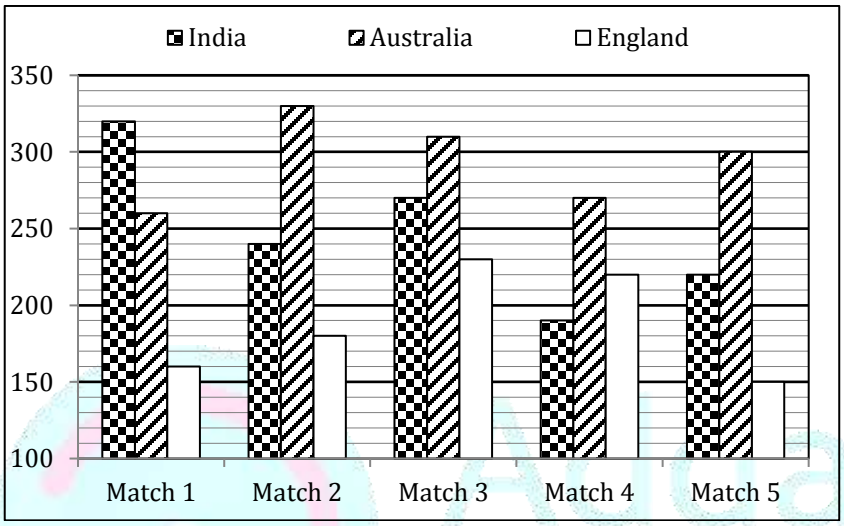
24. If in exam 'A' 25% of the students who enrolled for exam are female, then what is the number of males who qualified the exam A?

(a) 33,750 (b) 45,000 (c) 40,500 (d) Can't be determined (e) None of these

25. Out of the number of students who qualified the exam D, 22% of them disqualified due to malpractice, then find the total number of students who are not qualified in exam D?

(a) 5,000 (b)11600 (c) 5,600 (d) 10,000 (e) 5,445

Directions (26-30): Study the following graph and answer the questions given below.
Runs scored by three different teams in five different cricket matches.



26. The total runs scored by England and Australia in Match 3 together is what percentage of the total runs scored by India in all the five matches together?

(a) $48\frac{17}{31}\%$ (b) $39\frac{17}{31}\%$ (c) $36\frac{17}{31}\%$ (d) $42\frac{17}{31}\%$ (e) $43\frac{17}{31}\%$

27. In which match is the difference between the runs scored by India and England the second highest?

(a) Match 1 (b) Match 2 (c) Match 3 (d) Match 4 (e) Match 5

28. What are the total runs scored by Australia and England in match 4 and in match 2 together?

(a) 1100 (b) 1000 (c) 1300 (d) 1400 (e) 850

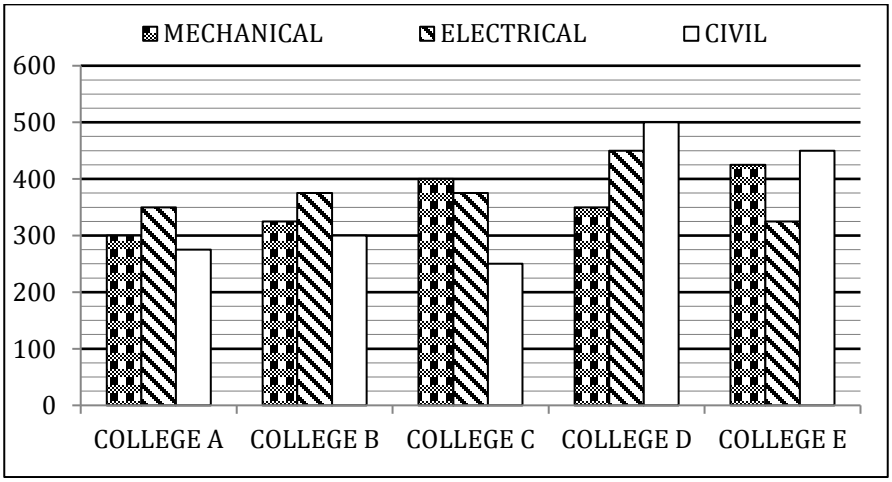
29. What is the ratio of the runs scored by Australia in Match 5, India in Match 2 and England in Match 3?

(a) 5:4:6 (b) 21 :17 : 13 (c) 11 : 3 : 9 (d) 30:24:23 (e) 30:28:23

30. What is the average run scored by all the three teams in Match 2 together?

(a) 280 (b) 270 (c) 275 (d) 285 (e) 250

Directions (31–35) : Study the following graph carefully and answer the questions given below
Number of students enrolled in mechanical , electrical and civil branches of five different colleges in the year 2016



31. Ratio of number of male to female students in electrical discipline from college B is 16 : 9 and total professors from same college and same branch is $\frac{100}{9}$% of total female students from the same branch and same college then, find total number of professor in electrical branch from college B.
(a) 18 (b) 15 (c) 20 (d) 22 (e) 25

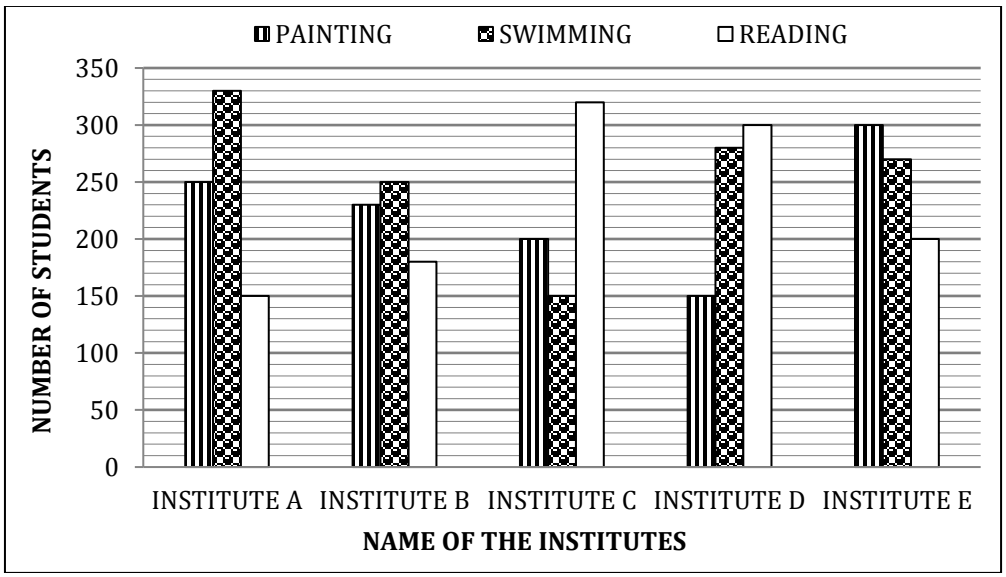
32. If number of male student in civil branch from college D and male students in mechanical branch from college A are equal then what is the percentage of female students in mechanical branch of college A ? Give that ratio of male to female students in civil branch from college D is 13 : 12
(a) $33\frac{1}{3}$% (b) $16\frac{2}{3}$% (c) $13\frac{1}{3}$% (d) $\frac{22}{7}$% (e) None of these

33. If 20% of students in civil branch from college E are transferred to civil branch of college C then find the ratio of students in civil from college C to the total students from college E now.
(a) $\frac{34}{111}$ (b) $\frac{23}{222}$ (c) $\frac{23}{111}$ (d) $\frac{34}{113}$ (e) None of these

34. Average of students in electrical branch from all colleges are what percent less/more than the average students in Civil branch from all colleges together ? (Approximately)
(a) 12% (b) 8% (c) 4% (d) 7% (e) 6%

35. If 20% of total students from College D are failed in yearly exam, 75% of total students are passed from college E in yearly exams then what will be total students in college D and E together in year 2017 if 400 more students are enrolled in 2017 from both colleges D and E together (consider both colleges were opened in 2016 and enrollment is cancelled when a student fails in exam)
(a) 2340 (b) 2900 (c) 2440 (d) 2800 (e) None of these

Directions (36-40): Study the following bar graph carefully and answer the questions given below.
NUMBER OF STUDENTS ENROLLED IN DIFFERENT HOBBY CLASSES IN VARIOUS INSTITUTES



36. What is the ratio of student enrolled from institute B and C together to the student enrolled from institute A and E together?
(a) $\frac{95}{113}$ (b) $\frac{83}{97}$ (c) $\frac{120}{143}$ (d) $\frac{133}{150}$ (e) None of these

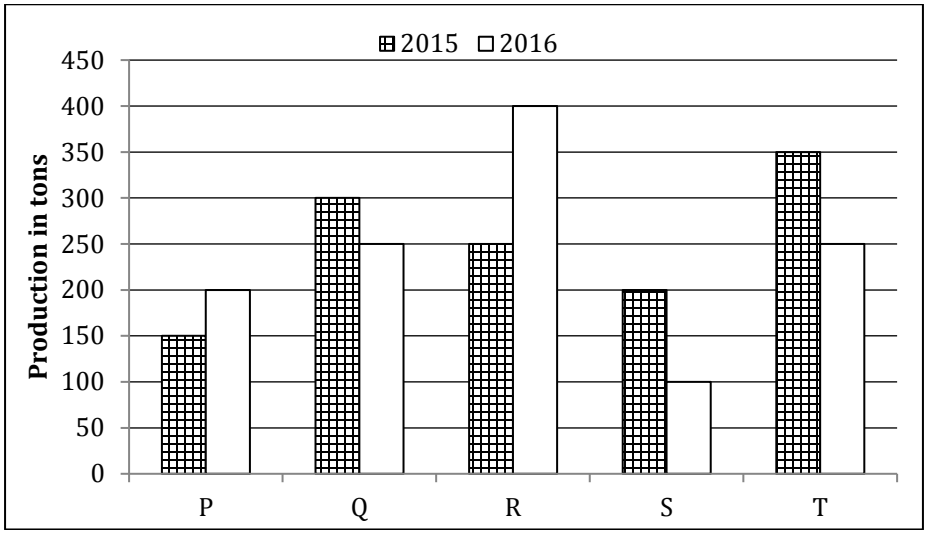
37. Students who like painting from institute A are approximately what percent of the total students enrolled from institute D?
(a) 33% (b) 16% (c) 37% (d) 66% (e) 34%

38. What is the ratio between the average of students enrolled in swimming from all institutes to the average of students enrolled in Reading from all institutes?
(a) $\frac{130}{133}$ (b) $\frac{200}{213}$ (c) $\frac{121}{99}$ (d) $\frac{128}{115}$ (e) None of these

39. If ratio of girls to boys who like swimming form institute E is 14 : 13, then what is the number of girls who like swimming from institute E?
(a) 160 (b) 170 (c) 140 (d)200 (e) None of these

40. Students who are enrolled in reading hobby classes from institute B and E together are approximately what percent more or less than students enrolled for painting classes from institute A and C together?
(a) 18% (b) 19.4% (c) 15.8% (d) 17% (e) 15.5%

Directions (41-45): Given below is the bar graph which shows the production of rice by 5 firms in two consecutive years 2015 and 2016



41. What is difference between the average of rice produced by firm P and S in 2015 to the average of Rice produced by firm Q and T in the same year.
(a) 175 (b) 150 (c) 140 (d) 125 (e) 225

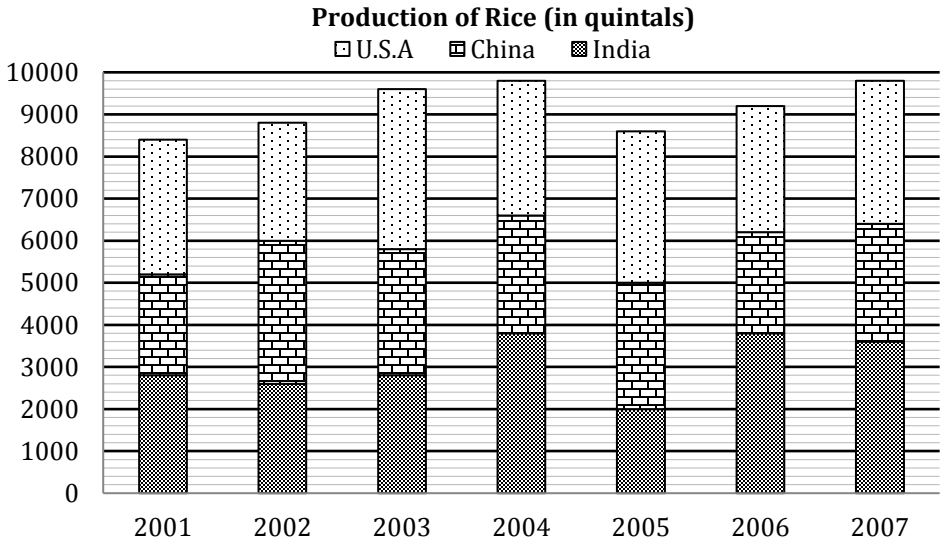
42. What is the ratio of Rice produced by firm P and S in both year to the Rice produced by firm R in 2015 and firm T in 2016 together
(a) 10 : 17 (b) 9 : 5 (c) 5 : 13 (d) 13 : 10 (e) 6 : 7

43. Total Rice produced by all firms in 2015 is what percent more or less than total Rice produced by all firms in 2016
(a) $\frac{25}{3}$% (b) $\frac{100}{3}$% (c) $\frac{100}{6}$% (d) $\frac{50}{3}$% (e) $\frac{25}{6}$%

44. If production of Rice in 2017 by firm Q increase by 20% over previous and that of firm Tincrease by $\frac{100}{7}$% over year 2015, then what is the sum of rice produced by both firm Q & T in 2017.
(a) 400 (b) 600 (c) 700 (d) 500 (e) 550

45. Percentage decrease in the production of Rice for the year 2016 over previous year is maximum for which firm.
(a) Q (b) S (c) T (d) Cannot be determined (e) None of these

Directions (46-50): In the following multiple graphs production of rice (in quintals) by three countries – India, China and U.S.A has been given. Study the following graphs carefully to answer the questions.



46. If the production of rice by India in the years 2003, 2004, 2005 and 2007 increase by 30%, 40%, 45% and 40% respectively, what will be the overall approximate percentage increase in the production of rice in India in these years?
(a) 41% (b) 39% (c) 43% (d) 47% (e) 32%

47. By what per cent is the total production of rice by three countries in the years 2002, 2003 and 2004 more or less than that in the years 2005, 2006 and 2007?
(a) $2\frac{9}{23}\%$ (b) $2\frac{7}{23}\%$ (c) $2\frac{4}{23}\%$ (d) $3\frac{4}{23}\%$ (e) $3\frac{7}{23}$

48. If the productions of rice in U.S.A in the years 2001, 2002, 2003 and 2004 increase by 20%, 25%, 28% and 35% respectively; what will be the approximate percentage increase in the average production of USA for these years?
(a) 32% (b) 22% (c) 24% (d) 27% (e) 29%

49. What was the average production of rice by all three countries in the year 2007? (in quintals)
(a) $1466\frac{2}{3}$ (b) $2566\frac{2}{3}$ (c) $4266\frac{2}{3}$ (d) $2266\frac{1}{3}$ (e) $3266\frac{2}{3}$

50. In the given years, what is the average production of rice in U.S.A? (in quintals)
(a) $3285\frac{5}{7}$ (b) $3186\frac{4}{7}$ (c) $3266\frac{5}{7}$ (d) $3285\frac{4}{7}$ (e) None of these

PRACTICE SET (LEVEL–I) SOLUTIONS

1. (e); Total population is A = 12 lakh
Total population is B = 13 lakh
Total population is C= 13 lakh
Total population is D = 13 lakh
Total population is E = 14 lakh
Lowest or min. Population is in A city

2. (d); Total population in A [after increment]
= 7 lakh × 1.1 + 5 lakh
= 12.7 lakh
Total population in B [after increment]
= 5 lakh × 1.2 + 8 lakh
= 14 lakh
Desired difference = 1.3 lakh

3. (c); Average no. of males in B, C, D is
$= \frac{5\ lak + 7\ lak + 10\ lak}{3}$
$= \frac{22\ lak}{3}$
Average no. of females in C, D, E $= \frac{6\ lak + 3\ lak + 6\ lak}{3}$
$= \frac{15\ lak}{3}$
Deserved ratio $= \frac{22/3}{15/3} = \frac{22}{15}$

4. (b); Total no. of females
$= (5 + 8 + 6 + 3 + 6)$ lakh
$= 28$ lakh
Total population = (12 + 13 + 13 + 13 + 14) lakh
= 65 lakh
% of females $= \frac{28}{65} \times 100 \approx 43\%$

5. (d); Increment is in the total population, since we don't know increment in population of male or female, so we can't find out the ratio.

6. (d); We do not know the number of girls in mathematics

7. (b); Required percentage
$= \frac{40,000}{455030} \times 100 \approx 9\%$

8. (e); Required number of students
= (5 + 35 + 15 + 15 + 20 + 5) × 1000 = 95000

9. (d); Required percentage
$= \left(\frac{15+30}{55+85}\right) \times 100$
$= \frac{45}{140} \times 100 \approx 32\%$

10. (a); Required ratio
$= (25 + 30) : (5 + 20)$
$= 55 : 25 = 11 : 5$

11. (a); Required profit = (500 + 400 + 550) – (350 + 450 + 450)
= 1450 – 1250
= Rs 200 crores

12. (e); Required average $= \frac{150+150+100}{3} = Rs\ 133\frac{1}{3} crores$

13. (b); From the graph, the required ratio will be maximum in year 2012.

14. (c); Required percentage$= \frac{150-100}{100} \times 100 = 50\%$

15. (b); Total income = Rs. 1250 crores
Total expenditure = Rs. 1200 crores
$\therefore$ Required percentage $= \frac{50}{1200} \times 100 = 4\frac{1}{6}\%$

16. (b); In 2004, Science (45%) = 900
Total students $= \frac{900}{45} \times 100 = 2000$
In 2007, commerce student (40%) = 700
Total students $= \frac{700}{40} \times 100 = 1750$
Difference $= 2000 - 1750 = 250$

17. (e); Avg. percentage of commerce students
$= \frac{25+40+25+25+30+40}{6} = \frac{185}{6}$
Avg. % of arts students $= \frac{35+25+30+45+45+35}{6} = \frac{215}{6}$
Required answer $= \frac{215}{6} \times \frac{6}{185} \approx 1.16$ times

18. (a); In 2006,
Science students = 600
Total students $= \frac{600}{25} \times 100 = 2400$
So, In 2005, total students $= \frac{2400 \times 100}{120} = 2000$
Required answer $= 2000 \times \frac{45}{100} = 900$

19. (d); Arts stream students (25%) = 800
Total students $= \frac{800}{25} \times 100 = 3200$
Required avg. $= \frac{3200 \times (40+35)}{100 \times 2} = \frac{2400}{2} = 1200$

20. (c); Required ratio $= 25 : 30 =$ **5 : 6**

21. (b); Total no. of students qualified
= 45,000 + 14,000 + 60,000 + 30,000 + 42,000
= 1,91,000
No. of students enrolled = 60,000 + 70,000 + 64,000 + 40,000 + 50,000
= 284,000
% of students qualified $= \frac{191}{284} \times 100 = 67.25\% \approx 67\%$

22. (e); Students enrolled for C & D = 64,000 + 40,000
= 1,04,000
Students appeared for D & E = 35,000 + 45,000
= 80,000
$= \frac{104000}{80000} = \frac{104}{80} \Rightarrow = \frac{13}{10}$

23. (b); % of students appeared for B $= \frac{49,000}{70,000} \times 100$
$= 70\%$
% of students appeared for C $= \frac{62}{64} \times 100$
$= 96.875\% - 70 = 26.875\%$

24. (d); Percentage of female is given for the students those who enrolled, not those who passed the exam.

25. (b); No. of students who appeared but unqualified
= 35,000 – 30,000 = 5000
No. of students disqualified due to malpractice
=22% × 30,000 = 6600
Total no. of students who are appeared but disqualified
5,000 + 6600= 11600

26. (e); Runs scored by England and Australia in Match - 3
= 310 + 230 = 540
Run scored by India = 320 + 240 + 270 + 190 + 220
= 1240
Required percentage $= \frac{540}{1240} \times 100 = 43\frac{17}{31}\%$

27. (e); In match five = Difference = 220 – 150 = 70

28. (b); Total score = 330 + 180 + 270 + 220 = 1000

29. (d); Required ratio = 300 : 240 : 230 = 30 : 24 : 23

30. (e); Required average $= \frac{240+330+180}{3} = 250$

31. (b); Total number of professors $= \frac{1}{9} \times \frac{9}{25} \times 375 = 15$

32. (c); Number of male students in Mechanical branch from college A $= \frac{13}{25} \times 500 = 260$

Required percentage $= \frac{300-260}{300} \times 100$

$= \frac{40}{3}\% \Rightarrow = 13\frac{1}{3}\%$

33. (a); 20% students from civil branch in college E

$= \frac{20}{100} \times 450 = 90$

Total students of civil branch in college C

= 250 + 90 = 340

Required ratio $= \frac{340}{1110} \Rightarrow = \frac{34}{111}$

34. (e); Total students in Electrical branch in all college = 350 + 375 + 375 + 450 + 325

= 1875

Total students in civil branch from all colleges

= 275 + 300 + 250 + 500 + 450

= 1775

Required percentage $= \frac{375-355}{355} \times 100$

$= 5.6\%$

$\sim 6\%$ more

35. (a); Total students in college D and E together in 2017 who are enrolled $= 1300 \times \frac{80}{100} + 1200 \times \frac{75}{100} + 400$

$= 2340$

36. (d); Students enrolled from institute B & C together

$= 230 + 250 + 180 + 200 + 150 + 320$

$= 1330$

Students enrolled from institute A and E together

$= 250 + 330 + 150 + 300 + 270 + 200$

$= 1500$

Required ratio $= \frac{133}{150}$

37. (e); Required percentage $= \frac{250}{(150+280+300)} \times 100$

$= \frac{250}{730} \times 100 \approx 34\%$

38. (d); Average students enrolled in swimming from all institutes

$= \frac{330+250+150+280+270}{5}$

$= \frac{1280}{5}$

Average of students enrolled in reading from all institutes

$= \frac{150+180+320+300+200}{5}$

Required ratio $= \frac{1280}{1150} \Rightarrow = \frac{128}{115}$

39. (c); Number of girls who like swimming from institute E

$= \frac{14}{27} \times 270 = 140$

40. (e); Students from B and E who are enrolled for reading = 180 + 200= 380

Students enrolled for painting from institute A & C together $= 250 + 200 = 450$

Required percentage $= \frac{70}{450} \times 100 = 15.5\%$

41. (b); $Required\ difference = \frac{1}{2}(300 + 350) - \frac{1}{2}(150 + 200) = \frac{1}{2}(650 - 350) = 150$

42. (d); Rice produced by firm P and S in both years

= (150 + 200) + (200 + 100) = 650

Rice produced by firm R in 2015 and firm T in 2016

= 250 + 250 = 500

Required ratio = 650 : 500 = 13 : 10

43. (e); Total rice produced in 2015 = 150 + 300 + 250 + 200 + 350 = 1250

Total rice produced in 2016 = 200 + 250 + 400 + 100 + 250 = 1200

$Required\ percentage = \frac{50}{1200} \times 100 = \frac{25}{6}\%$

44. (c); $Rice\ produced\ by\ firm\ Q\ in\ 2017 = \frac{120}{100} \times 250 = 300$

$Rice\ produced\ by\ firm\ T\ in\ 2017 = \frac{8}{7} \times 350 = 400$

Total rice produced in 2017 by them = 700

45. (b); $Percentage\ decrease\ for\ firm\ Q = \frac{50}{300} \times 100 = \frac{50}{3}\%$

$Percentage\ decrease\ for\ firm\ S = \frac{100}{200} \times 100 = 50\%$

$Percentage\ decrease\ for\ firm\ T = \frac{50}{350} \times 100 = \frac{100}{7}\%$

46. (b); Past Production = (2800 + 3800 + 2000 + 3600) = 12200

Present production = (1.3 × 2800 + 1.4 × 3800 + 1.45 × 2000 + 1.4 × 3600) = 16900

Required % $= \frac{16900-12200}{12200} \times 100 = 38.52$

$\approx 39\%$

47. (c); Total production of rice by three countries in 2002, 2003 and 2004 = 8800 + 9600 + 9800

= 28200

Total Production of rice by three countries in 2005, 2006 and 2007 = 8600 + 9200 + 9800

= 27600

Required % $= \frac{28200-27600}{27600} \times 100$

$= \frac{50}{23}\% = 2\frac{4}{23}\%$

48. (d); Past production of rice in USA in year 2001, 2002, 2003 and 2004 = 3200 + 2800 + 3800 + 3200

= 13000

Average past production $= \frac{13000}{4} = 3250$

Present production of rice in USA in year 2001, 2002, 2003 and 2004 = 1.2 × 3200 + 1.25 × 2800 + 1.28 × 3800 + 1.35 × 3200

= 3840 + 3500 + 4864 + 4320 = 16524

Average present production $= \frac{16524}{4} = 4131$

Required % $= \frac{4131-3250}{3250} \times 100 = \frac{881}{3250} \times 100 \approx 27\%$

49. (e); Required average production $= \frac{3600+2800+3400}{3}$

$= \frac{9800}{3} = 3266\frac{2}{3}$

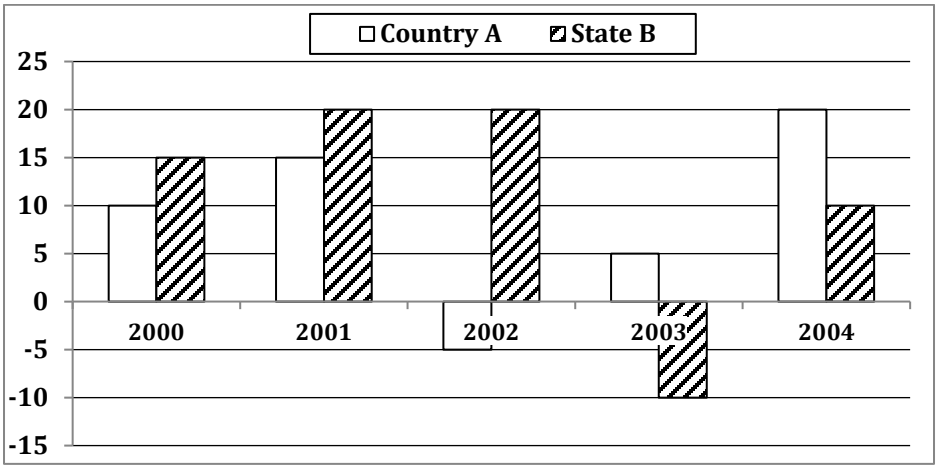
50. (a); Required average production

$= \frac{3200+2800+3800+3200+3600+3000+3400}{7}$

$= \frac{23000}{7} = 3285\frac{5}{7}$

PRACTICE SET (LEVEL–II)

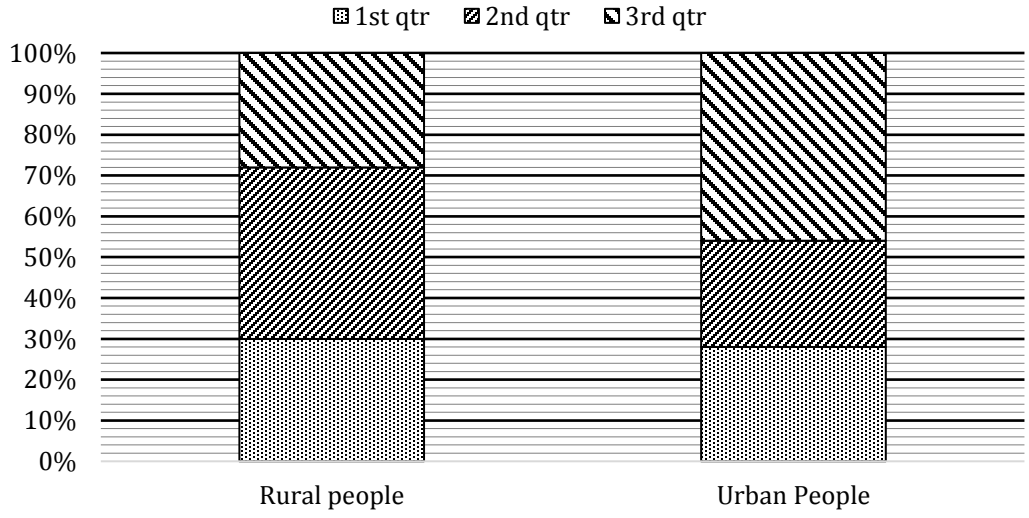
Directions(1-5) : The bar graph given below shows the percentage increase/decrease in the production of wheat in a country 'A' with respect to the production in previous year. The bar graph also shows the percentage increase/decrease in the production of wheat in one of the states 'B' of country 'A' with respect to the production in previous year.



Note: 1. Country A produced 100 thousand kg of wheat in 1999 and the amount of production of wheat in state B in 1999 was 20% of the country's A production of wheat.
2. Values which are in negative value show decrease in production.

1. If the production of wheat in states B in 2001 is 60% of the production of wheat of state C in 2001 then what is the production of wheat in state C in 2001?
(a) 46 thousand kg (b) 40 thousand kg (c) 50 thousand kg (d) 42 thousand kg (e)43 thousand kg
2. The amount of production of wheat in state B in 2000 is what percent of the amount of production of wheat in the country A in 2002? (nearest integer value)
(a) 10% (b) 19% (c) 25% (d) 29% (e) 33%
3. What is the difference between the amount of production in state B and the country A in the year 2003?
(a) 140124.5 kg (b) 122612.5 kg (c) 96375.75 kg (d) 120141.5 kg (e) None
4. Find the ratio of the amount of production of wheat in state B in 2001 to that of the country A in year 2002?
(a) 44 : 211 (b) 41 : 209 (c) 49 : 211 (d) 48 : 209 (e) 47:209
5. If the total production of wheat in state B in 2002 was 165600 kg, then find the total production of wheat in country A in the year of 2001?
(a)623500kg (b)632500kg (c) 612500kg (d165200kg (e)159200kg

Directions (6-10): In the given bar chart, Number of rural and urban people travelled in rail in a particular year is given. There are four quarters in a year and the following bar graph shows the percentage of number of people who travelled by rail are given for three quarters of the year. In the given graph, total number of people travelled by rail from rural area is 350 lakhs and that of urban area is 275 lakhs.



6. If we include the 4th quarter of the year, percentage of urban people travelled in 2nd quarter are 20% of the total urban people travelled in given year. Find the average number of urban people per quarter travelled in the given year?
(a) 82.375 lakhs (b) 84.775 lakhs (c) 89.355 lakhs (d) 79.525 lakhs (e) 89.375 lakhs

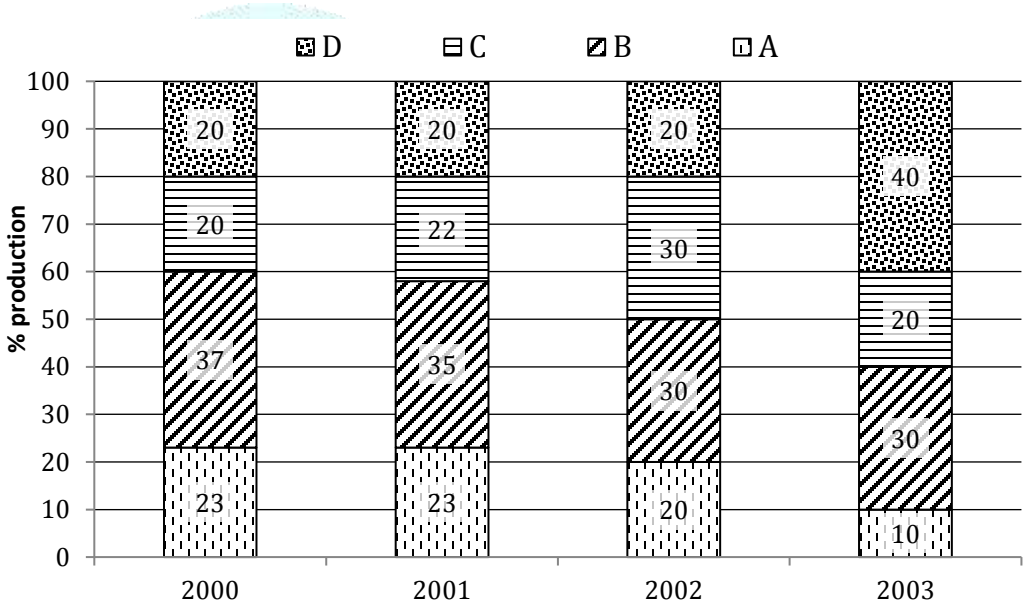
7. Find the ratio between the number of urban people travelled in 1st and 3rd quarter together to the number of rural people travelled in 2nd and 3rd quarter together?
(a) 112 : 235 (b) 235 : 112 (c) 490 : 407 (d) 407 : 490 (e) 407:409

8. If we include the 4th quarter of the year, percentage of rural people travelled in 3rd quarter will become 14% of the total rural people travelled in the given year. Then what is the number of rural people travelled in 4th quarter?
(a) 250 lakhs (b) 350 lakhs (c) 450 lakhs (d) 325 lakhs (e) 375lakhs

9. If the urban people travelled in IVth quarter is 45 lakhs less than the urban people travelled in IInd quarter. Then urban people travelled in 4th quarter are approximately what percent of total number of urban people travelled in the given year?
(a) 5% (b) 9% (c) 13% (d) 6% (e)12%

10. Average number of urban people travelled in 1st and 2nd quarter is how much percent more or less than the number of rural people in 1st quarter?
(a) $31\frac{3}{7}\%$ (b) $29\frac{2}{7}\%$ (c) $35\frac{3}{11}\%$ (d) $31\frac{4}{7}\%$ (e) $29\frac{3}{11}\%$

Directions (11-15): The bar chart showsthe production % distribution of four type of article A, B, C and D in a firm for 4 years. It is given that the total production increases at the rate of 10% per annum comparison to the previous year in the period of 2000-2003. It is also known that the amount of production of article C in 2003 is 1320 Metric tonne(MT) more than the amount of production of article A in 2001.



11. If the growth rate of total production would have been 25% instead of 10% as given then what would have been the difference in the production ofarticle C and article B in 2003? (If total production in 2000 is same as per the direction of the graph)
(a) 19531.25 MT (b) 18253.75 MT (c) 19529.50 MT (d) 18654.25 MT (e)19351.25MT

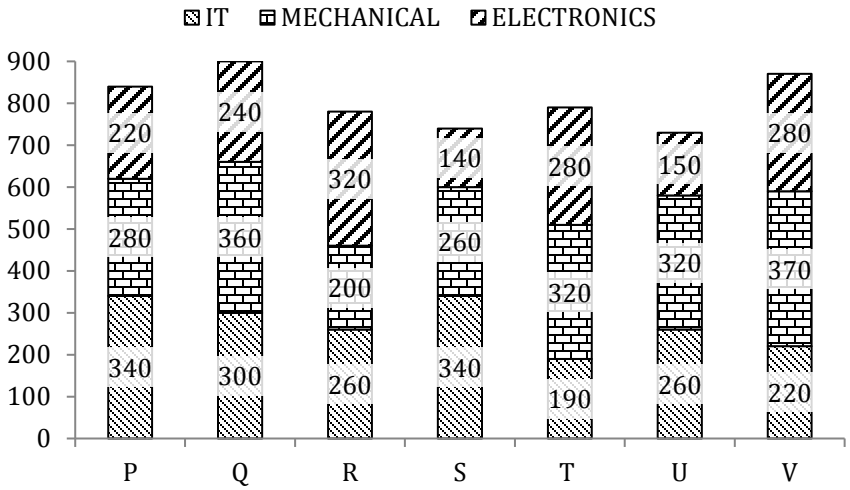
12. If the production of article D' in 2003 is 4191MTmore than production of article A' in 2001, and the growth rate of total production would have been same as per direction given above then, what will be the difference in the production of C and B in 2003?
(a) 2940.6125 MT (b) 3056.7521 MT (c) 1996.5MT (d) 3124.2596 MT (e) 1969.5 MT

13. The price of product D is Rs. 150 per metric tons in 2002. The sales revenue contributed by D in 2002 will be :
(a) Rs. 3630000 (b) Rs. 4356000 (c) Rs. 4536500 (d) Rs. 2354600 (e) Rs. 3663000

14. Which product has the largest total production in all of the given years?
(a) B (b) C (c) D (d) A (e) Can't be determined

15. The percentage increase in the production of C for the period 2000-2002 is:
(a) 81.5% (b) 85.5% (c) 75% (d) 85.6% (e) 89%

Directions (16-20): Study the following graph carefully to answer the given questions.
The following graph shows the total no. of students in seven different institutes in year 2012.



16. If the number of students with Mechanical specialization in each institute increased by 20% and the number of students with Electronics specialization in each institute decreased by 20% from 2012-2013, then total number of students with Mechanical from all the institutes in 2013 is approximately, what per cent of the total number of students with Electronics specialization from all the institutes in 2013 ?
(a) 122% (b) 116% (c) 162% (d) 132% (e)194%

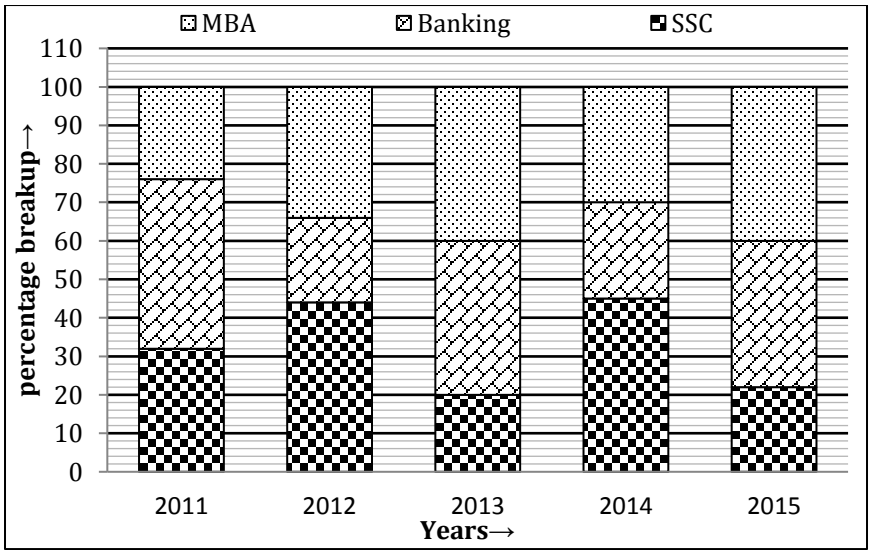
17. If the number of students in institutes P, Q and R with IT specialization increased by 15%, 22% and 10% respectively from 2012 to 2013, what was the total number of students with IT specialization in the three institutes together in 2013?
(a) 1028 (b) 1056 (c) 1043 (d) 1142 (e) 1145

18. If out of the total number of students for all three specializations together in institute Q number of students having liking for Music, Painting and Cricket are in the ratio 5 : 6 : 7 respectively, then what is the number of students liking Music from institute ?
(a) 250 (b) 300 (c) 350 (d) 360 (e) 280

19. What is the ratio between total number of students in institute R to V, respectively?
(a) 78 : 89 (b) 78 : 87 (c) 78 : 83 (d) 78 : 85 (e) 78 : 81

20. What is the difference between total number of students with IT specialization from all the institutes together and the total number of students with Mechanical specialization from all the institutes together?
(a) 260 (b) 240 (c) 280 (d) 200 (e) 250

Directions (21-25): The following bar graph shows the percentage break-up of number of students who are preparing for different exam from 2011 to 2015. With the given information, find the following questions.



Note: No students are preparing for more than one exam and all of the given students are preparing only for the given threeexams.

21. If the total number of student who are preparing for MBA exam in 2013 are 120 % more than and number of students who are preparing for SSC exam in 2014 and number of student who are preparing for Banking exam in 2014 is 225 then find the total no of student who are preparing for all of the three exams together in 2013?
(a) 1250 (b) 1215 (c) 1210 (d) 1235 (e) None of these

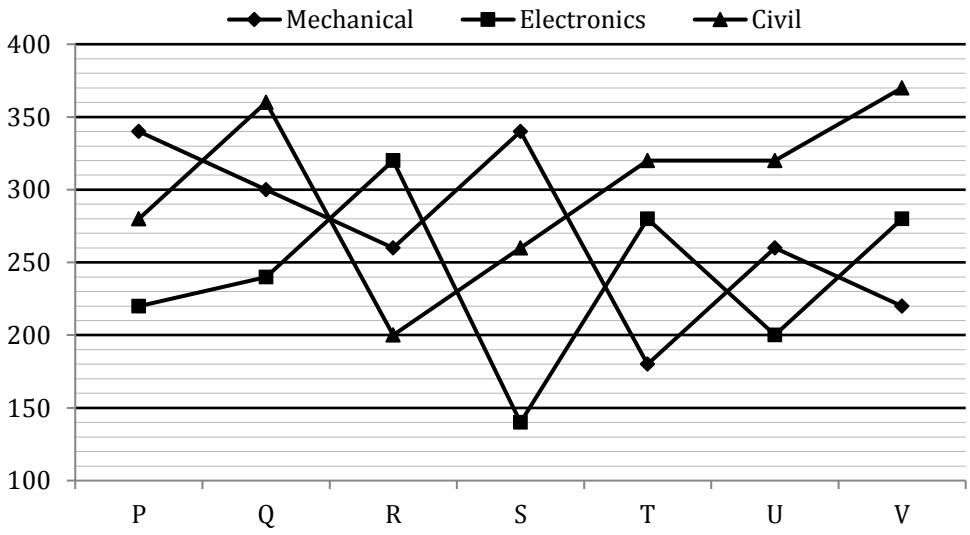
22. Total number of students who are preparing for bank exam in 2015 is what percent more/less than the number of students who are preparing for SSC exam in the same year?
(a) $72\frac{5}{11}\%$ (b) $73\frac{8}{11}\%$ (c) $72\frac{8}{11}\%$ (d) $71\frac{5}{11}\%$ (e) $72\frac{7}{11}\%$

23. If the ratio of number of students who are preparing for MBA exam in 2012 and number of students who are preparing for Bank exam in 2013 is 1:2. Then total numbers of students who are preparing for all of the three exams together in 2013 are what percent of the number of students who are preparing for all of the three exams together in 2012?
(a) 70% (b) 165% (c) 175% (d) 170% (e)180%

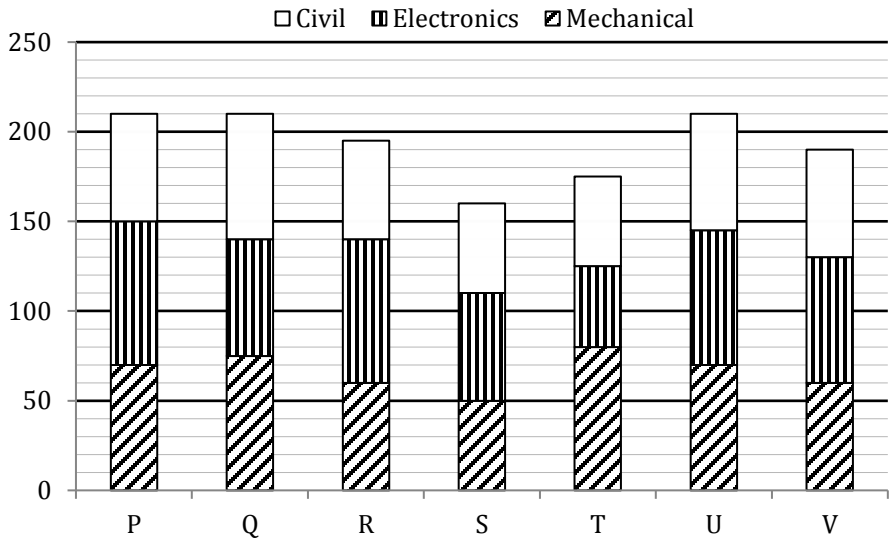
24. If the number of students who are preparing for Banking Exam in 2015 are $\frac{3}{2}$ times of the number of students who are preparing for SSC exam in 2011. Then what is the total number of students who are preparing for all exam together in 2011. (Given that total number of student in 2015 is 2640)
(a) 2080 (b) 2090 (c) 2070 (d) 2450 (e) 2900

25. If in every year there is an increase of 25% in total number of students as compared to previous year then what is the ratio of number of students who are preparing for MBA in 2013 to the total number of students who are preparing for SSC in 2014?
(a) 16 : 43 (b) 32 : 45 (c) 16 : 23 (d) 64 : 123 (e) 45:32

Directions (26-30): Study the following graphs carefully to answer the questions that follow.
Number of students in three branches of seven different engineering institute in a certain year



Percentage of students who passed the yearly examination



26. $66\frac{2}{3}\%$ of failed students of Civil from institute R are failed in the subject MD. Find the number of students failed in other subjects in Civil from instituteR is are what percent of the failed students in Mechanical from institute V ?
(a) $34\frac{1}{3}\%$ (b) $32\frac{2}{3}\%$ (c) $32\frac{1}{11}\%$ (d) $34\frac{1}{11}\%$ (e) $35\frac{1}{11}\%$

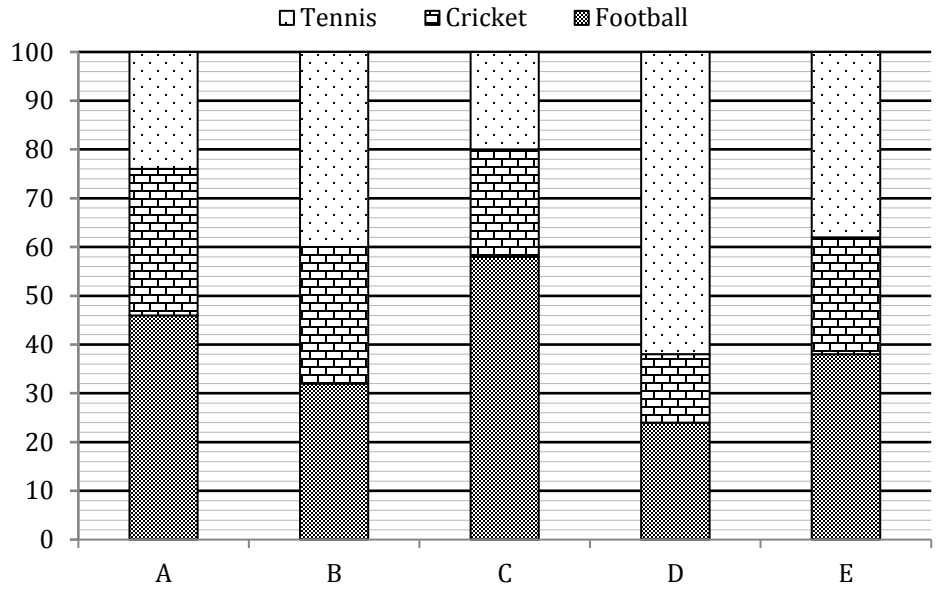
27. Find the average of number of failed students from Q, S and T in Electronics, Civil and Mechanical respectively?
(a) $78\frac{1}{3}$ (b) $83\frac{1}{3}$ (c) $85\frac{1}{3}$ (d) $81\frac{1}{3}$ (e) $82\frac{1}{3}$

28. Total failed students in all three branches frominstitute S are what percent of total passed students in all three branches frominstitute T?
(a) $80\frac{34}{43}\%$ (b) $82\frac{34}{43}\%$ (c) $78\frac{34}{43}\%$ (d) $83\frac{34}{43}\%$ (e) $85\frac{34}{43}\%$

29. What is the difference between total failed students in Civil from instituteQ and S together and total passed students in Mechanical frominstitute U and V together?
(a) 72 (b) 79 (c) 76 (d) 71 (e) 78

30. Find the ratio of total students of Mechanical students from institutes R, S and T together to the failed students of Electronics branch frominstitutes P, Q and U together?
(a) 390:77 (b) 390:79 (c) 79:390 (d) 89:390 (e) 390:89

Directions (31-35): Study the following bar graph and answer the following questions:
Given below is the graph which shows percentage of students playing three different games out of total in five different colleges.



31. If total number of students in college B are 6400 and total students in college E are $17\frac{3}{16}\%$ more than total students in college B then, find the ratio of students who play tennis from college B to the students who play football from college E.
(a) 245 : 287 (b) 253 : 290 (c) 256 : 285 (d) 257 : 279 (e) 213 : 253

32. If ratio of students who play Cricket from college A to students who play Tennis from college C is 14 : 9 and difference between students who play Tennis from college A and students who play Cricket from C is 156, then total students in College. C are what percent more or less than total students in college A.
(a) $3\frac{4}{7}\%$ (b) $5\frac{2}{3}\%$ (c) $2\frac{1}{7}\%$ (d) $6\frac{1}{3}\%$ (e) $3\frac{1}{7}\%$

33. If ratio of total students in college C to total students in college D is 24 : 29 then students who play Cricket from college C are what percent more or less than students who play football from college D.
(a) $27\frac{2}{27}\%$ (b) $36\frac{1}{29}\%$ (c) $25\frac{3}{29}\%$ (d) $24\frac{4}{29}\%$ (e) $25\frac{3}{27}\%$

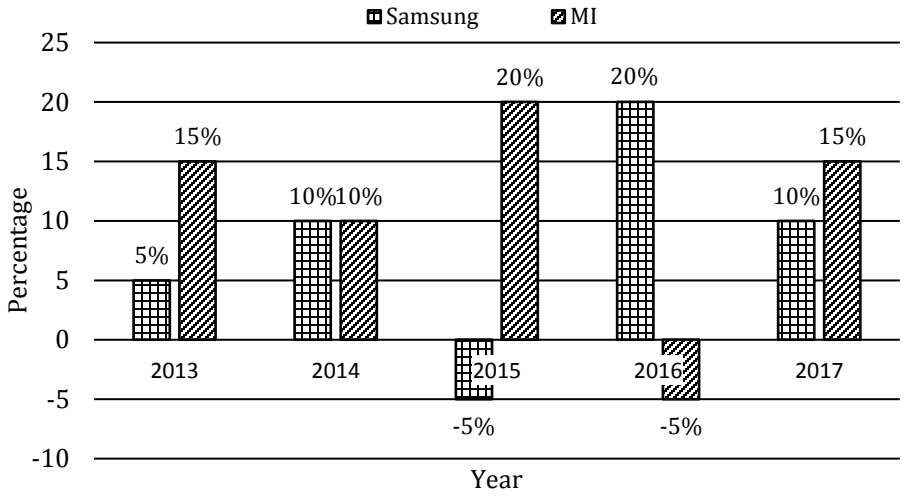
34. If number of females who play Cricket from college A are $23\frac{9}{17}\%$ less than number of males who play Cricket from college A, then females who play cricket from college A are what percent of students who play Tennis from college A.
(a) $52\frac{5}{6}\%$ (b) $51\frac{5}{6}\%$ (c) $55\frac{2}{3}\%$ (d) $51\frac{2}{7}\%$ (e) $54\frac{1}{6}\%$

35. Find the average of the number of students who play football and cricket from school C together if total number of students from college C are $81\frac{11}{69}\%$ of 6900.
(a) 2240 (b) 2245 (c) 2255 (d) 2250 (e) 2247

Directions (36-40): Given below the bar graph shows increaseordecreaseinpercentage of sales of two type of mobile by seller as compare to previous year.

Note:

1. MI phone sold in 2012 is 80% of Samsung phone sold in the same year
2. Negative % shows decrease in percentage of sales comparison to previous year
3. Increment or decrement in percentage of sales is related to the actual sale of previous year
4. Actual phone sold means total sale after returning phones).



36. If total number of MI phones sold in 2014 is 708400. Then find the total number of Samsung phones sold in 2015?
(a) 767605 (b) 678075 (c) 768075 (d) 767075 (e) 760775

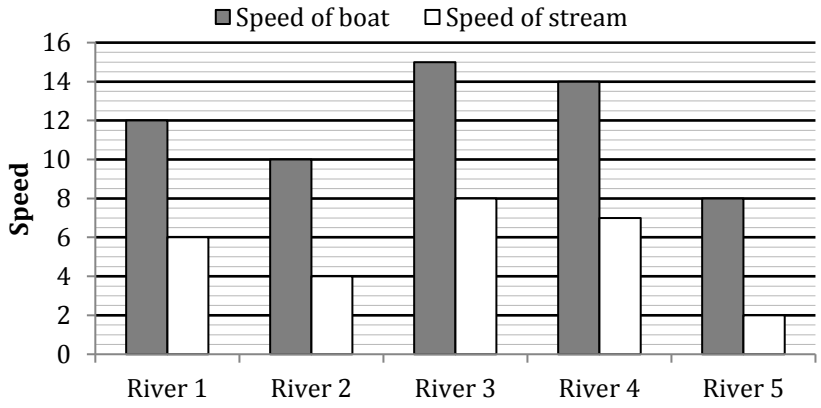
37. Seller have to return 10% of MI phones and 15% of Samsung phones sold in 2012 then the difference between MI phone and Samsung phone sold in 2012 in actual is 13000, then find total MI phone sold in 2013 in actual?
(a) 82,800 (b) 88,200 (c) 88,820 (d) 82,880 (e) 88,880

38. Total MI phones sold in 2013 is what percent of total Samsung phones sold in 2014?
(a) $65\frac{149}{231}\%$ (b) $79\frac{151}{231}\%$ (c) $69\frac{149}{231}\%$ (d) $78\frac{139}{231}\%$ (e) 80%

39. 25% of MI phone sold in 2013 return by customer, then find the ratio between actual MI phone sold in 2013 to total Samsung phone sold in 2016?
(a) 3300 : 4389 (b) 2300 : 2389 (c) 1900 : 2389 (d) 2300 : 4389 (e) 2200 : 4389

40. If selling price of Samsung mobile is 25% more than MI phone in year 2013 and total selling price of Samsung phonesin the same year i.e. in 2013 is 210000$. then find the selling price of each MI phonefor the year 2013, if total difference between MI and Samsung sold in 2012 is 5000?
(a)6.4$ (b)6$ (c)7$ (d)4$ (e)4.5$

Directions (41-45): The bar-graph given below shows the speed of boat and the speed of stream. Study the table & answer the questions based on it. Each of the rivers has a boat that travels with a particular speed.



41. What is the total time taken by Rohan if he travels a distance of 18kms both ways in river 1 and 21 km downstream in River 4?
(a) 5 hours (b) 4 hours (c) 3 hours (d) 6 hours (e) 7 hours

42. Ram &Shyam contest with each other for a 42 km race both ways. Ram choose River 1 whereas Shyam chooses River 5. In how much time will the winner complete the race?
(a) $\frac{23}{3}$hrs. (b) $\frac{28}{3}$hrs. (c) $\frac{50}{3}$hrs. (d) $\frac{29}{3}$hrs. (e) $\frac{56}{5} hrs$.

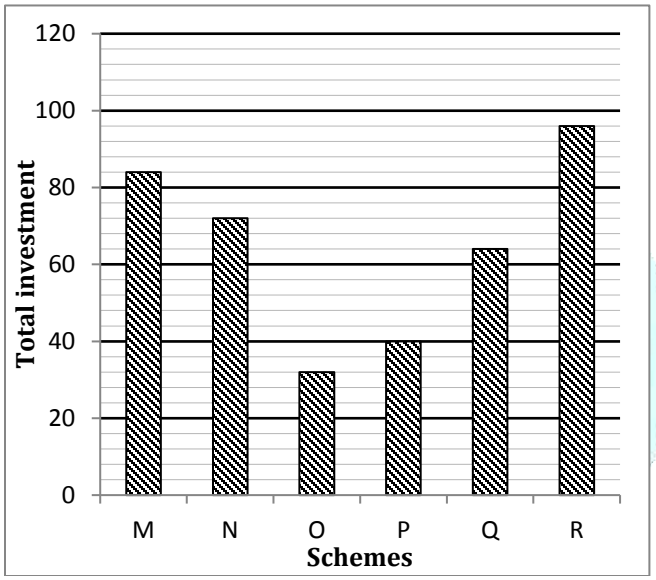
43. Banti uses an additional engine which can increase the speed of any boat by 20%. If Banti travels a distance of 40 km both ways in river 3, then find the ratio of the time taken by him when he uses the engine to the time he would have taken if he not used the engine.
(a) 473:650 (b) 483:650 (c) 493:650 (d) 463:650 (e) 503:650

44. Vikas wants to cover a distance of 20 km both ways either in River 2 orin River 5. The boating charges per hour in River 2 is Rs. 5 and that in River 5 is Rs. 6. How much should he spend in order to minimize his expenses and which river should he choose?
(a) River 2 and Rs. 28.8 (b) River 5 and Rs. 35.5 (c) River 5 and Rs. 32.0
(d) River 2 and Rs. 23.8 (e) Same expense on both rivers

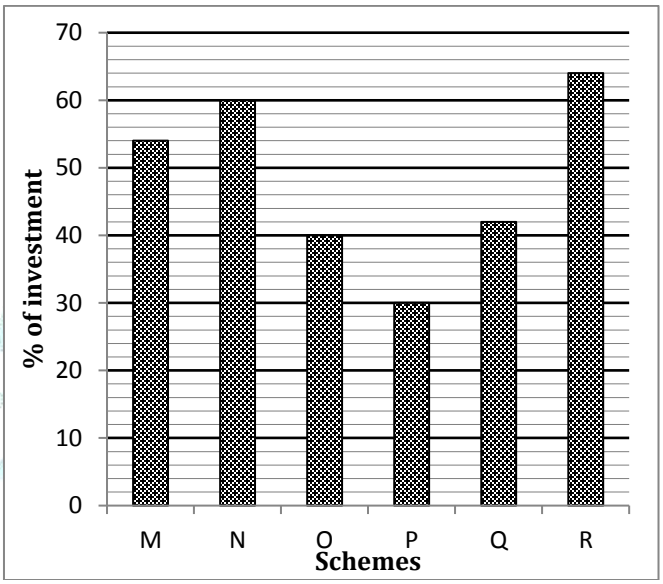
45. A person travelled an equal distance both ways in River 4. Find his average speed for the whole trip?
(a) 14 Km/h (b) 13 Km/h (c) 12 Km/h (d) 15 Km/h (e) 10.5 Km/h

Direction (46-50): Study the graph to answer the questions.

Total investment (in Rs. thousand) of Gaurav and Rishabh in 6 schemes (M, N, O, P, Q and R)



Percentage of Gaurav's investment out of total investment in these six schemes



46. Scheme M offers simple interest at a certain rate of internet (per cent per annum). If the difference between the interest earned by Gaurav and Rishabh from scheme M after 4 yrbeRs. 4435.20, what is the rate of interest (per cent per annum)?
(a) 17.5 (b) 18 (c) 16.5 (d) 20 (e) 15

47. What is the respective ratio between total amount invested by Gaurav in schemes O and Q together and total amount invested by Rishabh in the same scheme together?
(a) 31 : 44 (b) 31 : 42 (c) 27 : 44 (d) 35 : 48 (e) 29 : 38

48. If scheme O offers compound interest (compounded annually) at 12% per annum, then what is the difference between interest earned by Gaurav and Rishabh from scheme O after 2 yr?
(a) Rs. 1628.16 (b) Rs. 1584.38 (c) Rs. 1672.74 (d) Rs. 1536.58 (e) Rs. 1722.96

49. Rishabh invested in scheme R for 4 yr. If scheme R offers simple interest at 7% per annum for the first two years and then compound interest at 10% per annum (compound annually) for the 3rd and 4th year, then what will be the interest earned by Rishabh after 4 yr?
(a) Rs. 13548.64 (b) Rs. 13112.064 (c) Rs. 12242.5 (d) Rs. 12364 (e) Rs. 11886

50. Amount invested by Gaurav in scheme S is equal to the amount invested by him in scheme N. The rate of interest per annum of schemes S and N are same. The only difference is scheme S offers compound interest (compounded annually), whereas the scheme N offers simple interest. If the difference between the interest earned by Gaurav from both the schemes after 2 yr is Rs. 349.92, then what is the rate of interest?
(a) 9% (b) 5% (c) 13% (d) 11% (e) 7%

PRACTICE SET (LEVEL-II) SOLUTIONS

1. (a); Production of wheat is state B in 2001
$= \frac{20}{100} \times 100 \times \frac{115}{100} \times \frac{120}{100}$
$= 27.6\ thousand\ kg$
Production of wheat in state C in 2001
$= 27.6 \times \frac{100}{60}$
$= 46\ thousand\ kg$

2. (b); Production of wheat in the country in 2002
$= 100 \times \frac{110}{100} \times \frac{115}{100} \times \frac{95}{100}$
$= 120.175\ thousand\ kg$
Req% $= \frac{23}{120.175} \times 100 = 19.13\% \approx 19\%$

3. (c); Amount of production of state B in 2003
$= 20 \times 1.15 \times 1.2 \times 1.2 \times 0.9$
$= 29.808$ thousand kg
Amount of production of the Country in 2003
$= 100 \times 1.1 \times 1.15 \times 0.95 \times 1.05$
$= 126.18375\ kg$
Difference$= 126.18375 - 29.808$
$= 96.37575\ thousand\ kg$
$= 96375.75\ kg$

4. (d); $Req.\ Ratio = \frac{20 \times \frac{120}{100} \times \frac{115}{100}}{100 \times \frac{110}{100} \times \frac{115}{100} \times \frac{95}{100}}$
$= \frac{20 \times 120}{110 \times 95} = \frac{48}{209}$

5. (b); Production of wheat in state B in 2002$= 20 \times 1.15 \times 1.2 \times 1.2 = 33.12\%$
Production of wheat in country A in 2001
$= 100 \times 1.1 \times 1.15 = 126.5\%$
Required production$= \frac{165600}{33.12} \times 126.5 = 632500$kg

6. (e); Let total no. of Urban people travelled in the given year = x
$\therefore \frac{20x}{100} = \frac{26}{100} \times 275$
x = 357.5 lakh
$\therefore$ Required average $= \frac{357.5}{4}$
= 89.375 lakhs

7. (d); Required ratio $= \left[\frac{(28+46)}{100} \times 275\right] : \left[\frac{(42+28)}{100} \times 350\right]$
= 20350:24500
= 407 : 490

8. (b); Rural people travelled in 3rd quarter $= \frac{28}{100} \times 350$
$= 98$ lakh
Let total no. of rural people travelled in the year = x
$\therefore 98 = \frac{14}{100} \times x$
$x = \frac{98000}{14} = 700$ lakhs
$\therefore$ No. of rural people travelled in 4th quarter
$= (700 - 350) = 350$ lakhs

9. (b); Urban people travelled in IInd quarter $= \frac{26}{100} \times 275$
= 71.5 lakh
Urban people travelled in IVth quarter = (71.5 – 45)
= 26.5 lakh
Total no. of urban people travelled in the given year
= 275 + 26.5 = 301.5 lakhs
$\therefore$ Required % $= \frac{26.5}{301.5} \times 100 = 8.79\%$=9%approx

10. (b); Average no. of urban people travelled in Ist and 2nd quarter $= \left(\frac{28+26}{100}\right) \times 275 \times \frac{1}{2}$
= 74.25 lakhs
No. of rural people travelled in Ist quarter
$= \frac{30}{100} \times 350 = 105$ lakh
Required % $= \frac{105-74.25}{105} \times 100 = 29\frac{2}{7}\%$

11. (a); If growth rate = 10%
Let total amount of production in 2000 be x
The total amount of production in 2001 = 1.1x
Total amount of production in 2002 = 1.21x
Total amount of production in 2003 = 1.331x
A.T.Q
$\frac{1}{5} \times 1.331x - \frac{23}{100} \times 1.1x = 1320\ MT$
$\Rightarrow x = 1{,}00{,}000\ MT$
Now, Amount of production in 2003 if growth rate is 25%
$= 100{,}000 \times (1.25)^3$
$= 195312.5$ MT
Required difference $= \frac{(30-20)}{100} \times 195312.5$
$= 19531.25\ MT$

12. (c); A.T.Q,
$\frac{40}{100} \times 1.331x - \frac{23}{100} \times 1.1x = 4191\ MT$
$\Rightarrow x = 15{,}000\ MT$
Total amount of production in 2003 for growth rate 10%
$= 15000 \times 1.331$
$= 19965 MT$
Req. Difference $= \frac{(30-20)}{100} \times 19965 = 1996.5\ MT$

13. (a); Total amount of production in 2002 $= 1.21x$
$= 1.21 \times 100000$
$= 121000\ MT$
Amount of production of D in 2002
$= \frac{20}{100} \times 121000 = 24200\ MT$
Sales revenue contributed by D $= 24200 \times 150$
$= 3630000$

14. (a); We need to consider values of total production for D and B only as A and C can be eliminated by observation
By further observation we can make out that B's production is fairly high as compared of D

15. (a); Production of C in 2000 $= \frac{20}{100} \times 100{,}000$
$= 20000\ MT$
Production of C in 2002 $= \frac{30}{100} \times 1.21 \times 100000$
$= 36300\ MT$
% increase $= \frac{(36300-20000)}{20000} \times 100$
$= 81.5\%$

16. (e); Total number of students with mechanical specialization in 2013
$= 336 + 432 + 240 + 312 + 384 + 384 + 444$
$= 2532$

Total number of students with Electronics specialization in 2013 = 176 + 192 + 256 + 112 + 224 + 120 + 224 = 1304

∴ Required % = $\frac{2532}{1304} \times 100 = 194.17\% \approx 194\%$

17. (c); In 2013, total no. of students with IT specialization in institute P = 391

Q = 366 ⇒ R = 286

∴ Required no. of students = 391 + 366 + 286 = 1043

18. (a); Total no. of students in institute Q

= 360 + 300 + 240 = 900

From these, No. of students liking Music

$= \frac{5}{5+6+7} \times 900$

$= \frac{5}{18} \times 900 = 250$

19. (b); Total number of students in institute R

= 320 + 260 + 200 = 780

Total number of students in institute V

= 370 + 280 + 220 = 870

Required Ratio = 780 : 870 = 78 : 87

20. (d); Total number of students with Civil specialization from all the institutes together

= 340 + 300 + 260 + 340 + 190 + 260 + 220 = 1910

Total number of students with Mechanical specialization from all the institutes together

= 280 + 360 + 200 + 260 + 320 + 320 + 370 = 2110

Required difference = 2110 − 1910 = 200

21. (b); Let total no. of students in 2013 = x

Let total no. of students in 2014 = y

$\frac{40x}{100} = 1.2 \times \frac{45y}{100}$

$40x = 54y \Rightarrow \frac{x}{y} = \frac{27}{20}$ .....(i)

and,

$\frac{25y}{100} = 225 \Rightarrow y = 900$

$x = \frac{900 \times 27}{20} \Rightarrow x = 1215$

22. (c); Required % = $\frac{38-22}{22} \times 100 = 72\frac{8}{11}\%$

23. (d); Let total students in 2012 = x

Let total students in 2013 = y

$\therefore \frac{34x}{100} : \frac{40y}{100} = 1 : 2$

$\frac{17x}{20y} = \frac{1}{2} \Rightarrow \frac{x}{y} = \frac{10}{17}$

Required % = $\frac{17}{10} \times 100 = 170\%$

24. (b); Let total no. of students in 2015 = x

Let total no. of students in 2011 = y

$\frac{38x}{100} = \frac{3}{2} \times \frac{32}{100} \times y$

$38x = 48y \Rightarrow \frac{x}{y} = \frac{24}{19}$

Given —

$x = 2640$

$\therefore 24 \rightarrow 2640 \Rightarrow 19 \rightarrow \frac{2640}{24} \times 19$

$\therefore y = 2090$

25. (b); Let total students in 2013 = 16

total students in 2014 = 16 + 4 = 20

Required ratio = $\left(\frac{40}{100} \times 16\right) : \left(\frac{45}{100} \times 20\right)$

$= 40 \times 16 : (45 \times 20) \Rightarrow = 32 : 45$

26. (d); Number of students failed in other subject in institute R = $\frac{1}{3} \times \frac{45}{100} \times 200 = 30$

Failed students in Mechanical in institute V

$= \frac{40}{100} \times 220 = 88$

∴ Required percentage = $\frac{30}{88} \times 100 = 34\frac{1}{11}\%$

27. (b); Required average

$= \frac{1}{3}\left[\frac{35}{100} \times 240 + \frac{50}{100} \times 260 + \frac{20}{100} \times 180\right]$

$= \frac{250}{3} = 83\frac{1}{3}$

28. (d); Failed students in S

$= \frac{50}{100} \times 260 + \frac{40}{100} \times 140 + \frac{50}{100} \times 340 = 356$

Passed students in T

$= \frac{50}{100} \times 320 + \frac{45}{100} \times 280 + \frac{80}{100} \times 180 = 430$

∴ Required percentage = $\frac{356}{430} \times 100 = 83\frac{34}{43}\%$

29. (c); Failed in Civil = $\frac{30}{100} \times 360 + \frac{50}{100} \times 260 = 238$

Passed in Mechanical = $\frac{70}{100} \times 260 + \frac{60}{100} \times 220 = 314$

∴ Required difference = 76

30. (e); Required ratio = $\frac{260+340+180}{\frac{20}{100}\times220+\frac{35}{100}\times240+\frac{25}{100}\times200}$

$= \frac{780}{178} \Rightarrow = \frac{390}{89}$

31. (c); Total students in college E

$= \frac{275}{16 \times 100} \times 6400 + 6400$

= 1100 + 6400 ⇒ = 7500

Required ratio

$= \frac{40}{100} \times 6400 : \frac{38}{100} \times 7500$

= 40 × 64 :38 × 75

= 256 : 285

32. (a); Let total students from college A = 100 x

Let total students from college C = 100 y

$\frac{30x}{20y} = \frac{14}{9} \Rightarrow \frac{x}{y} = \frac{28}{27}$

and 24x – 22y = 156

$24 \times \frac{28}{27} \times y - 2y = 156$

$8 \times \frac{28}{9} y - 22y = 156$

224y – 198y = 156 × 9

26y = 156 × 9

y = 54

x = 56

$Required\ percentage = \frac{200}{5600} \times 100 = 3\frac{4}{7}\%$

33. (d); Let total students in college C = 2400

and total students in college D = 2900

Required percentage

$= \frac{24 \times 29 - 22 \times 24}{24 \times 29} \times 100$

$= \frac{700}{29}\% \Rightarrow = 24\frac{4}{29}\%$

34. (e); Let male student who play Cricket = x

So female student who play Cricket

$= x - \frac{4}{17}x \Rightarrow = \frac{13}{17}x$

Ratio of male to female who play Cricket in A = $\frac{17}{13}$

(17 + 13) → 30%

Required percentage $= \frac{13}{24} \times 100$

$= \frac{325}{6}\% \Rightarrow = 54\frac{1}{6}\%$

35. (a); Total no. of students from college C
$= 81\frac{11}{69}\%$ of 6900 = 5600
Required average $= \frac{1}{2}\left[\frac{58+22}{100} \times 5600\right]$
$= \frac{1}{2}[4480] \Rightarrow = 2240$

36. (c); Let, Samsung Phone sold in 2012 = 100X
Then, MI phones sold in 2012 = 80X
Given, total MI phones sold in 2014
= 80X × 1.15 × 1.1 = 101.2X
101.2X = 708400
X = 7000
Total Samsungmobile sold in 2015
= 100X × 1.05 × 1.1 × 0.95 $\Rightarrow$ = 109.725X
= 109.725 × 7000 = 768075

37. (a); Let, Samsung Phone sold in 2012 = 100X
In Actual,
$Sold\ Samsung \times \frac{85}{100} - Sold\ MI \times \frac{90}{100} = 13000$
$= 100X \times \frac{85}{100} - 80X \times \frac{90}{100} = 13000$
= 85X – 72X = 13000
X = 1000
Number of MI phone sold in 2013 in actual
= 72 × 1.15 × 1000 $\Rightarrow$ = 82,800

38. (b); Total MI phones sold in 2013 = 80X × 1.15 = 92X
Total Samsung phone sold in 2014
= 100X × 1.05 × 1.1 = 115.5X
$Required\% = \frac{92X}{115.5X} \times 100 \Rightarrow = 79\frac{151}{231}\%$

39. (d); Actual MI phone sold in 2013
$= 80X \times 1.15 \times \frac{3}{4} \Rightarrow = 69X$
Total Samsung phone sold in 2016
= 100X × 1.05 × 1.1 × 0.95 × 1.2
= 131.67X
$Required\ ratio = \frac{69X}{131.67X} = 2300 : 4389$

40. (a); Let Samsung mobile in year 2012 = 100x
∴ 100x – 80x = 5000 $\Rightarrow$ x = 250
Samsung phone sold in 2013
= 100X – 80X = 5000 $\Rightarrow$ = 20 × 25000
$= 250 \times (100 \times 1.05) \Rightarrow$ = 26250
Selling price of each Samsung phone
$= \frac{210000\$}{26250} = 8\$$
Selling price of each MI phone
$= 8 \times \frac{100}{125} = 6.4\$$

41. (a); Total time = $\frac{18}{12+6} + \frac{18}{12-6} + \frac{21}{14+7}$ = 1 + 3 + 1 = 5 hrs.

42. (b); Time taken by Ram = $\frac{42}{12-6} + \frac{42}{12+6} = 7 + \frac{7}{3} = \frac{28}{3}$ hrs.
Time taken by Shyam = $\frac{42}{8-2} + \frac{42}{8+2} = 7 + \frac{21}{5} = \frac{56}{5}$ hrs.
Ram will win the race.

43. (b); Speed of Boatif engine is used = 1.2 × 15 = 18 km/h
Time taken when engine is not used = $\frac{40}{15-8} + \frac{40}{15+8}$
$= \frac{40}{7} + \frac{40}{23} = \frac{40\times30}{23\times7} = \frac{1200}{161}\ hr.$
Time takenwhen engine is used = $\frac{40}{18-8} + \frac{40}{18+8}$
$= \frac{40}{10} + \frac{40}{26} \Rightarrow = \frac{144}{26} = \frac{72}{13}\ hr.$
Required Ratio = $\frac{72}{13} : \frac{1200}{161} = \frac{483}{650}$

44. (d); Cost incurred in River 2
$= \left(\frac{20}{6} + \frac{20}{14}\right) \times 5 = 20\left(\frac{7+3}{42}\right) \times 5 \Rightarrow = \frac{200\times5}{42}$
$= \frac{1000}{42}$= Rs. 23.8
Cost incurred in River 5
$= \left(\frac{20}{6} + \frac{20}{10}\right) \times 6 = 20\left(\frac{5+3}{30}\right) \times 6$
$= \frac{160\times6}{30} = \frac{960}{30} \Rightarrow$ = Rs. 32

45. (e); Speed downstream in river 4 = 14 + 7 = 21
Speed upstream in river 4 = 14 − 7 = 7
Average speed per hour in River 4
$= \frac{2\times7\times21}{7+21} = 10.5\ km/h$

46. (c); Amount invested by Gaurav in scheme M
= 54% of 84000= Rs. 45360
∴ Amount invested by Rishabh in scheme M
= 84000 – 45360 = Rs. 38640
Let the required rate be r% per annum. Then,
$= \frac{45360\times r\times4}{100} - \frac{38640\times r\times4}{100} = 4435.20$
$\Rightarrow 6720 \times r \times 4 = 443520$
$\Rightarrow$ r = 16.5%

47. (a); Required ratio = (Total amount invested by Gaurav in schemes O and Q together) : (Total amount invested by Rishabh in schemes O and Q together)
= (40% of 32000 + 42% of 64000) : (60% of 32000 + 58% of 64000) $\Rightarrow$ = 39680 : 56320 = 31 : 44

48. (a); Difference of amount invested by Gaurav and Rishabh in
Scheme O = 60% of 32000 – 40% of 32000
= 20% of 32000 $\Rightarrow$ = Rs. 6400
∴ Required difference in their interest
$= 6400\left[\left(1 + \frac{12}{100}\right)^2 - 1\right] = 6400 \times 0.2544$
$= Rs.\ 1628.16$

49. (b); Amount invested by Rishabh in investment R
=(100 – 64)% of 96000 = 36% of 96000 = Rs. 34560
Then, total interest earned by Rishabh after 4 year
$= \frac{34560\times7\times2}{100} + 21\%\ of\ (34560 + SI\ of\ first\ 2\ years)$
= 4838.40 + 8273.664 = Rs. 13112.064

50. (a); Amount invested by Gaurav in each of scheme S and N
= 60% of 72000 = 43200
Let the rate of interest be r% per annum.
Then, according to the question,
$349.92 = \frac{43200\times r^2}{100^2} \Rightarrow or,\ r^2 = 81$
∴ r = 9%

Chapter 4

Line Graph

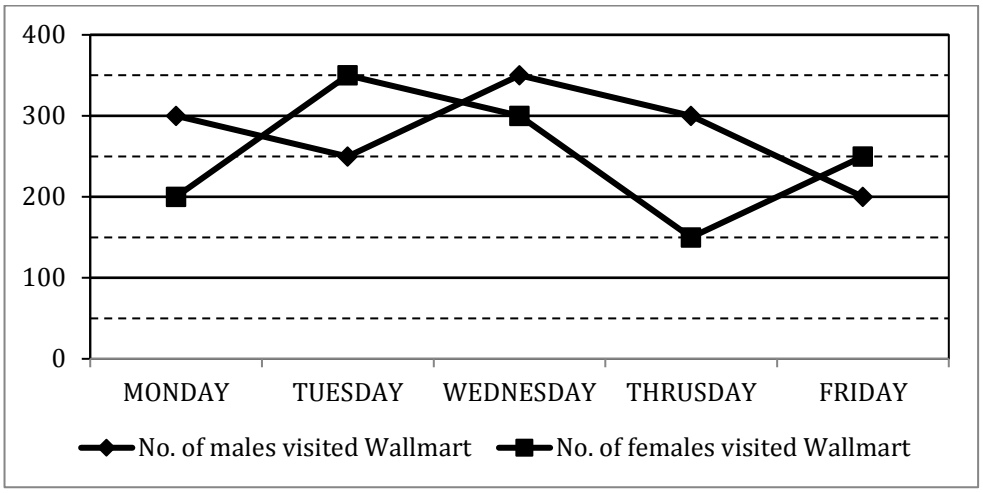
Line Graphs are very useful in representing the data related to time-series and frequency distribution. These graphs are also very useful in determining trends, rate of change and for illustrating comparisons with respect to some time series. A time series is an arrangement of data in chronological order. Line graphs are drawn by lines connecting the dots which show the value of a variable. It indicates the variation of one parameter with respect to another. It determines trends and rate of change over the time. These graphs are easier to interpret as we can easily see data movement in these graphs due to the use of lines.

This chapter contains:

- Solved Examples
- Previous Year Questions
- Practice Set Level I
- Practice Set Level II

Solved Examples

Directions (1-5): Read the following line graph and answer the following questions
In the following line graph number of males and number of females visited Wallmart on different days is shown.



1. What is the average number of males visited Wallmart on Tuesday, Thursday and Friday?
(a) 220 (b) 240 (c) 260 (d) 280 (e) 250

Sol. **(e);** $Desired\ Average = \frac{250+300+200}{3} = \frac{750}{3} = 250$

2. What is the difference between the numbers of males who visited Wallmart on Monday, Tuesday and Friday together and number of females who visited Wallmart on Wednesday, Tuesday and Friday together?
(a) 125 (b) 150 (c) 175 (d) 200 (e) 225

Sol. **(b);** No. of males visited Wallmart on Monday, Tuesday and Friday = 300 + 250 + 200 = 750
No. of females visited Wallmart on Wednesday, Tuesday and Friday = 300 + 350 + 250 = 900
Desired difference = 900 – 750 = 150

3. What is the percentage increases in total number of males and females who visited Wallmart on Wednesday over the total number of males and females who visited on Monday?
(a) 25% (b) 28% (c) 35% (d) 30% (e) 40%

Sol. **(d);** On Wednesday = 650
On Monday = 500
$\%\ increase = \frac{650-500}{500} \times 100 = \frac{150}{5}\% = 30\%$

4. If number of males visited on Friday is increased by 25% on Saturday and number of females visited on Friday is decreased by 10% on Saturday, then what will be the total number of males and females visited Wallmart on Saturday?
(a) 400 (b) 425 (c) 450 (d) 475 (e) 500

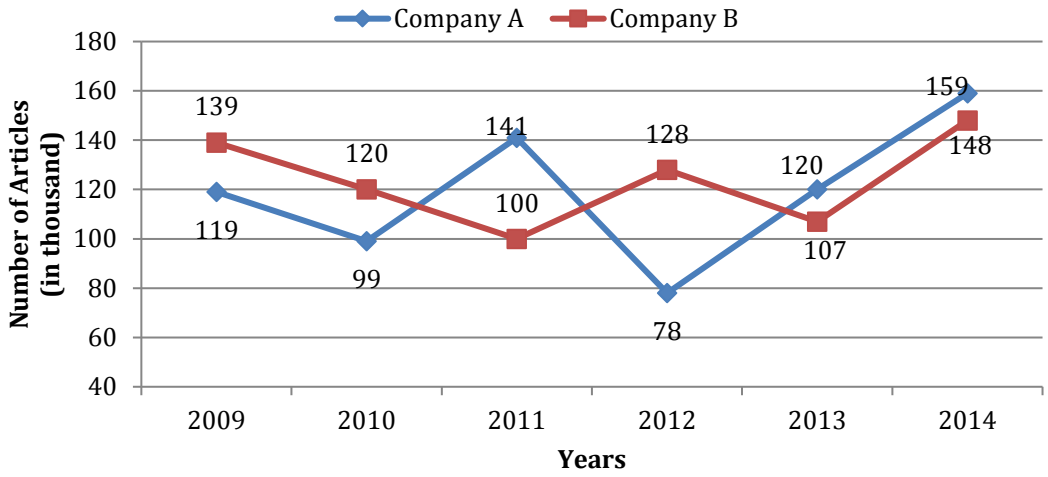
Sol. **(d);** $No.\ of\ males\ on\ Saturday = 200 \times \frac{125}{100} = 250$
$No.\ of\ females\ on\ Saturday = 250 \times \frac{90}{100} = 225$
Total no. of males and females visited Wallmart on Saturday = 250 + 225 = 475

5. Find the ratio between the average number of females visited Wallmart to average number of males visited Wallmart?
(a) 28 : 25 (b) 25 : 28 (c) 27 : 23 (d) 23 : 27 (e) None of these

Sol. **(b);** $Average\ no.\ of\ females = \frac{200+350+300+150+250}{5} = 250$
$Average\ no.\ of\ males = \frac{300+250+350+300+200}{5} = 280$
$Desired\ Ratio = \frac{250}{280} = \frac{25}{28}$

Directions (6-10): Study the following line graph and answer the questions based on it.
Given below is the line graph which shows the number of articles sold by two companies A and B over the years

Number of Articles (in thousand) sold by two companies over the years



6. If 20% and 15% of articles sold by company A in 2012 and 2014 respectively are defective then defective article sold by A in 2012 and 2014 together are what percent of total articles sold by A in 2012 and 2014 together.
(a) $14\frac{53}{79}\%$ (b) $12\frac{51}{79}\%$ (c) $16\frac{51}{79}\%$ (d) $19\frac{47}{69}\%$ (e) 22%

Sol. **(c);** Defective articles sold by A in 2012 and 2014 $= \left(\frac{20}{100} \times 78 + \frac{15}{100} \times 159\right) \times 1000$
$= 15600 + 23850 = 39450$
$Required\ \% = \frac{39450}{(78+159)\times 1000} \times 100$
$= \frac{39,45}{237} = \frac{1315}{79} = 16\frac{51}{79}\%$

7. What is the ratio of articles sold by company A in 2011, 2012 and 2013 together to the articles sold by B in 2009, 2010 and 2011 together.
(a) 339 : 359 (b) 249 : 250 (c) 331 : 336 (d) 125 : 139 (e) None of these

Sol. **(a);** $Required\ ratio = \frac{141+78+120}{139+120+100} = \frac{339}{359}$

8. Number of articles sold by A in 2009 and 2011 together is what percent more or less than articles sold by B in 2012 and 2013 together (appromately)
(a) $12\frac{30}{47}\%$ (b) $10\frac{30}{47}\%$ (c) $14\frac{46}{47}\%$ (d) $7\frac{29}{47}\%$ (e) 5%

Sol. **(b);** $Required\ \% = \frac{(119+141)-(128+107)}{(128+107)} \times 100 = 10\frac{30}{47}\%$

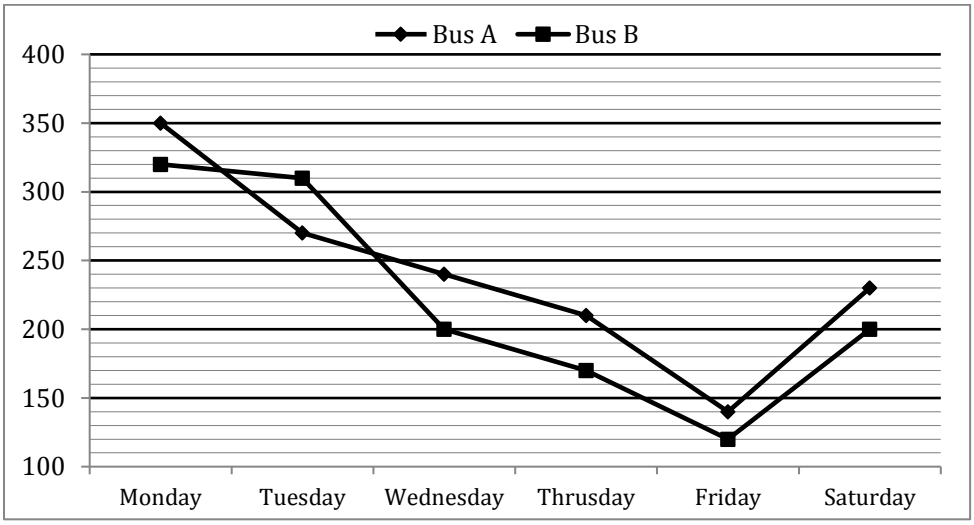
9. If number of articles sold by A in 2008 is 120% more than difference between articles sold by A and B in 2009, then articles sold by A in 2008 is what percent more or less than articles sold by B in 2009.
(a) $64\frac{65}{139}\%$ (b) $68\frac{48}{139}\%$ (c) $63\frac{63}{139}\%$ (d) 70% (e) $65\frac{65}{139}\%$

Sol. **(b);** $Articles\ sold\ by\ A\ in\ 2008 = \frac{220}{100} \times (139 - 119)$
$= \frac{220}{100} \times 20 = 44$
$Required\% = \frac{139-44}{139} \times 100$
$= \frac{95}{139} \times 100 = 68\frac{48}{139}\%$

10. What is the difference between the average of articles sold by A over all years except year 2009 and average of article sold by B over all the years except year 2014(in thousands).
(a) 1 (b) 0.6 (c) 0.8 (d) 0.4 (e) 0.5

Sol. **(b);** $Required\ difference = \frac{1}{5}(597 - 594) = \frac{3}{5} = 0.6\ thousand$

Directions (11-15): Given below is the graph which shows the number of people who travelled from Delhi to Bhopal by Bus A and Bus B on six different days.



11. The number of people who travelled by Bus B on Sunday of the same week are 20% more than those of who travelled by the same bus on Saturday. What is the ratio of the number of people who travelled on Sunday to those of who travelled on Tuesday by the same bus B.

(a) 24 : 31 (b) 23 : 32 (c) 33 : 41 (d) 11 : 19 (e) 5 : 7

Sol. **(a);** $People\ who\ travelled\ by\ bus\ B\ on\ Sunday = \frac{120}{100} \times 200 = 240$

$Required\ ratio = \frac{240}{310} = 24 : 31$

12. What is the difference between total people who travelled on Monday and Tuesday together by bus A and total people who travelled on Friday and Saturday by bus B.

(a) 250 (b) 300 (c) 350 (d) 200 (e) 400

Sol. (b); Total people who travelled on Monday and Tuesday together by bus A = 350 + 270 = 620
Total people who travelled on Friday and Saturday by Bus B = 120 + 200 = 320
Required difference = 300

13. What is the difference between average number of people who travelled by bus A on Tuesday, Wednesday and Thursday and average number of people who travelled by bus B on Wednesday, Monday and Friday.

(a) $26\frac{2}{3}$ (b) $33\frac{1}{3}$ (c) $14\frac{2}{7}$ (d) $66\frac{2}{3}$ (e) $28\frac{1}{3}$

Sol. **(a);** Average of people who travelled by bus A on Tuesday, Wednesday and Thursday
$= \frac{270+240+210}{3} = \frac{720}{3} = 240$
Average of people travelled by bus B on Wednesday, Monday and Friday
$= \frac{(320+200+120)}{3} = \frac{640}{3}$
$Required\ difference = 240 - \frac{640}{3} = \frac{80}{3} = 26\frac{2}{3}$

14. If on Sunday people who travel by bus A and who travel by bus B are increased by 10% and $\frac{25}{2}$% respectively over Saturday then the total people travelling on Sunday by both bus is what percent of total people who travel on Monday by both bus.

(a) $37\frac{2}{35}$% (b) $72\frac{7}{68}$% (c) $71\frac{23}{67}$% (d) $48\frac{5}{6}$% (e) None of these

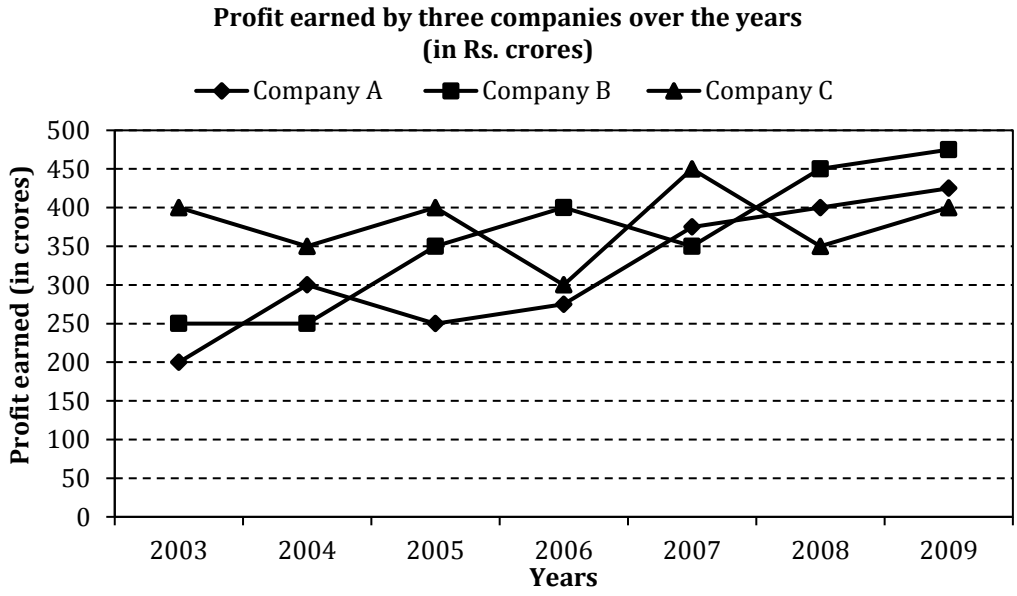
Sol. **(c);** Total people who travel by both bus (A & B) on Sunday
$= \frac{110}{100} \times 230 + \left(\frac{25}{200} \times 200 + 200\right)$
$= 253 + 225 = 478$
$Required\ percentage = \frac{478}{670} \times 100 = 71\frac{23}{67}\%$

15. If fare per person of Bus B is 90% of fare per person of Bus A on all days and difference between total fare of bus A and bus B on Monday is Rs. 1240 then find the total fare (in Rs.) of both bus on Friday.

(a) 2025 (b) 5550 (c) 4960 (d) 5354 (e) 3885

Sol. **(c);** Let fare per person of Bus A = x
Then, fare per person of Bus B = $0.9x$
According to question
$350x - 320 \times 0.9x = 1240$
$62x = 1240$
$x = 20$
Required fare $= 140 \times 20 + 120 \times 18$
$= 2800 + 2160 = 4960$

Directions (16-20): Study the following graph carefully and answer the questions given below:



16. What is the ratio of total profit earned by all companies in year 2007 to the total profit earned by all companies in year 2009.
(a) 23 : 22 (b) 47 : 52 (c) 44 : 45 (d) 33 : 34 (e) None of these

Sol. **(b);** $Required\ ratio = \frac{350+375+450}{400+425+475} = \frac{1175}{1300} = 47 : 52$

17. In which of the following years was the difference between the profits earned by company B and company A maximum?
(a) 2003 (b) 2004 (c) 2005 (d) 2008 (e) 2009

Sol. **(c);** Difference in 2003 = 50
Difference in 2004 = 50
Difference in 2005 = 100 (maximum among given options)
Difference in 2008 = 50
Difference in 2009 = 50

18. If profit earned by company A in 2010 increased by $\frac{20}{17}\%$ over previous year and profit earned by company B is increased by $\frac{300}{19}\%$ in 2010 over previous year then what is the sum of profit (in crores) earned by company A and B in 2010.
(a) 650 (b) 780 (c) 980 (d) 825 (e) 725

Sol. **(c);** $Profit\ of\ A\ in\ 2010 = \left(100 + \frac{20}{17}\right)\% \times 425$
$= \frac{1720}{100\times17} \times 425 = 430$
$Profit\ of\ B\ in\ 2010 = \left(100 + \frac{300}{19}\right)\%\ of\ 475$
$= \frac{2200}{19\times100} \times 475 = 550$
Required sum = 430 + 550 = 980

19. Highest total profit earned by all 3 companies together for any year is what percent of lowest total profit of all 3 companies togetherfor any year.
(a) $152\frac{16}{17}\%$ (b) $107\frac{2}{7}\%$ (c) $105\frac{3}{8}\%$ (d) $95\frac{3}{17}\%$ (e) None of these

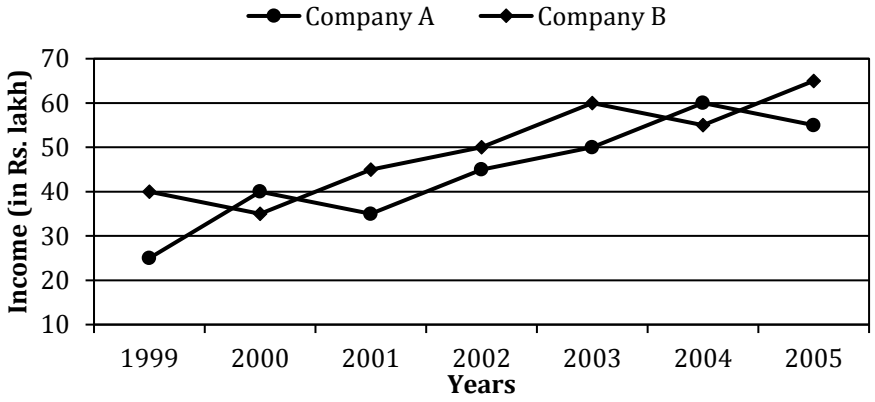
Sol. **(a);** Total profit in 2003 = 850
Total profit in 2004 = 900
Total profit in 2005 = 1000
Total profit in 2006 = 975
Total profit in 2007= 1175
Total profit in 2008 = 1200
Total profit in 2009 = 1300
$Required\ \% = \frac{1300}{850} \times 100 = 152\frac{16}{17}\%$

20. If in year 2002 ratio of profit earned by company A, B and C are 3 : 2 : 5 and profit of C in 2002 is 25% less than profit of C in 2003 then profit of B in 2009 increases by approximately what % percent over profit of B in 2002.
(a) 225% (b) 235% (c) 262.5% (d) 222.5% (e) 296%

Sol. **(e);** $Profit\ of\ C\ in\ 2002 = \frac{75}{100} \times 400 = 300$
Profit of B in 2002 = $\frac{300}{5} \times 2 = 120$
$Required\ \% = \frac{475-120}{120} \times 100 \approx 296\%$

Directions (21-25): Given below is the graph showing the income of two companies A and B. Study the graph carefully and answer the questions given below.

$$profit\ percent = \frac{income - expenditure}{expenditure} \times 100$$



21. Profit percent for company A in 1999 is $\frac{25}{2}\%$ and profit percent for company B in 2003 is $\frac{50}{3}\%$ and if profit percent is calculated on income then what is the ratio of expenditure for A in 1999 and B in 2003?
(a) 7 : 16 (b) 5 : 9 (c) 7 : 8 (d) 9 : 13 (e) 8 : 15

Sol. **(a);** For company A in 1999
Let expenditure of A in 1999 is E_A
Then $E_A + \frac{25}{200} \times 25 = 25$
$E_A = \frac{175}{8}$
For company B in 2003
Let expenditure of B in 2003 is E_B
$E_B + \frac{1}{6} \times 60 = 60$
$E_B = 50$
Required ratio = $\frac{175}{8 \times 50}$ = 7 : 16

22. For which of the following combinations of company and year, the percentage increase in income from previous year is the maximum among all the given combinations?
(a) A, 2000 (b) B, 2003 (c) B, 2001 (d) A, 2001 (e) B, 2005

Sol. **(a);** For A in 2000 $= \frac{15}{25} \times 100 = 60\%$
For B in 2003, $= \frac{10}{50} \times 100 = 20\%$
For B in 2001 $= \frac{10}{35} \times 100 = \frac{200}{7}\% = 28\frac{4}{7}\%$
For A in 2001, there is a decrease in income from the previous year.
For B in 2005 $= \frac{10}{55} \times 100 = \frac{200}{11}\% = 18\frac{2}{11}\%$

23. Income of A in 2006 increases by 20% over the previous year and income of B in 2007 is x. Income of B is 2006 is 75% more than income of B in 1999 and income of B in 2006 and 2007 are in ratio 7 : 8 then income of A in 2006 is what percent more or less than Income of B in 2007?

(a) 12.5% (b) 8.5% (c) 13.25% (d) 17.5% (e) 19.25%

Sol. **(d);** Income of A in 2006 = 66
Income of B in 2006 = 70
So income of B in 2007 = 80
Required percentage = $\frac{14}{80} \times 100 = 17.5\%$

24. Average income of company A over all given years is what percent more or less than average of income of company B over all years?

(a) $\frac{50}{3}\%$ (b) $26\frac{2}{7}\%$ (c) $\frac{80}{7}\%$ (d) $\frac{25}{2}\%$ (e) $\frac{50}{7}\%$

Sol. **(c);** Required percentage
$= \frac{\frac{350}{6} - \frac{310}{6}}{\frac{350}{6}} \times 100 = \frac{40}{350} \times 100 = \frac{80}{7}\%$

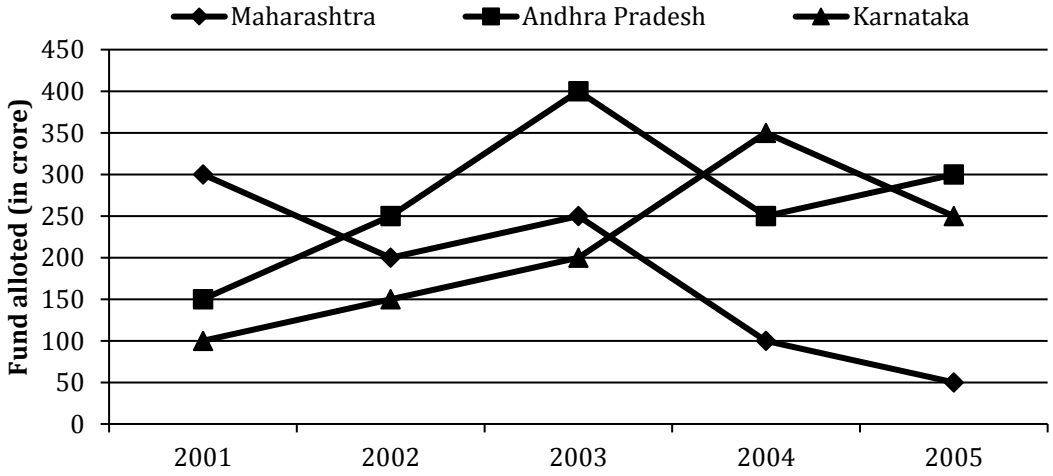
25. If profit percent earned by both companies in 2005 are equal and expenditure of B in 2005 is 40 lakh then expenditure of A in 2005 is what % more or less than expenditure of B in 2005? (approximately)

(a) 12 (b) 18 (c) 15 (d) 9 (e) 13

Sol. **(c);** According to the question,
$\frac{65-40}{40} = \frac{55-x}{x}$, where x is expenditure of A is 2005
25x = 2200 – 40x
65x = 2200
= 33.84 ≈ 34
required percentage ≈ $\frac{40-34}{40} \times 100 = 15\%$

Directions (26-30): Study the following line-graph and answer the following questions.

The graph below shows the funds allotted to three states by the government in different years.



26. What is the ratio of average funds allotted to Karnataka in years 2002, 2004 and 2005 to the average funds allotted to Andhra Pradesh in 2001, 2003 and 2005 ?

(a) 15:17 (b) 12:17 (c) 15:16 (d) 13:14 (e) 17:15

Sol. **(a);** $Req.ratio = \frac{\frac{150+350+250}{3}}{\frac{150+400+300}{3}} = \frac{750}{850} = \frac{15}{17}$

27. Total funds allotted to these three states in 2002 is what percent less than the total funds allotted to the three states in 2005 ?

(a) 5% (b) 0% (c) 4% (d) 6% (e) 2.5%

Sol. **(b);** Total funds in 2002 = 250 + 200 + 150 = 600 crore
Total funds in 2005 = 300 + 250 + 50 = 600 crore
Both are equal, Hence 0%

28. If in 2006, the funds allotted to Maharashtra, Andhra Pradesh and Karnataka increased by 10%, 20% and 40% respectively as compared to 2005, then find the average funds allotted to three states in 2006.
(a) 200 crores (b) 240 crores (c) 255 crores (d) 260 crores (e) 235 crores

Sol. **(c);** Fund allocated to Maharashtra in 2006 = 50 × 1.1 = 55 crore
Fund allocated to Andhra Pradesh in 2006 = 300 × 1.2 = 360 crore
Fund allocated to Karnataka in 2006 = 250 × 1.4 = 350 crore
$Req.average = \frac{55+360+350}{3} = \frac{765}{3} = 255\ crore$

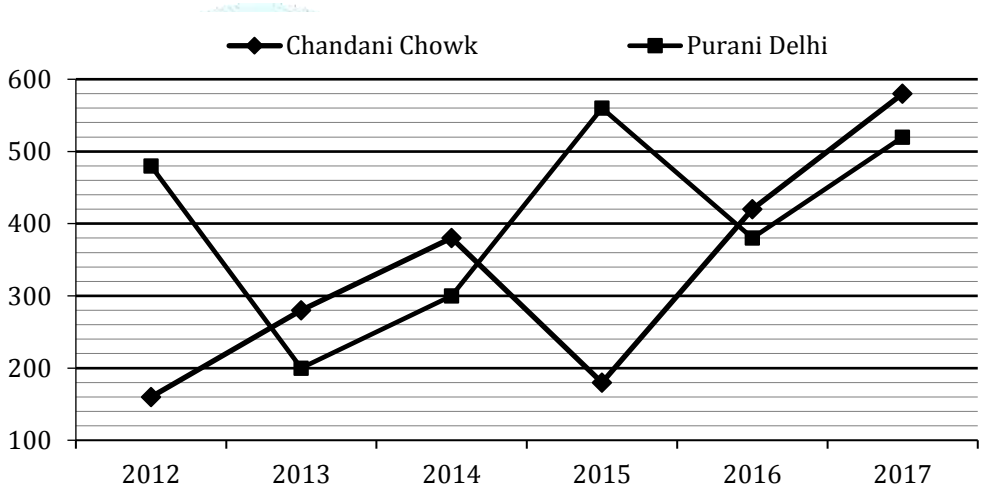
29. Funds allotted to Maharashtra in 2001, 2002 and 2003 is what percent less/more than funds allotted to Karnataka in 2003, 2004 and 2005 ?
(a) 3.25% (b) 7.25% (c) 4.25% (d) 6.25% (e) 6%

Sol. **(d);** Fund allocated to Maharashtra in 2001, 2002, 2003 = 300 + 200 + 250 = 750
Fund allocated to Karnataka in 2003, 2004, 2005 = 200 + 350 + 250 = 800
$Req.\% = \frac{(800-750)}{800} \times 100 = \frac{50}{8} = 6.25\%$

30. What is the average funds (in crore) allotted to the given three states in 2002 and 2005 ?
(a) 200 (b) 300 (c) 400 (d) 250 (e) 210

Sol. **(a);** $Req.Average = \frac{\frac{600}{3}+\frac{600}{3}}{2} = 200\text{crores}$

Direction(31-35):-Refer the graph and answer the following questions.
Data related to the number of votes polled in two constituencies Chandani Chowk and Purani Delhi during six years.



31. If in 2012 , $\frac{100}{9}$% of total registered voters did not poll vote from purani delhi and 20% of registered voters did not poll from chandani chowk then what is the sum of total registered voters in purani Delhi & Chandani chowk in 2012.
(a) 740 (b) 820 (c) 6240 (d) 520 (e) 550

Sol. **(a);** Total registered voters from chandani chowk = $\frac{160\times100}{80}$= 200
Total registered voters from purani Delhi = $\frac{480\times100}{\frac{800}{9}}$= 540
Required sum = 740

32. In 2015 if 20% of total votes polled from constituencies were invalid and valid votes from chandini chowk and Purani delhi are in the ratio 3 : 5 in 2015 then what is the number of invalid votes from Purani Delhi in 2015.
(a) 150 (b) 165 (c) 180 (d) 170 (e) 190

Sol. **(e);** Sol. Total polled votes from both constituencies in 2015
= 560 + 180 = 740
Valid votes from Purani Delhi = $740 \times \frac{80}{100} \times \frac{5}{8}$ = 370
Invalid votes from purani Delhi = 560 – 370 = 190

33. Number of votes Polled in purani delhi in 2012 is what percent of no. of votes polled of purani Delhi in 2017.
(a) $80\frac{2}{13}$% (b) $87\frac{3}{13}$% (c) $92\frac{4}{13}$% (d) $72\frac{9}{13}$% (e) $89\frac{3}{13}$%

Sol. **(c);** Required % = $\frac{480}{520} \times 100 = 92\frac{4}{13}\%$

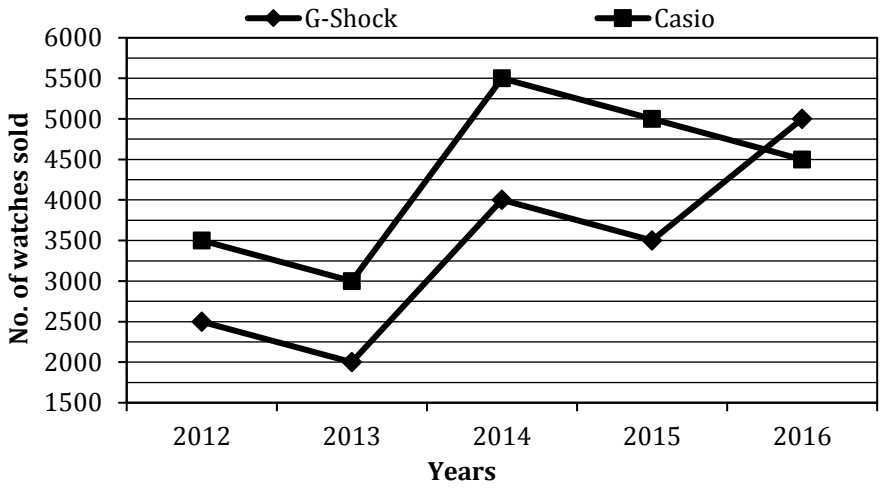
34. What is the ratio of votes Polled from chandani chowk in 2012, 2013 and 2015 together to the votes polled from purani delhi in 2014, 2015, 2017 together.
(a) 30 : 67 (b) 31 : 69 (c) 28 : 67 (d) 29 : 69 (e) 31 : 68

Sol. **(b);** Required ratio = $\frac{160+280+180}{300+560+520}$
= 31: 69

35. Number of votes polled in 2017 from purani Delhi decreases by what % over year 2015.
(a) $\frac{100}{3}\%$ (b) $\frac{100}{6}\%$ (c) $\frac{100}{7}\%$ (d) $\frac{50}{7}\%$ (e) $\frac{50}{17}\%$

Sol. **(d);** Required percentage = $\frac{560-520}{560} \times 100$
= $\frac{40}{560} \times 100 = \frac{50}{7}\%$

Directions (36-40): Read the following line graph and answer the following questions given below it.
There are two watch manufacturing companies G-Shock and Casio. The sale of watches by these two different companies in different years is given in the graph below.



36. What is the ratio of total sales of company G-Shock in 2012 and that of company Casio in 2014 together to the total sales of company Casio in 2012 and that of company G-Shock in 2015 together?
(a) 8:7 (b) 11:9 (c) 9:7 (d) 13:10 (e) 10:9

Sol. **(a);** Required ratio = $\frac{2500+5500}{3500+3500} = \frac{8000}{7000} = \frac{8}{7}$

37. What is the difference between the sales of company G-Shock in 2017 and that of company Casio in 2017 if the sales of company G-Shock and Casio increase by 20% and 10% respectively in 2017 as compared to 2016?
(a) 1340 (b) 1050 (c) 1080 (d) 1300 (e) 1500

Sol. **(b);** Sales of company G-Shock in 2017 = 1.2 × 5000 = 6000
Sales of company Casio in 2017 = 1.1 × 4500 = 4950
Required Difference = 6000 – 4950 = 1050

38. The total sales of both companies in 2015 is what percent more than the total sales of both the companies in 2013?
(a) 65% (b) 80% (c) 70% (d) 55% (e) 170%

Sol. **(c);** Sales of both the companies in 2015 = 3500 + 5000 = 8500
Sales of both the companies in 2013 = 3000 + 2000 = 5000
Required % = $\frac{(8500-5000)}{5000} \times 100 = \frac{3500}{5000} \times 100 = 70\%$

39. Find the difference between the total sales of company G-Shock from 2012 to 2014 and that of company Casio from 2013 to 2015?
(a) 7500 (b) 5500 (c) 6000 (d) 5000 (e) 6500

Sol. (d); Total sales of G-shock from 2012 to 2014 = 2500 + 2000 + 4000 = 8500
Total sales of casio from 2013 to 2015 = 3000 + 5500 + 5000 = 13500
Required Difference = 13500 – 8500 = 5000

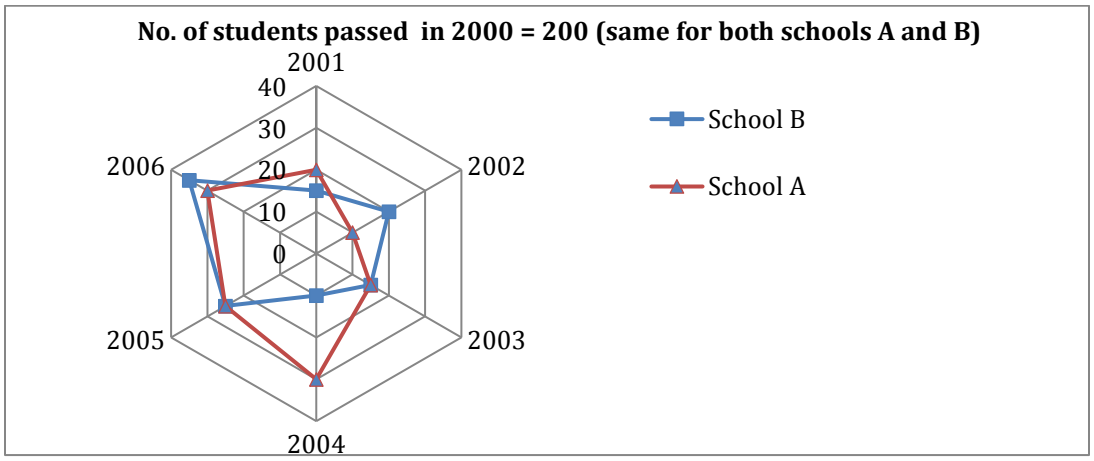
40. If the sales of company G-Shock increased by 25 % in 2012 over its sales in 2011, then find the percent increase in the sales of company G-Shock in 2015 with respect to the sales in 2011?

(a) 65% (b) 75% (c) 55% (d) 60% (e) 72%

Sol. **(b);** Sales of G-shock in 2011 = $2500 \times \frac{100}{125} = 2000$

Required percentage increase = $\frac{(3500-2000)}{2000} \times 100 = \frac{1500}{2000} \times 100 = 75\%$

Directions (41-45): Study the Radar graph given below and answer the following questions.



The Radar graph shows the percentage increase in the number of students passing out from schools A and B with respect to the number of students passed in 2000.

41. If the ratio of boys to girls (who passed out) in 2002 from school B was 6 : 4 and the ratio of students with Science background to those with non-science background was 7 : 3, then find the number of girls who had non-Science background from school B in 2002 ? (Given: boys with Science background were $85\frac{5}{7}\%$ of the students with Science background)

(a) 72 (b) 48 (c) 96 (d) 108 (e) 82

Sol. **(a);** Total no. of girls who passed out in 2002 from school B = $\frac{4}{10} \times 200 \times \frac{120}{100} = 96$

No. of students with Science background = $\frac{7}{10} \times 240 = 168$

Girls with Science background = $\frac{1}{7} \times 168 = 24$

Hence, girls without Science background = 96 – 24 = 72

42. If the ratio of boys to girls (who passed) in 2000 from school A was 12 : 8 and it was the same in 2004 as well for same school, then find the percentage increase in the number of girls passing out in 2004 from school A with respect to that of 2000 from the same school ?

(a) 35% (b) 30% (c) 45% (d) 60% (e) None of these

Sol. **(b);** No. of girls in 2000 = 80

No. of girls in 2004 = $\frac{8}{20} \times \frac{130}{100} \times 200 = 104$

Percentage % = $\frac{104-80}{80} \times 100 = \frac{24}{80} \times 100 = 30\%$

43. What is ratio of the average number of students passed from school A in 2001, 2002 and 2004 to that of from school B in 2002, 2004 and 2005 ?

(a) 73 : 71 (b) 72 : 67 (c) 72 : 71 (d) 75 : 71 (e) 71 : 72

Sol. **(c);** Required ratio = $\frac{\frac{240+220+260}{3}}{\frac{240+220+250}{3}} = \frac{720}{710} = \frac{72}{71}$

44. If $77\frac{7}{9}\%$ of the students who passed out from school B in 2006 went on to pursue engineering and the ratio of students who pursued engineering from school B in 2006 to that of from school A in 2005 is 3 : 2, then find the number of students who didn't pursue engineering from school A in 2005 ?

(a) 140 (b) 112 (c) 120 (d) 110 (e) 180

Sol. **(d);** No. of students from school B who pursued engineering in 2006 = $\frac{7}{9} \times \frac{135}{100} \times 200 = 210$

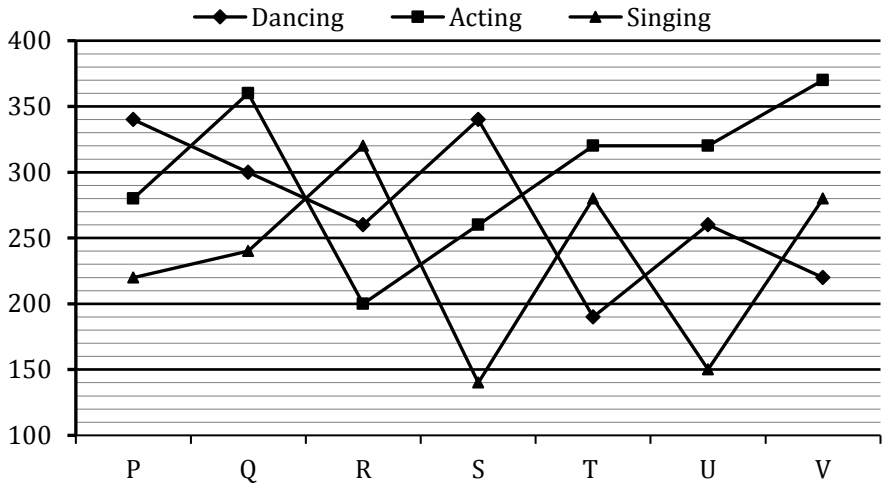
No. of students from school A pursued engineering in 2005 = $\frac{2}{3} \times 210 = 140$

No. of students from school A who didn't pursue engirneering in 2005 = $\frac{125}{100} \times 200 - 140 = 250 - 140 = 110$

45. What is the difference of the number of student who passed of school B in year 2004, 2005 and 2006 and number of student who passed of school A in same year ?
(a) 50 (b) 40 (c) 20 (d) 30 (e) 80

Sol. **(d);** Required difference
$= \left[200 \times \frac{110}{100} + 200 \times \frac{125}{100} + 200 \times \frac{135}{100}\right] \sim \left[200 \times \frac{130}{100} + 200 \times \frac{125}{100} + 200 \times \frac{130}{100}\right]$
$= [220 + 250 + 270] \sim [260 + 250 + 260] = 30$

Directions (46-50): The following graph shows the number of students participated in annual talent show of Kurukshetra university from different colleges. Study the graph carefully to answer the given questions.



46. Find the ratio of the total number of students participated in dancing from college P, T & V together to the total students participated in singing from college P, Q & R together.
(a) 28 : 27 (b) 25 : 26 (c) 25 : 29 (d) 27 : 29 (e) None of these

Sol. **(b);** Required ratio $= \frac{340+190+220}{240+320+220} = 25 : 26$

47. What is the average number of student participating in acting from Q and R and number of student participating in singing from T and V?
(a) 250 (b) 240 (c) 260 (d) 280 (e) 320

Sol. **(d);** Required average$= \frac{360+200+280+280}{4} = \frac{1120}{4} = 280$

48. If 40% of the total students of college S who participated in acting, are doing solo acting and other are in group acting. $66\frac{2}{3}\%$ of the students participated in group acting are a part of comedy dramas. Then find the total number of students who are acting in comedy dramas.
(a) 104 (b) 120 (c) 110 (d) 108 (e) 140

Sol. **(a);** Total number of students participating in Acting of college S=260
Number of students who are acting in comedy drama$= \frac{60}{100} \times \frac{2}{3} \times 260 = 104$

49. The difference between the no. of students participating in dancing from college P and R and that in singing from T and U ?
(a) 165 (b) 170 (c) 82 (d) 94 (e) 190

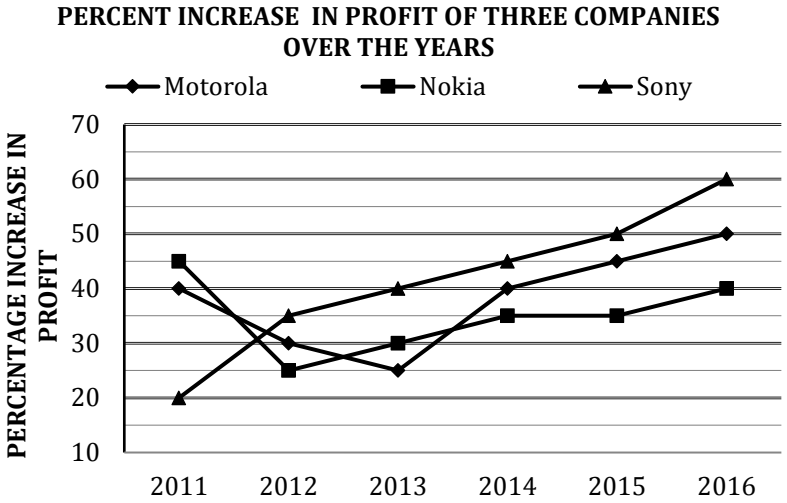
Sol. **(b);** Total number of students participating in dance from P and R=340+260=600
Number of students participating in singing from T and U is $=280 + 150 = 430$
Required Difference$=600 - 430 = 170$

50. The total number of students participated from college S is what percent more/less than that from college R? (Rounded off to two decimal places)
(a) 5.23% (b) 5.13% (c) 5.03% (d) 4.93% (e) 4.73%

Sol. **(b);** Total number of students from college S$=340 + 260 + 140 = 740$
Total number of students from college R=260+200+320=780
Required percentage $= \frac{780-740}{780} \times 100 \approx 5.13\%$

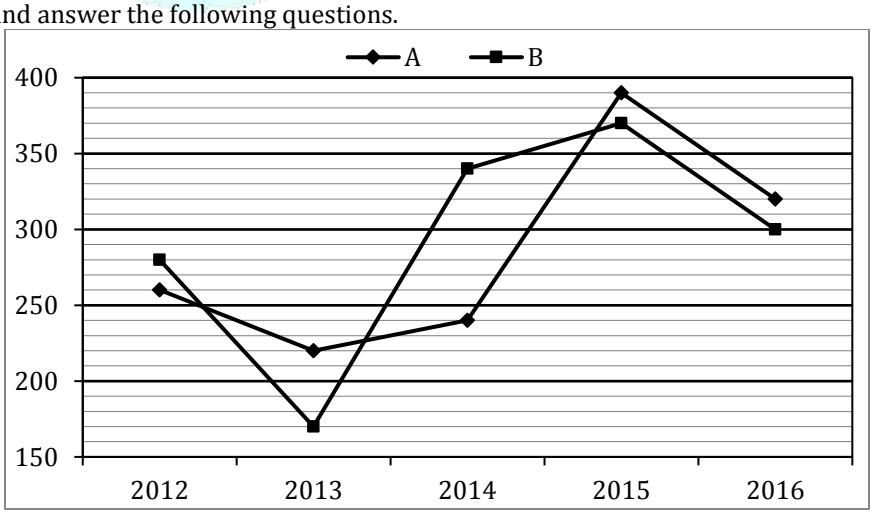
PREVIOUS YEAR QUESTIONS

Directions (1-5): Study the graph carefully to answer the questions that follow.



1. If profit for company Nokia in 2012 is 2000 and expenditure in 2013 for company Nokia is 50,000, then what is the total revenue in 2013 for Nokia? Give that total revenue = expenditure + profit.
   (a) Rs. 52600 (b) Rs.54200 (c) Rs.53280 (d) Rs.55800 (e) Rs.56020
2. If profit in year 2015 for company Sony is 3000 and profit of company Motorola in 2013 is equal to profit of company Sony in 2014 then what is the profit of company Motorola in 2013 ?
   (a) Rs.1500 (b) Rs.4000 (c) Rs.3500 (d) Rs.2000 (e) Rs.2500
3. What is the average percentage increase in profit for company Nokia over all the years?
   (a) 49% (b) 32% (c) 23% (d) 38% (e) 35%
4. What was the percentage increase in percent increase of profit of company Motorola in the year 2014 over its previous year ?
   (a) 60% (b) 65% (c) 55% (d) 50% (e) 70%
5. If profit earned by company Nokia in 2014 is 27,000 and by company Sony in 2014 is 43500 then what is the total profit earned by them in year 2013?
   (a) Rs. 25,000 (b) Rs. 35,000 (c) Rs. 40,000 (d) Rs. 50,000 (e) Rs. 45,000

Directions (6-10): The following line graph shows the number of visitors (in hundreds) in 2 museums A and B, in different years. Study it carefully and answer the following questions.



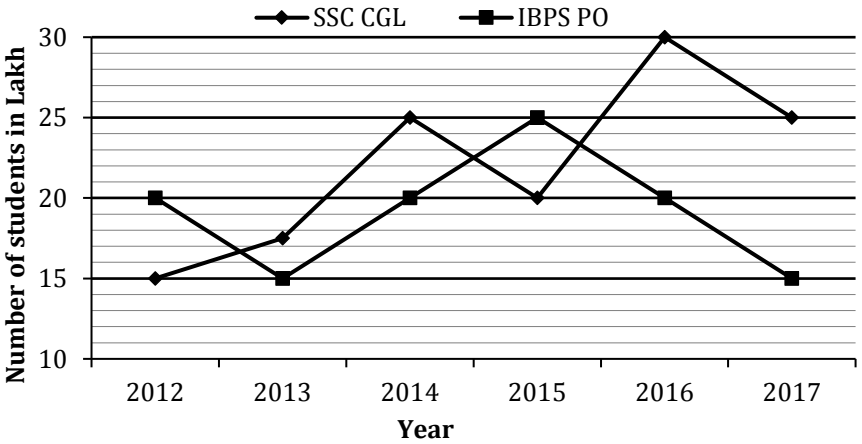
6. Number of visitors in museum B in 2015 is approximately what percent of sum of number in visitors of museum A in 2012 and that of museum B in 2016?
   (a) 60% (b) 52% (c) 66% (d) 58% (e) 72%
7. If in 2012, no. of visitors of museum A decreases by 25% and that of museum B increases of 20% then find the total number of visitors in 2012 in both of the museums.
   (a) 51300 (b) 53100 (c) 60500 (d) 63000 (e) 51550

8. If in 2014, 40% of the visitors in museum A are female and 60% of the visitors in museum B are male. Then find the total number of female visitors in both museums in 2014.
(a) 21200 (b) 23200 (c) 22000 (d) 22400 (e) 22300
9. Find the total number of visitors in museum B over the given years.
(a) 146000 (b) 144000 (c) 164000 (d) 125000 (e) 136000
10. Find the ratio of total visitors in museum B in 2012 and 2013 together to that of museum A in 2013 and 2016 together.
(a) 1 : 2 (b) 5 : 6 (c) 2 : 3 (d) 4 : 5 (e) 5 : 7

Directions (11-15): The graph shows the no. of students in two classes A and B in five different years. Read the following graph and answer accordingly.

11. What is the sum of differences between number of students through all these years in A and B?
(a)120 (b)130 (c)125 (d)110 (e)105
12 Total number of students in 2012 and 2015 together is approximately what percent of the total number of student from A in all these years?
(a) 64% (b) 68% (c) 70% (d) 62% (e) 60%
13. What is the ratio of Number of children in Class B for all the years to the total number of student in class A for all the years?
(a) 31 : 33 (b) 32 : 35 (c) 32 : 33 (d) 29 : 33 (e) 33 : 35
14. What is the sum total of student for class A in 2011 and 2013 and total number of students in 2015 & 2016 for class B?
(a)1560 (b)1400 (c)1500 (d)1460 (e)1650
15. Total students in class B for all the years is approximately what percent less than total no of students in both schools for all these years?
(a) 55% (b) 58% (c) 60 % (d) 50.8% (e) 62.2%

Directions (16-20): Given below is the line graph which shows the number of students who applied for SSC CGL and IBPS bank PO exams over different years.



16. What is the ratio of number of students who applied for SSC CGL in 2013, 2015 and 2016 together to the number of students who applied for IBPS PO in 2012, 2013 and 2017 together?
(a) 35 : 41 (b) 27 : 20 (c) 22 : 34 (d) 51 : 32 (e) 43 : 53

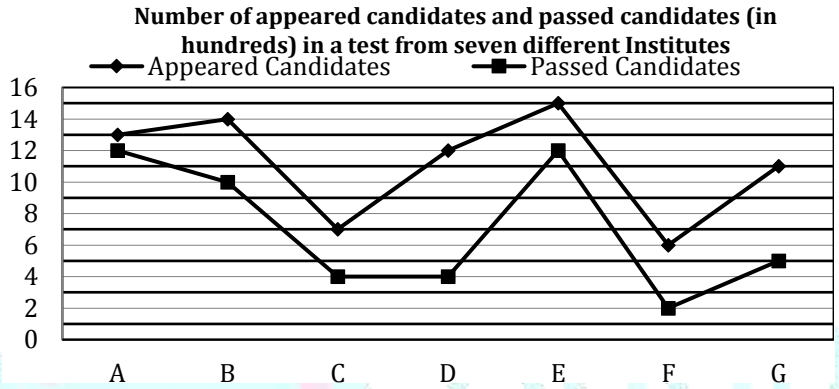
17. If in year 2014, 20% of students who applied for IBPS PO also applied for SSC CGL then the number of students who applied only for SSC-CGL are what percent of number of students who applied only for IBPS PO in year 2014?
(a) $131\frac{1}{4}\%$ (b) $133\frac{1}{4}\%$ (c) $123\frac{1}{3}\%$ (d) $110\frac{2}{3}\%$ (e) $99\frac{1}{10}\%$

18. If number of students who applied for SSC CGL in 2011 are $\frac{100}{3}\%$ less than students who applied for SSC CGL in 2012 then, number of students who applied for SSC CGL in 2011 are what percent of number of students who applied for IBPS PO in 2015?
(a) 30% (b) 25% (c) 35% (d) 40% (e) 50%

19. What is the difference between average of number of students who applied for SSC-CGL over all years and average of number of students who applied for IBPS-PO over all years? (approximately)
(a) 3.5L (b) 4L (c) 3L (d) 2.5L (e) 2L

20. If 45% of students who applied for SSC-SGL in 2015 are girls and ratio of number of girls who applied for SSC CGL in 2015 to the number of girls who applied for IBPS PO in 2017 is 4 : 5 then find the number of boys who applied for IBPS PO in 2017.
(a) 8L (b) 7L (c) 9.5L (d) 4L (e) 3.75L

Directions (21-25): Study the graph carefully to answer the questions that follow



21. What is the difference between the number of candidates appeared from institutions B, C, D and F together and number of candidates passed from institutions A, E and G together?
(a) 1100 (b) 900 (c) 1000 (d) 1200 (e) 800

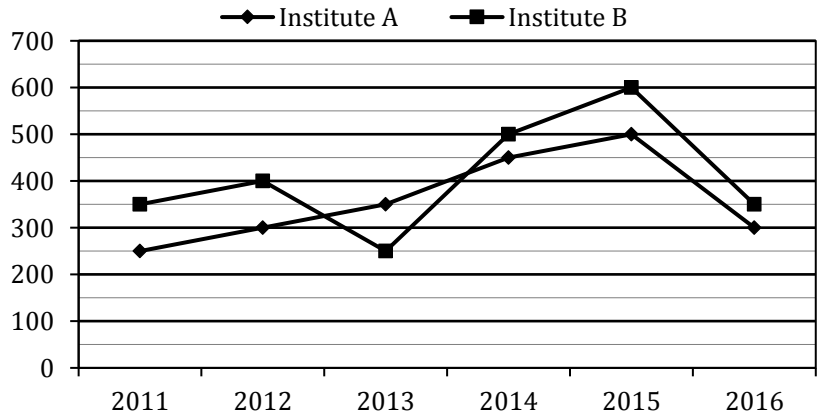
22. What is the average number of candidates passed from all the institutions together?
(a) 700 (b) 490 (c) 350 (d) 630 (e) 560

23. Number of candidates passed from institutions C and E together is approximately, what per cent of the total number of candidates appeared from institutions A and G together?
(a) 72% (b) 62% (c) 54% (d) 75% (e) 67%

24. From which institution, the difference between the number of appeared candidates and passed candidates is maximum?
(a) B (b) G (c) D (d) F (e) C

25. What is the respective ratio between the number of candidates who have failed from institution B and the number of candidates who have appeared from institution F?
(a) 2 : 5 (b) 2 : 3 (c) 4 : 3 (d) 1 : 3 (e) 5 : 3

Directions (26-30): Given below is the graph showing the number of students taking admission to two different institutes in the given years.



26. What is the ratio of 150% of number of student taking admission in year 2013 from both institutes to the 125% of number of students taking admission in year 2015 from both institutes?
(a) 36 : 55 (b) 55 : 57 (c) 53 : 57 (d) 46 : 53 (e) 51 : 57

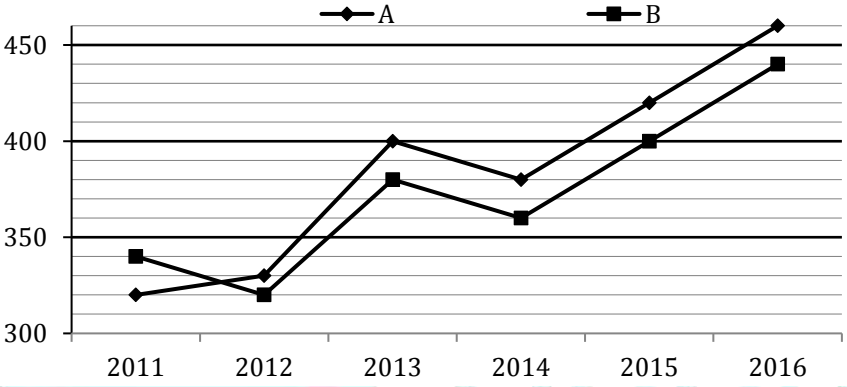
27. In which year, total number of students taking admission in both institutes together is second highest?
(a) 2015 (b) 2013 (c) 2014 (d) 2012 (e) 2016

28. Number of students taking admission in institute A in years 2010 and 2012 together are what percent of number of students taking admission in institute B in years 2013 and 2014 together, if the number of students taking admission in institute A in 2010 is 20% more than the number of students taking admission in institute A in 2011?
(a) 60% (b) 65% (c) 85% (d) 90% (e) 80%

29. Number of students taking admission in institute A in year 2011, 2013 and 2014 together are what percent more or less than the number of students taking admission in institute B in year 2012, 2013 and 2015 together?
(a) 20% (b) 16% (c) 19% (d) 13% (e) 15%

30. What is the ratio of total number of students taking admission in institute B to the total number of students taking admission in institute A over all years?
(a) 23 : 27 (b) 53 : 54 (c) 20 : 23 (d) 49 : 43 (e) 53 : 57

Directions(31-35): The graph shows the no. of students in two classes A and B in five different years. Read the following graph and answer accordingly.



31. What is the average of difference between number of students in A and B (no. of students in A-no. of students in B) through all these years?
(a)12.67 (b)13.67 (c)11.67 (d)15 (e)14

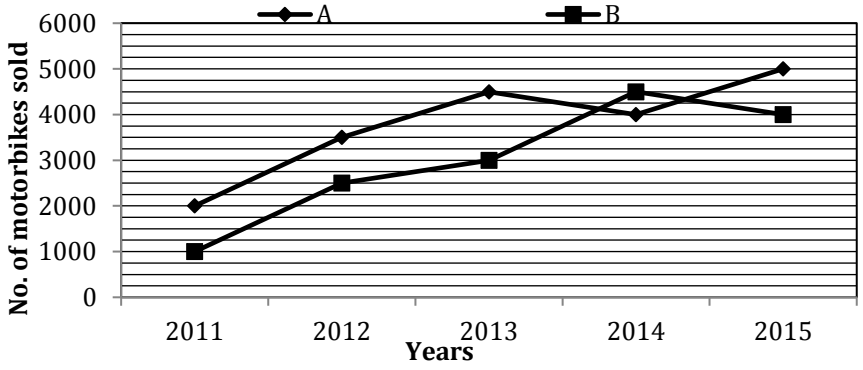
32. Total number of students in 2012 and 2015 is what percent of the total number of student from A in all these years?
(a) $63\frac{7}{11}\%$ (b) $65\frac{5}{11}\%$ (c) 70% (d) 62% (e) $67\frac{3}{11}\%$

33. What is the ratio of Number of children in Class B for all the years to the total number of student in class A for all the years?
(a) 31 : 33 (b) 32 : 35 (c) 32 : 33 (d) 29 : 33 (e) 33 : 35

34. What is the sum of total of student for A in 2011, 2013 and total number of students in 2015 & 2016 for B?
(a)1560 (b)1400 (c)1500 (d)1460 (e)1550

35. Total students in class B for all the years is approximately what percent less than total no of students in both schools for all these years?
(a) $54\frac{9}{13}\%$ (b) 52% (c) $60\frac{10}{13}\%$ (d) $50\frac{10}{13}\%$ (e) $50\frac{11}{13}$

Directions (36-40): Read the following line graph and answer the following questions given below it –
There are two motorbike manufacturing companies A and B. The sale of motorbikes by these two different companies in different years is given in the graph below.



36. What is the ratio of total sales of company B in 2012 and that of company A in 2014 to the total sales of company A in 2011 and that of company B in 2015?
(a) 13:12 (b) 11:9 (c) 12:7 (d) 13:10 (e) 12 : 13

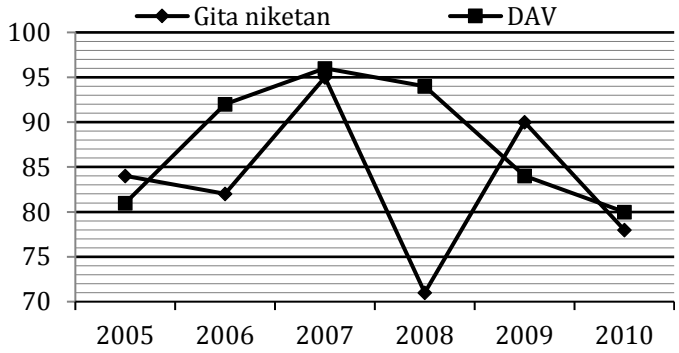
37. What is the difference between the sales of company A in 2016 and that of company B in 2016 if the sales of company A and B increase by 20% and 10% respectively in 2016 as compared to 2015?
(a) 1700 (b) 1600 (c) 1800 (d) 2100 (e) 1400

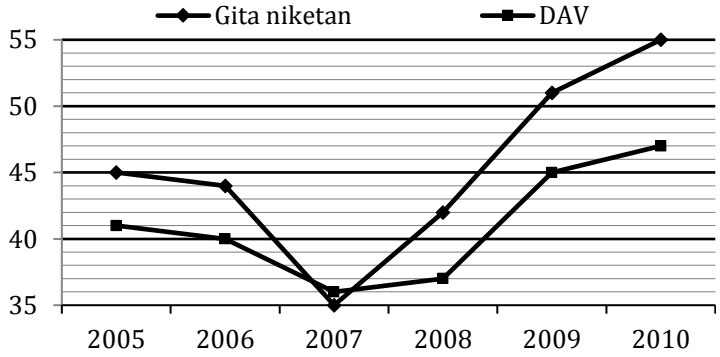
38. The total sales of both companies in 2015 is what percent more than the total sales of both the companies in 2011?
(a) 280% (b) 180% (c) 200% (d) 250% (e) 220%

39 Find the difference between the total sales of company A from 2012 to 2014 and that of company B from 2013 to 2015?
(a) 750 (b) 500 (c) 600 (d) 400 (e) 550

40. If the sales of company A increased by 33.33% in 2011 over its sales in 2010, then find the percent increase in the sales of company A in 2015 with respect to the sales in 2010?(up to two decimal places)
(a) $233\frac{1}{3}\%$ (b) $210\frac{1}{3}\%$ (c) $333\frac{1}{3}\%$ (d) $272\frac{3}{4}\%$ (e) None of these

Directions(41-45): Given below is the line graphs, first showing number of students participated (in hundreds) in NTSE (National Talent Search Exam) from 2 different schools from 2005-2010, the second line graph shows the corresponding percentage of girls participated in this exam. Read the graphs carefully and answer the following questions:





41. If no. of boys participated from Greenfield public school in 2009 is 10% less than the total no. of girls participated from DAV and Geeta Niketan in that year and the boys participated in 2009 from Greenfield was 45% of the total students participated from greenfield in that year, then find the no. of girls participated from greenfield school in 2009?
(a) 9428 (b) 8294 (c) 9211 (d) 9207 (e) 9084

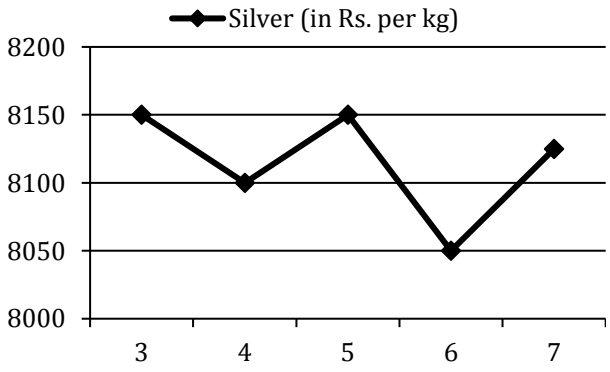
42. The difference between total number of boys participated and total number of girls participated from gita niketan in all years together is what percent of the total students participated from gita niketan in all years?
(a) 9.7% (b) 9.1% (c) 10.6% (d) 8.4% (e) 8.7%

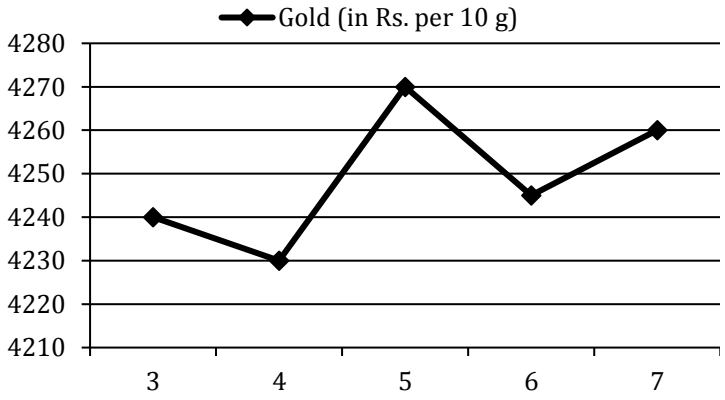
43. Girls participated from DAV in 2007 is approximately what percent less/more than the boys participated from Gita Niketan in 2009 and 2010 together?
(a) 56% (b) 42% (c) 50% (d) 44% (e) 66%

44. Find the difference between average no. of students participated from the 2 Schools over the years.
(a) 4.5 (b) 45 (c) 415 (d) 465 (e) 450

45. Find the total number of boys participated from Gita Niketan in all years together
(a) 23225 (b) 27425 (c) 28525 (d) 29625 (e) None of these

Directions (46-50): The following graphs show the price of gold (in Rs. per 10 g) and silver (in Rs. per kg) on 3rd, 4th 5th, 6th and 7th of August 2010 in Mumbai. Study the graphs and answer the questions that follow.





46. On 8th August, the price of silver (in Rs. per kg) is increased by 12% as compared to previous day and the price of gold (in Rs. 10 g) is decreased by 15% as compared to previous day then find the ratio of the average price of silver (in Rs. per kg) from 4th to 8th August to the average price of gold (in Rs. per 10 g) from 5th to 8th August.
(a) 1491 : 3020 (b) 8305 :4099 (c) 4017 : 1213 (d) 1213 : 4017 (e) None of these

47. On 2nd August the ratio between the price of silver (in Rs. per kg) and gold (in Rs. per 10 g) is 51 : 25 and the price of gold on 3rd August was 6% more than that of 2nd August then Find the average price of silver (in Rs. per kg) from 2nd August to 6th August ?
(a) 8212 Rs. (b) 8132 Rs. (c) 8130 Rs. (d) 8120 Rs. (e) 8122 Rs.

48. By how much per cent the rate of silver is less than the rate of gold on 6th August, 2010 ?
(a) 92% (b) 98% (c) 108% (d) Can't be determined (e) 88%

49. What is difference of average price of gold (in Rs/10gm) and average price of silver(in Rs/kg) ?
(a) 3866 (b) 4866 (c) 3226 (d) 3846 (e) 3626

50. What is the average price of silver (in Rs./kg) for the given dates ?
(a) 8217 (b) 8007 (c) 8120 (d) 8140 (e) 8115

PREVIOUS YEAR SOLUTIONS

1. (a); Profit in 2013 = $2000 \times \frac{130}{100}$ = Rs.2600
Total revenue = 50,000 + 2600 = Rs.52600

2. (d); Profit of company Motorola in 2013 = $\frac{3000\times100}{150}$
= Rs.2000

3. (e); Required average = $\frac{45+25+30+35+35+40}{6}$ $\frac{210}{6}$ = 35%

4. (a); Required percentage = $\frac{40-25}{25} \times 100 = \frac{15}{25} \times 100 = 60\%$

5. (d); Profit earned by Company Nokia in 2013 = $\frac{27000\times100}{135}$
= Rs.20,000
Profit earned by company Sony in 2013 = $\frac{43500\times100}{145}$
= Rs.30,000
Total profit = Rs.50,000

6. (c); Required percentage $= \frac{370}{560} \times 100 \approx 66\%$

7. (b); $260 \times \frac{75}{100} + 280 \times \frac{120}{100} = 195 + 336 = 531$hundreds
= 53100

8. (b); Female in museum A = 9600
Female in museum B = 13600
Total female visitors = 23200

9. (a); $280 + 170 + 340 + 370 + 300 = 1460$ hundred
= 146000

10. (b); Required ratio = $\frac{450}{540} = 5:6$

11. (d); Sum of differences=20 + 10 + 20 + 20 + 20 + 20
= 110

12. (a); Total students in 2012 & 2015 = 650 + 820 = 1470
Total students from A in all given years = 2310
Desired % = $\frac{1470}{2310}$ x 100 ≈ 64 %

13. (c); No. of children for Class B in all years = 2240
No of children for class A in all years = 2310
Desired ratio = $\frac{2240}{2310}$ = 32 : 33

14. (a); Total desired sum = (320 + 400) + (400 + 440)=1560

15. (d);
$Class\ B = 2240$
$Class\ A = 2310$ ⟩ Total = 4550
Desired value = $\frac{4550-2240}{4550} \times 100 \approx 50.8\%$

16. (b); Required ratio
= (17.5 + 20 + 30) : (20 + 15 + 15)
= 67.5 : 50 = 27 : 20

17. (a); Number of students applied only for SSC-CGL in 2014
$= 25 - \frac{20}{100} \times 20 = 25 - 4 = 21\ L$
$Required\% = \frac{21}{20-4} \times 100$
$= \frac{21}{16} \times 100 = 131\frac{1}{4}\%$

18. (d); Number of students who applied for SSC-CGL in 2011
$= \frac{2}{3} \times 15 = 10\ L$
$Required\ \% = \frac{10}{25} \times 100 = 40\%$

19. (c); $Required\ difference$
$= \frac{1}{6}[(15 + 17.5 + 25 + 20 + 30 + 25)$
$- (20 + 15 + 20 + 25 + 20 + 15)]$

20. (e); Number of girls who applied for SSC CGL in 2015
$= 20 \times \frac{45}{100} = 9$ L
Number of girls who applied for IBPS PO in 2017
$= 9 \times \frac{5}{4} = 11.25$ L
Number of boys who applied for IBPS PO in 2017
= 15 - 11.25 = 3.75 L

21. (c); Required difference = (14+7+12+6) – (12+12+5)
= 39 – 29 = 10 hundred = 1000

22. (a); Required average = $\frac{12+10+4+4+12+2+5}{7} = \frac{49}{7}$
= 7 hundred = 700

23. (e); (Required % = $\frac{(4+12)}{(13+11)} \times 100$
$= \frac{16}{24} \times 100 = 66.67\% \approx 67\%$

24. (c); Difference for institute A = (13 – 12) = 1
B = (14 – 10) = 4
C = (7 – 4) = 3
D = (12 – 4) = 8
E = (15 – 12) = 3
F = (6 – 2) = 4
G = (11 – 5) = 6
∴ Required institute = D

25. (b); Required Ratio = $\frac{(14-10)}{6} = \frac{4}{6} = 2:3$

26. (a); Required ratio = 150% of (350 + 250) : 125% of (500 + 600)= 36 : 55

27. (c); While observing the graph carefully, we find that the number of students are more in year 2014 and 2015 than any other year. So, the number of students taking admission in both institute is second highest in 2014.

28. (e); Number of students taking admission in institute A in 2010
$= \frac{6}{5} \times 250 = 300$
$Required\ \% = \frac{300+300}{250+500} \times 100 = \frac{600}{750} \times 100 = 80\%$

29. (b); $Required\ percentage$
$= \frac{(400+250+600)-(250+350+450)}{400+250+600} \times 100 = \frac{200}{1250} \times 100$
= 16%

30. (d); Required Ratio = 2450 : 2150 = 49 : 43

31. (c); Difference = $-20 + 10 + 20 + 20 + 20 + 20 = 70$
Avg. $= \frac{70}{6} \approx 11.67$

32. (a); Total students in 2012 & 2015 = 650 + 820 = 1470
Total students from A in all given years = 2310
Desired % = $\frac{1470}{2310}$ x 100 = $63\frac{7}{11}\%$

33. (c); No. of children for Class B in all years = 2240
No of children for class A in all years = 2310
Desired ratio = $\frac{2240}{2310}$ = 32 : 33

34. (a); Total desired sum = (320 + 400) + (400 + 440) = 1560

35. (d);
$Class\ B = 2240$
$Class\ A = 2310$ ⟩ Total = 4550

Desired value = $\frac{4550-2240}{4550} \times 100 = 50\frac{10}{13}\%$

36. (a); Total sales of company B in 2012 and that of company A in 2014 = 2500 + 4000 = 6500
Total sales of company A in 2011 and that of company B in 2015 = 2000 + 4000 = 6000
Ratio = $\frac{6500}{6000} = \frac{13}{12}$

37. (b); Sales of company A in 2016 = $5000 \times \frac{120}{100} = 6000$
Sales of company B in 2016 = $4000 \times \frac{110}{100} = 4400$
Difference = 6000 – 4400 = 1600

38. (c); Total sales in 2011 = 2000 + 1000 = 3000
Total sales in 2015 = 5000 + 4000 = 9000
Req.% = $\frac{9000-3000}{3000} = 200\%$

39. (b); Sales of company A from 2012 to 2014 = 3500 + 4500 + 4000 = 12000
Sales of company B from 2013 to 2015 = 3000 + 4500 + 4000 = 3000 + 4500 + 4000 = 11500
Difference = 500

40. (a); Sales of company A in 2010 = 2000 × ¾ = 1500
Percentage % = $\frac{5000-1500}{1500} \times 100$
$= \frac{3500}{1500} \times 100 = 233\frac{1}{3}\%$

41. (d); Girls participated in 2009 = $\frac{45}{100} \times 8400 + \frac{51}{100} \times 9000$
$= 3780 + 4590 = 8370$
boys participated from green field public school
$= \frac{90}{100} \times 8370 = 7533$
total no. of students of green field = $7533 \times \frac{100}{45}$
$= 16740$
no. of girls = 16740 – 7533 = 9207

42. (a); Total no. of girls participated = 22575
Total no. of boys participated = 27425
required percentage = $\frac{27425-22575}{50000} \times 100 = 9.7\%$

43. (a); Girls participated from DAV in 2007
$= 9600 \times \frac{36}{100} = 3456$
boys participated from Gita Niketan in 2009 and 2010 together = $9000 \times \frac{49}{100} + 7800 \times \frac{45}{100} = 7920$
percentage = $\frac{7920-3456}{7920} \times 100 \approx 56\%$

44. (e); required difference = $\frac{527}{6} - \frac{500}{6} = \frac{2700}{6}$ hundred
$= \frac{2700}{6} = 450$

45. (b); Total no. of boys
$= 84 \times \frac{55}{100} + 82 \times \frac{56}{100} + \frac{65}{100} \times 95 + \frac{58}{100} \times 71$
$+ \frac{49}{100} \times 90 + \frac{45}{100} \times 78 = 27425$ boy

46. (b); Average price of silver from 4th to 8 th August
$= \frac{8100+8150+8050+8125+1.12\times8125}{5} = \frac{41525}{5}$
Average price of Gold from 5th to 8th August
$= \frac{4270+4245+4260+0.85\times4260}{4}$
$= \frac{16396}{4}$
∴ Required Ratio = $\frac{41525\times4}{16396\times5}$ = 8305 :4099

47. (e); Price of gold on 2nd August = $\frac{100}{106} \times 4240$ = 4000 Rs.
Price of silver on 2nd August = $\frac{4000}{25} \times 51 = 8160$
Required average price = $\frac{8160+8150+8100+8150+8050}{5}$
= 8122 Rs.

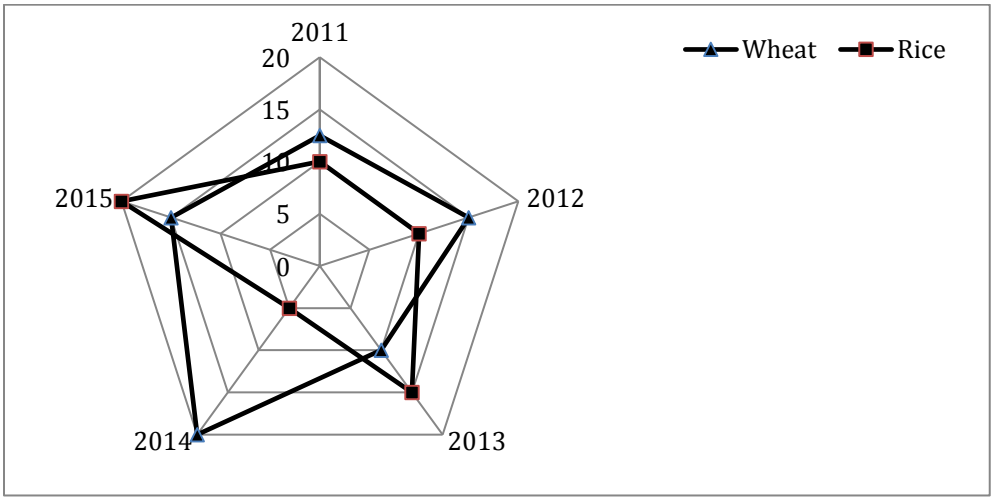
48. (b); Rate of 1 kg silver on 6th August = Rs. 8050
Rate of 1 kg gold on 6th August = Rs. 424500
Therefore, required percentage = $\frac{424500-8050}{424500} \times 100$
$= \frac{416450}{424500} \times 100 \approx 98\%$

49. (a); Average price of gold per 10gm for given five days
$= \frac{(4240+4230+4270+4245+4260)}{5} = \frac{21245}{5}$ = Rs. 4249
Average price of silver per kg for given five days = $\frac{8150+8100+8150+8050+8125}{5} = 8115$
∴ Required difference= 8115 – 4249=3866

50. (e); Average price of silver = $\frac{8150+8100+8150+8050+8125}{5}$
$= \frac{40575}{5}$ = Rs. 8115 per kg

PRACTICE SET (LEVEL–I)

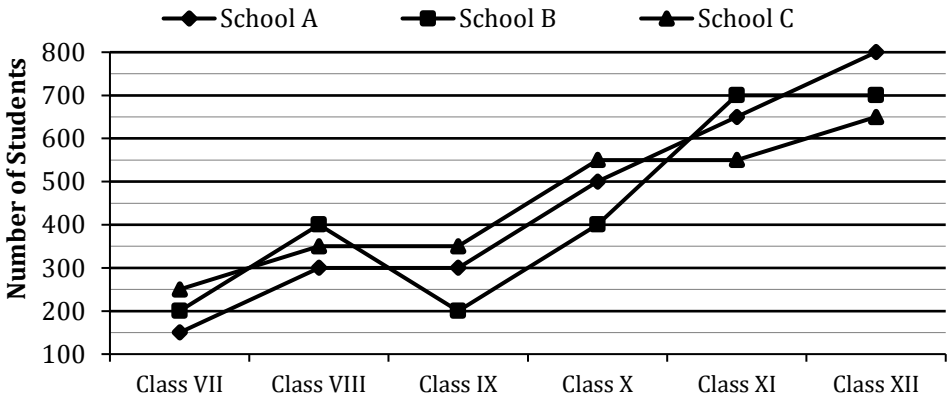
Directions (1-5): Study the following Radar graph and answer the questions based on it.
Given below is the Radar graph which shows the percentage rise in price of Wheat & Rice over the given years.



1. If ratio between price of rice & wheat in 2014 is 3 : 4 then what will be their ratio of price in 2015
(a) 20 : 23 (b) 19 : 21 (c) 18 : 23 (d) 23 : 28 (e) 17 : 19
2. If price of wheat in year 2011 is 7200 Rs /Quintal then what will be its price in year 2013
(a) 8420 (b) 9012 (c) 10500 (d) 83250 (e) 9108
3. What is the effective percentage increase in price of wheat from year 2011 to year 2013
(a) 30% (b) 22% (c) 23.5% (d) 26.5% (e) 32.75%
4. If a person expends Rs 4140 in buying rice at the rate of 120 Rs/kg in year 2012 then he has to reduce his consumption of rice by how many kg in year 2013 for the same expenditure of 4140.
(a) 4.5 kg (b) 3 kg (c) 2 kg (d) 2.5 kg (e) 4 kg
5. If the price of wheat in 2013 is 132 Rs/kg then what will be total cost of 25 kg of wheat in 2012.
(a) 1250 Rs (b) 3000 Rs (c) 1500 Rs (d) 2000 Rs (e) 2500 Rs

Directions (6-10): Study the following graph carefully to answer the questions given below.

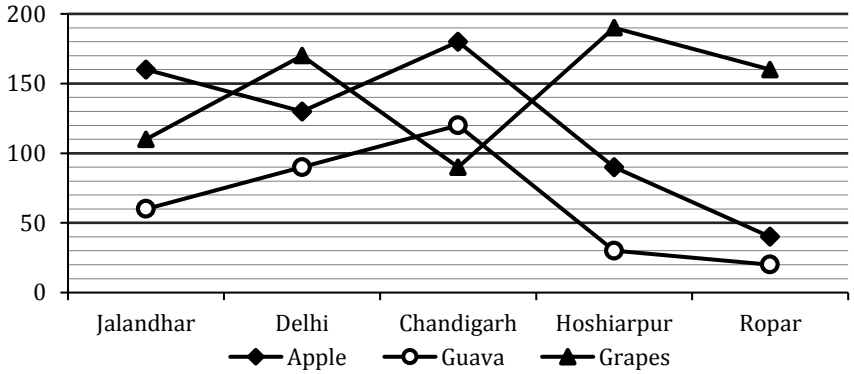
Number of students in different grades in three schools in year 2015



6. In year 2016 the number of students of class XII in three schools A, B and C increase by 5%, 10% and 20% respectively with comparison to the last year in same class. Find the ratio of students in class XII of all schools in 2016 ?
(a) 84:78:77 (b) 84:77:78 (c) 88:77:78 (d) 8:7:9 (e) 78 : 84 : 77
7. By what percent the number of students in class IX in school C less than total students in class XII in all schools together ?
(a) $83\frac{31}{43}\%$ (b) $67\frac{31}{43}\%$ (c) $74\frac{31}{43}\%$ (d) $71\frac{21}{43}\%$ (e) 58%
8. What is average number of students in school A in all grades taken together ?
(a) 456 (b) 465 (c) 450 (d) 460 (e) 445
9. What is respective ratio of the total students in all the grades in all 3 schools A, B and C ?
(a) 27 : 26 : 27 (b) 23 : 13 : 9 (c) 9 : 13 : 26 (d) 3 : 13 : 11 (e) None of these

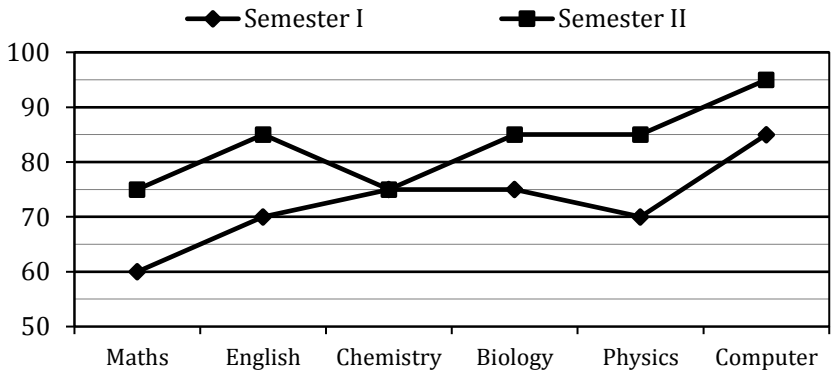
10. The number of class VIII students in school B is what percent of total students in same school ?
(a) $15\frac{5}{13}\%$ (b) $16\frac{2}{13}\%$ (c) $17\frac{5}{13}\%$ (d) $15\frac{8}{13}\%$ (e) $12\frac{7}{13}\%$

Directions (11-15): Study the following graph carefully to answer the questions that follow:
Given below is the graph showing the Cost of three different fruits (in rupees per kg.) in five different cities.



11. In which city difference between cost of one kg of apple and cost of one kg of Grapes is second lowest
(a) Delhi (b) Chandigarh (c) Jalandhar (d) Ropar (e) Hosiarpur
12. Average of cost of all three fruit in Ropar is what percent of average of all three fruits is Jalandhar.
(a) $33\frac{1}{3}\%$ (b) $66\frac{2}{3}\%$ (c) 62.5% (d) $20\frac{1}{4}\%$ (e) None of these
13. What is the ratio of sum of cost price of apple in Delhi, Chandigarh and Ropar together to the sum of cost price of Guava in Jalandhar, Delhi and Hoshiarpur together.
(a) 35 : 18 (b) 23 : 19 (c) 27 : 14 (d) 36 : 29 (e) 24 : 17
14. A shopkeeper from Jalandhar purchases apple and Guava at the rate given in table. At what price should he sell 2 kg of apple and 3 kg of Guava so, that on selling all quantity he gains overall profit of 35% percent
(a) 625 (b) 575 (c) 600 (d) 620 (e) 675
15. Cost of Guava in Jalandhar and Ropar together are what percent more or less than cost of Grapes from Delhi and Chandigarh together.
(a) $69\frac{3}{13}\%$ (b) $72\frac{5}{7}\%$ (c) $67\frac{3}{13}\%$ (d) $70\frac{5}{7}\%$ (e) None of these

Direction (16-20): Refer the following line graph and answer the questions based on it.
The line graph shows the percentage of students passed in different subjects in a class in two semesters.
Total number of student in the class = 600 (Same for both the semesters)



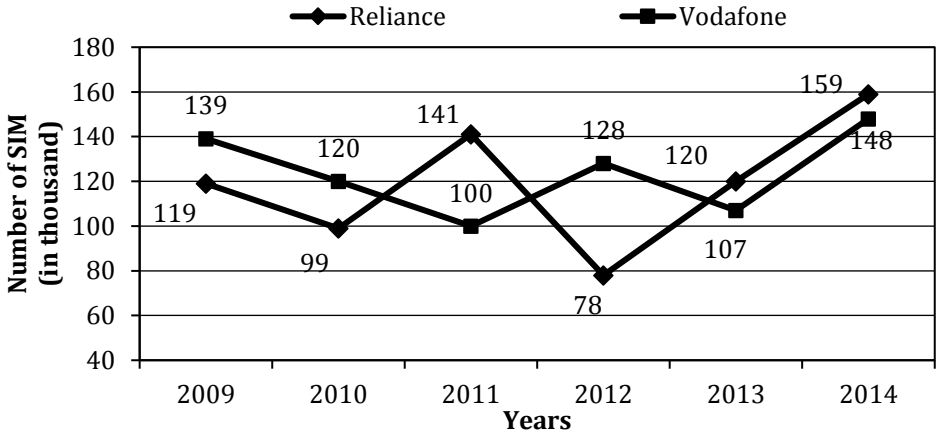
16. What is the average number of students passed in semester II in Chemistry, Biology and Physics?
(a) 500 (b) 490 (c) 480 (d) 510 (e) 450
17. What is the ratio of number of students not passed in Physics in semester I to the number of students passed in Computer in semester II?
(a) 19 : 14 (b) 14 : 19 (c) 19 : 6 (d) 6 : 19 (e) 12 : 19
18. In semester II, the number of students passed in Computer is how much percent more than the number of students passed in Maths in semester II ?
(a) $26\frac{2}{3}\%$ (b) $27\frac{1}{2}\%$ (c) $23\frac{1}{3}\%$ (d) $33\frac{1}{3}\%$ (e) $26\frac{1}{3}\%$

19. After the revision of result for semester I, it is found that the number of students passed in Chemistry is increased by 4% to the previous number. What is the number of students passed in Chemistry after the revision of the results?
(a) 472 (b) 470 (c) 468 (d) 466 (e) 486

20. What is the total number of students passed in Maths or English in semester I, if the number of students passed in both the subjects is 245?
(a) 540 (b) 530 (c) 525 (d) 535 (e) Cannot be determined

Directions (21-25): Study the following line graph and answer the questions based on it.

Number of Sim (in thousand) sold by two companies over the years



21. What is the difference between the number of sim sold by company Vodafone in 2011 and 2012 ?
(a) 50000 (b) 42000 (c) 33000 (d) 28000 (e) 27000

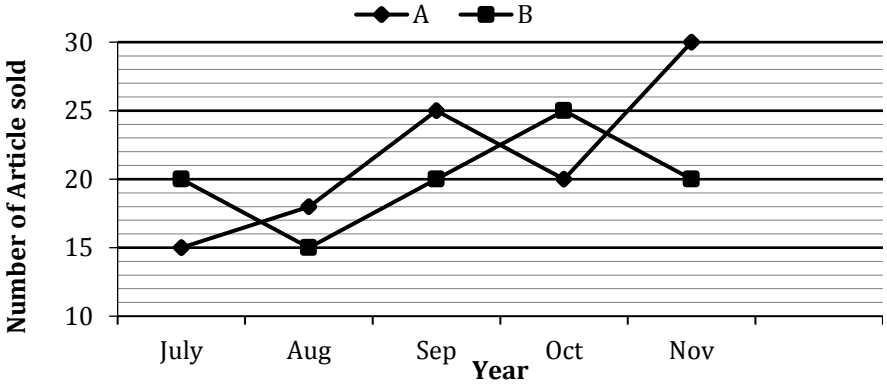
22. What is the difference between the total sim sold by the two companies in the given years ?
(a) 19000 (b) 22000 (c) 26000 (d) 28000 (e) 23000

23. What is the average numbers of sim sold by Reliance company over the given period ? (rounded off to nearest integer)
(a) 119333 (b) 113666 (c) 112778 (d) 111223 (e) 191333

24. In which of the following year, the difference between the number of sims sold by Reliance company and Vodafone is the maximum in the given years ?
(a) 2009 (b) 2010 (c) 2011 (d) 2012 (e) 2013

25. The number of sims sold by company Vodafone in 2011 was what per cent of the number of sims sold by Reliance company in the same year ?
(a) $73\frac{130}{141}\%$ (b) 111% (c) $80\frac{130}{141}\%$ (d) $82\frac{121}{141}\%$ (e) $70\frac{130}{141}\%$

Directions (26-30): Given below is the line graph which shows the number of article sold by two shopkeepers in five different months



26. What is the ratio of total articles sold by A and B together in Sep to the total articles sold by A in July and Aug together.
(a) 15 : 17 (b) 15 : 11 (c) 19 : 17 (d) 20 : 13 (e) 19 : 12

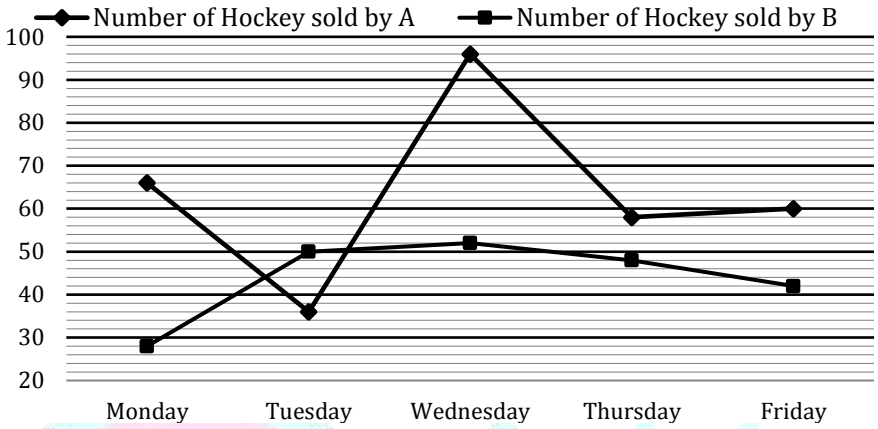
27. If number of articles sold by A in December month of same year is in increased by $23\frac{1}{3}\%$ over previous month, then what will be the average number of articles sold by A in Sep, Oct and December
(a) $20\frac{1}{3}$ (b) $18\frac{2}{3}$ (c) $26\frac{2}{3}$ (d) $27\frac{1}{3}$ (e) 24

28. Find the ratio of number of articles sold by A in August and November together to the number of articles sold by B in July and Oct together.
(a) 12 : 11 (b) 20 : 19 (c) 16 : 15 (d) 17 : 16 (e) 13 : 12

29. If Articles sold By A in June of same year is $33\frac{1}{3}\%$ more than that of sold in July of same year then articles sold by B in Aug and Sep. together are what percent more or less than articles sold by A in June.
(a) 80% (b) 87.5% (c) 62.5% (d) 50% (e) 75%

30. What is the difference between average of articles sold by A is July, Oct and Nov to the average of articles sold by B in Aug, Sep and Oct.
(a) $2\frac{2}{3}$ (b) $1\frac{2}{3}$ (c) $2\frac{1}{3}$ (d) $4\frac{1}{3}$ (e) $3\frac{1}{3}$

Direction (31-35): Bar graph is given below which shows the number of Hockey sold by seller A and seller B on five days.



31. Total number of Hockey sold by A and B together on Wednesday is how much percentage more than the number of Hockey sold by A and B together on Monday?
(a) $15\frac{2}{3}\%$ (b) $8\frac{1}{3}\%$ (c) $\frac{2700}{47}\%$ (d) $16\frac{2}{3}\%$ (e) $21\frac{3}{7}\%$

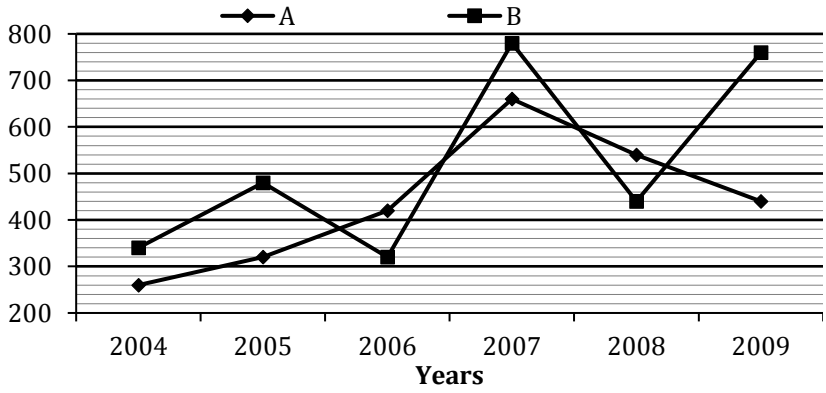
32. If number of Hockey sold on Tuesday by A is increases by $33\frac{1}{3}\%$,then what will be the average no. of Hockey sold on Monday, Tuesday and Friday by A?
(a) 85 (b) 58 (c) 56 (d) 82 (e) 52

33. Find the number of Hockey sold on Saturday by A and B together, if number of Hockey sold on Saturday is $5\frac{15}{17}\%$ more than the hockey sold on Friday by A and B together?
(a) 110 (b) 114 (c) 116 (d) 108 (e) 120

34. What is the difference between the number of Hockey sold on Monday and Wednesday by B to the number of Hockey sold on Friday by both A & B together?
(a) 22 (b) 12 (c) 14 (d) 21 (e) 24

35. A sold 70% defective Hockey on Friday and B sold 50% defective Hockey on Tuesday. Then find the number of Hockey sold by A on Friday and B on Tuesday that are not defected?
(a) 25 (b) 43 (c) 18 (d) 32 (e) 40

Direction(36-40):-Study the following table and answer the questions that follow.
Given line graph shows the number of students appeared from state A and state B in an examination.



36. Number of students appeared from state B in 2009 is about what percent of total students appeared from state A all over the years?(approx.)
(a) 32 (b) 30 (c) 33 (d) 28 (e) 22

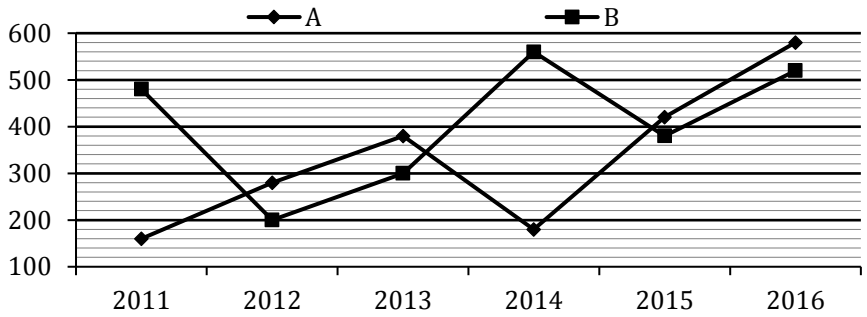
37. What is the difference between the total number of students from state A in 2004 and 2005 together and those of state B in 2008 and 2009 together?
(a) 520 (b) 580 (c) 620 (d) 720 (e) 680

38. What is the ratio of number of students appeared in examination from state B in 2004 ,2006 and 2008 to the number of students appeared from state A in 2005,2007 and 2009?
(a) 73:55 (b) 55:71 (c) 79:15 (d) 75:13 (e) 13:85

39. If in 2010 the number of students appeared from state A is increase by 10%and those from state B increased by 15% as compared to the number of students from respective states in year 2009,then what is the ratio of number of students from state A and state B in 2010?
(a) 287:439 (b) 285:437 (c) 289:437 (d) 433:189 (e) 242:437

40. What is the difference between average number of students from state A and state B all over the years?
(a) 90 (b) 60 (c) 80 (d) 70 (e) 110

Directions (41-45): Refer the graph and answer the given questions.
The following line graph shows the number of votes polled in two constituencies A and B of a city during six years.



41. What is the difference between number of votes polled in constituency A and B together in 2013 and number of votes polled in both constituencies together in 2011?
(a) 50 (b) 30 (c) 60 (d) 40 (e) 70

42. Find ratio of votes polled in constituency A in 2014 and polled votes in constituency B in 2016.
(a) 3 : 8 (b) 9 : 26 (c) 2 : 3 (d) 1 : 3 (e) 2 : 5

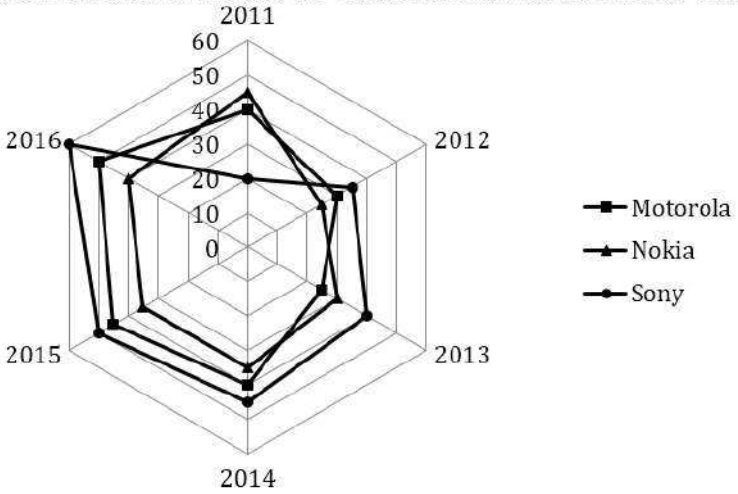
43. Number of votes polled in constituency A and B together in 2015 is what percent less or more than the number of votes polled in constituency B in 2015 and 2016 together?
(a) $11\frac{1}{9}\%$ (b) $9\frac{1}{11}\%$ (c) $16\frac{2}{3}\%$ (d) $14\frac{1}{7}\%$ (e) $13\frac{2}{3}\%$

44. If 10% of total votes polled in constituency A in 2012 is invalid and 5% of votes polled in constituency B in 2013 is invalid, then find the average of valid votes in constituency A in 2012 and B in 2013.
(a) 268.5 (b) 267.5 (c) 283.5 (d) 272.5 (e) 265.4

45. Find average number of votes polled in constituency A in all the given years.
(a) 343.33 (b) 333.33 (c) 233.33 (d) 330.33 (e) 353.33

Directions (46-50): Study the graph carefully to answer the questions that follow.

PERCENT INCREASE IN PROFIT OF THREE COMPANIES OVER THE YEARS



46. If profit for company Nokia in 2012 is 2000 and expenditure in 2013 for company Nokia is 50,000, then what is the total revenue in 2013 for Nokia? Give that total revenue = expenditure + profit.
(a) Rs. 52600 (b) Rs.54200 (c) Rs.53280 (d) Rs.55800 (e) Rs.56020

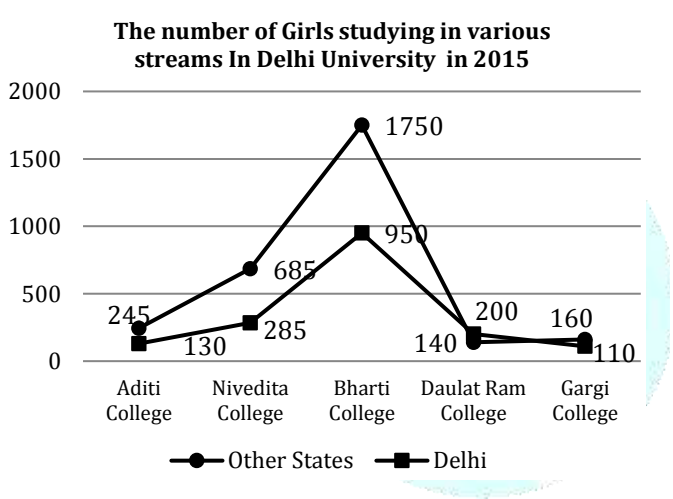
47. If profit in year 2015 for company Sony is 3000 and profit of company Motorola in 2013 is equal to profit of company Sony in 2014 then what is the profit of company Motorola in 2013 ?
(a) Rs.1500 (b) Rs.4000 (c) Rs.3500 (d) Rs.2000 (e) Rs.2500

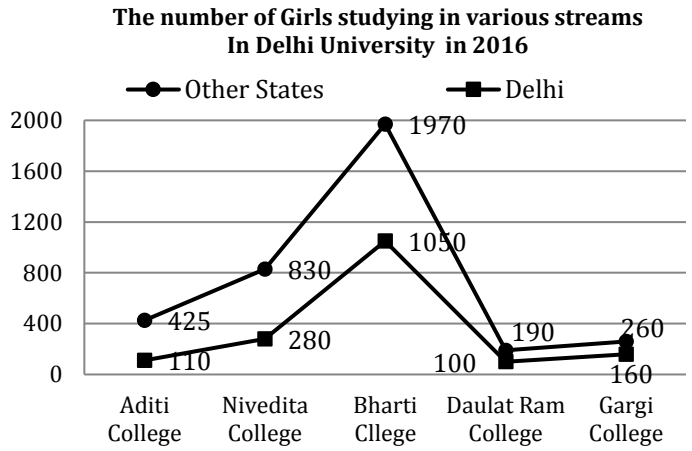
48. What is the average percentage increase in profit for company Nokia over all the years?
(a) 49% (b) 32% (c) 23% (d) 38% (e) 35%

49. What was the percentage increase in percent increase of profit of company Motorola in the year 2014 over its previous year ?
(a) 60% (b) 65% (c) 55% (d) 50% (e) 70%

50. If profit earned by company Nokia in 2014 is 27,000 and by company Sony in 2014 is 43500 then what is the total profit earned by them in year 2013?
(a) Rs. 25,000 (b) Rs. 35,000 (c) Rs. 40,000 (d) Rs. 50,000 (e) Rs. 45,000

Directions (51-55): Study the following graph carefully and answer the questions that follow:
The line graph show the number of Girls who study in various streams in Delhi University from Delhi and other states in two different years.





51. What is the difference between the average number of all the girls who study in various streams in Delhi University in 2015 from Other states and the average number of girls who study in Delhi University in 2016 from Delhi?
(a) 269 (b) 359 (c) 296 (d) 356 (e) 256

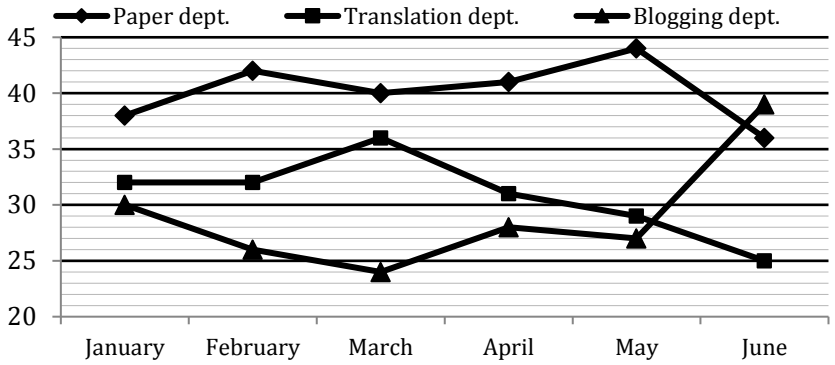
52. The number of girls who study in various streams in Delhi University from other-states in 2015 from Daulat Ram College and Gargi College is what per cent of the number of girls from same college from other-states in 2016? (Rounded off to two decimal places)
(a) 62.23% (b) 66.67% (c) 72.34% (d) 78.67% (e) 59.23%

53. What is the ratio of the total number of girls who study in various streams of Delhi University from Delhi in 2015 to the number of girls who study in various streams of Delhi University from other-States in 2016?
(a) 67 : 147 (b) 137 : 67 (c) 77 : 147 (d) 57 : 147 (e) 137 : 147

54. The number of girls who study in various streams of Delhi University from Other-states in 2016 is approximate what percent of the number of Girls who study in various streams of Delhi University from Delhi in 2016?
(a) 98% (b) 116% (c) 188% (d) 86% (e) 216%

55. What is the sum of the average number of girls who study in various streams from Delhi in 2015 and the average number of girls who study in various streams from other-states in 2016?
(a) 1070 (b) 3410 (c) 1680 (d) 2680 (e) 1080

Directions (56-60): The following line graph shows the number of reams (packets of A4 size paper) in terms of percentage used by three departments of Career Power i.e. Paper dept., Translation dept. and Blogging dept. Provided that total number of reams used per month is 1200 and it remains consistent for all the months. There is no other department using these reams.



56. Find the difference in total number of reams used by paper dept. from January to March and that of by Blogging dept. from April to May?
(a) 700 (b) 718 (c) 780 (d) 468 (e) None of these

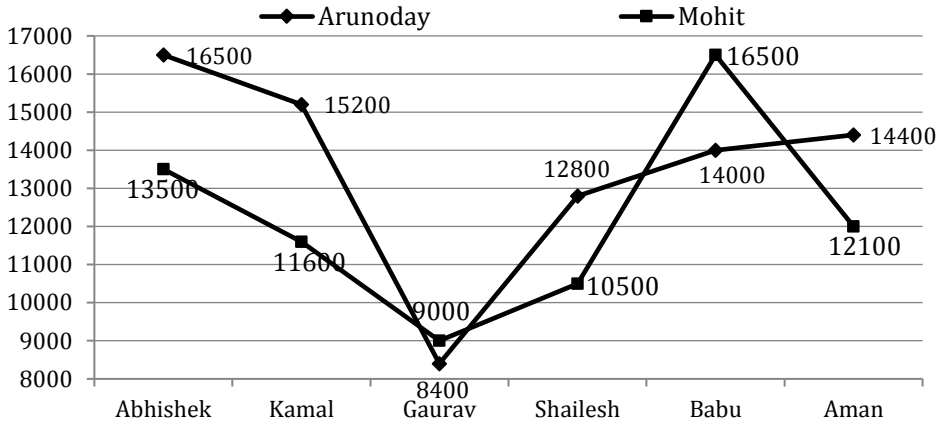
57. In May, Babu working in Paper dept. used 25% of the reams from which he wasted $66\frac{2}{3}\%$ reams. Find the number of reams not wasted by Babu.
(a) 68 (b) 88 (c) 32 (d) 44 (e) 27

58. In July Translation dept. demanded 25% more reams than that provided to paper dept. in June by stationary supervisor Mr. Vinod, which he denied. But he provided them the reams $16\frac{2}{3}\%$ less than that provided to paper dept. in June. Find the ratio of number of reams demanded and actually provided to translation dept.
(a) 4 : 3 (b) 3 : 2 (c) 13 : 12 (d) 5 : 3 (e) 5 : 8

59. By approximately what percent the total number of reams used by Blogging dept. is less than that of by paper team throughout the given months?
(a) 36% (b) 32% (c) 20% (d) 22% (e) 28%

60. Total number of reams used by paper dept. in February, blogging dept. in April and translation dept. in June respectively is what percent of total reams used by Translation dept. in given 6 months ?
(a) $49\frac{3}{8}\%$ (b) $51\frac{13}{37}\%$ (c) $51\frac{15}{37}\%$ (d) 50.35% (e) None of these

Direction (Q61-65): Study the following line graph carefully to answer the questions based on it.
The graph shows the amount lent by Mohit and Arunoday to six persons.



61. What is the difference between the average amount lent out by Arunoday and Mohit?
(a) Rs 1530 (b) Rs 1350 (c) Rs 1050 (d) Rs 1320 (e) None of these

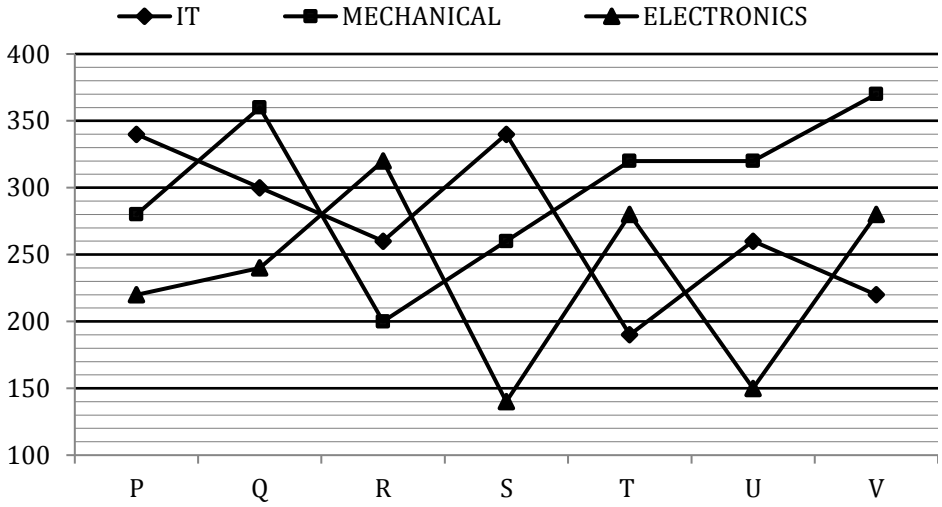
62. What is the interest earned by Arunday from Abishek and Shailesh if he lent them money at 10% and 11% p.a. respectively, interest being compound annually for 2 years?
(a) Rs 6435 (b) Rs 6345.88 (c) Rs 6435.88 (d) Rs 6453.88 (e) Rs 6525

63. Babu returned Rs 16633.4 to Arunday after 2 years. Find the rate pcpa at which he borrowed the amount at compound interest compounded annually?
(a) 19% (b) 12% (c) 10% (d) 9% (e) 8%

64. If Aman borrowed same amount as Babu from Arunday at same rate of interest for 3 years at simple interest while Babu borrowed at compound interest compounded annually at same rate and same time period If the difference between their interest is Rs 992.25 then find the rate pcpa.
(a) 15% (b) 10% (c) 5% (d) 12% (e) 18%

65. Find the amount earned by Mohit by lending money to given persons at 10% pa in 1 year?
(a) Rs 7235 (b) Rs 7330 (c) Rs 7230 (d) Rs 7320 (e) Rs 7420

Directions (66-70): Study the following graph carefully to answer the given questions.
The following line graph shows the total no. of students in seven different institutes with three different specialization in 2012.



66. If the number of students with Mechanical specialization in each institute increased by 20% and the number of students with Electronics specialization in each institute decreased by 15% from 2012-2013, total number of students with Mechanical from all the institutes in 2013 is what per cent of the total number of students with Electronics specialization from all the institutes in 2013 ?
(a) 122% (b) 116% (c) $162\frac{29}{163}\%$ (d) $181\frac{28}{163}\%$ (e) $194\frac{28}{163}\%$

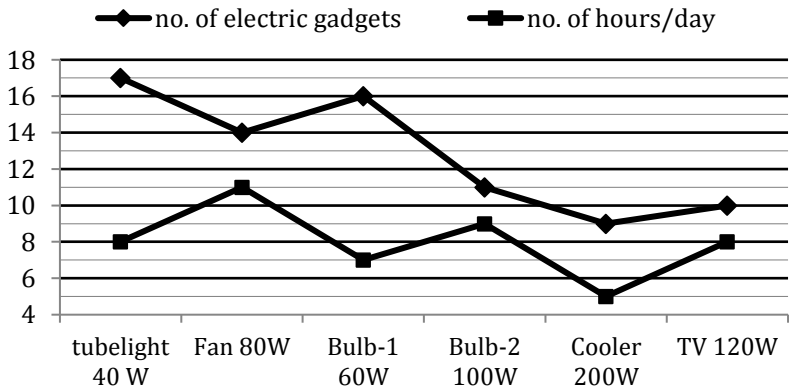
67. What is the ratio between total number of students in institute R and V, respectively?
(a) 39 : 44 (b) 26 : 29 (c) 29 : 26 (d) 44 : 39 (e) 38 : 43

68. What is the difference between total number of students with IT specialization from all the institutes together and the total number of students with Mechanical specialization from all the institutes together ?
(a) 260 (b) 240 (c) 280 (d) 200 (e) 250

69. If the number of students in institutes P, Q and R with IT specialisation increased by 15%, 22% and 10% respectively from 2012 to 2013, what was the total number of students with IT specialisation in the three institutes together in 2013 ?
(a) 1028 (b) 1056 (c) 1043 (d) 1142 (e) 1145

70. If out of the total number of students for all three specializations together in institute Q number of students having liking for Music, Painting and Cricket are in the ratio 5 : 6 : 7 respectively, then what is the number of students liking Music from institute Q ?
(a) 250 (b) 300 (c) 350 (d) 360 (e) 280

Directions (71-75); The following graph shows the number of different electric gadgets and their hours of use per day in a jeweler's shop. Study the graph carefully and answer the following questions:-



NOTE; If an 80W fan used for 2 hours then it consumes 160watt hours energy and 1000W hour=1Unit.

71. Which of the following consumes 2nd highest amount of electricity in the shop?
(a) Tube light (b) Cooler (c) bulb-2 (d) TV (e) Fan

72. If 1 electric unit costs Rs. 2.7 then what money is paid to electricity department for using fans and tube lights for the month of August?
(a) Rs. 1438.56 (b) Rs. 1486.512 (c) Rs. 1495.64 (d) Rs. 1498.37 (e) Rs. 1485.612

73. Electricity consumption by all the fans is what percent of the consumption by Bulb I and Bulb II together?
(a) $72\frac{106}{831}\%$ (b) $75\frac{106}{831}\%$ (c) $71\frac{601}{831}\%$ (d) $74\frac{106}{831}\%$ (e) None of these

74. Find the total consumption of energy in the shop in kwh (kilowatt hours) in 1 week.
(a) 367.63 (b) 354.52 (c) 384.85 (d) 370.86 (e) 348.85

75. If the coolers are of power 175W instead of 200W then how much less units it would consume in the whole month (30 days)?
(a) 33.75 units (b) 43.25 units (c) 41.85 units (d) 34.95 units (e) 37.35 units

PRACTICE SET (LEVEL-I) SOLUTIONS

1. (c); Let ratio of price of rice to price of wheat in 2014 be 3x and 4x
Ratio of price of rice to price of wheat in 2015 = (120% of 3x) : (115% of 4x) = 18 : 23

2. (e); Price of wheat in 2013 = $= 7200 \times \frac{115}{100} \times \frac{110}{100} = 9108$

3. (d); Let price of wheat in 2011 = 100
so, price of wheat in 2013 = $\frac{115}{100} \times \frac{110}{100} \times 100 = 126.5$
So, effective increases equals = 26.5%

4. (a); In 2012 person buys $= \frac{4140}{120}$ kg of Rice
So, in 2013 person buys $= \frac{4140}{\frac{115}{100} \times 120}$ *kg of rice*
So decrease in consumption = 34.5 – 30 = 4.5 kg

5. (b); Price per kg of wheat in 2012 $= \frac{132 \times 100}{110} = 120$
Total cost for 25 kg of wheat in 2012 = 120 × 25
= 3000 Rs

6. (b); In 2017, number of students in class XII of
School A = $\frac{105}{100} \times 800 = 840$
School B = $\frac{110}{100} \times 700 = 770$
School C = $\frac{120}{100} \times 650 = 780$
So, required ratio = 840:770:780 = 84:77:78

7. (a); Required percentage = $\frac{2150-350}{2150} \times 100 = 83\frac{31}{43}\%$

8. (c); Required average $= \frac{1}{6}(150 + 300 + 300 + 500 + 650 + 800)$
$= \frac{1}{6} \times 2700 = 450$

9. (a); Students in school A = (150 + 300 + 300 + 500 + 650 + 800) = 2700
Students in school B = (200 + 400 + 200 + 400 + 700 + 700) = 2600
Students in school C = (250 + 350 + 350 + 550 + 550 + 650) = 2700
So, ratio = 27:26:27

10. (a); Required percentage = $\frac{400}{2600} \times 100 = 15\frac{5}{13}\%$

11. (c); The difference between costs of 1 kg of apple and 1 kg of grapes is second lowest in Jalandhar.

12. (b); Average of cost of all three fruits in Ropar
$= \frac{1}{3}(20 + 40 + 160) = \frac{220}{3}$
Average of cost of all three fruits in Jalandhar
$= \frac{60+110+160}{3} = \frac{330}{3}$
Required percentage = $\frac{220/3}{330/3} \times 100 = \frac{22}{33} \times 100$
$= 66\frac{2}{3}\%$

13. (a); Required ratio = (130 + 180 + 40) : (60 + 90 + 30)
= 350 : 180 = 35 : 18

14. (e); Cost of 2 kg apple and 3 kg of Guava in Jalandhar
= 160 × 2 + 3 × 60 = 320 + 180 = 500
Required selling price = $\frac{135}{100} \times 500 = 675$

15. (a); Cost of guava in Jalandhar & Ropar together
= 60 + 20 = 80
Cost of Grapes in Delhi and Chandigarh together
= 170 + 90 = 260
Required % = $\frac{260-80}{260} \times 100$
$= \frac{180}{260} \times 100 = 69\frac{3}{13}\%$

16. (b); Required average = $\frac{(75+85+85)}{3} \times 600 = 490$

17. (d); Required Ratio = (100 – 70) : 95 = 30 : 95 = 6 : 19

18. (a); Required Percentage = $\frac{(95-75)}{75} \times 100 = 26\frac{2}{3}\%$

19. (c); Number of students passed in Chemistry in semester I after the revision of the result
$= \frac{75}{100} \times \frac{100+4}{100} \times 600 = 468$

20. (d); Number of students passed in Maths or English in semester I
$= \left(\frac{60+70}{100} \times 600\right) - 245 = 780 - 245 = 535$

21. (d); Difference = 128 − 100 = 28 thousands = 28000

22. (c); Total number of sim sold by Reliance in the given year = 119 + 99 + 141 + 78 + 120 + 159
= 716 thousand
Total number of sim sold by Vodafone in the given year = 139 + 120 + 100 + 128 + 107 + 148
= 742 thousand
Difference = 742 − 716 = 26 thousand = 26000

23. (a); Average number of sim sold by Reliance
Over the given period $= \frac{716}{6} = 119.333$ thousand
= 119333

24. (d); Difference in 2009 = 139 − 119 = 20 thousand
In 2010 = 120 − 99 = 21 thousand
In 2011 = 141 − 100 = 41 thousand
In 2012 = 128 − 78 = 50 thousand (maximum)
In 2013 = 120 − 107 = 13 thousand
In 2014 = 159 − 148 = 11 thousand

25. (e); Required percentage $= \frac{100}{141} \times 100 = 70\frac{130}{141}\%$

26. (b); Required ratio
$= \frac{25+20}{15+18} = \frac{45}{33} = 15 : 11$

27. (d); Articles sold by A in December
$= \left(1 + \frac{7}{30}\right)30 = 37$
Required average
$= \frac{25+20+37}{3} = \frac{82}{3} = 27\frac{1}{3}$

28. (c); Required ratio
$= \frac{18+30}{20+25} = \frac{48}{45} = 16 : 15$

29. (e); Articles sold by A in June
$= \frac{4}{3} \times 15 = 20$
Articles sold by B in Aug and Sep = 15 + 20 = 35
Required percentage $= \frac{35-20}{20} \times 100 = 75\%$

30. (b); Average of articles sold by A in July, Oct and Nov
$= \frac{15+20+30}{3} = \frac{65}{3}$
Average of articles sold by by B in Aug, Sep and Oct
$= \frac{15+20+25}{3} = \frac{60}{3}$
Required difference
$\frac{65}{3} - \frac{60}{3} = \frac{5}{3} = 1\frac{2}{3}$

31. (c); Required percentage
$= \frac{148-94}{94} \times 100 = \frac{5400}{94} = \frac{2700}{47}\%$

32. (b); Hockey on Tuesday after increase by A.
$= \frac{4}{3} \times 36 = 48$
$\therefore Required\ average = \frac{66+48+60}{3} = \frac{174}{3} = 58$

33. (d); Required no. of Hockey sold on Saturday by A and B
$= \frac{18}{17} \times 102 = 108$

34. (a); Required difference = 80 ~ 102 = 22

35. (b); $= \frac{30}{100} \times 60 + \frac{50}{100} \times 50$
$= 18 + 25 = 43$

36. (d); Required percent $= \frac{760}{2640} \times 100 = 28.78\% \approx 28\%$

37. (c); Total students from state A in 2004 and 2005
$= 260 + 320 = 580$
Total students from state B in 2008 and 2009
$= 440 + 760 = 1200$
Difference $= 1200 - 580 = 620$

38. (b); Required Ratio $= \frac{340+320+440}{320+660+440} = \frac{1100}{1420} = \frac{55}{71}$

39. (e); Required ratio $= \frac{\frac{110}{100} \times 440}{\frac{115}{100} \times 760} = \frac{484}{874} = \frac{242}{437}$

40. (c); Difference $= \frac{3120}{6} - \frac{2640}{6} = 520 - 440 = 80$

41. (d); Number of votes polled in both constituencies in 2013 = 300 + 380 = 680
Number of votes polled in both constituencies in 2011 = 160 + 480 = 640
Required difference = 680 – 640 = 40

42. (b); $Required\ ratio = \frac{180}{520} = \frac{9}{26}$

43. (a); Number of total votes polled in both constituencies in 2015 = 420 + 380 = 800
Number of votes polled in constituency B in 2015 and 2016 = 380 + 520 = 900
$Required\ percentage = \frac{900-800}{900} \times 100 = 11\frac{1}{9}\%$

44. (a); Valid votes of constituency A in 2012=$280 \times \frac{90}{100} = 252$
Valid votes of constituency B in 2013=$300 \times \frac{95}{100} = 285$
Average of valid votes $= \frac{285+252}{2} = 268.5$

45. (b); Required Average
$= \frac{160+280+380+180+420+580}{6} = 333.33$

46. (a); Profit in 2013 = $2000 \times \frac{130}{100}$ = Rs.2600
Total revenue = 50,000 + 2600 = Rs.52600

47. (d); Profit of company Motorola in 2013 = $\frac{3000 \times 100}{150}$
= Rs.2000

48. (e); Required average = $\frac{45+25+30+35+35+40}{6} = \frac{210}{6} = 35\%$

49. (a); Required percentage = $\frac{40-25}{25} \times 100 = \frac{15}{25} \times 100 = 60\%$

50. (d); Profit earned by Company Nokia in 2013 = $\frac{27000 \times 100}{135}$
= Rs.20,000
Profit earned by company Sony in 2013 = $\frac{43500 \times 100}{145}$
= Rs.30,000
Total profit = Rs.50,000

51. (e); Average of girls from other states in 2015
$= \frac{245+685+1750+140+160}{5} = \frac{2980}{5} = 596$
Average of girls from Delhi in 2016
$= \frac{110+280+1050+100+160}{5} = \frac{1700}{5} = 340$
Difference = 596 – 340 = 256

52. (b); Number of girls from other states in 2015
= 140 + 160 = 300
Number of girls from other states in 2016
= 190 + 260 = 450
Required percent = $\frac{300}{450} \times 100 = 66.67\%$

53. (a); Required Ratio = $\frac{130+285+950+200+110}{425+830+1970+190+260} = \frac{1675}{3675} = \frac{67}{147}$

54. (e); Required percent = $\frac{3675}{1700} \times 100 \approx 216.17\%$

55. (a); Average of girls from Delhi in 2015
$= \frac{130+285+950+200+110}{5} = \frac{1675}{5} = 335$
Sum = 335 + 735 = 1070

56. (c); Required difference
$= [(38 + 42 + 40) - (27 + 28)] \times \frac{1}{100} \times 1200 = 780$

57. (d); Number of reams not wasted by Babu =132-88=44

58. (b); Reams demanded $= 1.25 \times 0.36 \times 1200 = 540$
Reams provided $= 432 - 72 = 360$
$\therefore$Required ratio $= 3 : 2$

59. (e); Required percentage $= \frac{2892-2088}{2892} \times 100 \approx 28\%$

60. (b); Required percentage $= \frac{\frac{95}{100} \times 1200}{\frac{185}{100} \times 1200} \times 100 = 51\frac{13}{37}\%$

61. (b); $Average\ amount\ lent\ by\ Arunoday$
$= \frac{1}{6} \times (165 + 152 + 84 + 128 + 140 + 144) \times 100$
$= 13550$
$Average\ amount\ lent\ by\ Mohit$
$= \frac{1}{6} \times (135 + 116 + 90 + 105 + 165 + 121) \times 100$
=12200
$\therefore Required\ difference = 1350\ Rs$

62. (c); Required interest =21% of 16500+23.21% of 12800
=3465+2970.88 $= Rs\ 6435.88$

63. (d); $16633.4 = 14000\left(1 + \frac{r}{100}\right)^2$
$or, \frac{166334}{140000} = \left(1 + \frac{r}{100}\right)^2$
$or, \frac{11881}{10000} = \left(1 + \frac{r}{100}\right)^2$
$or, \frac{109}{100} = 1 + \frac{r}{100}$
$or, r = 9\%$

64. (a); $992.25 = 14000\left(\frac{r}{100}\right)^2\left(\frac{300+r}{100}\right)$
$or, \frac{567}{8} = \frac{r^2(300+r)}{1000}$
$or, 70875 = r^2(300 + r)$
By using option,
$r = 15\%$

65. (d); Required earning = 1350 + 1160 + 900 + 1050+ 1650 + 1210 = Rs 7320

66. (e); Total number of students with mechanical specialisation in 2013
= 336 + 432 + 240 +312 + 384 + 384 + 444 = 2532
Total number of students with Electronics specialisation in 2013 $= 176 + 192 + 256 + 112 + 224 + 120 + 224 = 1304$
$\therefore$Required % $= \frac{2532}{1304} \times 100 = 194\frac{28}{163}\%$

67. (b); Total number of students in institute R = 320 + 260 + 200 = 780
Total number of students in institute V = 370 + 290 + 220 = 870
Required Ratio = 780 : 870 = 26 : 29

68. (d); Total number of students with IT specialisation from all the institutes together
$= 340 + 300 + 260 + 340 + 190 + 260 + 220 = 1910$
Total number of students with Mechanical specialisation from all the institutes together $= 280 + 360 + 200 + 260 + 320 + 320 + 370 = 2110$
Required difference $= 2110 - 1910 = 200$

69. (c); In 2013, total no. of students with IT specialisation in institute P = 340 × 1.15 = 391
Q = 300 × 1.22 = 366
R = 260 × 1.1 = 286
∴ Required no. of students $= 391 + 366 + 286 = 1043$

70. (a); Total no. of students in institute Q $= 360 + 300 + 240 = 900$
From these, No. of students liking Music
$= \frac{5}{5+6+7} \times 900 = \frac{5}{18} \times 900 = 250$

71. (c); Electricity consumption per day tube lights = 17 × 8 × 40 = 5440 w hours
Of fans = 14 × 11 × 80 = 12320w hours
Of bulb I = 6720w hours
Of bulb II = 9900w hours
Of coolers = 9000w hours
Of TVs = 9600w hours
2nd highest consumption is by bulb – II

72. (b); Required amount to be paid
$= \frac{(5440+12320)31\times2.7}{1000} = Rs.1486.512$

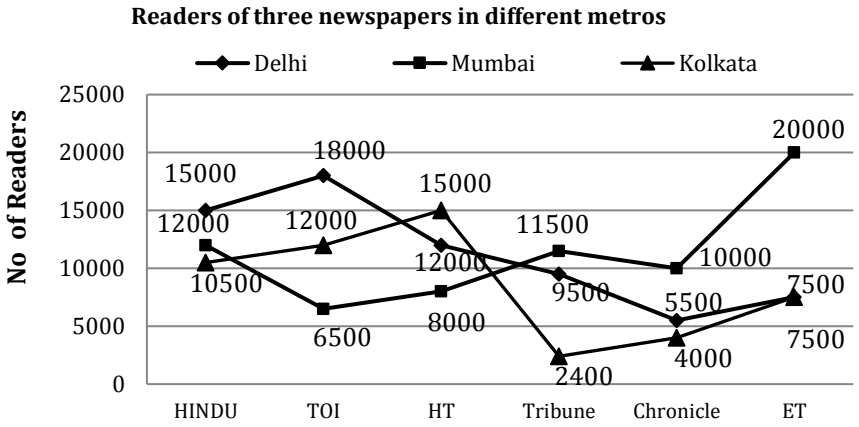
73.(d); Required percentage $= \frac{12320}{16620} \times 100 = 74.13\%$

74.(d); Total consumption in 1 week $= \frac{52980\times7}{1000} = 370.86\ kwh$

75.(a) units consumed by cooler (200w)
$= \frac{9000\times30}{1000} = 270$ units
Units consumed by cooler (175 w)
$= \frac{7875\times30}{1000} = 236.25$ units
Required difference = 270 – 236.25 = 33.75 units

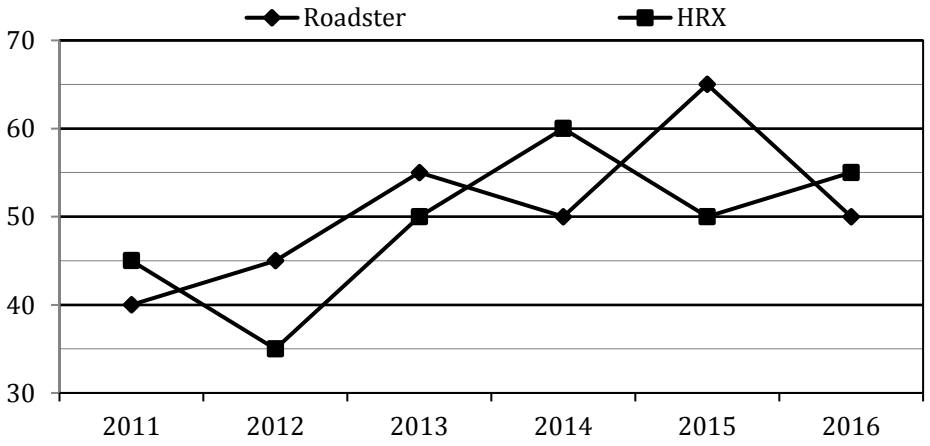
PRACTICE SET (LEVEL-II)

Directions (1–5); Read the following graph and answer the questions that follow.



1. What is the difference between TOI reader in Mumbai and average of Tribune readers in all three Metros?
(a) 1350 (b) 1300 (c) 1750 (d) 1450 (e) None of these
2. Total readers in Delhi except ET are approximately what percent of total readers in Mumbai except Chronicle and ET together?
(a) 140% (b) 150% (c) 165% (d) 160% (e) 170%
3. How many readers are there in all three Metros for all newspaper?
(a) 186900 (b) 168900 (c) 189600 (d) 188600 (e) None of these
4. What is the ratio between one third of readers of Mumbai and three times the Hindu Reader in all three metro together?
(a) 7 : 11 (b) 17 : 31 (c) 13 : 77 (d) 4 : 25 (e) 136 : 675
5. If total no of readers in Chennai are 30% less than in Kolkata but no of Tribune readers in Chennai are 25% more than the ET reader in Delhi, What is the total no of readers except Tribune in all four metro city now?
(a) 190015 (b) 109105 (c) 190105 (d) 180100 (e) 198105

Directions (Q.6-10): Study the following graph carefully and answer the questions that follow.
Profit = Income – Expenditure
Profit % is defined as percentage of total income
Line graph given below shows the percentage profit of two companies in six different years.

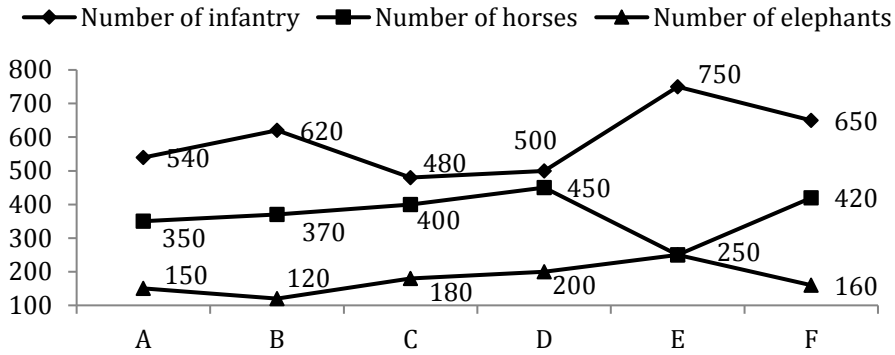


6. In year 2012, Roadster earned a profit of Rs. 2,16,000 while HRX's income is 10% less as compared to Roadster in the same year. Find the difference (in Rs.) between their expenditures.
(a) 18600 (b) 16800 (c) 15500 (d) 14800 (e) 16400
7. The company HRX made a total expenditure of 2,50,000 in year 2013. If its income in year 2015 remains same as that in 2013, find its profit (in Rs.) in 2015.
(a) 2,45,000 (b) 2,00,000 (c) 2,50,000 (d) 2,25,000 (e) 3,50,000
8. In year 2016, both companies have same income. Find the ratio between expenditure of company HRX to that of company Roadster.
(a) 10 : 9 (b) 9 : 11 (c) 9 : 10 (d) 5 : 7 (e) 8 : 9

9. The company HRX has the second lowest percentage change in the profit percent over the previous year in which of the following year ?
(a) 2016 (b) 2015 (c) 2012 (d) 2014 (e) None of these

10. The company Roadster shows its expenditure in 2013 as Rs. 90,000 and declares that income in 2013 is equal to the expenditure in 2014. Find the percentage change in income for year 2014.
(a) 10% (b) 200% (c) 50% (d) 100% (e) None of these

Directions (11-15): Study the following line graph carefully to answer the questions based on it. The graph shows the number of infantry, horses and elephants in each army unit of six kings in a certain year. Horses and elephants are being ridden by 1 and 4 soldiers respectively.



11. If $16\frac{2}{3}\%$ of the infantry of one army unit of king C is transferred to infantry of one army unit of king B. Then new infantry of one army unit of king C is what percent of the new infantry of one army unit of king B?
(a) $54\frac{3}{7}\%$ (b) $51\frac{2}{3}\%$ (c) $54\frac{2}{7}\%$ (d) 51% (e) 61%

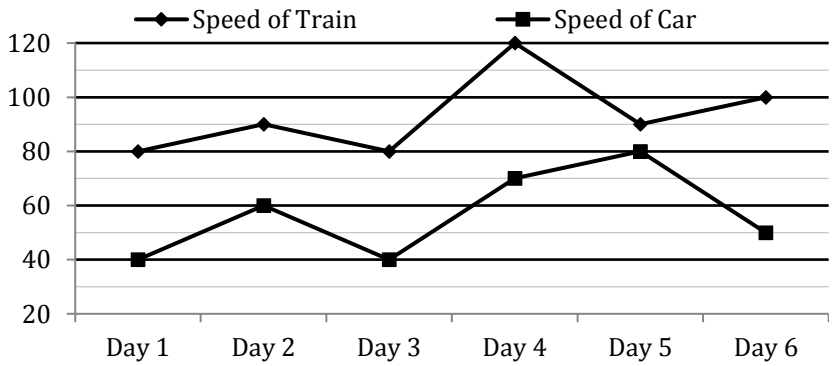
12. In a war, $83\frac{1}{3}\%$ of total number of one army unit of king F died. If the ratio of alive infantry, horses and elephants (with soldiers) is 6 : 5 : 2, then find the number of infantry left alive.
(a) 95 (b) 105 (c) 86 (d) 90 (e) 80

13. By what percent approximately the total number of soldiers in one army unit of king A is more or less than that of King E ?
(a) 25% (b) 25.5% (c) 23.5% (d) 24% (e) 26%

14. Kind D gave his 1 army unit to king A as dowry. King A sent that army unit along with his one army unit to king E. King E divided the infantry, horses and elephants of the two gifted units equally into his 5 army units. Find number of elephants in his new army unit. (Given that all unit has same number of three elements)
(a) 325 (b) 300 (c) 290 (d) 320 (e) 420

15. What is the ratio of average number of soldiers of 1 army unit of King F to the average number of infantry, horses and elephants of 1 army unit of king B ?
(a) 5 : 3 (b) 7 : 5 (c) 11 : 7 (d) 13 : 9 (e) 57 : 37

Direction (16-20): Refer the following line graph and answer the questions based on it.
The line graph shows the speeds (in km/h) of car and train on six days in a week.

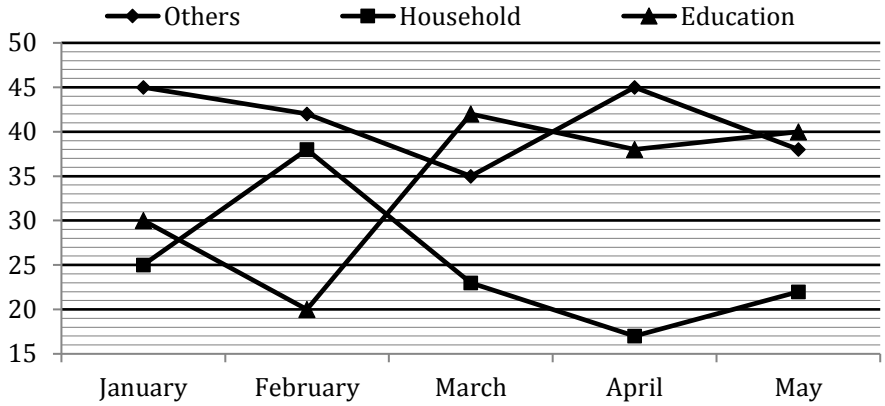


16. What is the average speed of the train on Day 1, Day 3 and Day 4 together if the train travelled same distance on each of these days?
(a) 95 km/h (b) 90 km/h (c) 85 km/h (d) 100 km/h (e) None of these

17. On day 5, the train covered a distance of 300 km while the car covered 240 km. What is the ratio of time taken by the car to the time taken by the train on that day?
(a) 6 : 7 (b) 7 : 6 (c) 10 : 9 (d) 9 : 10 (e) 8 : 9

18. If the time taken by the car is thrice to the time taken by the train on day 3, then the distance covered by the car is how much percent more than the distance covered by the train on that day?
(a) 50% (b) 40% (c) 60% (d) 30% (e) 55%
19. For which day, the percentage increase/decrease in the speed of train from the previous day is the maximum?
(a) Day 4 and 5 (b) Day 5 (c) Day 4 (d) Day 2 and 4 (e) None of these
20. If both the train and the car travelled for 3 hours 20 minutes each on day 2, then what is the difference of the distances travelled by the train and the car on that day?
(a) 60 km (b) 120 km (c) 90 km (d) 100 km (e) Cannot be determined

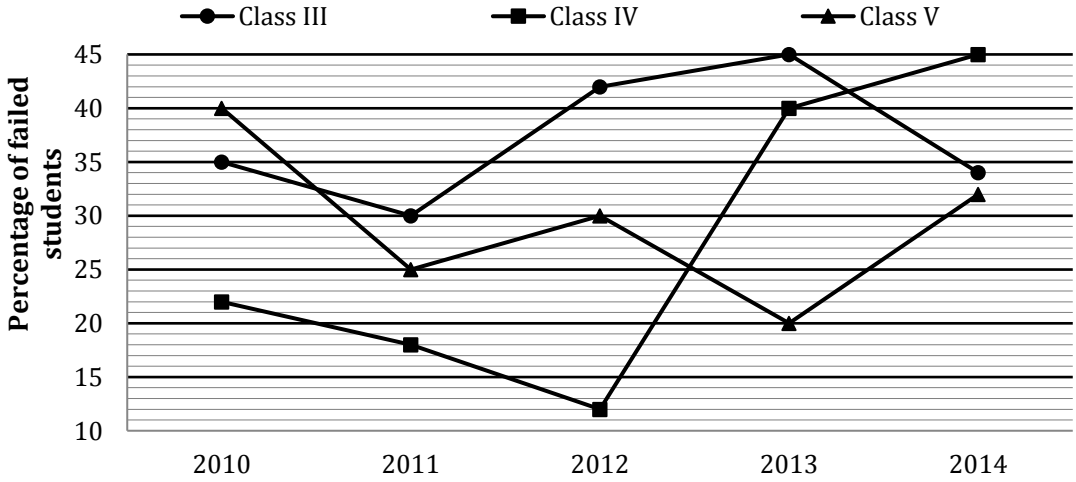
Direction (21-25): - Study the following line graph and answer the questions that follow.
The graph shows the percentage distribution of money spent by Avanish on Education, Household and Others in five different months. He spent only 60% of his monthly salary.



Note: Monthly income throughout the year remains constant.
MONTHLY SALARY:- 50,000

21. In June, Avanish spent 25% less amount on others as compared to what he spent on others in May. Find the percentage contribution of money spent on others in June in monthly salary of June.
(a) 20.5% (b) 22.5% (c) 17.1% (d) 23.2% (e) 34.6%
22. Avanish invested 10% of the money spent on others in January in a business which gives him 10% interest per annum on amount invested. Find the interest earned by him in one year?
(a) Rs. 125.5 (b) Rs. 152 (c) Rs. 150 (d) Rs. 135 (e) Rs. 168
23. What is the difference in amount saved and amount spent on education by Avanish in April?
(a) Rs. 12100 (b) Rs. 8600 (c) Rs. 7200 (d) Rs. 8500 (e) Rs. 7850
24. Find the total expenditure made in February except education?
(a) Rs. 24,000 (b) Rs. 24,400 (c) Rs. 22,400 (d) Rs. 20,400 (e) None of these
25. Find the ratio of money spent on Education in February to monthly salary in February?
(a) 3 : 22 (b) 4 : 27 (c) 5 : 29 (d) 8 : 35 (e) 3:25

Directions (Q.26-30): The following graph shows the percentage of failed students in three different classes of a school in five different years.
Study the graph carefully to answer the questions based.



26. In 2012, in class V, 140 students passed which is equal to 175% of failed students of same class in 2013. Find the ratio of failed students and passed students in 2012 & 2013 respectively in class V.
(a) 5 : 16 (b) 3 : 16 (c) 4 : 17 (d) 3 : 17 (e) 16 : 3

27. If the total strength of students in 2010 in class IV was 150 and it increases every year by 50, then find the number of passed students in 2013.
(a) 182 (b) 160 (c) 180 (d) 170 (e) 200

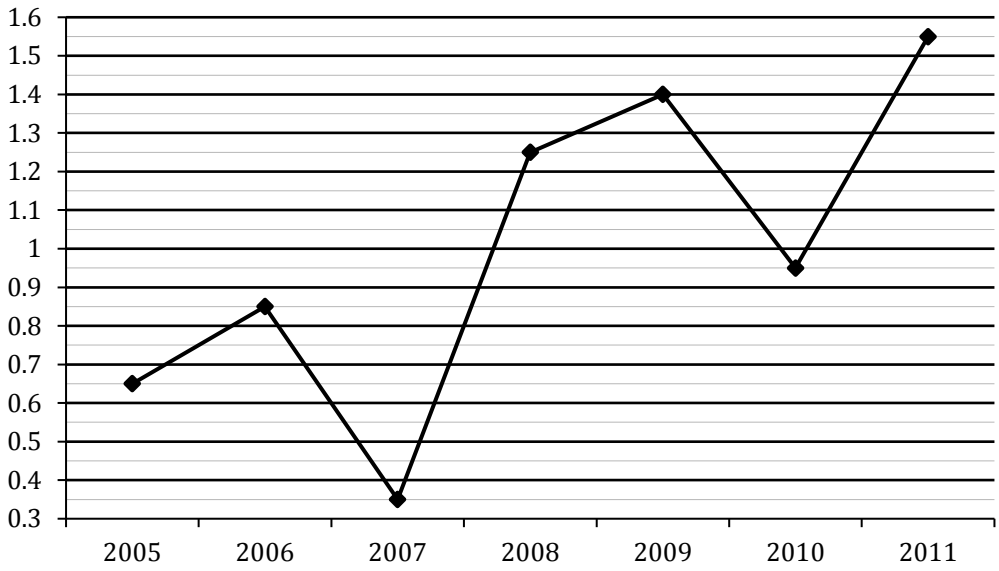
28. The ratio of girls to boys who failed in class III in 2014 was 7 : 10. One-seventh i.e. 5 of these girls passed when their answer sheet were re-evaluated which made the number of passed girls i.e. 84 in 2014, 20% more than those in 2010 in same class. Find the number of passed boys in 2010 in class III. Total students in class III in 2014 and 2010 are in ratio 5 : 4.
(a) 60 (b) 65 (c) 70 (d) 62 (e) 78

29. In 2012, 105 students failed in class III, while 198 students passed in class IV. The number of passed boys is 17 more than the passed girls in class III and the number of failed girls is 15 less than the failed boys in class IV. Find the difference in failed boys of class IV and passed girls of class III.
(a) 45 (b) 50 (c) 52 (d) 43 (e) 67

30. Find the average of percentage of passed students of class IV throughout the given years
(a) 76.2% (b) 70.8% (c) 72.6% (d) 70.2% (e) 56%

Directions (31-35): The following line graph gives the ratio of the amounts of imports by a company to the amount of exports from that company over the period from 2005 to 2011.

Ratio of value of imports to exports by a company over the years



31. If the imports in 2008 was Rs. 250 crore and the total exports in the years 2008 and 2009 together was Rs. 500 crore, then the imports in 2009 was
(a) Rs. 250 crore (b) Rs. 300 crore (c) Rs. 357 crore (d) Rs. 420 crore (e) Rs. 480 crore

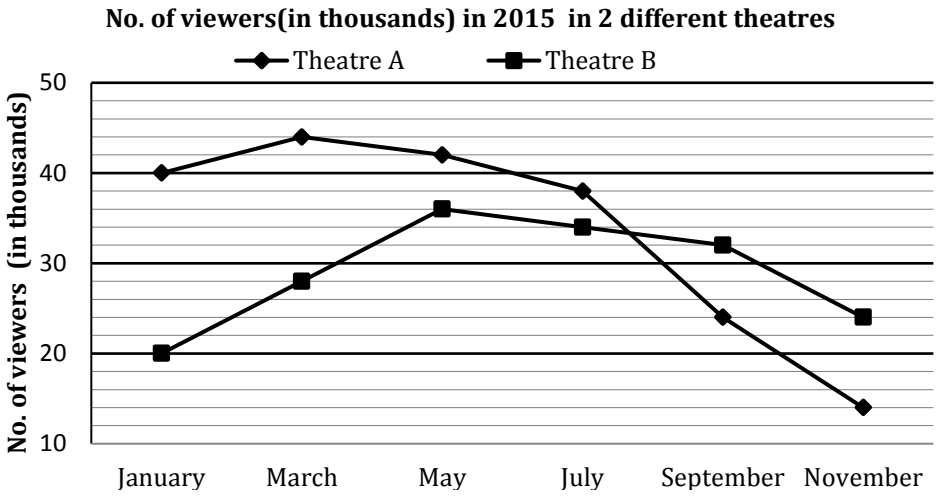
32. What was the percentage increase in imports from 2007 to 2008 ?
(a) 72% (b) 56% (c) 28% (d) Data inadequate (e) None of these

33. If the imports in 2010 are 40% of the export in 2009 then total imports and exports in 2010 is what percent of the total imports and exports in 2009 ? (calculate up to two decimal points)
(a) 34.21% (b) 39.62% (c) 36.26% (d) 39.92% (e) 42.12%

34. IF TOTAL IMPORTS AND EXPORTS IN 2011 IS 255 CR. AND THE TOTAL IMPORTS IN 2005 IS 35% LESS THAN THE EXPORTS IN 2011 THEN FIND THE TOTAL IMPORTS AND EXPORTS IN 2005 ?
(a) 155 cr (b) 165 cr (c) 320 cr (d) 210 cr (e) 175 cr

35. If the export in year 2011 is 400 crore. The import in year 2012 is 50% of the import of the year 2011 and export in 2012 is 2/5 th of the export of 2011. Then find the ratio of import to export in year 2012 ?
(a) 3 : 2 (b) 7 : 5 (c) 31 : 17 (d) 16 : 31 (e) 31 : 16

Directions (36-40): Study the following line graph carefully and answer the following questions.



36. If out of the total number of viewers from both of the theatres in January, the ratio of male to female is 7 : 5 and out of the total number of viewers from both of the theaters in November, the ratio of male to female is 5: 3 then male viewers from both of the theatres in January are approximately what percentage of the female viewers from both of the theaters in November ?
(a) 200% (b) 246% (c) 150% (d) 220% (e) 225%

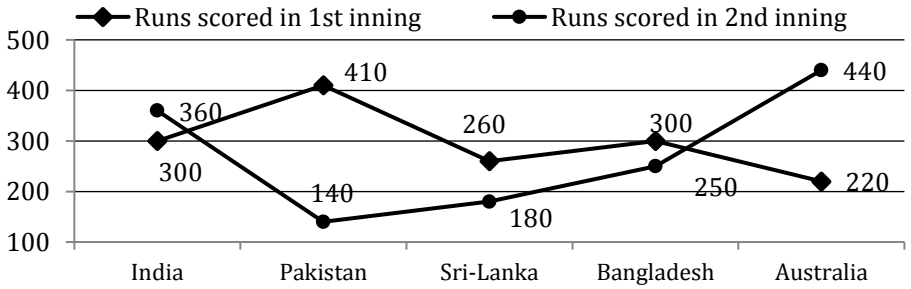
37. Find the ratio between the average number of viewers from January and July from theater A to the average number of viewer from July, September and November from theatre B ?
(a) 7 : 5 (b) 5 : 7 (c) 10 : 13 (d) 13 : 10 (e) 12 : 11

38. If number of viewers of theatre A in January 2016 increases by 20% and of theatre B by10% as compared to the corresponding no. of viewers of these theatres in January in 2015. Then find the difference between no. of viewers of theatre A and theatre B in January 2016.
(a) 20000 (b) 22000 (c) 25000 (d) 26000 (e) 24500

39. The number of viewers of theatre B in October is equal to average number of the viewers of same theatre in September and November. Also the viewers of theatre A in October is $\frac{5}{7}$ of the viewers of theatre B in the same month. Find the number of viewers of theatre A in October.
(a) 24000 (b) 22000 (c) 25000 (d) 20000 (e) 48000

40. The total number of viewers in March 2016 increased by 40% as compared to that in March 2015. If the viewers of theatre A in March 2016 are 25% more than that in 2015. Then find the difference between number of viewers of theatre B in March 2016 and in March 2015.
(a) 15800 (b) 19800 (c) 17800 (d) 18800 (e) 18700

Directions (41-45): Given below is the line graph which shows the runs scored by five teams in first and second innings in different test matches. Read the data and solve the questions.



41. What is the average runs scored by Sri-Lanka, Bangladesh and Australia in 2nd innings?
(a) 260 (b) 270 (c) 280 (d) 290 (e) 300

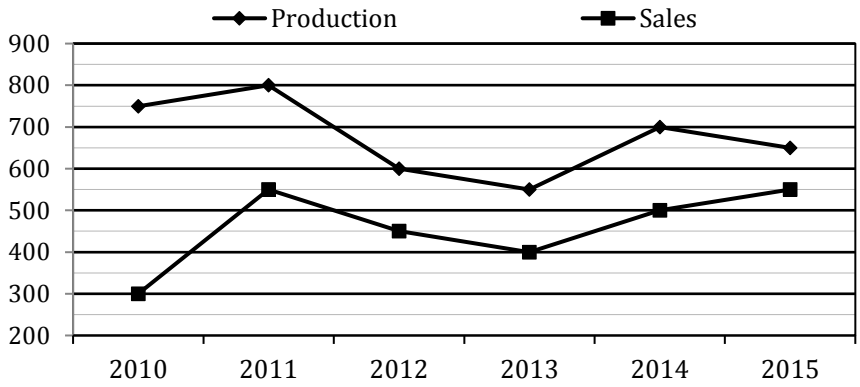
42. If there is 10% and 20% increase in runs scored in 1st and 2nd innings respectively by both teams, India and Pakistan, then what will be the ratio of total runs scored by India to the total runs scored by Pakistan?
(a) 762 : 619 (b) 756 : 646 (c) 756 : 619 (d) 762 : 646 (e) 647 : 761

43. In a match between Bangladesh and New-Zealand, if New-Zealand scored 30% more runs in 1st inning and 10% less runs in 2nd inning as compared to Bangladesh then how many more runs did New-Zealand score with respect to Bangladesh?
(a) 45 (b) 55 (c) 65 (d) 75 (e) 85

44. If Sri Lanka has to score runs equal to the runs scored by India in both innings then by what percent Sri Lanka has to increase their total score of both innings?
(a) $\frac{100}{3}\%$ (b) 50% (c) $66\frac{2}{3}\%$ (d) $55\frac{5}{9}\%$ (e) 55%

45. If there is a match between Pakistan & Bangladesh and Pakistan & Bangladesh both score 10% & 30%, more runs in 1st and 2nd innings respectively, then which team will score more and how many more runs than the other team?
(a) Pakistan, 22 runs (b) Pakistan, 25 runs (c) Match Draw
(d) Bangladesh, 25 runs (e) Bangladesh, 22 runs

Directions (46-50): Study the following graph carefully and answer the following question
The graph below represents the production (in tonnes) and sales (in tonnes) of a company X from 2010-2015



46. If production of company X and another company Y is in the ratio 14 : 13 in year 2014, then production of company Y in 2014 is what percent more or less than production of company X in 2010?
(a) $13\frac{1}{3}\%$ (b) $33\frac{1}{3}\%$ (c) $66\frac{2}{3}\%$ (d) $16\frac{2}{3}\%$ (e) $6\frac{2}{3}\%$

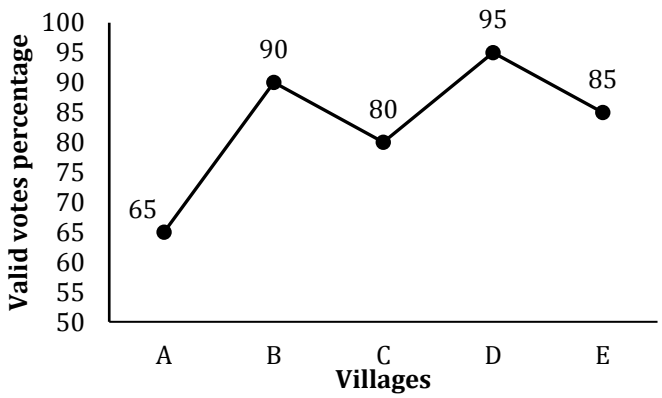
47. If production of company X in 2016 is 120% of its production in 2015 then what is the ratio of sales company X in 2010 to the production of company X in 2016?
(a) $\frac{7}{9}$ (b) $\frac{13}{20}$ (c) $\frac{20}{13}$ (d) $\frac{5}{13}$ (e) $\frac{7}{13}$

48. If production cost is Rs.1,500 per tonne and sale is at the rate of Rs.2,800 per tonne over all years then what is the ratio of profit or loss of company X in 2013 to the profit or loss of the company in year 2014? (Profit = Income through sales – Production cost)
(a) $\frac{59}{70}$ (b) $\frac{20}{23}$ (c) $\frac{53}{94}$ (d) $\frac{27}{38}$ (e) $\frac{37}{47}$

49. If production cost in year 2013 is Rs.150 per tonne and production cost increases by 10% every year after 2013 then what is the average production cost of company X over all years after year 2013?
(a) 1,23,764.5 (b) 1,16,737.5 (c) 2,22,467 (d) 1,33,647 (e) 1,22,373.5

50. If 35% of production of company X in 2010 is added to the sale of company X in 2012 then total sale of company X in 2012 is what percent of the total sale of company X over all the years now? (approximately)
(a) 14% (b) 18% (c) 35% (d) 28% (e) 24%

Directions (51-55): Given below are two line graphs, First line graph shows the percentage of voters who polled votes out of total voters from five different villages in the elections held in year 2016. Second line graph shows the percentage of valid votes polled out of total votes polled in these villages.
Note → Total voters = voters who polled votes + voters who did not poll votes
Total votes polled = valid votes polled + invalid votes polled



51. If difference between the total votes polled and valid votes polled from village C is 3740 and sum of total votes polled and invalid votes polled from village D is 9450 then find the total voters from village C and D together.
(a) 35500 (b) 36000 (c) 33000 (d) 32000 (e) 34000

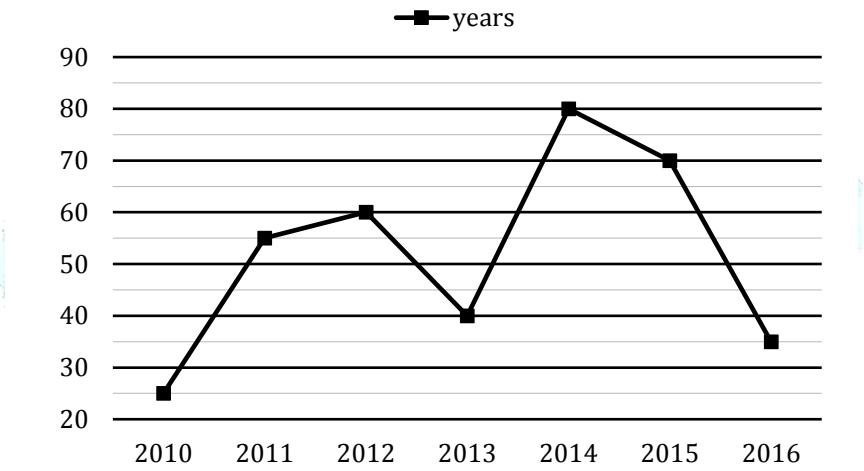
52. If ratio of total voters from village E to village B is 7 : 9 and ratio of males to female in the invalid votes of village E and village B is 4 : 3 and 3 :2 respectively then females who cast invalid votes from village E are what percent of males, who cast invalid votes from village B? (approximately)
(a) 96% (b) 88% (c) 80% (d) 75% (e) 82%

53. In village A, only two contestants participated in the election and winner got $52\frac{1}{2}\%$ of the total valid votes and won by 390 votes. Find the total voters in village A.
(a) 13,500 (b) 12,000 (c) 15,000 (d) 14,000 (e) 10,000

54. In village D, if it was found that percentage of votes polled which are valid is 80% instead of 95% (as given in line graph) then total valid votes are decreased by 1350. If ratio of total voters from village D to village E is 6 : 7 then, find total valid votes polled in village E.
(a) 11305 (b) 11200 (c) 10805 (d) 9500 (e) 10985

55. If total voters in village A is 15000 out of which 60% are males and ratio of males to females in total valid votes for same village is 9 : 13, then how many females are there who did not poll the votes?
(a) 870 (b) 1420 (c) 1320
(d) Can't be determined (e) 2200

Directions (56 – 60): The following line graph shows the percentage of the number of candidates who qualified an examination out of the total number of candidates who appeared for the examination over period of seven years from 2010 to 2016.



56. If the number of qualified boys in year 2011 is 1210 and ratio of number of qualified boys and girls is 11 : 9, then find the total number of students who are not qualified in year 2011.
(a) 2500 (b) 1800 (c) 1300 (d) 1900 (e) 1600

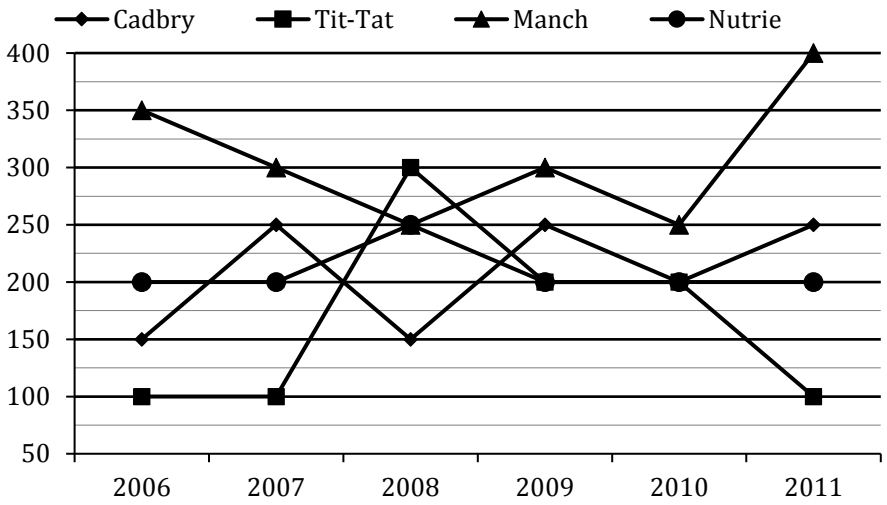
57. If the ratio of total number of students who appeared in year 2016 and 2017 is 7 : 9 and ratio of number of boys to girls who qualified in year 2017 is 4 : 5, then find the difference in number of unqualified boys and girls in year 2017. [Given that total number of students appeared in year 2016 is 1400].
(a) 70 (b) 90 (c) 120
(d) Cannot be determined (e) 180

58. If the total number of students in year 2013 is 40% more than the total number of students in year 2015, then the number of students who are not qualified in year 2013 is what percent more than number of students who are not qualified in year 2015?
(a) 180% (b) 160% (c) 135% (d) 125% (e) 170%

59. If the number of qualified boys in year 2009 is 770 which is 35% of the total number of qualified students in year 2010 and ratio of total number of qualified students in year 2009 to that in year 2010 is 7 : 11, then find the ratio of total number of students in year 2009 to that in year 2010. (Number of qualified students in year 2009 is 20% of the total number of students appeared in that year).
(a) 44 : 31 (b) 31 : 44 (c) 35 : 44 (d) 44 : 35 (e) 35 : 41

60. If total number of student appeared in year 2012 is 4200 which is 80% of the number of students appeared in year 2014, then find the total number of unqualified girls in year 2012 and unqualified boys in year 2014. [Given that number of unqualified boys are 50% more than number of unqualified girls for both years].
(a) 1502 (b) 1202 (c) 1402 (d) 1302 (e) 1602

Directions(61-65) : Answer the questions on the basis of the information given below.
Sales (by volume) of chocolates by different companies (in lakh units)



Revenue = Sales (by volume) × Selling price of each chocolate
Profit = Revenue – Expenditure
Profit percent = $\frac{Revenue-Expediture}{Expenditure}$×100

61. The market share of a company is defined as the volume of the sales of the company as a percentage of the total sales volume of all the four given companies. In which year was the market share of Manch the highest?
(a) 2011 (b) 2008 (c) 2006 (d) 2009 (e) 2010

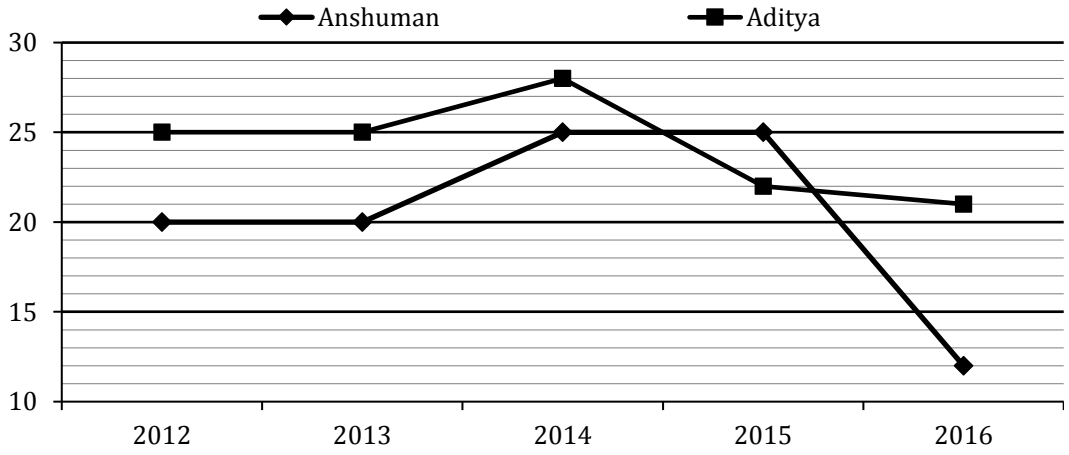
62. In the year 2010, if the profit percent on selling each Cadbry chocolate is 25%, and the selling price of each Cadbry chocolate is Rs. 10, what was the expenditure incurred by Cadbry in making chocolates?
(a) Rs. 12 crore (b) Rs. 14 crore (c) Rs. 16 crore (d) Rs. 10 crore (e) Rs. 8 crore

63. In the year 2009, the expenditures of Cadbry, Tit-Tat, Manch and Nutrie are in ratio 3 : 2 : 6 : 8. Which company had the highest profit percentage in 2009?
(a) Cadbry (b) Manch (c) Nutrie
(d) Cannot be determined (e) Tit-Tat

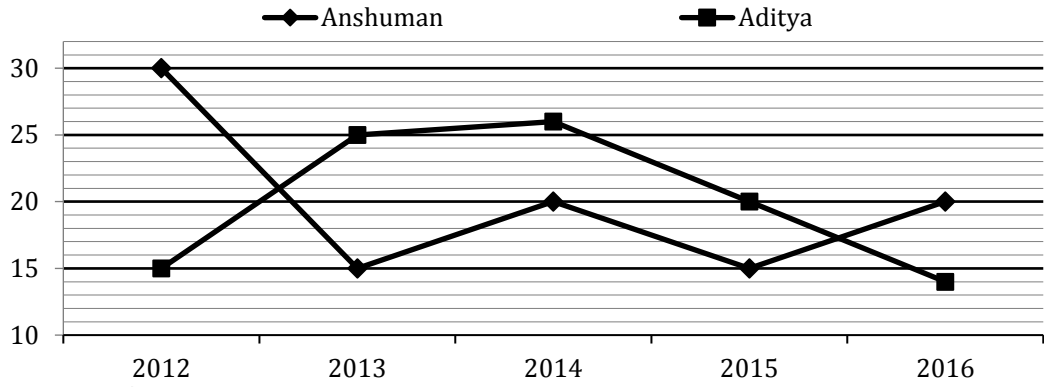
64. Which company had the highest growth rate for the period 2006 to 2010?
(a) Tit-Tat (b) Cadbry (c) Nutrie (d) Manch (e) none of these

65. Total sales (by volume) of cadbry from 2007 to 2010 are what percent more/less than the total sales (by volume) of nutrie from 2008 to 2011?
(a) 100% (b) 50% (c) 150% (d) 200% (e) 0%

Directions (66-70): First line graphs shows the percentage profit of 2 brothers from year 2012 to 2016 and the second line graph shows the percentage distribution of total income of each in different years. Study the data carefully and answer the following questions.



Total income of Anshuman = 1400 thousand and Aditya = 1600 thousand



Note: %profit = $\frac{income-expenditure}{expenditure} \times 100$

66. Find the difference (in thousand rupees) in the expenditures of both in 2014.
(a) 110 (b) 103 (c) 101 (d) 100 (e) 112

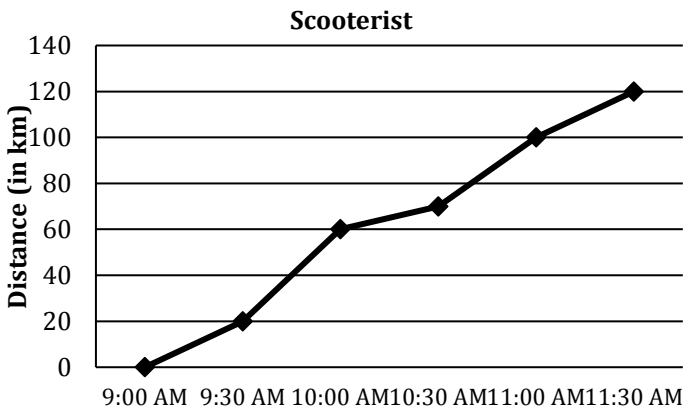
67. Expenditure of Aditya in 2013 is what percent more or less than that of Anshuman in 2016?
(a) 26% (b) 25% (c) 23% (d) 28% (e) 32%

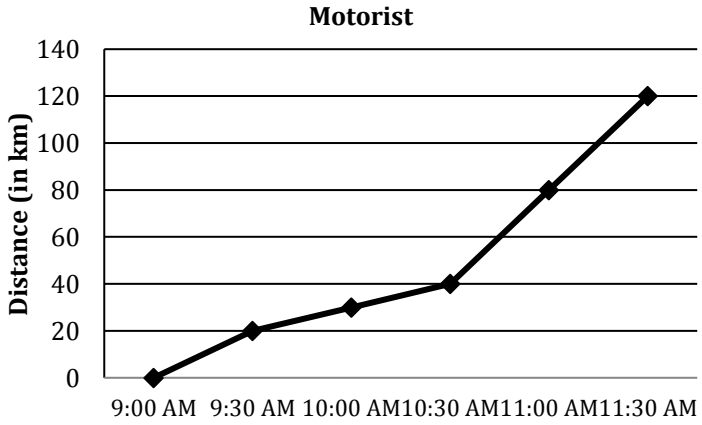
68. Find the ratio of income of Anshuman in 2012 and expenditure of Aditya in 2014.
(a) 8 : 5 (b) 65 : 84 (c) 84 : 65 (d) 5 : 8 (e) None of these

69. Find the average expenditure (in thousand rupees) of Anshuman from 2012 to 2016.
(a) 233 (b) 232.4 (c) 235 (d) 333.4 (e) 342

70. If in 2011 the expenditure of Aditya was 50% of income of Anshuman in 2012 and his income in the year 2011 was 50% more than expenditure of Anshuman in 2015, then find profit or loss percentage of Aditya in 2011.
(a) 22% (b) 20% (c) 25% (d) 26% (e) 30%

Directions (71-75): Read the following line graphs carefully and answer the following questions :
A Scooterist and a motorist cover a distance of 120 km. They both start their journey at 9 : 00 AM. In the first line graph the distance time-slots of 30 minutes is given for the scooterist and the same is given in second graph for the motorist.
Note: Both scooterist and mototrist run with a constant speed in the given intervals of 30 minutes.





71. Average speed of the scooterist to cover first 110 km distance is what percent more/less than the average speed of the motorist to cover first 100 km distance ?
(a) 5% (b) 10% (c) 15% (d) 20% (e) 18%

72. At 10 : 30 am, a car starts chasing the scooterist with the speed of 140 km/hr from the point where scooterist started his journey , then find the time at which the car will catch the scooterist ?
(a) 11 : 18 am (b) 11 : 08 am (c) 11 : 15 am (d) 11 : 32 am (e) Can't be determined

73. If the speed of the scooterist and the motorist is increased by 10% and 20% respectively throughout the journey then find the difference in time taken by the scooterist and motorist to cover the given total distance ?
(a) $\frac{11}{23}$ hr (b) $\frac{7}{22}$ hr (c) $\frac{4}{11}$ hr (d) $\frac{25}{132}$ hr (e) None of these

74. At what time they will be 30 km apart from each other if they choose the same road to cover 120 km of distance ?
(a) 10 : 20 am (b) 11 : 15 am (c) 11 : 09 am (d) 10 : 00 am (e) None of these

75. Distance covered by scooterist in first two hours is what percent of the distance covered by motorist in same time?
(a) 35% (b) 25% (c) 40% (d) 20% (e) 45%

PRACTICE SET (LEVEL–II) SOLUTIONS

1. (b); TOI Mumbai : 6500
Avg. of Tribune riders : $\frac{1}{3}[9500 + 11500 + 2400] = \frac{23400}{3} = 7800$
Difference = 7800 – 6500 = 1300

2. (d); Delhi : (except ET) 15000 + 18000 + 12000 + 9500 + 5500 = 60000
Mumbai (except ET & Chronicle) : 12000 + 6500 + 8000 + 11500 = 38000
Desired % = $\frac{60000}{38000} \times 100 \approx 160\%$

3. (a); Delhi :60000 + 7500 = 67500
Mumbai : 38000 + 30000 = 68000
Kolkata : 10500 + 12000 + 15000 + 2400 + 4000 + 7500 = 51400
Total users = 67500 + 68000 + 51400 = 186900

4. (e); $\frac{1}{3}$ (Mumbai Reader) = $\frac{68000}{3}$
3 (Hindu reader) = 3 [15000 + 12000 + 10500]=(37500×3)
Ratio = $\frac{68000}{37500\times9}$ = 136 : 675

5. (c); Readers Chennai = $\frac{70}{100}(51400) = 35{,}980$
Tribune in Chennai = $7500 \times \frac{5}{4} = \frac{37500}{4} = 9375$
Total reader except Tribune in all 4 metro city now = (35980 + 67500 + 68000 + 51400) − (9375 + 9500 + 11500 + 2400)
= 222880 − 32775 = 190105

6. (b); Income of Roadster in 2012 = $\frac{216000}{45} \times 100$ = Rs. 4,80,000
Income of HRX in 2012 = $\frac{90}{100} \times 4{,}80{,}000$ = Rs. 4,32,000
Expenditure of Roadster in 2012 = $\left(48 - \frac{45\times48}{100}\right) \times 10000$ = Rs. 2,64,000
Expenditure of HRX in 2012 = $\left(432 - \frac{432\times35}{100}\right) \times 1000$ = Rs. 2,80,800
∴ Required difference = Rs. 16,800

7. (c); Income of HRX in 2013 = $\frac{2{,}50{,}000\times100}{50}$ = Rs. 5,00,000
∴ Required profit = $\frac{50\times5{,}00{,}000}{100}$ = Rs. 2,50,000

8. (c);
$$\frac{E_{HRX}}{E_{Roadster}} = \frac{\left(\frac{100-55}{100}\right)\times I}{\left(\frac{100-50}{100}\right)\times I} = \frac{9}{10}$$

9. (b); Percentage change in 2012 = $\frac{45-35}{45} \times 100 = 22.22\%$
Percentage change in 2013 = $\frac{15}{35} \times 100 \approx 42.86\%$
Percentage change in 2014 = $\frac{10}{50} \times 100 = 20\%$
Percentage change in 2015 = $\frac{10}{60} \times 100 \approx 16.67\%$
Percentage change in 2016 = $\frac{5}{50} \times 100 = 10\%$
∴ 2nd lowest percentage change is in year 2015

10. (d); Income in year 2013 = $\frac{100\times90{,}000}{100-55}$ = Rs. 2,00,000
And Income in year 2014 = $\frac{100\times2{,}00{,}000}{100-50}$ = Rs. 4,00,000
∴ Required percentage change = $\frac{2{,}00{,}000}{2{,}00{,}000} \times 100 = 100\%$

11. (c); Required percentage= $\frac{400}{700} \times 100 = \frac{400}{7} = 54\frac{2}{7}\%$

12. (d); Number of soldiers left = $16\frac{2}{3}\%$ of $(650 + 420 + 160 \times 4) = 285$
Then, according to question,
$6x + 5x + (2 \times 4)x = 285$
$\Rightarrow x = \frac{285}{19} = 15$
∴ Required number of soldiers = 15 × 6 = 90

13. (b); Total soldiers of A = 540 + 350 + 150 × 4 = 1490
Total soldiers of E = 750 + 250 + 250 × 4 = 2000
∴ Required percentage = $\frac{510}{2000} \times 100 = 25.5\%$

14. (d); Required number of elephants = $250 + \frac{200+150}{5}$ = 320

15. (e); Required ratio = $\frac{\frac{1}{3}\times(650+420+160\times4)}{\frac{1}{3}\times(620+370+120)}$
= $\frac{1710}{1110} = \frac{57}{37}$

16. (b); Average Speed = $\frac{3}{\left(\frac{1}{80}+\frac{1}{80}+\frac{1}{120}\right)} = \frac{3\times240}{8}$ = 90 km/h

17. (d); Required Ratio = $\frac{240}{80} : \frac{300}{90}$ = 9 : 10

18. (a); Let the time taken by the train be t hours
Then, the time taken by the car = 3t hours
Distance covered by the train = 80 × t = 80t km
Distance covered by the car = 40 × 3t = 120t km
Required Percentage = $\frac{(120t - 80t)}{80t} \times 100 = 50\%$

19. (c); Percentage increase = $\frac{(\text{Today's Speed} - \text{Previous Day's Speed})}{\text{Previous Day's Speed}} \times 100$
Percentage increase for day 2 = $\frac{(90-80)}{80} \times 100 = 12.5\%$
Similarly,
Percentage decrease for day 3 = 11.11%
Percentage increase for day 4 = 50%
Percentage decrease for day 5 = 25%
Percentage increase for day 6 = 11.11%
Hence, maximum percentage increase/decrease is for Day 4

20. (d); Required Difference = (90 – 60) × $\frac{10}{3}$ = 100 km
Money spent = $\frac{60}{100} \times 50000 = 30{,}000$

21. (c); Money spent by Avanish on others in June
= $\frac{75}{100} \times \frac{38}{100} \times 30000 = 8550$
∴ % contribution = $\frac{8550}{50000} \times 100 = 17.1\%$

22. (d); Money invested by Avanish = $\frac{10}{100} \times \frac{45}{100} \times 30{,}000$
= Rs. 1350
∴ Interest earned by him = $\frac{10}{100} \times 1350$ = Rs. 135

23. (b); Amount saved in April = $\frac{40}{100} \times 50000$ = Rs. 20,000
Amount spent on education = $\frac{38}{100} \times 30{,}000$
= Rs. 11,400
∴ Required difference = Rs. 8600

24. (a); Asked expenditure in February except education = $\frac{(100-20)}{100} \times 30000 = \text{Rs. } 24{,}000$

25. (e); Required ratio = $\frac{\frac{20}{100}\times 30{,}000}{50{,}000} = \frac{3}{25}$

26. (b); Total students of class V in 2012 = $\frac{140}{70} \times 100 = 200$

Failed students of class V in 2013 = $140 \times \frac{100}{175} = 80$

$\therefore$ Required ratio = $\frac{\frac{30}{100}\times 200}{\frac{80}{100}\times\frac{80}{20}\times 100} = \frac{3}{16}$

27. (c); Total strength in 2013 = 150 + 150 = 300

$\therefore$ Number of passed students = $\frac{60}{100} \times 300 = 180$

28. (a); Failed girls in 2014 = $7 \times 5 = 35$

Failed boys in 2014 = $35 \times \frac{10}{7} = 50$

$\therefore$ Total students in 2014 = $85 \times \frac{100}{34} = 250$

Total students in 2010 = $250 \times \frac{4}{5} = 200$

Number of passed girls in 2010 = $84 \times \frac{100}{120} = 70$

$\therefore$ Number of passed boys in 2010 = $\frac{65}{100} \times 200 - 70 = 60$

29. (d); Passed students in class III = $\frac{105}{42} \times 58 = 145$

Failed students in class IV = $\frac{198}{88} \times 12 = 27$

Passed girls in class III = $\frac{145-17}{2} = 64$

Failed boys in class IV = $\frac{27+15}{2} = 21$

$\therefore$ Required difference = 43

30. (c); Average = $\frac{1}{5}(78 + 82 + 88 + 60 + 55) = \frac{1}{5} \times 363$

= 72.6%

31. (d); The ratio of imports to exports for the years 2008 and 2009 are 1.25 and 1.40, respectively.

Let the exports in the year 2008 = Rs. x crore

Then, the exports in the year 2009 = Rs. (500 − x) crore

$\therefore 1.25 = \frac{250}{x} \Rightarrow x = \frac{250}{1.25} = 200$ (using ratio for 2008)

Thus, the exports in the year 2009

= Rs. (500 – 200) crore = Rs. 300 crore

Let the imports in the year 2009 = Rs. y crore

Then, $1.40 = \frac{y}{300} \Rightarrow y = (300 \times 1.40) = 420$

$\therefore$ Imports in the year 2009 = Rs. 420 crore

32. (d); The graph gives only the ratio of imports to exports for different years. To find the percentage increase in imports from 2007 to 2008, we require more details such as the value of imports or exports during these years.

Hence, the data is inadequate to answer this question.

33. (a); Let $I_{2009} = 7x$ $\quad E_{2009} = 5x$

and $I_{2010} = 19y$ $\quad t_{2010} = 20y$

$19y = \frac{40}{100} \times 5x$

$2x = 19y$

$\boxed{x = \frac{19}{2}y}$

Total imports and exports in 2009= $12x = 12 \times \frac{19y}{2}$

=114y

Total imports and exports in 2010= 39y

Required percentage= $\frac{39y}{114y} \times 100 = 34.21\%$

34. (b); $\frac{I_{2011}}{t_{2011}} = \frac{155}{100} = \frac{31}{20}$

$\therefore I_{2011} = \frac{31}{51} \times 255 = 155$ cr

$E_{2011} = \frac{20}{51} \times 255 = 100$ cr

$I_{2005} = 65$ cr

$E_{2005} = \frac{65}{13} \times 20 = 100$ cr

$\therefore$ Imports and Exports in 2005 = 100 + 65 = 165 cr

35. (e); Import of year 2011 = $\frac{400}{20} \times 31$=620 crore

$\therefore$ Import of year 2012 = $620 \times \frac{1}{2}$ =310 crore

And export of year 2012 = $400 \times \frac{2}{5}$=160 crore

$\therefore$ Required ratio = $\frac{310}{160} = 31 : 16$

36. (b); Male viewers from both the theatres in January = $\frac{7}{12} \times 60{,}000 = 35000$

female viewers from both the theatres in November = $\frac{3}{8} \times 38000 = 14250$

$\therefore$ Required percentage = $\frac{35000}{14250} \times 100 \approx 246\%$

37. (d); Required Ratio = $\frac{(40+38)}{2} : \frac{(34+32+24)}{3}$

$= 39 : 30 = 13 : 10$

38. (d); Required difference = 48000 − 22000 = 26000

39. (d); No. of viewers of theatre A in October = $\frac{5}{7} \times \left(\frac{32+24}{2}\right) = 20$ thousand

40. (c); Total viewers in March 2016 = $\frac{140}{100} \times 72000 = 100800$

Viewers of theatre A in March 2016= $\frac{125}{100} \times 44000 = 55000$

Viewers of theatre B in march 2016 = 100800 – 55000 = 45800

Required difference = 45800 – 28000 = 17800

41. (d); Average = $\frac{180+250+440}{3} = \frac{870}{3} = 290$

42.(a); India's run after increment = $300 \times \frac{110}{100} + 360 \times \frac{120}{100} = 762$

Pakistan's Run after increment = $410 \times \frac{110}{100} + 140 \times \frac{120}{100} = 619$

Ratio = $\frac{762}{619}$

43. (c); New-Zealand Scored in

1st inning = $300 \times \frac{130}{100}$ =390

2nd inning = $250 \times \frac{90}{100} = 225$

Total score of New-Zealand = 615

Total score of Bangladesh = 550

New-Zealand scored 65 more runs than Bangladesh.

44. (b); India's score in both innings = 660

Sri-Lanka's score in both innings = 440

'220' more runs required.

% of runs needed by Sri-Lanka = $\frac{220}{440} \times 100 = 50\%$ more runs needed

45. (e); Pakistan's score = $410 \times \frac{110}{100} + 140 \times \frac{130}{100} = 633$

Bangladesh's score = $300 \times \frac{110}{100} + 250 \times \frac{130}{100} = 655$

Bangladesh will score 22 more runs.

46. (a); Production of company Y in 2014 = $\frac{700}{14} \times 13 = 650$ tonnes

Required percentage = $\frac{100}{750} \times 100$

$= \frac{40}{3}\%$ $= 13\frac{1}{3}\%$ less

47. (d); Production of company X in 2016 = $\frac{120}{100} \times 650 =$ 780 tonnes

Required ratio = $\frac{300}{780} = \frac{5}{13}$

48. (a); Cost of production in 2013 = 1500 × 550 = Rs.8,25,000

Total Income through sales in 2013 = 2800 × 400 = Rs.11, 20,000

Profit in 2013 = 11,20,000 − 8,25,000= Rs.2,95,000

Cost of production in 2014 = Rs. 1500 × 700 = Rs.10,50,000

Total Income through sales in 2014 = Rs. 2800 × 500 = Rs.14,00,000

Profit in 2014 = Rs.3,50,000

Required ratio = $\frac{295}{350} = \frac{59}{70}$

49. (b); Total production cost in 2014 and 2015 = 165 × 700 + 181.5 × 650

= 1,15,500 + 1,17,975

= Rs.2,33,475

Required average = $\frac{2,33,475}{2} = 1,16,737.5$

50. (e); Total sale of company X in 2012 = $450 + \frac{35}{100} \times 750 =$ 712.5 tonnes

Required percentage

$= \frac{712.5}{300+550+450+400+500+550+262.5} \times 100$

$= \frac{712.5}{3012.5} \times 100 = 23.65\% \sim 24\%$

51. (e); Let total voter of village C = x

And total voter of village D = y

$\frac{85}{100}x - \frac{85}{100}x \times \frac{80}{100} = 3740$

$\frac{17}{20}x\left(1-\frac{4}{5}\right) = 3740$

x = 22000

$\frac{75}{100}y + \frac{75}{100}y \times \frac{5}{100}y = 9450$

$\frac{3}{4}y\left(1+\frac{1}{20}\right) = 9450$

y = 12000

Required sum = 12000 + 22000 = 34000

52. (b); Let total voters from village E = 70000x

And total voters from village B = 90000x

Votes polled in E = 66,500x

Invalid votes in E = 9975x

Invalid votes cast by females in village E

$= \frac{3}{7} \times 9975x = 4275x$

Votes polled in B = 900x × 90 = 81000 x

Invalid votes in B = 810x × 10 = 8100x

Males who cast invalid votes in B

$= \frac{3}{5} \times 8100\ x = 4860\ x$

Required percentage

$= \frac{4275x}{4860x} \times 100 \approx 88\%$

53. (c); Let total voters in A = 10000x

According to question

Total valid votes in A = 5200 x

$\frac{5}{100} \times 5200x = 390$

$260x = 390$

$x = \frac{3}{2}$

total voters = 15000

54. (a); Let total votes polled = x

So

$\frac{15}{100}x = 1350$

x = 9000

Total voters from village D

$= 9000 \times \frac{100}{75}$

$= 12000$

Total voters in E

$= \frac{12000}{6} \times 7 = 14000$

Total valid votes polled in E

$= 140 \times 95 \times \frac{85}{100} = 11,305$

55. (d); Since we cannot determine number of males and females who vote so value cannot be determined

56. (b); Total number of qualified student in year 2011 = $\frac{1210}{11} \times 20 = 2200$

Number of student who are not qualified in year 2011 = $\frac{45}{55} \times 2200 = 1800$

57. (d); Cannot be determined since percentage of qualified candidates and ratio of unqualified boys to girls fro the year 2017 is not given.

58. (a); Let total number of student in year 2015 be 100

Then total number of student in year 2013 is 140

Required percentage = $\frac{140\times60-30\times100}{30\times100} \times 100 = 180\%$

59. (c); Total number of qualified student in year 2010 = $\frac{770}{35} \times 100 = 2200$

Total number of qualified student in year 2009 = $\frac{2200}{11} \times 7 = 1400$

Total number of student in year 2009 = $\frac{1400}{20} \times 100 = 7000$

Total number of student in year 2010 = $\frac{2200}{25} \times 100 =$ 8800

∴ Required ratio = $\frac{7000}{8800} = 35 : 44$

60. (d); Total number of appeared student in year 2014 = $\frac{4200}{80} \times 100 = 5250$

Total number of unqualified student in year 2012 = $\frac{40}{100} \times 4200 = 1680$

Total number of unqualified student in year 2014 = $\frac{20}{100} \times 5250 = 1050$

Let the number of unqualified girls in year 2012 are x

∴ 2.5x = 1680

x = 672

And,

Let the number of unqualified girls in year 2014 is y

∴ 2.5y = 1050

y = 420

∴ Required total

= 672 + (1050-420)

= 672 + 630 = 1302

61. (c); By observation we can say that the sales volume of Manch is more in 2006 compared to 2007 and also 2010 and total sales volume is less in 2006 compared to 2007 and 2010. So the market share of Manch is not the highest for years 2007 and 2010. In the same way the market share of Manch is not the highest in 2009.

In the year 2006, market share of Manch = $\frac{350}{800} = \frac{7}{16}$

In the year 2011, market share of Manch = $\frac{400}{950} = \frac{8}{19}$

Since $\frac{7}{16}$ is more than $\frac{8}{19}$, then market share is the highest in 2006.

62. (c); Given that profit percent

$= \frac{\text{Sales revenue} - \text{Expenditure}}{\text{Expenditure}} \times 100$

$25 = \frac{(10\times200)\times10^5 - \text{expenditure}}{\text{expenditure}} \times 100$

$\therefore$ expenditure = Rs. 16×10^7 = Rs. 16 crore.

63. (d); We need the sales revenue and expenditure. Now we do not know the sales revenue as selling prices of the chocolates are not known. We cannot answer the question.

64. (a); Before doing the calculation to check if there is any possibility to answer the question by observation. By observation we can say that the sales of Tit-Tat in year 2010 are two times the sales of 2006, but for other companies, it is less than double. So the average annual growth rate is the highest for Tit-Tat from year 2006 to 2010.

65. (e); Requied percent = $\frac{850-850}{850} \times 100 = 0\%$

66. (c); Expenditure of Anshuman = $\frac{280}{1.25}$ = 224 thousands

Expenditure of Aditya = $\frac{416}{1.28}$ = 325 thousands

$\therefore$ Required difference = $325 - 224 = 101$ thousands

67. (d); Expenditure of Aditya in 2013 = $\frac{400}{1.25}$ = 320 thousands

Expenditure of Anshuman in 2016 = $\frac{280}{1.12}$ = 250 thousnads

$\therefore$ Required percentage = $\frac{320-250}{250} \times 100 = 28\%$

68. (c); Required ratio = $\frac{\frac{30}{100}\times1400}{\frac{416}{1.28}} = \frac{420}{325} = \frac{84}{65}$

69. (e); Expenditure of Anshuman in 2012 = $\frac{420}{1.20}$ = 350 thousand

Expenditure of Anshuman in 2013 = $\frac{210}{1.20}$ = 175 thousand

Expenditure of Anshuman in 2014 = $\frac{280}{1.25}$ = 224 thousand

Expenditure of Anshuman in 2015 = $\frac{210}{1.25}$ = 168 thousand

Expenditure of Anshuman in 2016 = $\frac{280}{1.12}$ = 250 thousand

$\therefore$ Required average = $\frac{1}{5} \times 1167 = 233.4$ thousand

70. (b); In 2011, expenditure of Aditya = $\frac{1}{2} \times 420 = 210$ thousand

In 2011, income of Aditya = $1.5 \times \frac{210}{1.25} = 252$ thousand

$\therefore$ Required profit % = $\frac{252-210}{210} \times 100 = 20\%$

71. (b); Avg. speed of scooterist = $\frac{110}{2+\frac{1}{4}} = \frac{110\times4}{9}$

$= \frac{440}{9}$ km/hr

Avg. speed of motorist = $\frac{100}{2+\frac{1}{4}} = \frac{400}{9}$

Required % = $\frac{\frac{440}{9}-\frac{400}{9}}{\frac{400}{9}} \times 100 = \frac{40}{400} \times 100 = 10\%$

72. (a); At 10 : 30 distance covered by scooterist = 70 km

At 11 : 00 am distance covered by scooterist = 100 km

At 11 : 00 am distance covered by car= $\frac{140}{2}$ = 70 km

Relative speed = 140 – 40 = 100 km/hr

Required time = $\frac{(100-70)}{100} = \frac{30}{100} = \frac{3}{10}$ hr = 18 min

$\therefore$ At 11 : 18 am the car will catch the scooterist

73. (d); Time taken by scooterist to cover the total distance with increased speed= $\frac{120}{\frac{11}{10}\times48} = \frac{1200}{11\times48}$

Time taken by motorist to cover the total distance with increased speed= $\frac{120}{\frac{12}{10}\times48} = \frac{1200}{12\times48}$

Difference in time=$\frac{1200}{48}\left(\frac{1}{11}-\frac{1}{12}\right) = \frac{1200}{48\times132} = \frac{25}{132}$hr.

74. (e); There will be more than one possibility to be 30 km apart.

75. (b); Required percentage= $\frac{100-80}{80} \times 100 = 25\%$

Chapter 5

Pie Graph

Pie Graph are specific type of data representation where the data is represented in the form of a circle. The circle is divided into various segments or sectors. The circle represents the total value and the different segments or sectors represent certain proportions (degree or percentage value) of the total. The value of each component is in proportion to the circular area representing the component. This chart is used to show the break-up of one variable into its component parts. This chart is less versatile as compared to other representation format like table, bar graph or graph because it can represent only one variable at a time.

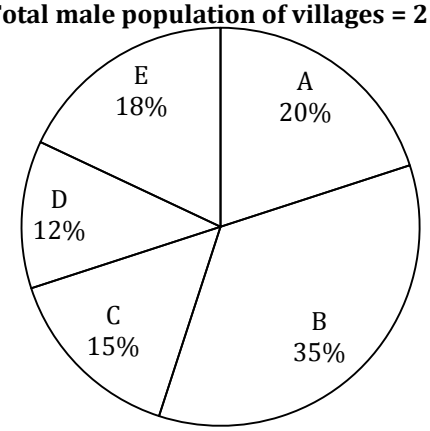
This chapter contains:

- Solved Examples
- Previous Year Questions
- Practice Set Level I
- Practice Set Level II

SOLVED EXAMPLES

Directions (1-5): Read the following pie chart carefully and answer the following questions —
In this pie-chart male population of five villages is given.
Note : Ratio between the total male population and total female population of the given villages is 10 : 7.

Total male population of villages = 2500



1. If the ratio between the male population and female population of village B is 7 : 3 then the female population of village B is what percent of the total female population of given villages ?
(a) $19\frac{1}{7}\%$ (b) $21\frac{3}{7}\%$ (c) $23\frac{4}{7}\%$ (d) $27\frac{1}{3}\%$ (e) $21\frac{4}{7}\%$

Sol. **(b);** $Female\ population\ of\ village\ B = \frac{3}{7} \times \frac{35}{100} \times 2500 = 375$

$Required\ \% = \frac{375}{1750} \times 100 = 21\frac{3}{7}\%$

2. Total male population of village A and B together are what percent more/less than the total male population of village C and D together?
(a) $101\frac{2}{19}\%$ (b) $109\frac{1}{17}\%$ (c) $105\frac{7}{17}\%$ (d) $103\frac{19}{27}\%$ (e) None of these

Sol. **(d);** $Required\ \% = \frac{(35+20)-(15+12)}{(15+12)} \times 100 = \frac{55-27}{27} \times 100 = 103\frac{19}{27}\%$

3. Find the difference between the average male population of village B and C together and the average male population of D and E together?
(a) 150 (b) 200 (c) 250 (d) 300 (e) 280

Sol. **(c);** $Required\ difference = \left[\frac{(35+15)}{2} - \frac{(12+18)}{2}\right] \times 25 = (25-15) \times 25 = 10 \times 25 = 250$

4. Ratio of female population of village C to that of village D is 2 : 3 and the ratio of female population of village D to male population of village E is 4 : 5 then find the total female population of village D and C together ?
(a) 300 (b) 750 (c) 120 (d) 450 (e) 600

Sol. **(e);** $Female\ population\ of\ village\ D = \frac{450}{5} \times 4 = 90 \times 4 = 360$

$Female\ population\ of\ village\ C = \frac{360}{3} \times 2 = 240$

Required population = 360 + 240 = 600

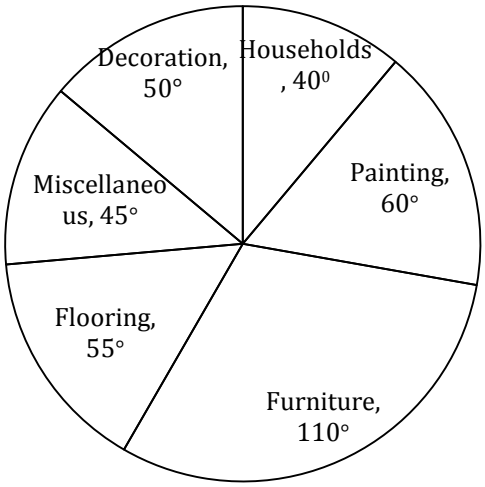
5. Male population of village G is $7\frac{7}{9}\%$ more than the male population of village E then male population of village G is what percent of the total male population of the given villages?
(a) 24.8% (b) 18.1% (c) 21.2% (d) 19.4% (e) 15.2%

Sol. **(d);** $Male\ population\ of\ village\ G = 107\frac{7}{9}\%\ of\ 450 = 485$

$Required\ \% = \frac{485}{2500} \times 100 = 19.4\%$

Directions (Q.6-10): Study the following pie chart and answer the questions that follow it
Given below is the pie chart which shows the distribution of expenditure of a man in degree.

Total Expenditure of 2017 = 2,50,000



6. Expenditure on household and flooring is what percent of the total expenditure (approximately)?
(a) 26% (b) 36% (c) 20% (d) 22% (e) 24%

Sol. **(a);** Central angle of household and flooring together = 40° + 55° = 95°
Overall central angle= 360°
∴ percentage of income spend on household and flooring together $= \frac{95^\circ}{360} \times 100\% = 26.33 \approx 26\%$

7. What is the ratio of expenditure on miscellaneous and painting together to the expenditure on flooring and furniture together?
(a) 33 : 21 (b) 7 : 11 (c) 7 : 8 (d) 23 : 31 (e) 11 : 7

Sol. **(b);** Angle of miscellaneous and painting together = 45° + 60° = 105°
Angle of flooring and furniture together = 55° + 110°= 165°
∴ ratio $= \frac{105^\circ}{165^\circ} = \frac{7}{11}$

8. What is difference between the expenditure on decoration and furniture together to the expenditure on households?
(a) Rs 83,333.33 (b) Rs 84,333.33 (c) Rs 86,333.33 (d) Rs 82,333.33 (e) Rs. 85333.33

Sol. **(a);** Angle of decoration & furniture together = 50 + 110 = 160°
Angle of household = 40°
Difference of angle = 160° – 40° = 120°
∴ expenditure $= \frac{120^\circ}{360^\circ} \times 250{,}000 = Rs\ 83{,}333.333$

9. If expense on painting is Rs 30,000 in 2018 then what is the percentage of expenditure on painting to total expenditure if total expenditure remains the same?
(a) 10% (b) 16% (c) 12% (d) 18% (e) 15%

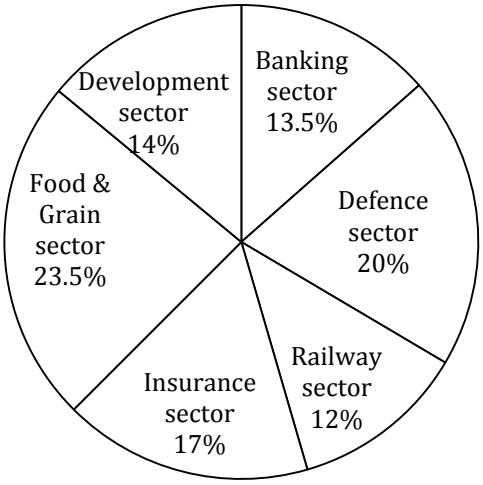
Sol. **(c);** Expenditure on painting = Rs 30,000
Total expenditure = Rs 2,50,000
∴ Percentage of expenditure on painting to total $= \frac{30{,}000}{2{,}50{,}000} \times 100 = 12\%$

10. If the expenditure on each decoration & household is increased by 20% in 2018, then what is the total expenditure on decoration and household in 2018?
(a) Rs 63,500 (b) Rs 62,500 (c) Rs 75,000 (d) Rs 66,500 (e) None of these

Sol. **(c);** Angle of decoration & household together = 90°
Expenditure on decoration and household together in 2017 $= \frac{90^\circ}{360^\circ} \times$ 2,50,00 = Rs 62,500
For 20% increase = 62,500 $\times \frac{20}{100} = Rs\ 12{,}500$
∴ Total expenditure on decoration and household in 2018 = 62500 + 12500 = 75,000

Directions (11-15): Pie-chart given below shows the investment of a government entity (in crore) in different sectors. Study the pie-chart and answer the following.

Total Investment = 1,000 crores



11. What is the ratio of average investment on banking and defense sector to the average investment on insurance, railway and development sector.
(a) 172 : 201 (b) 201 : 172 (c) 67 : 86 (d) 86 : 67 (e) 65 : 86

Sol. **(b);** Average investment on Banking and defence $= \frac{135+200}{2} = \frac{335}{2} crore$

Average investment on Insurance, Railway & Development $= \frac{170+120+140}{3} = \frac{430}{3} crore$

$Desired\ Ratio = \frac{\frac{335}{2}}{\frac{430}{3}} = \frac{335}{2} \times \frac{3}{430} = \frac{201}{172}$

12. What is the percentage of investment in banking sector to the investment in Railway sector:
(a) 110% (b) 114% (c) 112% (d) 116% (e) None of these

Sol. **(e);** $Desired\% = \frac{135}{120} \times 100 = 112.5\%$

13. What is the central angle for Food and Grain sector ?
(a) 84° (b) 84.2° (c) 84.4° (d) 84.6° (e) 84.8°

Sol. **(d);** $Investment\ on\ Food\ \&\ Grain\ in\ \% = \frac{235}{1000} = 23.5\%$

$In\ Central\ Angle = 23.5 \times \frac{18}{5} = 84.6°$

14. If the investment in Railway and Defence sector is increases by 15% and 25% respectively then how much percentage increase in total investment(in percentage) ?
(a) 6.8% (b) 7% (c) 7.2% (d) 6.6% (e) 6.4%

Sol **(a);** $IncreaseinRailway = 120 \times \frac{15}{100} = 18$ Crore

$Increaseindefence = 200 \times \frac{25}{100} = 50$ Crore

Total Increase = 68 Cr.

$Desired\ \% = \frac{68}{1000} \times 100 = 6.8\%\ increase$

15. If the government reduces the investment on Defence sector by 20% and distributed this money on Railway and insurance sector in the ratio 5 : 3 then investment in insurance sector changes by what percentage ?(approximately).
(a) 8% decrease (b) 8.8% increase (c) 10.2% increase (d) 11% increase (e) 10.5% decrease

Sol. **(b);** $Reduction\ on\ Defence\ sector = 200 \times \frac{20}{100} = 40$ Crore

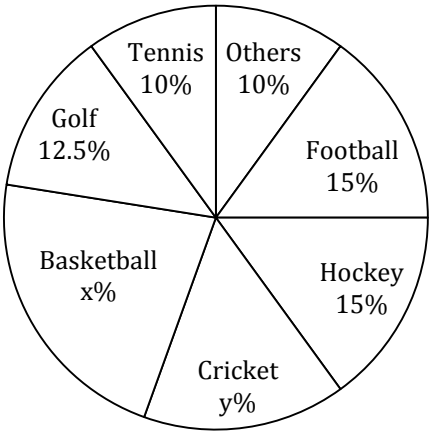
Investment in Railway and Insurance sector be 5x and 3x respectively

Total = $8x = 40 \Rightarrow x = 5$

Increase in Insurance sector = 3 × 5 = 15 Crore

$Effect\ on\ insurance\ sector = \frac{15}{170} \times 100 \approx 8.8\%\ increase$

Directions (16-20): Given below is the pie chart which shows the percentage expenditure issued by government on different sports in a state in year 2016
Total Expenses = 500 Lakhs



16. What is the ratio of expenditure on Football and Golf together to the expenditure on Hockey and Tennis together ?
(a) 11 : 10 (b) 9 : 10 (c) 10 : 11 (d) 11 : 12 (e) 5 : 6

Sol. **(a);** $Required\ ratio = \frac{\frac{27.5}{100}\times 500}{\frac{25}{100}\times 500}$
$= \frac{275}{250} = 11 : 10$

17. What is the difference between average of expenditure on sports Golf, Football together to the average of expenditure on sport tennis and Hockey together ?
(a) 4.25L (b) 10.25L (c) 6.25L (d) 5.5L (e) 7.25L

Sol. **(c);** Average expenditure on football and Golf together $= \frac{27.5\times 5}{2} = 68.75$
Average of expenditure Tennis and Hockey $= \frac{25\times 5}{2} = 62.5$
Required difference = 6.25 L

18. If in year 2017 expenditure on Cricket and basketball increases by 20% and 12% than the previous year respectively and ratio of expenditure between these two sports in 2016 is 2 : 1 then find the total expenditure of these two sports in 2017.
(a) 180 L (b) 310 L (c) 285 L (d) 220 L (e) 170 L

Sol. **(d);** Expenditure on Cricket in 2016 $= \left\{\frac{(100\%-62.5\%)\times 500}{3}\right\} \times 2$
$\frac{37.5\times 5}{3} \times 2 = 12.5 \times 5 \times 2 = 125\ L$
Expenditure on Basketball in 2016 $= \frac{37.5\times 5}{3} = 12.5 \times 5 = 62.5\ L$
Required expenditure in 2017 $= \frac{120}{100} \times 125 + \frac{112}{100} \times 62.5$
$= 150 + 70 = 220$

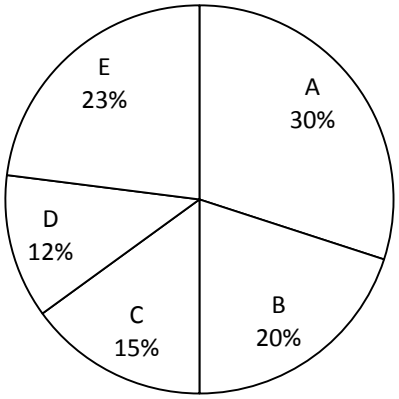
19. If expenditure on football and Hockey increases 20% and 25% in 2017 than that in 2016 respectively then what is the total expenditure for these two sports in 2017 ?
(a) 120 .65 L (b) 170.50 (c) 183.75 (d) 190.00 (e) 201.5

Sol. **(c);** Required expenditure $= 15 \times 5 \times \frac{120}{100} + 15 \times 5 \times \frac{125}{100}$
$= 90 + 93.75 = 183.75$

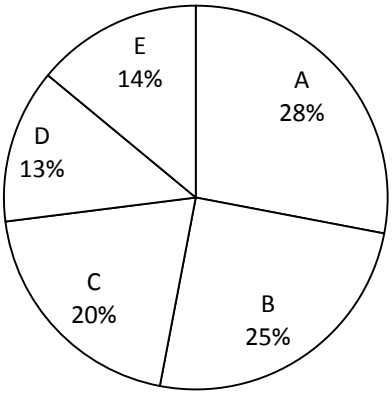
20. Total expenditure of Tennis and football together in 2016 is what percent of total expenditure on all, sports in 2017 if in 2017 expenditure on all sports increases by 20% than that in 2016 ?
(a) $20\frac{5}{6}\%$ (b) $30\frac{2}{3}\%$ (c) $13\frac{7}{9}\%$ (d) $14\frac{2}{7}\%$ (e) $16\frac{2}{3}\%$

Sol. **(a);** Required percentage $= \frac{(10\%+15\%)500}{120\%\times 500} \times 100 = 20\frac{5}{6}\%$

Directions (21-25): Given below are two pie charts, first pie chart shows the percentage distribution of total population of five cities in 2016 and second pie chart shows the percentage distribution of male population in these five cities in 2016



Population of five cities in 2016
Total population 6,00,000



Male population of five cities in 2016
Total population = 4,00,000

21. What is the total number of females in city C and E together ?
(a) 1,00,000 (b) 98,000 (c) 96,000 (d) 94,000 (e) 92,000

Sol. **(e);** Total population in city C and E = 38% of 6,00,000 = 2,28,000
Total male population in city C and E = 34% of 4,00,000 = 1,36,000
Total no. of females in city C and E = 2,28,000 – 1,36,000 = 92,000

22. What is the ratio between males in city B and D together to females in city A and B together ?
(a) 11 : 7 (b) 7 : 11 (c) 11 : 14 (d) 19 : 11 (e) 14 : 9

Sol. **(d);** Males in B and D together = 38% of 4,00,000 = 1,52,000
Total population in A and B = 50% of 6,00,000 = 3,00,000
Total male population in city A and B = 53% × 4,00,000 = 2,12,000
Total female population in A and B in = 88,000
$Ratio = \frac{1,52,000}{88,000} = \frac{19}{11}$

23. If in 2017, population of city D and C increases by 10% and 15% respectively over previous year and the male population is increased by 15% and 20% respectively over previous year, then find the ratio between number of females in city D to number of females in city C in year 2017?
(a) 191 : 75 (b) 75 : 194 (c) 194 : 75 (d) 75 : 191 (e) None of these

Sol. **(c);** $Population\ of\ D\ in$ 2017 = 6,00,000 × $\frac{12}{100} \times \frac{110}{100}$ = 79,200
$Male\ population\ of\ D\ in$ 2017 = 4,00,000 × $\frac{13}{100} \times \frac{115}{100}$ = 59,800
Female population in D in 2017 = 79,200 – 59,800 = 19,400
$Population\ of\ C\ in$ 2017 = 6,00,000 × $\frac{15}{100} \times \frac{115}{100}$ = 1,03,500
$Male\ population\ in\ C\ in$ 2017 = 4,00,000 × $\frac{20}{100} \times \frac{120}{100}$ = 96,000
Female population in C in 2017 =1,03,500 – 96,000 = 7500
$Ratio = \frac{19,400}{7,500} = \frac{194}{75}$

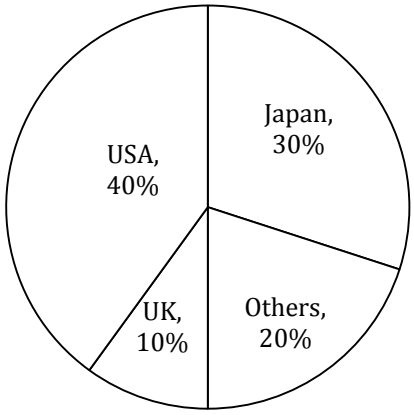
24. What was the population of city C in 2014, if population increase at the rate of 20% annually.
(a) 62,000 (b) 62,500 (c) 63,000 (d) 64,000 (e) 64,500

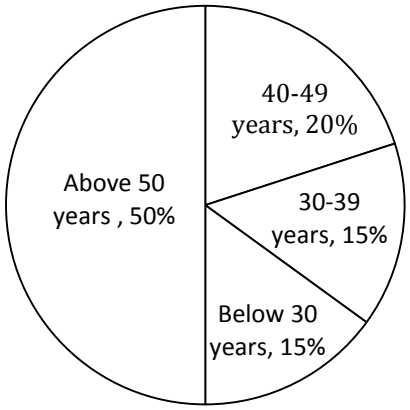
Sol. **(b);** Let, population in city C in 2014 = x
$x \times \left[1 + \frac{20}{100}\right]\left[1 + \frac{20}{100}\right] = 6,00,000 \times 15\%$
$x \times \frac{120}{100} \times \frac{120}{100} = 90,000 \Rightarrow x = 62,500$

25. Number of females in city C is how much percent more or less than the males in City D [approximately]?
(a) 19% less (b) 81% more (c) 81% less (d) 19% more (e) 27% more

Sol. **(c);** $No.\ of\ females\ in\ city\ C = 6,00,000 \times \frac{15}{100} - 4,00,000 \times \frac{20}{100} = 90,000 - 80,000 = 10,000$
No. of males in D = 13% × 4,00,000 = 52,000
$\% = \frac{52,000-10,000}{52,000} \times 100 = \frac{42,000}{52,000} \times 100 = 80.77\% \simeq 81\%$
No. of females in city C is 81% less than the number of males in city D.

Direction(26-30)- Study the given pie charts and answer the following questions.
In the first pie chart distribution of overseas tourist traffic from India to different countries is given and in the second pie chart distribution of overseas tourist traffic from India according to age wise is given.
Distribution of Overseas Tourist Traffic from India





26. If the tourist traffic from India to USA is 165000 more than that of UK then overseas tourist traffic in the age group of (40-49) years are how much (in lakh) more/less than the overseas traffic from India in the age group of (30 - 39) years?
(a) 0.725 lakh (b) 0.275 lakh (c) 0.55 lakh (d) 0.527 lakh (e) 0.42 lakh

Sol. **(b);** Given
30 % → 165000
1 % → 5500
100% → 550000
∴ Total overseas tourist from India = 550,000
Then,
$(20 - 15) = 5\%\ of\ 550{,}000 = 5 \times 5500 = 27500 = 0.275$ lakh

27. The ratio of the number of Indian tourists that went to USA to the number of Indian tourists who were below 40 years of age is :
(a) 2 : 1 (b) 8 : 3 (c) 3 : 8 (d) Cannot be determined (e) 4 : 3

Sol. **(e);** Required Ratio $= \frac{40}{15+15} = \frac{40}{30} = 4 : 3$

28. If amongst other countries, Switzerland, accounted for 25% of the Indian tourist traffic, and it is known from official Swiss records that a total of 25 lakh Indian tourists had gone to Switzerland during the year, then find the number of 30-39-year-old Indian tourists who went abroad in that year.
(a)18.75 lakh (b) 25 lakh (c) 50 lakh (d) 75 lakh (e) 80 lakh

Sol. **(d);** 25% → 25 lakh
100% → 100 lakh
∴ total overseas tourist from India $= \frac{100}{20} \times 100 = 500\ lakh$
Then required no. of overseas tourist $= \frac{15}{100} \times 500 = 75\ lakh$

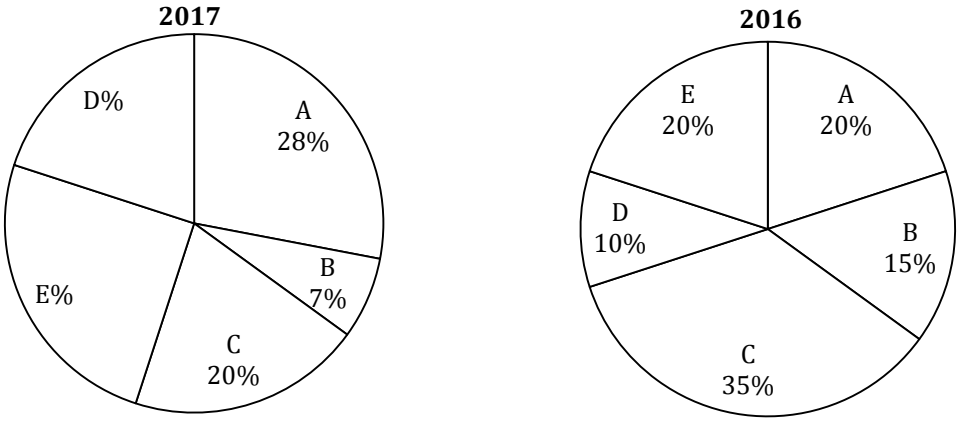
29. If amongst other countries, Switzerland, accounted for 25% of the Indian tourist traffic, and it is known from official Swiss records that a total of 25 lakh Indian tourists had gone to Switzerland during the year, then what was the volume of traffic of Indian tourists in the US?
(a) 150 lakh (b) 125 lakh (c) 200 lakh (d) 225 lakh (e) 230 lakh

Sol. **(c);** Total overseas Indian tourist= 500 $lakh$
∴ Required No. of tourist $= \frac{40}{100} \times 500 = 200\ lakh$

30. If tourist of age group above 50 years are 3.6 lakh more than the tourist of age group 40-49 years then what is the total no. tourist of age below 40 years ?
(a) 4.8 lakh (b) 4.2 lakh (c) 3.6 lakh (d) 4.5 lakh (e) 3.2 lakh

Sol. **(c);** 30% → 3,60,000
100% → $\frac{3{,}60{,}000}{30} \times 100$
→ 12,00,000
∴ Required answer = $\frac{15+15}{100} \times 12{,}00{,}000$ = 3.6 lakh

Directions (31-35): Read the given data carefully and answer the following questions.
Given below are two pie charts which show the percentage distribution of Income of 5 firms in 2016 and in 2017. Percentage distribution for some firms is not given. You have to calculate these value if required



Note: Total income of all firm in 2016 and in 2017 is in the ratio 5 : 7

$Profit\ \% = \frac{Income - Expenditure}{Expenditure} \times 100$

31. What is the ratio of income of A & B together in 2016 to the income of B and C together in 2017.
(a) 25 : 27 (b) 23 : 25 (c) 12 : 17 (d) 12 : 13 (e) 19 : 20

Sol. **(a);** Let total income in 2016 = 5x
Total income in 2017 = 7x
Income of A & B in 2016 = $35 \times \frac{5x}{100}$
Income of B & C in 2017 = $27 \times \frac{7x}{100}$
Required ratio = $\frac{35 \times 5x}{27 \times 7x}$ = 25 : 27

32. If income of D & E in 2017 is in the ratio 4 : 5, then income of E in 2017 is what percent more or less than income of B in 2016.
(a) $16\frac{2}{3}\%$ (b) $33\frac{1}{3}\%$ (c) $133\frac{1}{3}\%$ (d) $14\frac{2}{7}\%$ (e) None of these

Sol. **(c);** Income of E in 2017 = $\frac{45}{9} \times 5 \times \frac{7x}{100} = \frac{7x}{4}$
Required % = $\frac{\frac{7x}{4} - \frac{3x}{4}}{\frac{3x}{4}} \times 100 = 133\frac{1}{3}\%$

33. If profit percentage of A in 2016 is equal to profit percentage of C in 2017 and expenditure of A in 2016 is 20 L then what is the expenditure of C in 2017.
(a) 15 L (b) 18 L (c) 21 L (d) 35 L (e) 28 L

Sol. **(e);** According to question, $\frac{20 \times \frac{5x}{100} - 20}{20} = \frac{20 \times \frac{7x}{100} - E}{E} \Rightarrow \frac{x - 20}{20} = \frac{\frac{7x}{5} - E}{E}$
Ex – 20E = $\frac{140x}{5} - 20E \Rightarrow$ E = 28 L

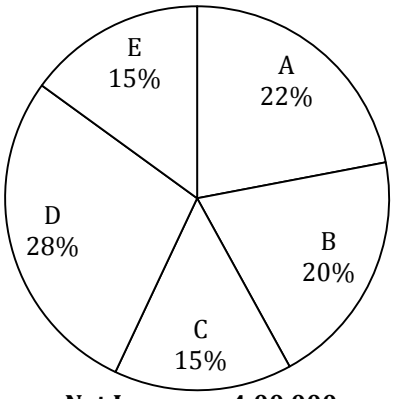
34. If difference between income of D in 2016 and income of B in 2017 is 1 L then what is the total income of D and E in 2017.
(a) 280 L (b) 210 L (c) 315 L (d) 140 L (e) 215 L

Sol. **(c);** According to question $\Rightarrow 10 \times \frac{5x}{100} - 7 \times \frac{7x}{100} = 1 \Rightarrow x = 100$
Total income of D & E in 2017 = $\frac{45}{100} \times 7 \times 100$ = 315 L

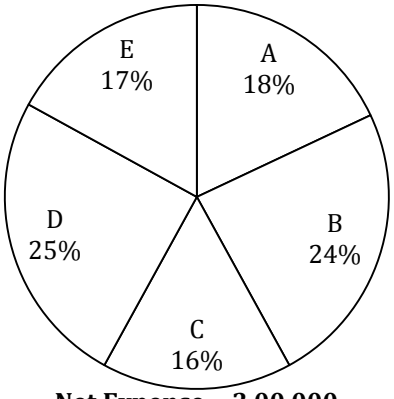
35. Income of A and B together in 2016 is what percent of income of C in 2017.
(a) $66\frac{2}{3}\%$ (b) 80% (c) 100% (d) $133\frac{1}{3}\%$ (e) 125%

Sol. **(e);** Income of A & B in 2016 = $35 \times \frac{5x}{100}$
Income of C in 2017 = $20 \times \frac{7x}{100}$
Required percentage = $\frac{35 \times 5x}{20 \times 7x} \times 100 = 125\%$

Directions (36-40): In the following pie-chart Income and expenses of five employees is given. Read the given data & answer the following questions.



Net Income = 4,00,000



Net Expense = 3,00,000

Note- Income = expenditure + saving

36. What is the average saving of B and C together?
(a) 8,000 (b) 9,000 (c) 10,000 (d) 11,000 (e) 12,000

Sol. **(c);** $Income\ of\ B = \frac{20}{100} \times 4\ Lakh = 80{,}000$
$Expenses\ of\ B = \frac{24}{100} \times 3\ Lakh = 72{,}000$
Saving of B = 8,000
$Income\ of\ C = \frac{15}{100} \times 4{,}00{,}000 = 60{,}000$
$Expenses\ of\ C = \frac{16}{100} \times 3{,}00{,}000 = 48{,}000$
Saving of C = 12,000
$Average\ of\ saving = \frac{12{,}000+8{,}000}{2} = 10{,}000$

37. If Income of Employee A decreases by 10% and its expenses increase by 20%. Then, his saving changes by what percent? (approximately)
(a) 42% (b) 50% (c) 58% (d) 62% (e) 68%

Sol. **(c);** $Income\ of\ A = \frac{22}{100} \times 4{,}00{,}000 = 88{,}000$
$Expense\ of\ A = \frac{18}{100} \times 3{,}00{,}000 = 54{,}000$
Present saving of A = 34,000
$Income\ after\ decrement = 88{,}000 \times \frac{90}{100} = 79{,}200$
$Expenses\ after\ increment = 54{,}000 \times \frac{120}{100} = 64800 = 64{,}800$
Saving after changes = 14,400
$\%\ changes\ in\ saving = \frac{34{,}000-14{,}400}{34{,}000} \times 100 = 57.64\% \simeq 58\%$

38. If the income of D increases by 10% and income of E decreases by 20% then what will be the effect on net income of five employees?
(a) Rs. 800 increase (b) Rs. 1000 Increase (c) Rs. 1000 decrease (d) Rs. 800 decrease (e) None of these

Sol. **(d);** $Changes\ in\ D's\ salary = \frac{28}{100} \times 4{,}00{,}000 \times \frac{10}{100} = 11{,}200\ (\uparrow)$
$Changes\ in\ E's\ salary = \frac{15}{100} \times 4{,}00{,}000 \times \frac{20}{100} = 12{,}000\ (\downarrow)$
Effect on Net Income = Rs. 800 (↓) = Rs. 800 decrease

39. What is the ratio of saving of A to B ?
(a) 17 : 4 (b) 4 : 17 (c) 17 : 15 (d) 15 : 17 (e) 12 : 7

Sol. **(a);** Saving of B = 8,000 [see question 1]
Saving of A = 34,000 [see question 2]
$Ratio = \frac{34{,}000}{8{,}000} = \frac{17}{4}$

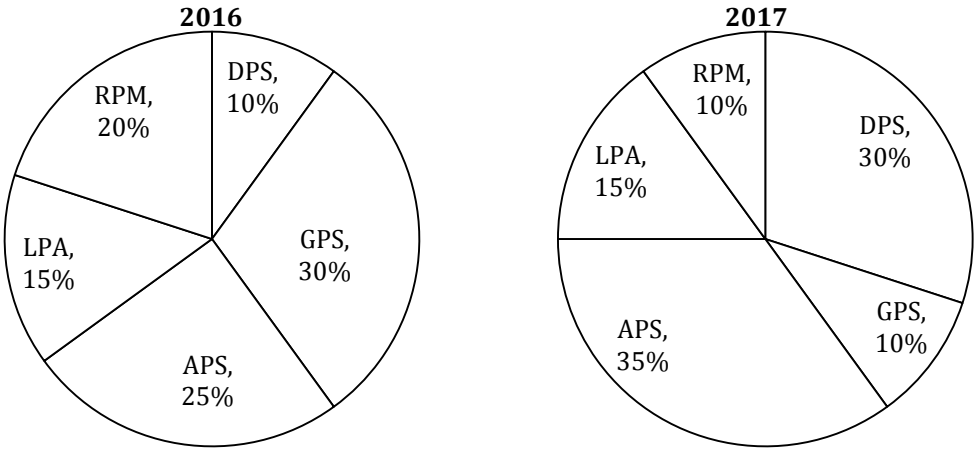
40. If expenses of C increase by 15% then to how much percentage of increment is necessary in his income to keep his saving same as before?
(a) 10% (b) 12% (c) 15% (d) 8% (e) 6%

Sol. **(b);** $Expenses\ of\ C = \frac{16}{100} \times 3{,}00{,}000 = 48{,}000$

$Increment\ in\ expense = 48{,}000 \times \frac{15}{100} = 7200$

$\%\ increment\ necessary\ on\ salary = \frac{7200 \times 100}{15\% \times 4{,}00{,}000} = \frac{7200 \times 100}{60{,}000} = 12\% \Rightarrow 12\%$ increment

Directions (41-45): Study the following pie-chart and answer the questions that follow it.
Given below are the two pie charts which shows the percentage distribution of admission of students in five different schools in year 2016 and 2017.



41. Total number of admission in 2016 and 2017 are 2000 and 2500 respectively. Number of students in DPS in 2016 is what percent less or more than number of students in GPS in 2017?
(a) 35% (b) 25% (c) 40% (d) 20% (e) 15%

Sol. **(d);** Number of students in DPS in 2016 = $\frac{10}{100} \times 2000 = 200$

Number of student in GPS in 2017 = $\frac{10}{100} \times 2500 = 250$

$\therefore$ Percentage = $\frac{250-200}{250} \times 100 = \frac{50}{250} \times 100 = 20\%$

42. If the total number of students in 2016 is 4000 and ratio of boys and girls in RPM is 2 : 3. Then the difference between boys and girls in APS is?
(a) 500 (b) 600 (c) Cannot be determined
(d) 400 (e) 160

Sol. **(c);** Since ratio of number of boys and girls in 2016 in APS is not given.

43. If the total number of admission in 2017 is 5000 and 500 students left DPS in 2017 and taken admission in RPM in 2017 then number of admissions in RPM increases by what percent ?
(a) 80% (b) 100% (c) 120% (d) 60% (e) 10%

Sol. **(b);** Number of student in DPS in 2017 = $\frac{30}{100} \times 5000 = 1500$

Number of student in DPS in 2017 after 500 left = $1500 - 500 = 1000$

Number of student in RPM in 2017 = $\frac{10}{100} \times 5000 = 500$

Number of student after 500 student joined = $500 + 500 = 1000$

$\therefore$ Percentage increase = $\frac{500}{500} \times 100 = 100\%$

44. If total student taking admission in 2017 is 6000 and in 2016 is 4000. Then find the ratio of total student taking admission in RPM and LPA in 2016 and total student taking admission in GPS and LPA in 2017?
(a) 14 : 15 (b) 15 : 14 (c) 12 : 14 (d) 12 : 15 (e) 13 :15

Sol. **(a);** Total student taking admission in RPM and LPA in 2016 = $\frac{20}{100} \times 4000 + \frac{15}{100} \times 4000$

$= 800 + 600 = 1400$

Total student taking admission in GPS and LPA in 2017 = $\frac{10}{100} \times 6000 + \frac{15}{100} \times 6000$

$= 600 + 900 = 1500$

Therefore, ratio = $\frac{1400}{1500} = 14 : 15$

45. If total student taking admission in 2016 and 2017 is 8000 and 10,000 respectively. And number of boys in GPS is 400 in 2016 and number of girls in DPS in 2017 is 1000. Then find the ratio of number of girls in GPS in 2016 to the number of boys in DPS in 2017 is ?

(a) 1 : 2 (b) 2 : 1 (c) 1 : 3 (d) 1 : 4 (e) 1 : 1

Sol. **(e);** Total number of student in GPS in 2016 $= \frac{30}{100} \times 8000 = 2400$

Number of girls in GPS in 2016 $= 2400 - 400 = 2000$

Total number of student in DPS in 2017 $= \frac{30}{100} \times 10{,}000 = 3000$

Number of boys in DPS in 2017 = 3000 – 1000 = 2000

$\therefore$ Ratio $= \frac{2000}{2000} = 1 : 1$

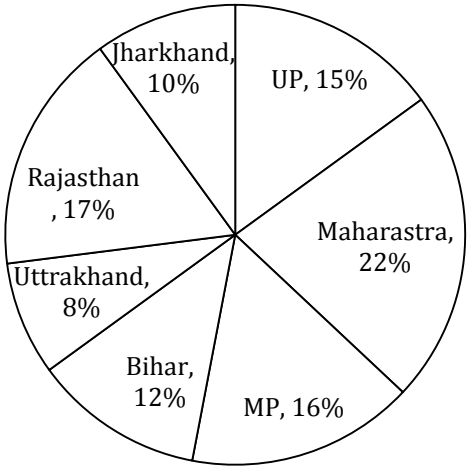
Directions (46-50): Study the following table carefully and answer the questions given below

Ist pie chart shows distribution of candidates applied for NIACL Assistant exam 2017 from 7 different states.

IInd pie chart shows distribution of candidates who qualified the NIACL assistant pre exam from these 7 states.

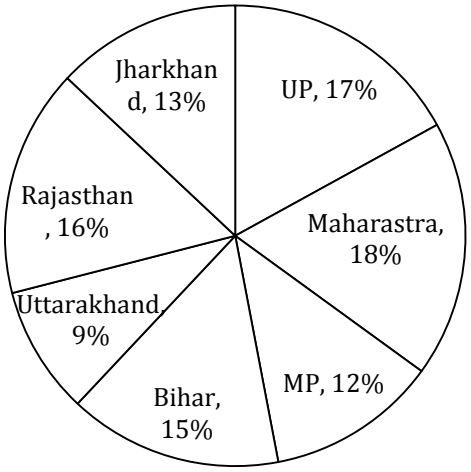
Total applied candidates from these seven states = 7,50,000

Pie Chart I



Candidates who qualified pre exam = 38000

Pie chart II



46. What percentage of candidates applied from Maharastra state have qualified the pre exam of NIACL assistant (approximately)

(a) 8% (b) 10% (c) 7% (d) 4% (e) 6%

Sol. **(d);** Number of candidates applied from Maharashtra state $= 22 \times 7500 = 165{,}000$

Number of candidates qualified $= 18 \times 380 = 6840$

Required percentage $= \frac{6840}{165000} \times 100 \approx \frac{680}{165} \approx 4\%$

47. What is the difference between total number of failed candidates from state MP and Bihar together and the failed candidates from state Maharastra and Jharkhand together. (Consider all candidates who have applied have given exam.)

(a) 30383 (b) 28480 (c) 25680 (d) 19720 (e) 12320

Sol. **(b);** Candidates failed from MP = 16 × 7500 – 12 × 380 = 120,000 – 4560 = 115440

Candidate failed from Bihar = 12 × 7500 – 15 × 380 = 90,000 – 5700 = 84300

Total failed from MP and Bihar = 115440+84300 = 199740

Candidates failed from Maharashtra = $22 \times 7500 - 18 \times 380 = 165000 - 6840 = 158160$

Candidate failed from Jharkhand $= 10 \times 7500 - 13 \times 380 = 75000 - 4940 = 70060$

Total failed from Maharashtra and Jharkhand $= 158160 + 70060 = 228220$

Required difference = 228220 – 199740 = 28480

48. 15% of candidates who have applied from state Rajasthan did not appear for the exam then what percent of the appeared candidates from Rajasthan pass the exam. (Approximately)

(a) 3% (b) 5.6% (c) 8% (d) 10% (e) 12%

Sol. **(b);** Candidate passed from Rajasthan = 16 × 380 = 6080

Appeared candidates $= \frac{85}{100} \times 17 \times 7500 = 108375$

Required percentage $= \frac{6080}{108375} \times 100 \approx \frac{610}{108} \approx 5.6\%$

49. If ratio of male to female who applied from state UP is 7 : 5 and ratio of male to female candidates who qualified the pre exam from state UP is 2 : 3 then what is the number of female who failed in the exam (Consider all candidates who have applied have appeared for the exam.)

(a) 42999 (b) 53620 (c) 41200 (d) 39500 (e) 24242

49. (a); Total females who have applied from UP $= 15 \times 7500 \times \frac{5}{12} = 46875$

Total qualified females from UP $= 17 \times 380 \times \frac{3}{5} = 3876$

Total failed female candidates from UP $= 46875 - 3876 = 42999$

50. What is the difference between the central angle of candidates who applied from state Uttarakhand and Jharkhand and the central angle of candidates who qualified exam from Maharashtra and Bihar?

(a) 58° (b) 60° (c) 48° (d) 38° (e) 54°

Sol. (e); Central angle for state Uttarakhand and Jharkhand for applied candidates $= \frac{18\times18}{5} = \frac{324}{5} = 64.8$

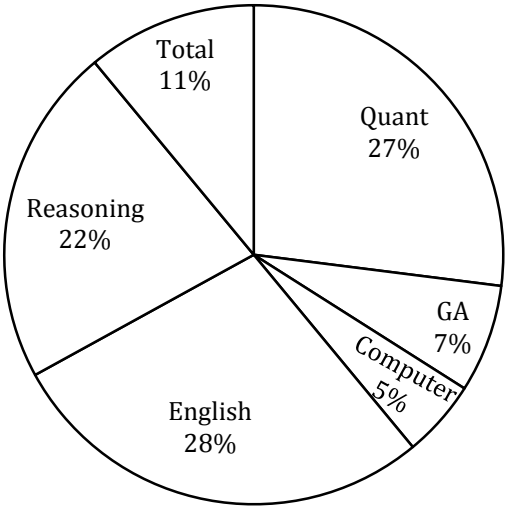
Central angle for qualified candidates from state Maharashtra and Bihar $= \frac{18\times33}{5} = 118.8^{\circ}$

Required difference $= 118.8 - 64.8° = 54°$

PREVIOUS YEAR QUESTIONS

Directions (1-5): The given Pie chart represents the percentage of failed students in different sections of IBPS Mains Exam 2016.

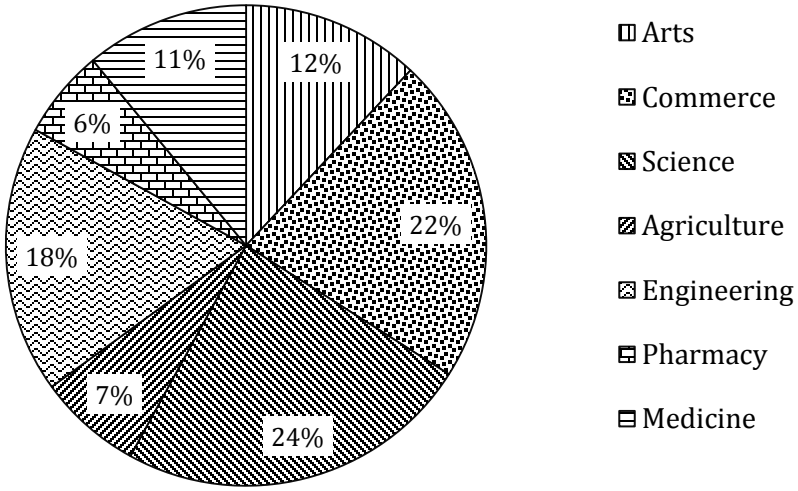
Total No of Failed Candidates = 1,44,000



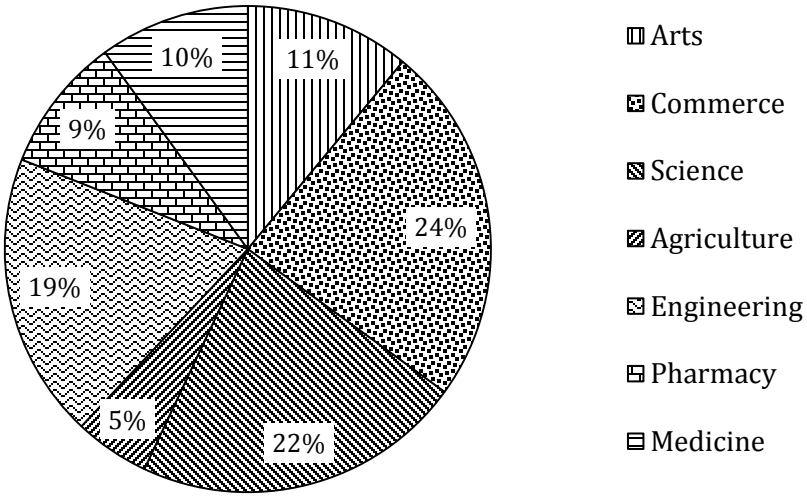
1. If total candidates failed in IBPS Mains exam is only 24% of the total number of candidates appeared for IBPS PO pre exam, then total number of candidates appeared in IBPS PO pre exam are approximately how many times the number of candidates failed in Quant section of Mains Exam?
   (a) 23 (b) 15 (c) 20 (d) 12 (e) 18
2. What is the difference between the number of candidates failed in Reasoning & Total section together and number of candidates failed in Quant Section?
   (a) 8640 (b) 8600 (c) 9000 (d) 8000 (e) 7775
3. Total number of candidates failed in IBPS mains exam is 75% of the number of candidates appeared for same exam. If final selection will be one-third of the candidates who qualified in Mains Exam, then the number of finally selected candidates are :
   (a) 16600 (b) 16000 (c) 17000 (d) 19000 (e) 18000
4. What is the ratio of number of candidates who failed in English and Reasoning together to the number of candidates failed overall in Mains exam?
   (a) 2 : 3 (b) 2 : 1 (c) 1 : 2 (d) 3 : 2 (e) None of these
5. What is the central angle of the candidates who passed in English and Quant ?
   (a) 85.6 (b) 90 (c) 80.8 (d) Can't be eterminded (e) None of the above

Directions (6 – 10): The following pie chart shows the percentage distribution of the choices made in various discipline by CBSE XII passout students in year 2016 and 2017 respectively. Study the following pie-diagrams carefully and answer the questions given below.

Total Students in year 2016 = 4,40,000



Total students in year 2017 = 5,20,000



6. In which discilpine there was decrease in the number of students from 2016 to 2017?
(a) Science (b) Agriculture (c) Pharmacy (d) Engineering (e) Medicine

7. What is the ratio between the number of students whose choices is pharmacy in the years 2016 and 2017 respectively?
(a) 22 : 39 (b) 22 : 37 (c) 23 : 29 (d) 17 : 29 (e) None of these

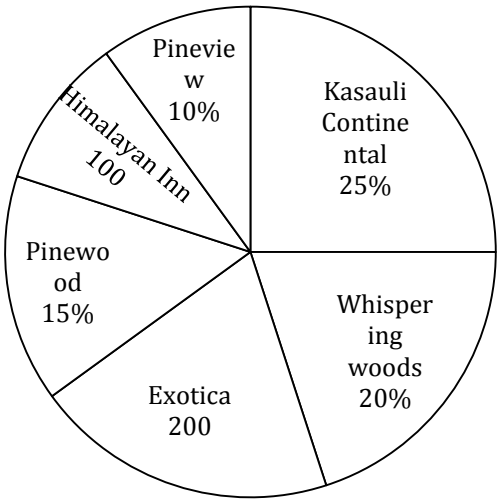
8. What was the approximate percentage increase in the number of students of Engineering from the year 2016 to 2017?
(a) 25% (b) 21% (c) 18% (d) 26% (e) 17%

9. In the year 2016, the number of students whose choice is arts and commerce together is what percent of the number of students whose choice are these subjects together in 2017? (approximately)
(a) 85% (b) 75% (c) 80% (d) 82% (e) 87%

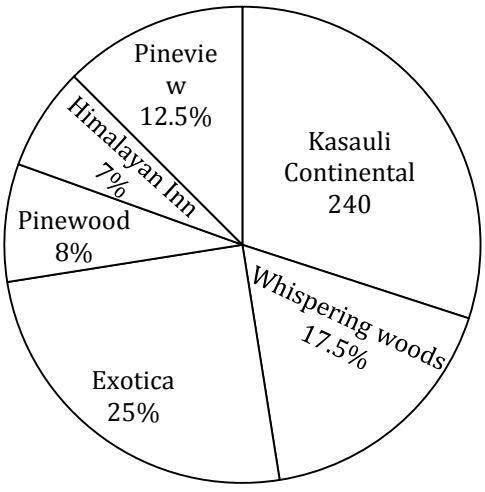
10. In which of the following discipline the percent increase in the number of students was maximum from year 2016 to 2017?
(a) Medical (b) Pharmacy (c) Commerce (d) Science (e) Agriculture

Directions (11-15): Study the following pie-graphs and answer the questions based on the information given in it.
(Note: A person books a single room for himself/herself unless stated otherwise)
Some values are given as absolute data and same as given as percentage.

No. of people who booked rooms in different hotels



No. of persons who actually showed up in the given hotels



11. What is the ratio of the number of persons who didn't show up in Kasauli continental to that of Whispering woods ?
(a) 1 : 6 (b) 2 : 7 (c) 1 : 8 (d) 3 : 5 (e) 5 : 3

12. If the cost of stay per person in Himalayan Inn was Rs. 3000 and there was no provision of refund in case of no show up then calculate the profit made by Himalayan Inn on account of the persons who didn't show up ? (All the persons paid for the booking in advance)
(a) Rs. 152000 (b) Rs. 132000 (c) Rs. 141000 (d) Rs. 140000 (e) Rs. 145000

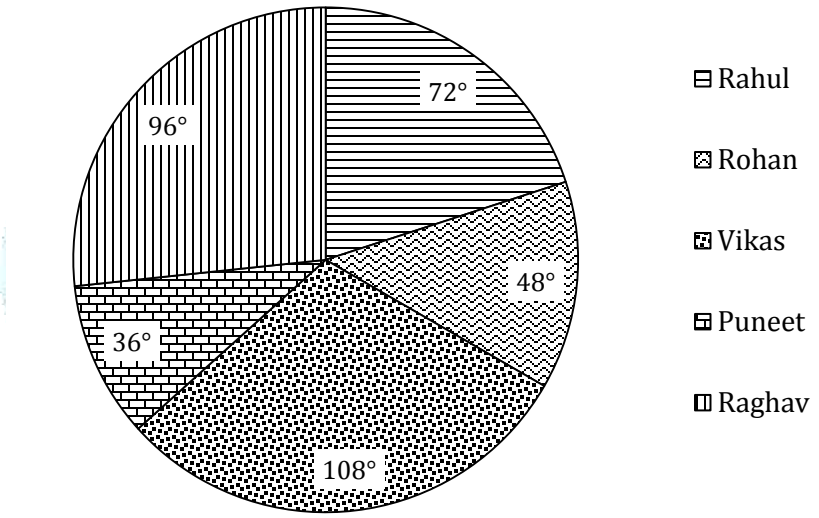
13. If in Whispering woods, only couples booked the rooms, then find the number of couples who didn't show up there as the percentage of total number of persons who didn't show up in Pinewood ? (A couple booked only a room)(Calculate nearby value)
(a) 40% (b) 24% (c) 35% (d) 28% (e) 50%

14. Hotel Exotica charges Rs. 5000 per person and Rs. 500 extra for the rooms with balcony. If 30% of the persons who booked Exotica booked rooms without balcony & rest booked the rooms with balcony, then find overall revenue for Exotica ?
(a) Rs. 12,10,000 (b) Rs. 10,80,000 (c) Rs. 9,48,000 (d) Rs. 10,70,000 (e) Rs. 11,55,000

15. Number of person who showed up in Hotel Himalayan Inn & Pinewood together is what percent of the number of person who booked the room in same hotel together ?
(a) 42% (b) 38% (c) 48% (d) 52% (e) 56%

Directions (16-20): The following pie-graph shows the investments made by five friends in a business for a year. Answer the questions based on the information given in it.

Total investemnt = 60,000



16. If Rahul earned a profit of Rs. 7200, then find the difference between the average profit earned by Puneet & Vikas & the average profit made by Rohan & Raghav?
(a) Rs. 0 (b) Rs.10 (c) Rs. 5 (d) Rs. 8 (e) Rs. 12

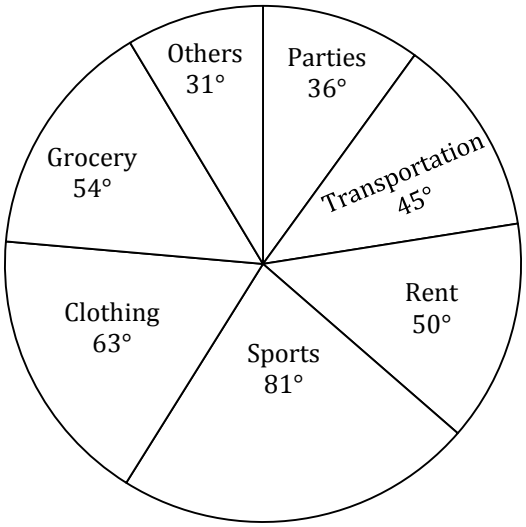
17. Vikas invested the profit earned by him in another business and got a profit of 20%. If his profit from second business in Rupees was Rs. 3600 then find the profit percentage for Puneet from original Business?
(a) 150% (b) 100% (c) 125% (d) 200% (e) 220%

18. Due to some reasons Rahul withdrew half of his initially planned amount after 4 months. If Rohan invested more amount equal to that withdrawn by Rahul for rest of year , then find the percentage increase in the profit of Rohan at the end of the year:
(a) 25% (b) 28% (c) 50% (d) 35% (e) 48%

19. All the friends decided to withdraw $\frac{1}{3}^{rd}$ of their amount and thus, at the end of year Puneet & Rohan shared an average profit of Rs. 1400. What is the ratio of profit earned by Rahul & Raghav together to the investment made by Vikas?
(a) 9 : 30 (b) 7 : 22 (c) 11 : 23 (d) 7 : 15 (e) 15 : 7

20. If Vikas earned Rs. 6000 more profit than Rahul then profit earned by Rohan is what percent more or less than profit earned by Raghav ?
(a) 50% more (b) 50% less (c) 45% more (d) 45% less (e) 60% less

Directions (21-25): The circle graph shows the spendings of a man in various terms during a particular year. Study the graph carefully and answer the questions that follow.



21. What is difference between percentage spending on sports and Grocery?
(a) 7.5% (b) 9.5% (c) 8.5% (d) 8% (e) 9%

22. Spendings on parties, Sports and Grocery are what percent of spending on others, Rent and Clothing.
(a) 121.35% (b) 120% (c) 118.75% (d) 112.75% (e) 111.75%

23. If 12% spending of Rent is added in Grocery then find percentage increase in spending of Grocery.
(a) $9\frac{1}{11}\%$ (b) $11\frac{1}{9}\%$ (c) 12.5% (d) $13\frac{1}{3}\%$ (e) $11\frac{4}{9}\%$

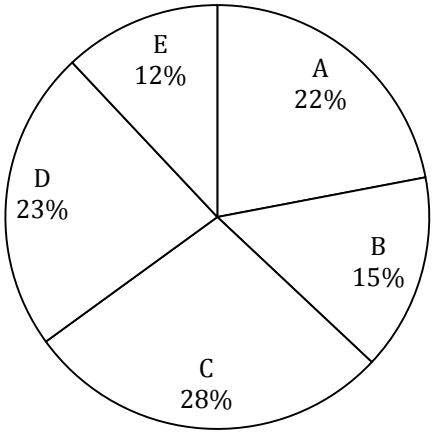
24. If spending on transportation is Rs. 1350, find spending on Sports, Clothing and other together.
(a) Rs. 6150 (b) Rs. 3750 (c) Rs. 5250 (d) Rs. 6250 (e) Rs. 7150

25. What is the total spending of man, if amount spend by him on sports is Rs. 11,520 more than amount spend by him on clothing?
(a) 2,30,400 (b) 2,20,200 (c) 2,35,400 (d) 2,40,600 (e) 2,45,500

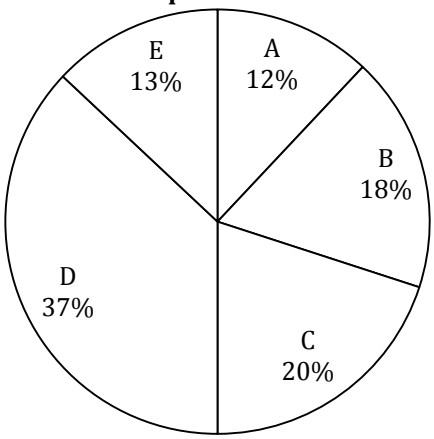
Directions (26-30): The following pie charts show the income of 5 different companies and profit of these 5 companies in 2016. Study it carefully and answer the following questions.

Income – Expenditure = Profit

Total income = 250 lakh



Total profit = 80 lakh



26. Find the expenditure (in lakh) of company B ?
(a) 32.1 (b) 23.8 (c) 23.1 (d) 33.3 (e) 22.1

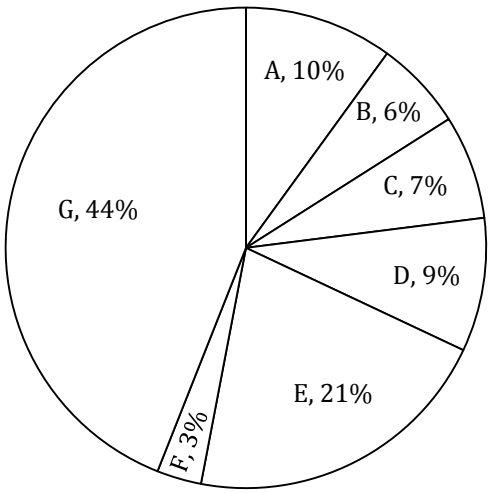
27. Find the profit (in lakh) of company B, D and E together.
(a) 54.4 (b) 45.5 (c) 54.8 (d) 45.2 (e) 60.1

28. Find the difference (in lakh) between the income of company D and company B.
(a) 18.2 (b) 25.5 (c) 24 (d) 20 (e) 22

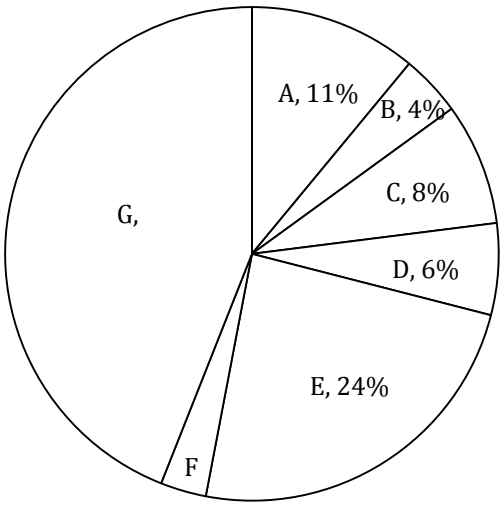
29. Income of company E is how much more than profit of company A and B together ?
(a) 8.5 lakh (b) 8 lakh (c) 9.2 lakh (d) 10 lakh (e) 6 lakh

30. Find the ratio of total income of companies A and E together to total profit of companies B and C together.
(a) 11:4 (b) 17:9 (c) 9:4 (d) 13:6 (e) 425:152

Directions (31-35): Percentage distribution of Income of 7 firms in year 2015 and 2016 is given below in pie charts. Percentage distribution of some firms are not given in the chart. You have to calculate these values if required to answer the question.



2015



2016

Ratio of Total Income of all 7 firms in 2015 to total income of all seven firms in 2016 5 : 7.

31. If profit percent earned by company C in 2015 and profit percent earned by company D in 2016 are equal and income of company D in 2016 is 10 million and expenditure of company D in 2016 is 8 million then what will be profit of C in 2015?
(a) $\frac{7}{6}$ million (b) $\frac{5}{3}$ million (c) $\frac{8}{7}$ million (d) $\frac{2}{3}$ million (e) 3 million

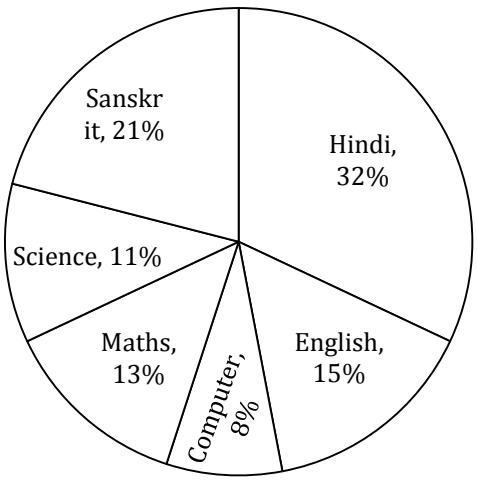
32. If total income of all firm in 2015 is 13860 million then what is the difference between the income of firm E in 2015 and income of A in 2016.(approx.)
(a) 776 million (b) 820 million (c) 720 million (d) 810 million (e) 800 million

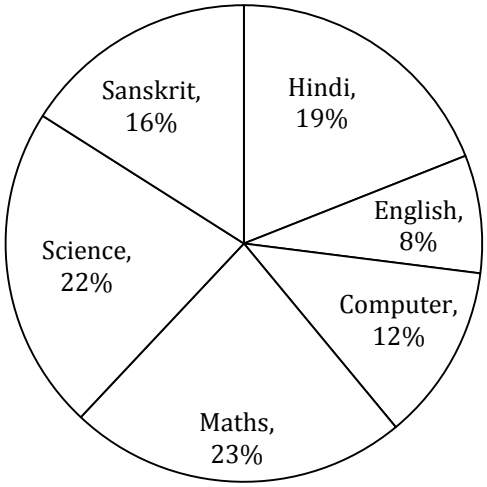
33. What will be the ratio of income of firm D in 2015 to the income of firm G in 2016 if income of G and F in 2016 is in the ratio of 24 : 23?
(a) $\frac{21}{28}$ (b) $\frac{33}{35}$ (c) $\frac{15}{59}$ (d) $\frac{15}{56}$ (e) $\frac{15}{16}$

34. If difference between the total income of all firms in 2015 and 2016 in N then what will be the difference between the average of income of firm A, B and C together in 2015 and average of income of firm B, C and D together in 2016
(a) $\frac{23N}{600}$ (b) $\frac{11N}{600}$ (c) $\frac{23N^3}{600}$ (d) $\frac{11N^2}{600}$ (e) None of these

35. If income of company G in 2016 is $\frac{100}{11}$% more than income of company G in 2015 then what is the percentage distribution of income for firm F in 2016.
(a) $\frac{89}{7}$% (b) $33\frac{1}{3}$% (c) $66\frac{2}{3}$% (d) $16\frac{2}{3}$% (e) None of these

Direction (36-40)-Percentage of students interested in studying different subjects (Hindi, English, Computer, Maths, Science, Sanskrit) in Pie chart I & percentage of girls interested in studying these subjects in pie chart II.





RATIO OF BOYS : GIRL = 5:3
TOTAL STUDENTS = 48,000

36. For which of the subject, the ratio of percentage of student interested in that subject to the percentage of girls interested in that subject is minimum?
(a) Science (b) Computer (c) Maths (d) English (e) Sanskrit

37. What is the difference between the no. of girls interested in studying computer and that of science?
(a) 1.5 thousand (b) 2.2 thousand (c) 1.8 thousand (d) 1.9 thousand (e) 2.4 thousand

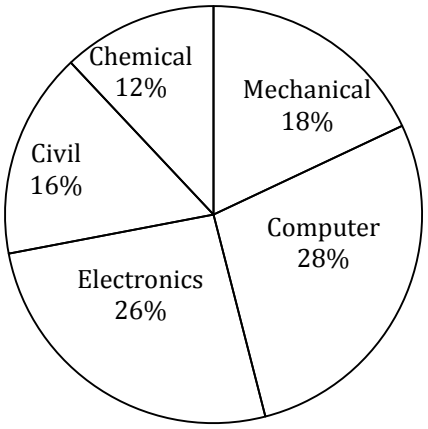
38. What is the ratio of the no. of boys interested in studying Computer and English together to that of girls interested in studying Sanskrit and Maths together?
(a) 124 : 117 (b) 128 : 119 (c) 19 : 17 (d) 23 : 19 (e) 5 : 3

39. What is the ratio of the no. of students interested in studying maths and Sanskrit together to that interested in Hindi and Science together?
(a) 23 : 32 (b) 34 : 43 (c) 101 : 130 (d) 11 : 32 (e) None of these

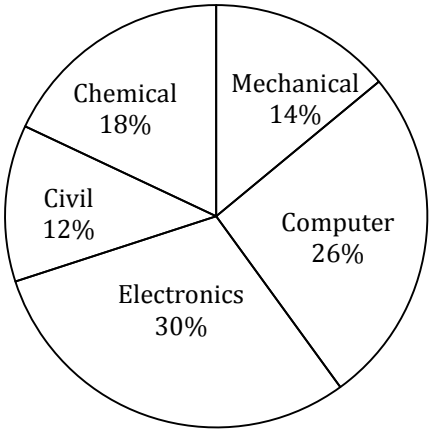
40. No. of girls studying Hindi and English together is approximately what percent of the no. of boys studying the same subject?
(a) 27% (b) 30% (c) 17% (d) 23% (e) 21%

Directions (41-45): Study the pie charts carefully to answer the questions that follow.
Percentage wise distribution of students and female students in five different streams in an Engineering College.
Total number of students in the college is 5400, out of which number of female students is 2400.

Distribution of students



Distribution of female students



41. The number of female students in Chemical Engineering is what percent of the number of male students in Civil Engineering?
(a) 120% (b) 80% (c) 125% (d) 75% (e) 60%

42. What is the ratio of the number of female students in Mechanical and Computer Engineering together to the number of male students in Electronics and Civil Engineering together?
(a) 21: 16 (b) 16: 21 (c) 5: 7 (d) 7: 5 (e) None of these

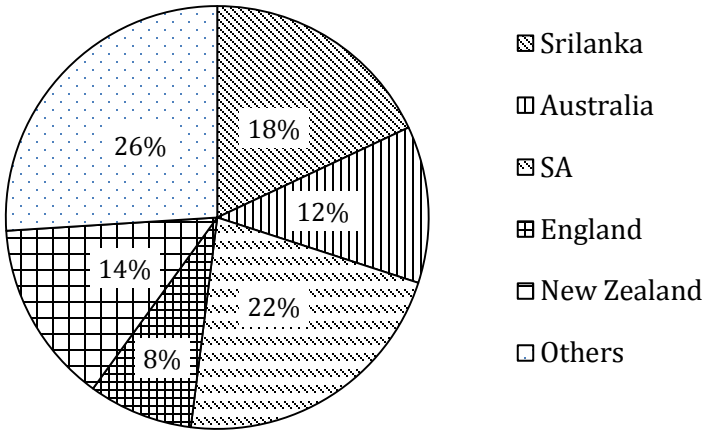
43. In a new stream Biotechnology, the total number of students is $8\frac{1}{3}\%$ less than that in Chemical Engineering. If the ratio of the number of male and female students in Biotechnology is 5: 6 then what is the difference between the number of female students in Biotechnology and Chemical Engineering?
(a) 54 (b) 135 (c) 81 (d) 108 (e) 180

44. What is the total number of male students in Computer, Electronics and Chemical Engineering?
(a) 1888 (b) 1776 (c) 1788 (d) 1876 (e) 1728

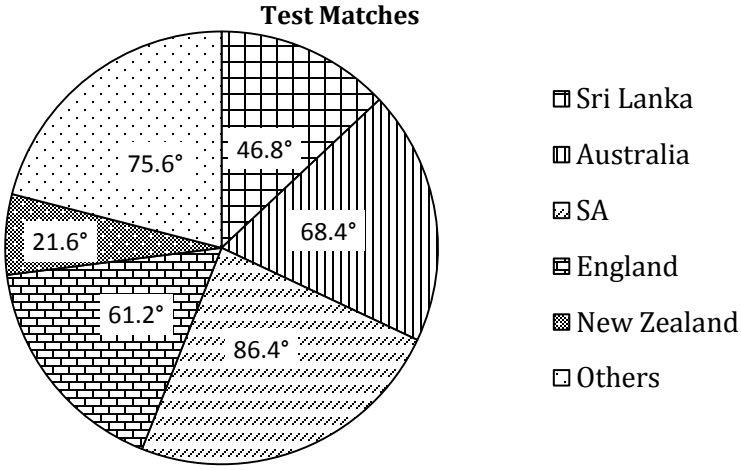
45. What is the difference between the average of number of male students in Mechanical and Electronics Engineering together and the average of the number of male students in rest of the streams?
(a) 100 (b) 60 (c) 120 (d) 80 (e) 70

Directions (46-50) : Given below are the pie charts showing the distribution of runs scored by MS Dhoni against different teams in ODI matches and test matches. The total runs scored by him in ODI matches is 25500 and in test matches is 11200.

ODI Matches



Test Matches



46. If $44\frac{4}{9}\%$ of the runs scored against Sri Lanka in ODI's and $\frac{5}{14}$ of the runs scored against the same team in test matches, are scored in India. Then find the difference between runs scored against Sri Lanka in test matches outside India and the runs scored against the same team in ODI's outside India.
(a) 1516 (b) 1614 (c) 3419 (d) 1450 (e) 1416

47. Total runs scored by M.S. Dhoni in ODI's against Sri lanka and SA together are what percent less/more than total runs scored by him in tests against New Zealand and England together ?
(a) 194% (b) 196% (c) 294% (d) 296% (e) 264%

48. Total number of runs scored by him in ODI's against all of the team excluding others are how many times the runs scored by him in tests against SA ?
(a) 8.23 (b) 7.14 (c) 7.02 (d) 6.95 (e) 8.02

49. What is the ratio between of the runs scored by Dhoni in ODI's against England and New Zealand together and runs scored by him in tests against Sri lanka and Australia together ?
(a) 2805 : 1792 (b) 2905 : 1792 (c) 2805 : 1799 (d) 2875 : 1292 (e) 1792 : 1801

50. If the runs scored in ODI matches against west indies is 20% of the total runs scored in ODI matches against "others", then find the difference between runs scored against West Indies in ODI matches and the total runs scored against England in test matches and ODI matches together?
(a) 2541 (b) 2455 (c) 2461 (d) 2375 (e) 2618

PREVIOUS YEAR SOLUTIONS

1. (b); 24% → 1,44,000

∴ 100% → 600000 = Total no. of candidate appeared in Pre Exam

Candidates failed in Quant section in Mains = 1440 × 27 = 38,880

∴ $Desired\ value\ will\ be\ \frac{6,00,000}{38,880} \approx \frac{6,00,000}{40,000} = 15$ times

2. (a); No. of candidate failed in (Reasoning & Total section) = (22 + 11) ×1440 = 47520

No. of candidate failed in Quant section = 27 × 1440 = 38,880

Difference = 47,520 – 38,880 = 8,640

3. (b); $144000 = x \times \frac{3}{4}$

∴ x = Total candidates appeared for main exam = 1,92,000

Candidates Qualified in Mains Exam = 1,92,000 – 1,44,000 = 48,000

∴ Final Selection = $48,000 \times \frac{1}{3} = 16,000$

4. (c); $\frac{Failed\ in\ (Eng+Reasoning)}{Total\ Failed} = \frac{(28+22)1440}{144000} = \frac{1}{2} = 1:2$

5. (d); As per given value in graph, Data is not sufficient to calculate the desired value.

6. (b);

	2016	2017
Arts	52,800	57,200
Commerce	96,800	1,24,800
Science	1,05,600	1,14,400
Agriculture	30,800	26,000
Pharmacy	26,400	46,800
Medicine	48,400	52,000
Engineering	79,200	98,800

Clearly in Agriculture, there was decrease in number of students from 2016 to 2017.

7. (a); Ratio = 26400 : 46800 = 22 : 39

8. (a); $\%\ increase\ in\ Engineering\ students\ from\ 2016\ to\ 2017 = \frac{98800-79200}{79200} \times 100 \approx 25\%$

9. (d); Arts & Commerce together in 2016 = 52800 + 96800 = 1,49,600

Arts & commerce together in 2017 = 57,200 + 1,24,800 = 1,82,000

$Desired\ \% = \frac{1,49,600}{1,82,000} \times 100 \approx 82\%$

10. (c); Clearly in commerce % increase was maximum

11. (a); No. of persons who booked rooms in Kasauli Continental

$= 300 \times \frac{100}{30} \times \frac{25}{100} = 250$

No. of persons who showed up in Kasauli Continental = 240

No. of persons who booked rooms in Whispering woods $= 300 \times \frac{100}{30} \times \frac{20}{100} = 200$

No. of persons who showed up in Whispering woods $= 240 \times \frac{100}{30} \times \frac{17.5}{100} = 140$

Req. Ratio $= \frac{250-240}{200-140} = \frac{10}{60} = \frac{1}{6}$

12. (b); No. of persons who booked in Himalayan Inn = 100

No. of persons who showed up Himalayan Inn

$= 240 \times \frac{100}{30} \times \frac{7}{100} = 56$

Profit made on account of those who didn't show up = (100 – 56) × 3000 = Rs. 132000

13. (c); No. of persons who didn't show up in Whispering woods = 200 – 140 = 60

No. of couples $= \frac{60}{2} = 30$

No. of persons who didn't show up in Pinewood

$= 1000 \times \frac{15}{100} - 800 \times \frac{8}{100}$

$= 150 - 64 = 86$

Req.% $= \frac{30}{86} \times 100 \approx 35\%$

14. (d); Overall revenue for Exotica

$= \frac{3}{10} \times 200 \times 5000 + \frac{7}{10} \times 200 \times 5500$

= Rs. 10,70,000

15. (c); No. of person who booked hotel in Pinewood

$= \frac{300}{30} \times 15 = 150$

$Required\ percentage = \frac{\frac{240}{30} \times 15}{250} \times 100 = \frac{12000}{250} = 48\%$

16. (a); Ratio of their investments = 72 : 48 : 108 : 36 : 96 = 6 : 4 : 9 : 3 : 8 (starting from Rahul & going clockwise)

Total profit $= 7200 \times \frac{30}{6}$ = Rs. 36000

Average profit of Puneet & Vikas $= \frac{1}{2} \times \frac{12}{30} \times 36000$

$= 7200$

Average profit of Rohan & Raghav $= \frac{1}{2} \times \frac{12}{30} \times 36000$

$= 7200$

Difference = 0

17. (b); Amount invested by Vikas in another business

$= 3600 \times \frac{100}{20}$ = Rs. 18000

This is equal to profit earned by him from original business.

Profit earned by Puneet $= 18000 \times \frac{30}{9} \times \frac{3}{30} = 6000$

Profit % for Puneet $= \frac{6000}{\frac{3}{30} \times 60000} \times 100 = 100\%$

18. (c); New ratio of investment/profit

$= (6 \times 4 + 3 \times 8) : (4 \times 12 + 3 \times 8) : 9 \times 12 : 3 \times 12 : 8 \times 12$

$= 48 : 72 : 9 \times 12 : 3 \times 12 : 8 \times 12$

$= 4 : 6 : 9 : 3 : 8$

Rohan's earlier profit $= \frac{4}{30}$

Rohan''s new profit = $\frac{6}{30}$

% increase = $\frac{\frac{6}{30}-\frac{4}{30}}{\frac{4}{30}} \times 100 = 50\%$

19. (d); Total investment = $\frac{2}{3} \times 60000 = 40{,}000$

Total profit = $2800 \times \frac{30}{7} = 12000$

Req. ratio = $\frac{\frac{14}{30}\times 12000}{\frac{9}{30}\times 40000} = \frac{7}{15}$

20. (b); Ratio of their profits = 72 : 108 = 6 : 9

Let profit earned by Vikas = 9x

& that by Rahul = 6x

∴ 3x = 6000 ⇒ x = 2000

∴ Rahul's profit = 12000

∴ Total profit = $12000 \times \frac{30}{6} = 60{,}000$

∴ Required percentage = $\frac{16000-8000}{16000} \times 100$

= 50% less

21. (a); $Required\ percentage\ difference = \left(\frac{81-54}{360}\right) \times 100$

$= \frac{27}{360} \times 100 = 7.5\%$

22. (c); Spending on Parties, Sports and Grocery in terms of degree = 36° + 81° + 54° = 171°

Spending on others, Rent and Clothing in degree = 31° + 50° + 63° = 144°

$Required\ percentage = \frac{171}{144} \times 100 = 118.75\%$

23. (b); $Required\ percentage\ increase = \left(\frac{\frac{12\times 50}{100}}{54}\right) \times 100$

$= \frac{6}{54} \times 100 = 11\frac{1}{9}\%$

24. (c); $Spending\ on\ Sport, Clothing\ and\ other\ together$

$= \frac{1350}{45} \times (81 + 63 + 31) = Rs.\ 5{,}250$

25. (a); 81° − 63° = 11,520

18° = 11,520

360° = $\frac{11{,}520}{18} \times 360 = 2{,}30{,}400$

26. (c); $Income\ of\ B = \frac{15}{100} \times 250 = 37.5\ lakh$

$Profit\ of\ B = \frac{18}{100} \times 80 = 14.4\ lakh$

∴ Expenditure of B = 37.5 – 14.4 = 23.1 lakh

27. (a); Profit of B, D and E together = (18 + 37 + 13)% of 80 = 54.4 lakh

28. (d); $Required\ difference = (23 - 15)\%\ of\ 250$

$= \frac{8\times 250}{100} = 20\ lakh$

29. (e); $Income\ of\ E = \frac{12}{100} \times 250 = 30\ lakh$

$Profit\ of\ A\ and\ B\ together = \frac{30}{100} \times 80 = 24\ lakh$

∴ Income of E is more than profit of A and B together by 30 – 24 = 6 lakh

30. (e); $Required\ ratio = \frac{\frac{34}{100}\times 250}{\frac{38}{100}\times 80} = \frac{34\times 25}{38\times 8} = \frac{425}{152}$

31. (b); Profit % of company D in 2016 = $\frac{2}{8} \times 100$ = 25%

Income of C in 2015 = $\frac{10}{6} \times \frac{100}{7} \times \frac{5}{100} \times 7$

= $\frac{350}{42}$ million = $\frac{25}{3}$

Total income = $\frac{25}{3}$

Profit % = 25%

Expenditure = $\frac{25}{3} \times \frac{100}{125} = \frac{20}{3}$

Profit of C = $\frac{25}{3} - \frac{20}{3} = \frac{5}{3}$ million

32. (a); Income of E in 2015 = $\frac{13860}{100} \times 21 = 2910.6$

Income of A in 2016 = $\frac{13860 \times 7 \times 11}{5 \times 100} = 2134.44$

Required difference = 776.16 ≈ 776 million

33. (d); Required Ratio = $\frac{\frac{5x}{100} \times 9}{\frac{7x}{100} \times 24} = \frac{15}{56}$

34. (b); Total Income of all firms in 2015 = $\frac{5}{2}N$

Total Income of all firms in 2016 = $\frac{7}{2}$N

Average of firm A, B and C in 2015 = $\frac{5N \times 23}{2 \times 100 \times 3}$

Average of firm B, C and D in 2016 = $\frac{7N \times 18}{2 \times 100 \times 3}$

Required difference = $\frac{7N \times 18}{2 \times 100 \times 3} - \frac{5N \times 23}{2 \times 100 \times 3}$

= $\frac{N}{600}(7 \times 18 - 5 \times 23)$

= $\frac{N}{600}(126 - 115) = \frac{11N}{600}$

35. (a); Income of G in 2015 = $\frac{5x}{100} \times 44$

Income of G in 2016 = $\frac{5x}{100} \times 44 \times \frac{12}{11}$

Percentage distribution of G for 2016

= $\frac{\frac{5x}{100}\times 12\times 4}{7x} \times 100 = \frac{240}{7}\%$

Percentage distribution of F for 2016

= $100 - \left(\frac{240}{7} + 11 + 4 + 8 + 6 + 24\right)$

= $100 - \left(\frac{240}{7} + 53\right) = \frac{89}{7}\%$

36. (a); Required ratio = $\frac{Percentage\ of\ total\ student}{Percentage\ of\ girls}$

For science = $\frac{11}{22} = 0.5$

For computer = $\frac{8}{12} = 0.66$

For Maths = $\frac{13}{23} = 0.565$

For English = $\frac{15}{8} = 1.875$

For Hindi = $\frac{32}{19} = 1.684$

For Sanskrit = $\frac{21}{16} = 1.3125$

∴ Ratio for science is minimum

37. (c); Total no. of girls studying = $\frac{3}{8} \times 48$ = 18 thousands

Difference between no. of girls interested in studying computer and that of science.

= 10% of 18 thousand = 1.8 thousand

38. (a); Boys interested in computer

= $\frac{8}{100} \times 48 - \frac{12}{100} \times 18 = 1.68$thousand

Boys interested in English

$\frac{15}{100} \times 48 - \frac{8}{100} \times 18 = 5.76\ thousand$

Girls interested in Sanskrit

= $\frac{16}{100} \times 18 = 2.88\ thousand$

Girls interested in Maths= $\frac{23}{100} \times 18$

$= 4.14\ thousands$

∴ Required ratio = $\frac{5.76+1.68}{2.88+4.14} = \frac{124}{117}$

39. (b); Required ratio = $\frac{21+13}{11+32} = 34 : 43$

40. (a); No. of boys studying Hindi $= \frac{32}{100} \times 48 - \frac{19}{100} \times 18$
$= 15.36 - 3.42 = 11.94$
No. of boys studying English $= \frac{15}{100} \times 48 - \frac{8}{100} \times 18$
$= 7.20 - 1.44 = 5.76$
$\therefore$ required percentage
$= \frac{4.86}{17.7} \times 100 \simeq 27.457\% \simeq 27\%$

41. (d); Number of female students in Chemical Engineering
= 18% of 2400 = 432
Number of male students in Civil Engineering
= 16% of 5400 - 12% of 2400
= 864 - 288 = 576
Required % = $\frac{432}{576} \times 100 = 75\%$

42. (b); Number of female students in Mechanical and Computer Engineering together
= (14 + 26)% of 2400 = 40% of 2400 = 960
Number of male students in Electronics and Civil Engineering together
= (26 + 16)% of 5400 - (30 + 12)% of 2400
= 42% of 5400 - 42% of 2400
= 2268 - 1008 = 1260
Required ratio = $\frac{960}{1260} = \frac{16}{21}$

43. (d); Number of female students in Biotechnology
= $\frac{6}{11} \times \frac{11}{12} \times \frac{12}{100} \times 5400 = 324$
Number of female students in Chemical Engineering
= 18% of 2400 = 432
Required Difference = 432 - 324 = 108

44. (c); Total number of male students in Computer, Electronics and Chemical Engineering
= (28 + 26 + 12)% of 5400 - (26 + 30 + 18)% of 2400
= 66% of 5400 - 74% of 2400
= 3564 - 1776 = 1788

45. (a); Number of male students in Mechanical and Electronics Engineering together
= (18 + 26)% of 5400 - (14 + 30)% of 2400
= 44% of 5400 - 44% of 2400
= 2376 - 1056 = 1320
Number of male students in Computer, Civil and Chemical Engineering together
= (28 + 16 + 12)% of 5400 - (26 + 12 + 18)% of 2400
= 56% of 5400 - 56% of 2400
= 3024 - 1344 = 1680
Difference between averages = $\frac{1320}{2} - \frac{1680}{3}$
= 660 - 560 = 100

46. (b); *Required difference*
$= \left[\left(100 - 44\frac{4}{9}\right)\% \text{ of } 4590 - \left(1 - \frac{5}{14}\right) \text{ of } 1456\right]$
= 2550 – 936 = 1614

47. (d); Required % $= \frac{(4590+5610)-(1904+672)}{1904+672} \times 100$
$= \frac{7624}{2576} \times 100 \approx 296\%$

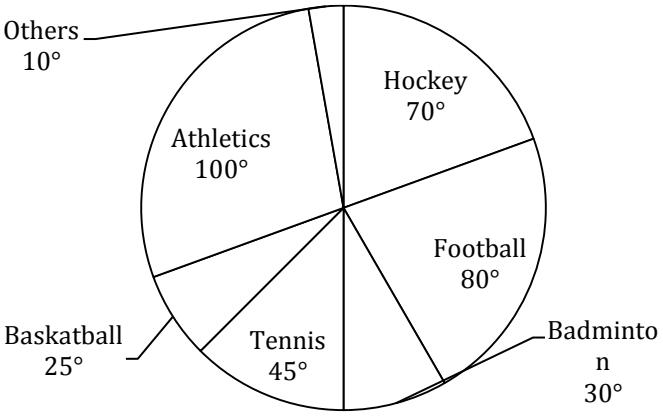
48. (c); Required fraction $= \frac{18870}{2688} \approx 7.02$

49. (a); Required Ratio = (2040 + 3570) : (1456 + 2128)
= 5610 : 3584 = 2805 : 1792

50. (e); Required difference = $(1904 + 2040) - \frac{20}{100} \times 6630$
$= 3944 - 1326 = 2618$

PRACTICE SET (LEVEL–I)

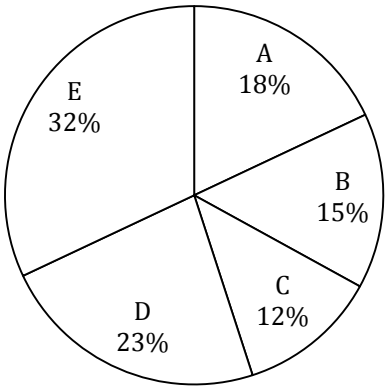
Directions (1-5): Study the following pie chart showing the distribution of sports budget among various sports to answer the questions that follow.
Spending of total Sport budget 144 crore.



1. What percentage of total spending is spent on Tennis?
(a) 12.5% (b) 18% (c) 14% (d) 10% (e) 8%
2. How much more is spent on Hockey than on Basketball ?
(a) 15 cr (b) 12 cr (c) 18 cr (d) 20 cr (e) 10 cr
3. If total spending on Hockey is increased by 20% while that of football is decreased by 30%, what will be difference between the spending on hockey and football now?
(a) 11.8 Cr (b) 11.2 Cr (c) 10.9 Cr (d) 12.1 Cr (e) 12.8 Cr
4. What is the ratio of amount spent on Hockey, football and Tennis together to Rs. 84 crore?
(a) $\frac{11}{14}$ (b) $\frac{13}{14}$ (c) $\frac{3}{7}$ (d) $\frac{4}{9}$ (e) $\frac{5}{2}$
5. If for another game, billiards with additional budget of 17 crore is allocated, what is the difference between amounts spend on Others & Billiards?
(a) 12cr (b) 10 cr (c) 18 cr (d) 13 cr (e) 20 cr

Directions (6-10): Given below is the pie chart which shows the percentage distribution of number of article sold by 5 shopkeepers A, B, C, D and E in a year 2016

Total Number of articles sold = 6000

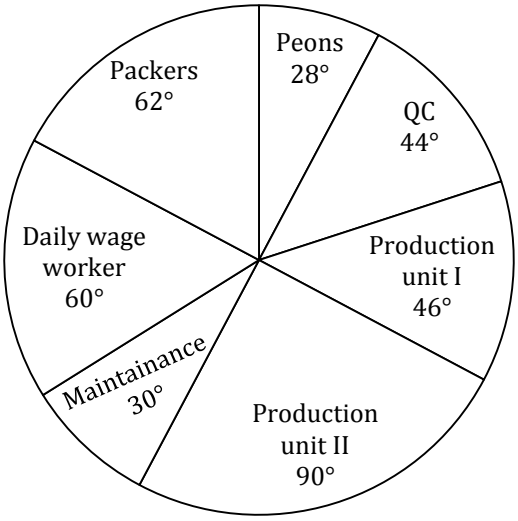


6. What is the difference between the central angle for articles sold by B and D.
(a) 25.5° (b) 23.6° (c) 28.8° (d) 26° (e) 27°
7. What is the ratio of number of articles sold by B and C together to 150% of total number of articles sold by A and E together
(a) 2 : 5 (b) 9 : 14 (c) 9 : 25 (d) 16 : 25 (e) 13 : 20
8. If in 2017 articles sold by A and C increased by $\frac{100}{3}$% and $\frac{100}{6}$% respectively then what is the sum of articles sold by them in 2017.
(a) 2280 (b) 1990 (c) 2250 (d) 1970 (e) 2200
9. What is the difference between the average of articles sold by A and B together and average of articles sold by C and D together.
(a) 65 (b) 60 (c) 58 (d) 48 (e) 54

10. If total number of articles sold by all increases by $\frac{100}{3}$% then what is the difference between number of articles sold by A and D together and number of articles sold by B and E together. (Percentage distribution remains same)
(a) 180 (b) 175 (c) 256 (d) 480 (e) 216

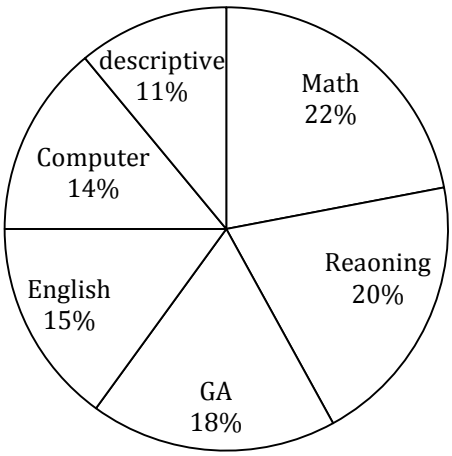
Directions (11– 15): The following pie- chart shows the distribution of wages paid in an organization in 2015 -16 for seven different departments. Read the questions carefully and answer accordingly.

Wages paid for 2015-16
(Total wage paid - Rs. 10,80,000)



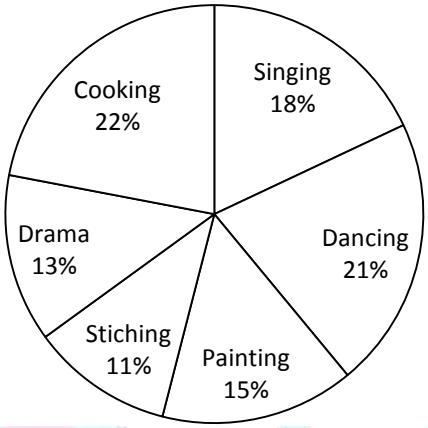
11. What is the difference between the wages paid to the QC staff & Maintenance worker ?
(a) Rs. 42000 (b) Rs. 44000 (c) Rs. 48000 (d) Rs. 54000 (e) Rs. 46500
12. For which of the following, were the wages paid exactly equal to Production Unit II ?
(a) Maintenance (b) Daily wage (c) Production unit I (d) Sum of (a) and (b) (e) Sum of (a) and (c)
13. Which one of the following combinations of workers was paid Rs. 270000 ?
(a) Production unit II (b) Maintenance and Daily wage workers together
(c) Packers and Maintenance workers together (d) Both (a) and (b)
(e) Both (a) and (c)
14. The management decided to give an ex-gratia grant to daily wage workers. The grant was 20% of the total wages paid to daily wage workers. If a daily wage worker works for 48 days in a year and get Rs. 900 per day, what was the number of such workers in the period 2015-16 ?
(a) 6 (b) 10 (c) 5 (d) 11 (e) None of these
15. If the management increased the total wages to be paid by 10% (across the board) for the year 2016-17, what was the difference between the wages paid to packers and those paid to peons for the year 2016-17 ? (wage distribution remain same)
(a) Rs. 114400 (b) Rs. 112200 (c) Rs. 122800 (d) Rs. 120000 (e) Rs. 121200

Directions (16 – 20): Study the following pie chart carefully and answer the questions given below.
A student scored 60% of the total marks in an exam. Percentage distribution of marks scored by the student in various subjects with respect to total marks obtained.
Total Marks Obtained = 1200



16. The marks scored in GA, Computer and Descriptive when added together, represents what percentage of the total marks?
(a) 24.1% (b) 23.7% (c) 25.8% (d) 19.9% (e) 33.3%
17. The marks scored in Math and Reasoning added together, exceed the marks scored in GA and Descriptive added together, by how many marks?
(a) 156 (b) 278 (c) 148 (d) 198 (e) 238
18. In which subject did the student score 168 marks?
(a) Math (b) Reasoning (c) Computer (d) GA (e) None of these
19. The marks scored in English and Computer together is how much per cent of marks scored in GA and Math together?
(a) 82% (b) 68.5% (c) 75% (d) 72.5% (e) 77.5%
20. The approximate average marks scored by student in each subject are
(a) 140 (b) 100 (c) 150 (d) 200 (e) 155

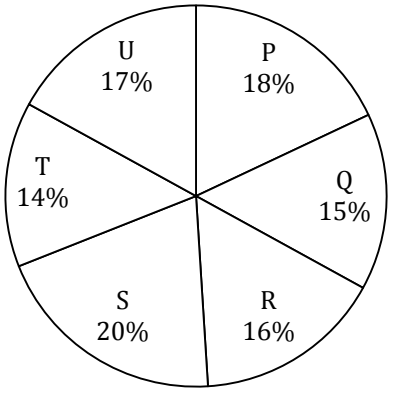
Directions (21-25): Given below is the pie chart which shows the percentage of students enrolled in different Hobby classes in a school in year 2016



Total Enrolled students = 7200

21. What is the difference between average of number of students enrolled in Dancing and stiching hobby together and average of students enrolled in Painting and cooking hobby together
(a) 160 (b) 180 (c) 175 (d) 165 (e) 190
22. If in year 2017 total students who were enrolled in singing and painting increases by $\frac{100}{3}$% and 20% respectively, then find the total number of enrolled students in singing and painting in 2017.
(a) 3334 (b) 3245 (c) 3525 (d) 3600 (e) 3024
23. What is the ratio of total students enrolled in Dancing and drama together to the 160% of total students enrolled in cooking and painting together.
(a) 85 : 148 (b) 80 : 83 (c) 33 : 43 (d) 11 : 22 (e) 11 : 27
24. What is the average of number of students enrolled in Singing, Dancing and Painting together.
(a) 1331 (b) 941 (c) 1296 (d) 1225 (e) 1025
25. If total students who are enrolled in painting and Singing together in 2017 are $\frac{100}{3}$% more than those enrolled in these two hobby in 2016 and in 2017 total enrolled boys in these hobby are 20% more than enrolled girls in these hobby in 2017. Find number of enrolled girls in 2017 in these hobbies together?
(a) 1320 (b) 1225 (c) 1520 (d) 1580 (e) 1440

Directions (26-30): Given below is the pie-chart which shows the percentage distribution of total population of Six villages in year 2016



Total population = 85000

26. If ratio of male to female in village P and village Q is 2 : 3 and 4 : 1 respectively then females in village P are what percent of females in village Q.
(a) 200% (b) 175% (c) 350% (d) 360% (e) 275%

27. If in the year 2017 population of village R and S increases by 20% and 25% respectively what is the sum of population in these villages in 2017.
(a) 43280 (b) 35275 (c) 37570 (d) 32250 (e) 39450

28. If in village S ratio of male to female is 3 : 2 and 20% males and 10% females are illiterate the what percent of population in village S is literate
(a) 81% (b) 82% (c) 83% (d) 84% (e) 85%

29. What is the ratio of population of village P, Q and S together to the population of village R, T and U together.
(a) 53 : 47 (b) 48 : 53 (c) 47 : 42 (d) 30 : 23 (e) 33 : 32

30. If female from village R and U together equals to total population of village Q and female in village R equals to $\frac{200}{3}$% of females of village U then number of males in village U is
(a) 7650 (b) 6500 (c) 7800 (d) 6800 (e) 7000

Directions (31-35): The break-up of the volume share of different cars sold by Maruti Car Company in Delhi for year 2002 is shown in figure I. The break up for the year 2003 for maruti car company in delhi was same as that for the year 2002. The breakup of the car market according to market share by volume possessed by different car manufacturing in Delhi for 2002 is shown in figure II.

Figure I

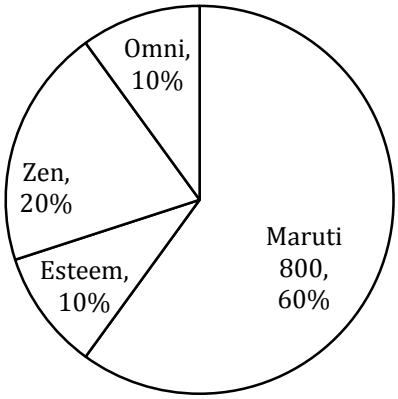
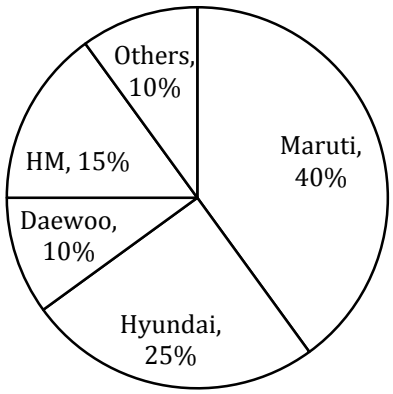


Figure II



31. If in 2002, the total no. of cars sold in Delhi was 2.5 lakh, then what is the ratio of no. of cars sold by company HM in 2002 to the no. of cars sold by Maruti of models Omini, Zen and Esteem together in the same year?
(a) 15 : 16 (b) 12 : 13 (c) 17 : 15 (d) 16 : 15 (e) 15 : 17

32. If total no. of cars sold in Delhi in 2002 is 4 lakhs, then how many of the cars manufactured by Maruti remained unsold?
Given: no. of cars sold by Maruti in 2002 is $88\frac{8}{9}$% of the no. of cars manufactured by it.
(a) 0.6 lakh (b) 0.2 lakh (c) 0.4 lakh (d) 0.25 lakh (e) 0.35 lakh

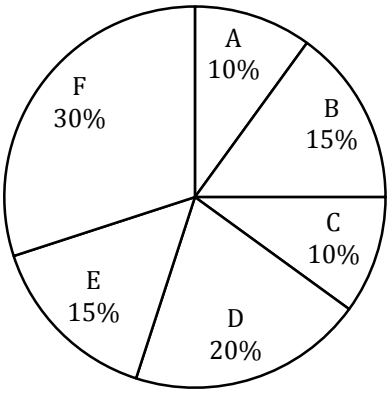
33. What is the no. of Santro sold in Delhi if Santro accounts for 75% of the Hyundai sales in 2002? The no. of Zen sold in 2002 is equal to 3.0 lakh.
(a) 232489 (b) 730125 (c) 703125 (d) 264489 (e) 710325

34. If the total sales of cars in 2002 in India was 24 lakh and Delhi constituted 5% of India's total car sales then what was the sales of Maruti 800 in Delhi?
(a) 26400 (b) 24200 (c) 27000 (d) 28800 (e) 28600

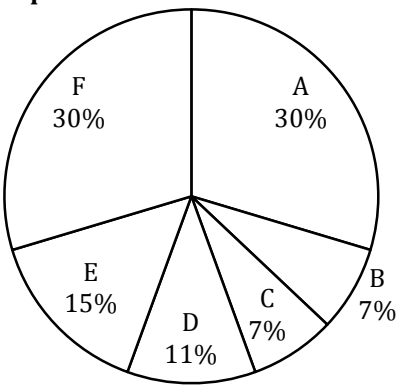
35. If total sales of cars in Delhi in 2002 was 3 lakh and it increased by 20% in 2003, then find percentage increase in the sales of Omni in 2003?
(a) Can't be determined (b) 25% (c) 20% (d) 22% (e) 14.25%

Directions (36-40): The pie chart given below shows the percentage distribution of the production of various models of a car manufacturing company in 2007 and 2008. The total production in 2007 was 35 lakh cars and in 2008 the production was 44 lakh. Study the chart and answer the following questions.

Total production in 2007 = 35 Lakhs



Total production in 2008 = 44 Lakhs



36. Total number of cars of models A, B and E manufactured in 2007 was
(a) 2450000 (b) 22750000 (c) 1400000 (d) 1925000 (e) 225000

37. For which models the difference between number of cars produced in 2007 and 2008 is maximum ?
(a) Model A (b) model B (c) Model C (d) Model D (e) None of these

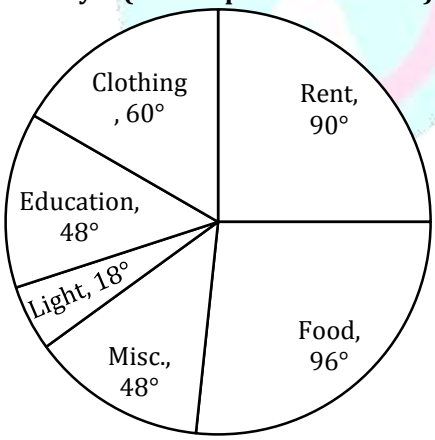
38. What was the difference in the number of B type cars produced in 2007 and 2008?
(a) 217000 (b) 270000 (c) 225000 (d) 175000 (e) 200000

39. The production of A type cars in 2008 is approximately what percent of the production of A type cars in 2007?
(a) 360% (b) 377% (c) 365% (d) 362% (e) 370%

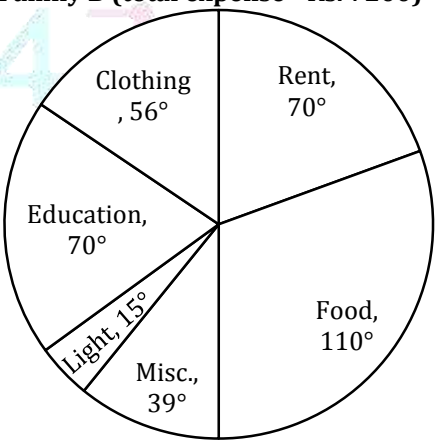
40. If 85% of D type cars produced in each year were sold by the company, then how many D type cars remained unsold in total?
(a) 76500 (b) 93500 (c) 177600 (d) 122500 (e)196000

Directions (41-45): The two pie diagrams given below provide relative expenses of two families A and B.

Family A (total expense= Rs. 4800)



Family B (total expense= Rs. 7200)



41. If 60% of expenses on misc. of family A are on 'repair' and 30% of expenses on misc. of family B were on 'travel' then what is the ratio of expenses on education of family A to the sum of expenses on repair of family A and that of travel of family B?
(a) 310 : 309 (b) 330 : 319 (c) 320 : 309 (d) 330 : 312 (e) 309 : 311

42. If total expenses of family A are tripled, then expense on education, clothing and rent together of family B is what percentage of expenses on clothing, rent and Food together of family A?(Rounded off to two decimal places)
(a) 36.75% (b) 42.23% (c) 38.43% (d) 39.83% (e) 32.98%

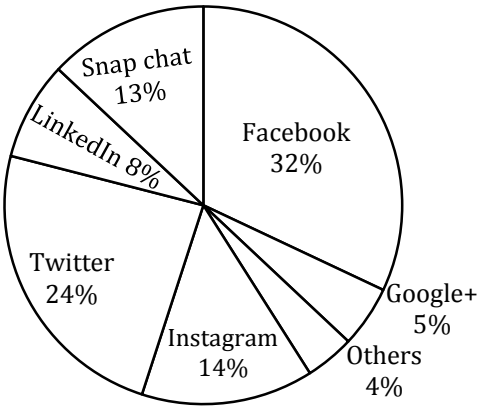
43. The expenses on education of families A and B together is what percent more/less than the expense on rent of both the families?(appproximately)
(a) 22% (b) 28% (c) 18% (d) 32% (e) 16%

44. If the total expenses of A and B are doubled, then what is the ratio of expenditure on light of family A to that of misc. of family B?
(a) 37 : 43 (b) 4 : 13 (c) 42 : 11 (d) 11 : 42 (e) 13 : 4

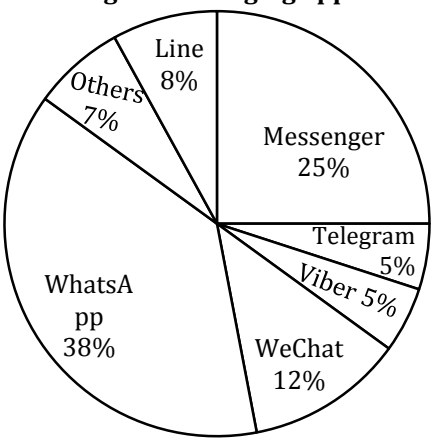
45. The item showing the least difference in expenditure between family A and family B is
(a) Light (b) Clothing (c) Misc. (d) Education (e) None of these

Directions (46-50) : Study the following information carefully and answer the following questions.
The pie-charts show the percentage of users of different social networking sites and the percentage of users of different messaging apps.
The ratio of the total number of social networking sites to the total number of messaging apps is 4: 5.

Percentage of users of social networking sites



Percentage of messaging apps users



46. If the total number of Facebook users is 192 million then what is the difference between the total number of Instagram users and the total number of WhatsApp users? (in million)
(a) 201 (b) 200 (c) 185 (d) 211 (e) 241

47. If the total number of WhatsApp users is 285 million then what is the average number of messaging apps users (in million)? (approximately)
Note: Assume Others to be a single messaging app.
(a) 120 (b) 125 (c) 118 (d) 115 (e) 107

48. If the total number of people who use LinkedIn networking site is 64 million then what is the difference between the total number of people who use social networking sites and the total number of people who use messaging apps?
(a) 200 million (b) 241 million (c) 215 million (d) 214 million (e) 220 million

49. If the total number users of Twitter are 192 million then the users of Snapchat are what per cent of the Instagram and Google+ users together? (rounded off to two decimal places)
(a) 62.42% (b) 68.42% (c) 64.82% (d) 70.28% (e) 78.48%

50. If the total number of Line users is 68 million then what is the sum of Facebook and WeChat users?
(a) 501.5 million (b) 319.6 million (c) 532.1 million (d) 502.6 million (e) None of these

PRACTICE SET (LEVEL–I) SOLUTIONS

1. (a); Total spending on Tennis $= \frac{45}{360} \times 100 = 12.5\%$

2. (c); Desired value $= \frac{(70-25)^\circ}{360} \times 144 = 18$ cr.

3. (b); Increase in Hockey $= 144 \times \frac{70}{360} \times \frac{120}{100} = 33.6$

Decrease in football $= 144 \times \frac{80}{360} \times \frac{70}{100} = 22.4$

Difference in spending = 33.6 – 22.4 = 11.2

4. (b); Amount spent on Tennis, Football and Hockey

$= \frac{195^\circ}{360} \times 144 = 19.5 \times 4 = 78$ cr.

Desired ratio $= \frac{78}{84} = \frac{13}{14}$

5. (d); Amount spend on others $= \frac{10^\circ}{360} \times 144 = 4$ cr.

Difference = 17cr – 4 cr = 13 cr.

6. (c); Required difference $= \frac{18\times(23-15)}{5} = \frac{18\times8}{5} = \frac{144}{5}$

$= 28.8$

7. (c); Required ratio $= (15 + 12)\% : \frac{150}{100}(18 + 32)\%$

$= 27 \times 2 : 3 \times 50 = 9 : 25$

8. (a); Sum of articles sold by both A and C in 2017

$= 18 \times 60 \times \frac{4}{3} + 12 \times 60 \times \frac{7}{6}$

$= 18 \times 20 \times 4 + 2 \times 60 \times 7 = 1440 + 840 = 2280$

9. (b); Required difference

$= \frac{1}{2} \times \frac{6000}{100}[(12 + 23) - (18 + 15)]$

$= 30[35 - 33] = 60$

10. (d); Total articles sold now $= \frac{4}{3} \times 6000 = 8000$

Required difference $= \frac{8000}{100}[(15 + 32) - (18 + 23)]$

$= \frac{8000}{100}(47 - 41) = 80 \times 6 = 480$

11. (a); Required difference $= \frac{14^\circ}{360} \times 1080000 = \text{Rs. } 42000$

12. (d); Clearly wages paid to Daily wage workers & Maintenance staffs are equal to production unit II members.

13. (d); $270000 = \frac{1}{4}$ of $1080000 = \frac{90^\circ}{360^\circ}$ of 1080000

According to given pie-chart 90° belongs to production unit II.

Also 90° = 60° + 30° which belongs to maintenance staff and Daily wage workers

Hence, option d is correct.

14. (c); Wages paid to daily wage workers $= \frac{1}{6}$ of 1080000

$= 180000$

After ex-gratia grant,

Total wages paid $= 180000 \times \frac{120}{100} = 216000$

No. of such workers $= \frac{216000}{48\times900} = 5$

15. (b); For year 2016-17,

Total wages to be paid $= 10{,}80{,}000 \times \frac{110}{100}$

$= 11{,}88{,}000$

Required difference $= \frac{62-28}{360} \times 1188000$

$= \text{Rs. } 11{,}2200$

16. (c); Total marks obtained in GA, Computer and Descriptive together

$= \frac{(18+14+11)}{100} \times 1200 = 43 \times 12 = 516$

And total marks in an examination

$= \frac{1200}{60} \times 100 = 2000$

Required % $= \frac{516}{2000} \times 100 = 25.8\%$

17. (a); Required marks $= \frac{[(22+20)-(18+11)]}{100} \times 1200$

$= 13 \times 12 = 156$

18. (c); 168 marks $= \frac{168}{1200} \times 100 = 14\%$

$\Rightarrow$ Marks obtained in Computer

19. (d); Required % $= \frac{15+14}{22+18} \times 100 = \frac{29}{40} \times 100 = 72.5\%$

20. (d); Required average $= \frac{1200}{6} = 200$

21. (b); Required difference

$= \frac{1}{2}[(15 + 22)\% - (21 + 11)\%]7200$

$= \frac{1}{2}[5\%]7200 = 180$

22. (e); Total enrolled students in singing and painting in 2017

$= \left(\frac{4}{3} \times 18\% + \frac{6}{5} \times 15\%\right)7200 = 42 \times 72 = 3024$

23. (a); Required ratio

$= (21\% + 13\%) : 160\%(22\% + 15\%)$

$= 5 \times 34 : 8 \times 37 = 170 : 296 = 85 : 148$

24. (c); Required average $= \frac{1}{3}(18 + 21 + 15)\% \times 7200$

$= 18 \times 72 = 1296$

25. (e); Total enrolled students in Painting and Singing in 2017 $= \frac{4}{3} \times (15\% + 18\%) \times 7200 = 3168$

Let total enrolled girls in 2017 in Painting & Singing $= x$

So,

$3168 = \left(x + \frac{6}{5}x\right)$ Or, $x = \frac{3168\times5}{11} = 1440$

26. (d); In this question, we don't have to calculate values.

Let total population of all 6 villages be x

So, female in village P $= \frac{3}{5} \times 18\%\ x$

Female in village Q $= \frac{1}{5} \times 15\%\ x$

Required percentage $= \frac{\frac{3}{5}\times18}{\frac{1}{5}\times15} \times 100 = 360\%$

27. (c); Sum of population of R and S in 2017

$= \frac{6}{5} \times \frac{16}{100} \times 85000 + \frac{5}{4} \times \frac{20}{100} \times 85000$

$= 850\left(\frac{6}{5} \times 16 + \frac{5}{4} \times 20\right) = 37570$

28. (d); Literate male in village S $= \frac{3}{5} \times \frac{20}{100} \times 85000 \times \frac{80}{100}$

Literate female in village S $= \frac{2}{5} \times \frac{20}{100} \times 85000 \times \frac{90}{100}$

Require % $= \frac{20\times850\left(\frac{3}{5}\times\frac{4}{5}+\frac{2}{5}\times\frac{9}{10}\right)}{20\times850} \times 100$

$= \left(\frac{12}{25} + \frac{18}{50}\right) \times 100 = \frac{(24+18)}{50} \times 100 = 84\%$

29. (a); Required ratio $= \frac{(18\%+15\%+20\%)\times 85000}{(16\%+14\%+17\%)\times 85000} = 53 : 47$

30. (d); Total females in village R & U $= \frac{15}{100} \times 85000$

$= 12750$

Let females in village U = x

So,

$\left(x + \frac{2}{3}x\right) = \frac{15}{100} \times 85000$

$\frac{5}{3}x = 12750$

$x = 7650$

Males in village U = 17 × 850 – 7650 = 6800

31. (a); Required ratio $= \frac{\frac{15}{100}\times 2.5}{\frac{(10+20+10)}{100}\times\frac{40}{100}\times 2.5} = \frac{15}{16}$

32. (b); No. of cars sold by Maruti $= \frac{40}{100} \times 4 = 1.6$ lakh

No. of cars Manufactured by Maruti $= 1.6 \times \frac{9}{8}$

$= 1.8$ lakh

No. of cars remains unsold $= 1.8 - 1.6 = 0.2$ lakh

33. (c); Total no. of maruti cars sold in Delhi $= 3 \times \frac{100}{20}$

$= 15$ lakh

Total no. of cars sold in Delhi $= 15 \times \frac{100}{40} = 37.5$ lakh

No. of Santro sold $= \frac{75}{100} \times \frac{25}{100} \times 37.5 = 7.03125$ lakh

$= 703125$

34. (d); No. of Maruti 800 cars sold $= \frac{60}{100} \times \frac{40}{100} \times \frac{5}{100} \times 24$

$= 28800$

35. (a); Since market share for the year 2003 is not given, the answer can't be determined.

36. (c); Required Answer $= \frac{35}{100}(10 + 15 + 15)$ lakh

$= \frac{35\times 40}{100} = 14$ lakh

37. (a); it can be clearly seen from the chart that maximum variation is in production of model A = (30% of 44 lakh-10% of 35 lakh) = 9.7 lakh

38. (a); Required difference $= \frac{35 \text{ lakh}\times 15}{100} - \frac{44 \text{ lakh}\times 7}{100}$

$= 2.17$ lakh

$= 217000$

39. (b); Required %$= \frac{13.2}{3.5} \times 100 = 377$ %(approx..)

40. (c); Required No.

$= 35 \text{ lakh} \times \frac{20}{100} \times \frac{15}{100} + 44 \text{ lakh} \times \frac{11}{100} \times \frac{15}{100}$

$= 1.776$ lakh

$= 177600$

41. (c); Req. Ratio $= \frac{\frac{48}{360}\times 4800}{\frac{60}{100}\times\frac{48}{360}\times 4800 + \frac{30}{100}\times\frac{39}{360}\times 7200}$

$= \frac{640}{384+234} = \frac{640}{618} = \frac{320}{309}$

42. (d); Req. Percentage $= \frac{\frac{196}{360}\times 7200}{\frac{246}{360}\times 14400} \times 100 = 39.83\%$

43. (a); Expense on education $= \frac{48}{360} \times 4800 + \frac{70}{360} \times 7200$

$= 2040$

Expense on rent $= \frac{90}{360} \times 4800 + \frac{70}{360} \times 7200$

$= 2600$

Req. percentage $= \frac{(2600-2040)}{2600} \times 100$

$= 21.53\% \approx 22\%$

44. (b); Req. ratio $= \frac{\frac{18}{360}\times 4800}{\frac{39}{360}\times 7200} = \frac{4}{13}$

(**Note:** Doubled expenses don't alter the ratio)

45. (a);

Item	Difference		
Clothing	1120 – 800	=	320
Rent	1400 – 1200	=	200
Food	2200 – 1280	=	920
Misc.	780 – 640	=	140
Light	300 – 240	=	60
Education	1400 – 640	=	760

46. (a); Required difference $= \frac{192\times 100\times 5\times 38}{32\times 4\times 100} - \frac{192}{32} \times 14$

$= 285 - 84 = 201$ million

47. (e); Required average $= \frac{1}{7} \times \frac{285}{38} \times 100$

$= 107.14$ million

48. (a); Required difference $= \frac{800}{4} \times 5 - \frac{64}{8} \times 100$

$= 1000 - 800 = 200$ million

49. (b); Required % $= \frac{\frac{192}{24}\times 13}{\frac{192}{24}\times(14+5)} \times 100$

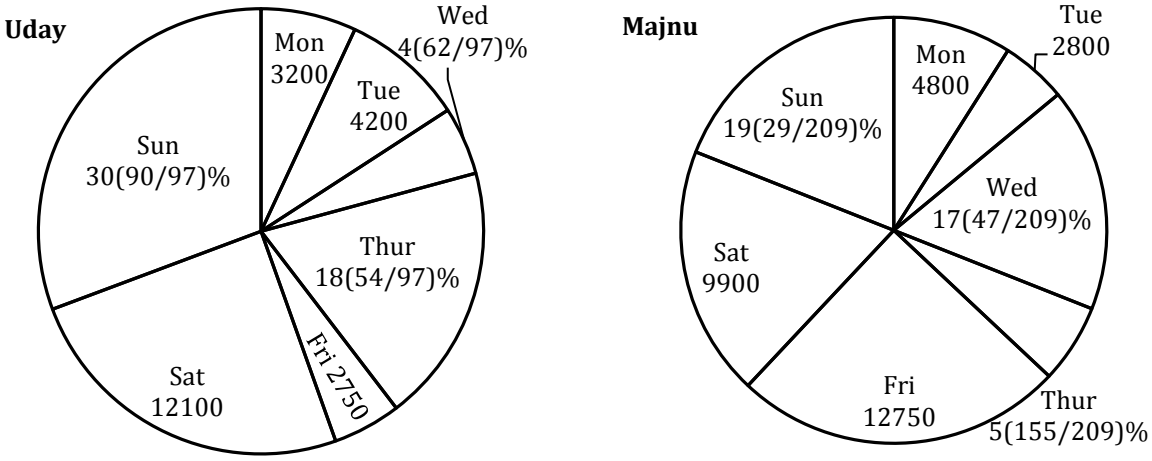
$= \frac{104}{152} \times 100 = 68.42\%$

50. (b); Required users $= \frac{68\times 100\times 4\times 32}{8\times 100\times 5} + \frac{68}{8} \times 12$

$= 217.6 + 102 = 319.6$ million

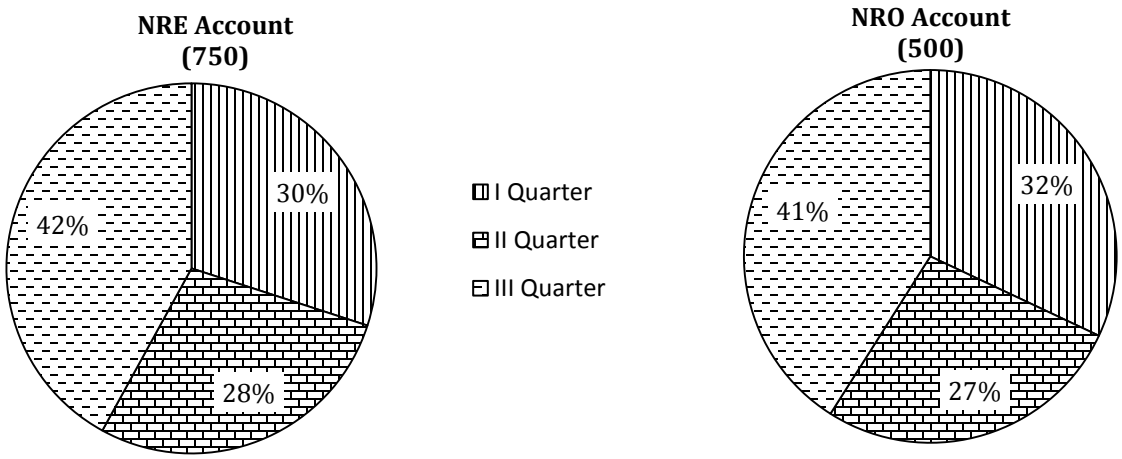
PRACTICE SET (LEVEL–II)

Directions (1-5): Study the following pie charts and answer the following questions carefully :-
Uday and Majnu are working in a restaurant, they serve different no. of customers on different days in a week. No. of customers or percentage of the customers are given in both pie charts from Monday to Sunday



1. Customers served by Majnu on Saturday are what % more/less then that the customers served by Uday on Monday and Tuesday together ? (Rounded off to two decimal points)
   (a) 33.66% (b) 33.78% (c) 33.87% (d) 33.58% (e) 32.78%
2. Total customers served by Uday during the whole week are approximately what % of the total customers served by both together during the whole week ?
   (a) 42% (b) 48% (c) 52% (d) 45% (e) 53%
3. What is the ratio of the customer served by Uday on Tuesday and Sunday together to the customer served by Majnu on Wednesday and Friday together ?
   (a) 63 : 64 (b) 51 : 53 (c) 147 :148 (d) 178 : 179 (e) 128 : 145
4. The customers served by Majnu from Mon to Wednesday are how much less that the customers served by Uday from Thursday to Sunday?
   (a) 23,209 (b) 25,666 (c) 22,250 (d) 22,102 (e) 21,935
5. On which day of the week Majnu served the maximum customers ?
   (a) Sunday (b) Monday (c) Thursday (d) Friday (e) Saturday

Directions (6-10): In the given pie chart, In state Bank of India there are two types of accounts NRE account and NRO account which can be opened by a foreigner.
These pie charts show the percentage wise breakup of these accounts spend in a given year. There are 4 quarters in a year and graph shown the information about three quarters.



6. If we include the 4th quarter in the given year, percentage of NRO accounts opened in 2nd quarter will become $16\frac{7}{8}\%$ of the total NRO accounts opened during the whole year. Then what is the number of NRO accounts opened in 4th quarter ?
(a) 450 (b) 300 (c) 350 (d) 250 (e) 260

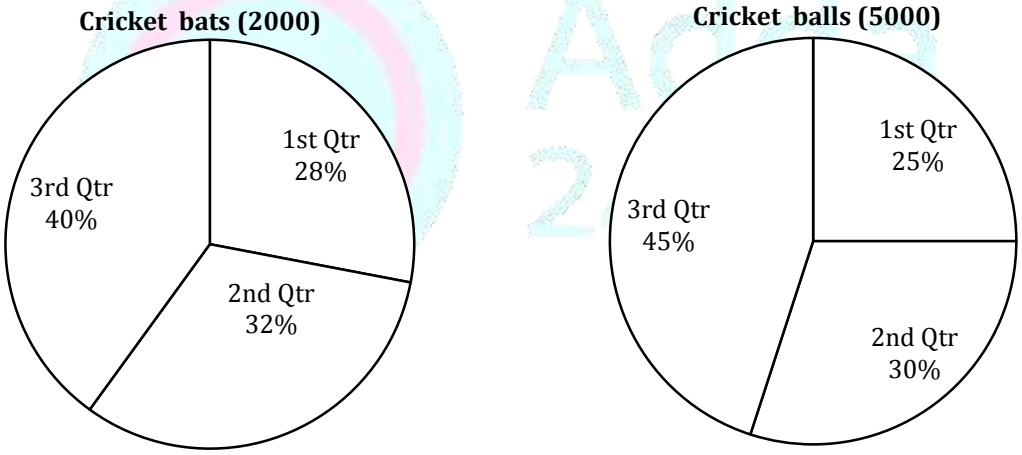
7. Total number of NRE accounts opened in the 4th quarter are $42\frac{6}{7}\%$ more than the NRE accounts opened in 3rd quarter, then find the average number of NRE accounts opened during whole year if the NRE accounts opened in 4th quarter are 50% more than the NRO accounts opened in 4th quarter?
(a) 325 (b) 200 (c) 350 (d) 250 (e) 300

8. If the total number of NRE accounts opened in the whole year are 50% more than the NRO account opened in the whole year then find the ratio of the NRE accounts opened in 4th quarter to NRO accounts opened in 4th quarter ?
(a) 2 : 3 (b) 2 : 5
(c) 3 : 2 (d) Can't be determined
(e) None of these

9. If the NRE accounts opened in IVth quarter is 240 more than the NRE accounts opened in 2nd quarter, then NRE accounts opened in 4th quarter is what percent of the total NRE accounts opened in the whole year ?
(a) 37.5% (b) 39.5% (c) 35.5% (d) 36% (e) 34.6%

10. If 16 % NRE account holders and 18% NRO account holders close their account then total no. of NRE accounts in 2nd and 3rd quarter is approximately what percent more than the total no. of NRO accounts in these quarters respectively ?
(a) 36 % (b) 45 %
(c) 52 % (d) Can't be determined
(e) None of these

Directions(11-15)- The given pie graphs show the percentage wise breakup of production of cricket bats and cricket balls in a given year. There are 4 quarters in a year and graph shows the information for three quarters.



11. If we include the 4th quarter of the year, percentage of cricket bats in 1st quarter will become 25% of the total cricket bats produced during the whole year. Then what is the number of cricket bats in 4th quarter?
(a) 260 (b) 230 (c) 280 (d) 240 (e) 250

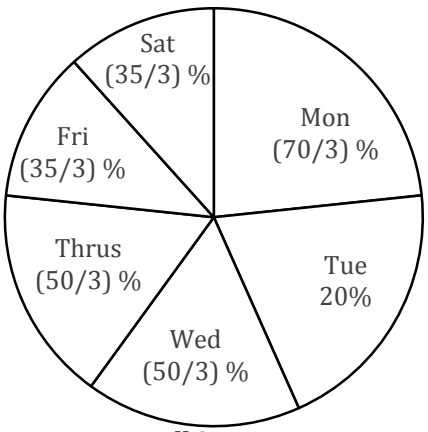
12. If the Cricket balls produced in 4th quarter is 1/3 less than the Cricket balls produced in 2nd quarter. Then Cricket balls produced in 4th quarter is what percent of total number of Cricket balls produced. (up to 2 decimal places).
(a) 25% (b) 16.67% (c) 14.28% (d) 33.33% (e) 22.22%

13. Total no of cricket bats produced in 2nd and 3rd quarter is what percent of total no. of the Cricket balls produced in 2nd and 3rd quarter?
(a) 39.23% (b) 38.4% (c) 37.6% (d) 33.33% (e) 41.15%

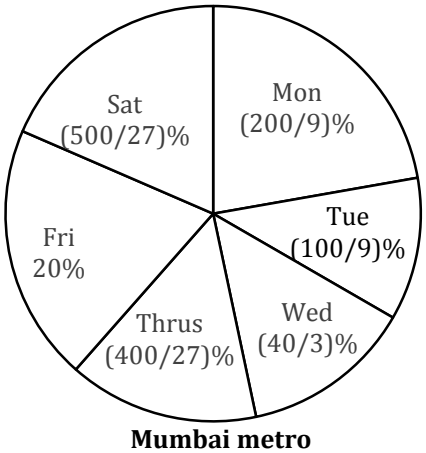
14. Average number of cricket bats produced in 1st and 2nd quarter is how much percent more or less than the number of cricket balls produced in 3rd quarter? (up to 2 decimal places).
(a) 73.33% (b) 72.16% (c) 26.67% (d) 27.84% (e) 71.84%

15. If the production of cricket balls in 4th quarter is 35% more than that of cricket bats in 2nd quarter and production of cricket bats in 4th quarter is 25% less than the production of cricket balls in 4th quarter, than the production of cricket bats in 2nd quarter is what % of total production of cricket bats taking all the quarter together. (up to 2 decimal points)
(a) 23.52% (b) 24.17% (c) 26.37% (d) 23.92% (e) 24.96%

Directions (16-20): Given below are the two pie charts which shows the percentage distribution of people who travel a certain distance in Delhi metro and Mumbai metro on six different days of the week starting from Monday to Saturday.



Delhi metro



Mumbai metro

Note:

1. Ratio of total person travelling in these six days in Delhi metro to Mumbai metro is 10 : 9
2. Difference between person travelling in Delhi metro and Mumbai metro on Wednesday is 70.

16. If fare per person in Delhi metro and Mumbai metro on all days for the particular distance is Rs. 18 and Rs. 20 respectively then what is the difference between total fare obtained by both metro on Saturday.
(a) 1375 (b) 1750 (c) 1850 (d) 1700 (e) 1650

17. If in both metro, number of people travelling on Sunday of same week decreases by 'x' with respect to people travelling on Saturday then the ratio of people travelling in Delhi metro to Mumbai metro on Sunday is 2 : 3, then find the value 'x'
(a) 20 (b) 30 (c) 22 (d) 24 (e) 25

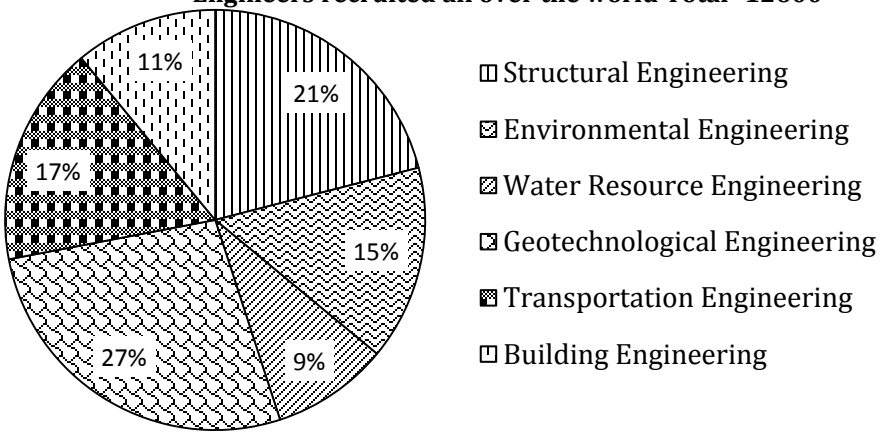
18. Number of people travelling in Delhi metro on Wednesday and Thursday together is what percent of people travelling in Mumbai metro on Monday and Saturday together ?
(a) $90\frac{10}{11}\%$ (b) $89\frac{10}{11}\%$ (c) $90\frac{2}{11}\%$ (d) $92\frac{8}{11}\%$ (e) $95\frac{5}{11}\%$

19. If fare per person of Delhi metro to Mumbai metro is 10 : 9 on all days and sum of fare obtained from both metro on Tuesday is Rs. 4350, then total fare obtained from Delhi metro on Monday is what percent more or less than total fare obtained from Mumbai metro on Saturday.
(a) $46\frac{4}{9}\%$ (b) $45\frac{4}{9}\%$ (c) $55\frac{5}{9}\%$ (d) $54\frac{4}{9}\%$ (e) $52\frac{5}{9}\%$

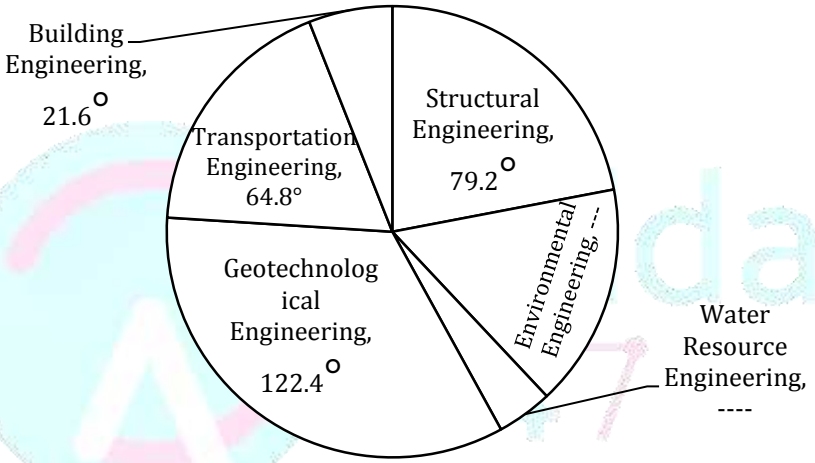
20. If on Sunday of same week, person who travel by Delhi metro and Mumbai metro are increased by 20% and 30% respectively over Saturday, then total people who travelled by both metro on Sunday is what percent of total people who travelled by both metro on Monday.
(a) $81\frac{5}{17}\%$ (b) $87\frac{2}{13}\%$ (c) $93\frac{4}{15}\%$ (d) $82\frac{4}{13}\%$ (e) $78\frac{3}{13}\%$

Direction (21-25): L&T pvt limited recruited civil engineers for Infrastructure Project in different streams from all over the India.But ie fixes some seats for engineers from IITs.The information ,regarding this is given below

Engineers recruited all over the world Total=12600



Engineers recruited from IITs Total=6800



NOTE:- SOME VALUE ARE MISSING. YOU HAVE TO CALCULATE THESE VALUES ACCORDING TO QUESTION.

21. Engineers Recruited by company except from IITs in stream Geotechnological Engineering 30% are master degree holders and Engineers recruited from IITs in Building Engineering 25% are master degree holders. Then find the ratio of engineers recruited from non-IIT in Geotechnological Engineering having master degree to Engineers recruited from IITs in building Engineering having master degree?
(a) 106 : 39 (b) 107 : 35 (c) 109 : 34 (d) 101 : 31 (e) 105 : 32

22. If the number of engineers recruited from IITs in Environmental and water Resource Engineering are in ratio of 4 : 1, then how many Engineers recruited in Environmental Engineering are non-IITians ?
(a) 804 (b) 802 (c) 799 (d) 796 (e) 792

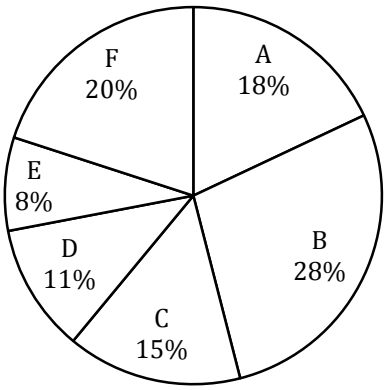
23. Number of Transport Engineers recruited by the company from IIT by what percent more than the number of non – IITian Transport Engineers recruited by company?
(a) $33\frac{1}{3}\%$ (b) $33\frac{2}{3}\%$ (c) $32\frac{1}{3}\%$ (d) $32\frac{2}{3}\%$ (e) 34%

24. If in structural Engineering, the ratio of Engineers from IITs and non-IITs should be 1 : 1. Then by what percent less it should recruit Engineers from IITs in structural Engineering.
(a) 14.29% (b) 12.78% (c) 10.31% (d) 11.56% (e) 15.29%

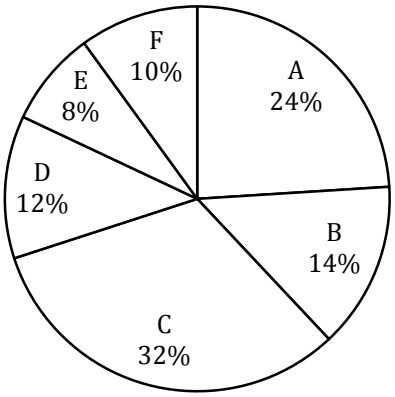
25. Average number of non-IITian Engineers recruited in Geotechnological and Transportation Engineering, taking together?
(a) 1298 (b) 1004 (c) 1678 (d) 928 (e) 1238

Directions (26-30): Study the pie-charts carefully and answer the following question.
Distribution of Laptops (HP and Asus) sold by six sellers

Total number of laptops sold = 48,000



Number of Asus laptops sold = 28,000



26. Number of HP Laptops sold by A and B together is approximately what percentage more or less than the number of Asus laptop sold by E and F together?
(a) 145% (b) 227% (c) 127% (d) 245% (e) 97%

27. Find the difference between the number of Asus laptop sold by D and E together to the number of HP laptop sold by A, B and F together?
(a)10,450 (b) 12,460 (c) 10,540 (d)12,640 (e) 12,540

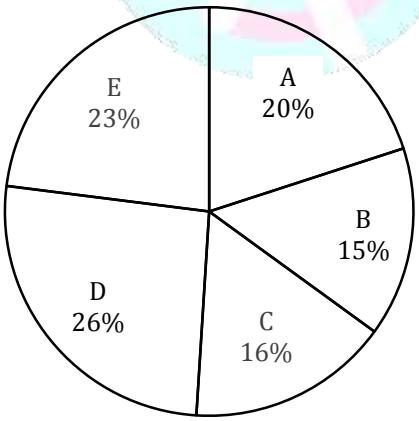
28. What is ratio of number of HP laptop sold by D and F together to HP laptop sold by B and E together?
(a) $\frac{139}{109}$ (b) $\frac{109}{139}$ (c) $\frac{113}{127}$ (d) $\frac{127}{113}$ (e) $\frac{121}{147}$

29. Find the total profit earned by seller A if seller A earns Rs. 40 and Rs. 70 per laptop on HP and Asus respectively.
(a) Rs. 5,47,200 (b) Rs. 5,27,500 (c) Rs. 5,47,900 (d) Rs. 4,77,200 (e) Rs. 5,77,200

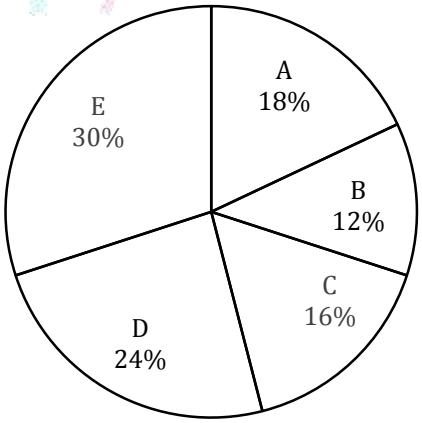
30. If seller E sells Asus laptop at a loss of Rs. 30 each so at how much profit he should sell each HP laptop to gain Rs. 3,200 in total.
(a) Rs.39 (b) Rs.41 (c) Rs.43 (d) Rs.45 (e) Rs. 44

Directions (31-35): Following pie charts show the percentage distribution of males and females in five companies. Study the charts carefully to answer the questions that follow.

Distribution of males



Distribution of females



31. If ratio of number of females to number of males in company B is 32 : 45 then number of males in company E is what percent more than the number of females in company C.(approx.)
(a) 53% (b) 62% (c) 65% (d) 80% (e) 75%

32. If the average of total males and females of all the company together is 21000 and difference between male to female in company C is 320(no. of males > no. of females) then find the total females in company A.
(a) 3422 (b)3500 (c) 3420 (d) 2000 (e) 3600

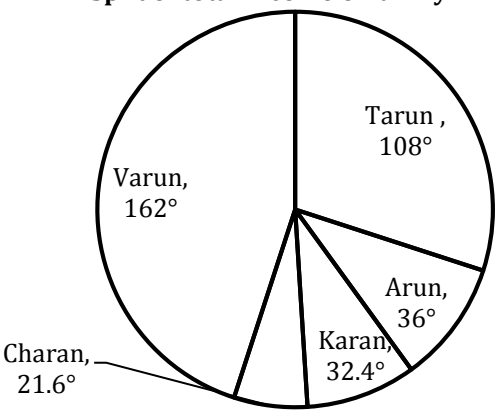
33. Find the average of number of males in company D and company C and females in company B if ratio of total number of males to total number of females is 3:2 and number of males in the company D is 3900.
(a) 2500 (b) 1500 (c) 1600 (d) 1700 (e) 2600

34. If ratio between total females to total males is $x^3 : (x + 1)^2$ (x is a whole number), then find the minimum possible value of x, given that number of males in company A is 25% more than the number of females in the same company.
(a) 4 (b) 1 (c) 6 (d) 3 (e) 2

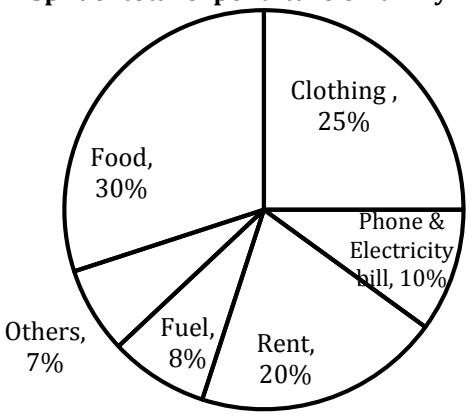
35. Ratio between average of number of male of company A, B and C to the average of number of females of company A, B and E is 51 : 65 then total females are how much percent more than total males.
(a) 8.45% (b) 7.34% (c) 7.14% (d) 8.33% (e) 9.33%

Direction(36-40): Answer the questions on the basis of the following information.
The following pie charts gives the breakup of the income of all the five members – Varun, Tarun, Arvind, karan and Charan of family XYZ and the breakup of the total family expenditure under different heads.

Split of total income of family XYZ



Split of total expenditure of family XYZ



Note: The total income of the family is equal to the total expenditure and the family has no other sources of income.
In question head means individual part of expenditure i.e. clothing, rent, fuel etc.

36. If Varun did not pay for "others", then his income can fully account for expenses under at most how many heads?
(a) 2 (b) 3 (c) 4 (d) 5 (e) 6

37. Whenever possible, if all the expenses under one head is paid by a single person, the number of heads under which more than one person shared the expenses is at least
(a) 1 (b) 2 (c) 3 (d) 4 (e) 5

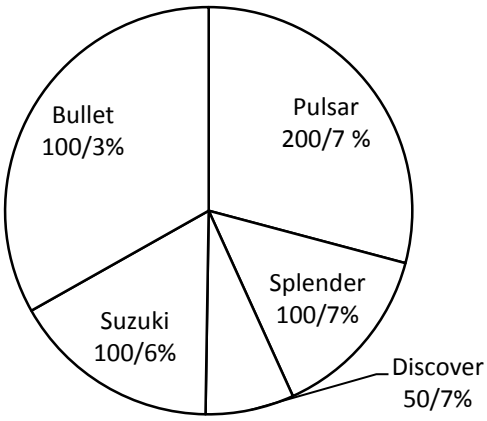
38. If Varun does not spend any amount on food, then the expenditure of Varun on clothing and rent as a percentage of the total expenditure on rent and clothing cannot be less than
(a) 33.33% (b) 44.44% (c) 25% (d) 66.66% (e) 54.44%

39. If at most 40% of the income of each person is paid for food, then the number of persons who did not pay for food is at most
(a) 1 (b) 2 (c) 3 (d) 4 (e) 6

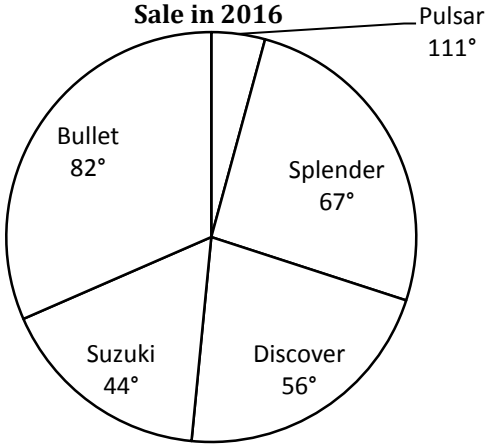
40. If at least 5% of the total expenses under each head is paid from Karan's income, then the percentage share of Karan's payment under any head can be a maximum of
(a) 22.5% (b) 90% (c) 62.14% (d) $66\frac{2}{3}$ (e) 61.24%

Directions (41-45): Given below are the two pie charts. Pie chart I shows the percentage distribution of different models of bike sold in year 2015 and pie chart II shows the sale of these models of bike in 2016 in degree.

Sale in 2015



Sale in 2016



41. If ratio of total sale in 2015 to the total sale in 2016 is 4 : 5 then sale of pulsar in 2016 increases or decreases by what percentage in comparision to sale of Pulsar is 2015. ?
(a) 35% (b) 30% (c) 43% (d) 52% (e) 24%

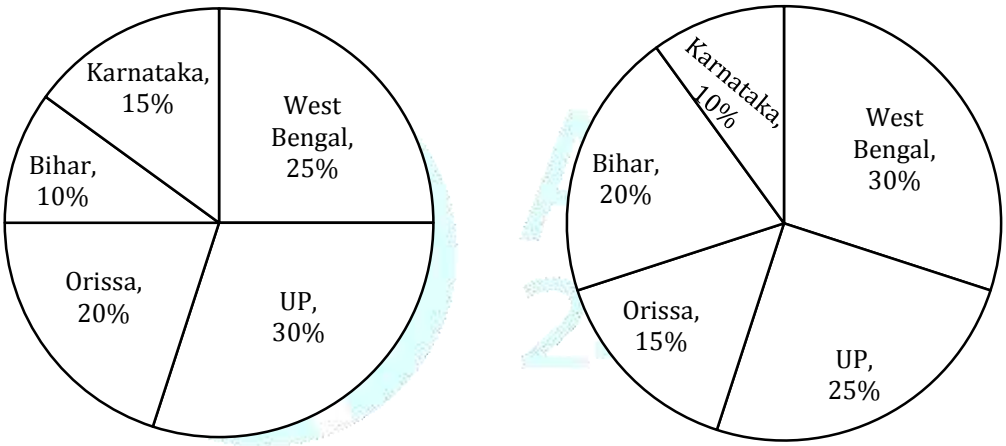
42. If total sale in 2015 is 84000 and total sale of bikes in 2016 is increased by 20% then find the difference in sale of bike splender in 2015 and 2016.
(a) 5530 (b) 6250 (c) 6760 (d) 5230 (e) None of these

43. If the ratio of sale of pulsar in 2015 to sale of Bullet in 2016 is 3 : 7 then sale of discover in 2016 is what percent of sale of Suzuki in 2015 (approximately)
(a) 238% (b) 242% (c) 217% (d) 273% (e) 222%

44. If selling price of Suzuki per bike in 2015 is 45000 and selling price of Suzuki per bike in 2016 is 54000 then what is the ratio of total selling price of Suzuki in 2015 to the total selling price of Suzuki in 2016. If ratio of total sale in 2015 to total sale in 2016 is 2 : 3.
(a) $\frac{25}{33}$ (b) $\frac{36}{37}$ (c) $\frac{24}{29}$ (d) $\frac{18}{23}$ (e) None of these

45. If total sale of all bikes in 2015 and in 2016 are equal then sale of Bullet in 2015 is what percent more or less than sale of Bullet in 2016 (approximately)
(a) 40% (b) 32% (c) 38% (d) 43% (e) 46%

Directions (46-50) : Study the pie charts given below and answer the following questions . First Pie chart represent percentage distribution of 'Population of children' and second pie chart represent percentage distribution of 'no. of schools' in five Indian states – Karnataka, Orissa, Bihar, UP and West Bengal.



Note: All the children attend school.

46. Which state has got the maximum no. of children per school?
(a) Karnataka (b) Bihar (c) Orissa (d) UP (e) none of these

47. By how much percent should the no. of schools in Orissa be increased so that the no. of students per school in Bihar becomes equal to the no. of students per school in Orissa?
(a) $133\frac{1}{3}\%$ (b) $166\frac{2}{3}\%$ (c) $120\frac{2}{3}\%$ (d) $140\frac{1}{3}\%$ (e) $162\frac{2}{3}\%$

48. If Orissa has 1 lakh children and UP has 500 schools then find the ratio of average no. of children in Karnataka and west Bengal to the no. of schools in all the states excluding Karnataka?
(a) 200:9 (b) 300:9 (c) 500:9 (d) 400:9 (e) none of these

49. If total area of all the schools in Bihar is 5000000 square feet and all the schools in Bihar are identical and the no. of children in UP is 5 lakh more than that in West Bengal then find the no. of children per school in UP? (Area of a school in Bihar is 2500 sq. ft)
(a) 3000 (b) 2000 (c) 2500 (d) 1200 (e) 1500

50. If 30% of the students in Orissa drop out of school after 5^{th} standard, then find the difference between the no. of students per school till 5^{th} standard & no. of students per school after 5^{th} standard for the state of Orissa? (No. of children in Orissa = 1 lakh and total no. of schools in all the five states = 2000)
(a) 90 (b) 85 (c) 100 (d) 80 (e) 120

PRACTICE SET (LEVEL–II) SOLUTIONS

Directions (1-5):

UDAY:

We have to find the value which are missing like on Wed = $4\frac{62}{97}\%$; THU = $18\frac{54}{97}\%$; SUN = $30\frac{90}{97}\%$

$\therefore 4\frac{62}{97}\% + 18\frac{54}{97}\% + 30\frac{90}{97}\% = 54\frac{12}{97}\% = ?$

Given : $(100 - 54\frac{12}{97})\% = 12100 + 2750 + 4200 + 3200$

$= 22250$

$\therefore \quad 1\% = \frac{22250 \times 97}{4450} = 485$

Hence, Total customers for Uday = 100% = 48500

Customers on Wednesday = $485 \times 4\frac{62}{97} = 2250$

Customers on Thursday = $485 \times 18\frac{54}{97} = 9000$

Customers on Sunday = $485 \times 30\frac{90}{97} = 15000$

MANJU :

We have to find the value which are missing like on Wed = $17\frac{47}{209}\%$; Thu = $5\frac{155}{209}\%$; Sun = $19\frac{29}{209}\%$

$\therefore \quad 17\frac{47}{209}\% + 5\frac{155}{209}\% + 19\frac{29}{209}\% = 42\frac{22}{209}\% = ?$

Given: $(100 - 42\frac{22}{209}\%) = 4800 + 2800 + 12750 + 9900$

$= 30250$

$\therefore \quad 1\% = 522.5$

Or, 100% = Total customers for Manju = 52250

Hence, Customers on Wednesday = $522.5 \times 17\frac{47}{209} = 9000$

Customers on Thursday = $522.5 \times 5\frac{155}{209} = 3000$

Customers on Sunday = $522.5 \times 19\frac{29}{209} = 10000$

Therefore, accumulated table as follows:

	UDAY	MAJNU
Mon	3200	4800
Tue	4200	2800
Wed	2250	9000
Thu	9000	3000
Fri	2750	12750
Sat	12100	9900
Sun	15000	10000
Total	48500	52250

1. (b); Required $\% = \frac{(9900-7400)}{7400} \times 100$

$= \frac{2500}{74} = 33.78\%$

2. (b); Required $\% = \frac{48500}{100750} \times 100 \approx 48\%$

3. (e); Required Ratio = 19200 :21750 = 128 :145

4. (c); Required difference $= 38850 - 16600 = 22250$

5. (d); Clearly from the graph, it's on Friday

6. (b); Let total NRO accounts opened in the whole year = x

$\therefore 16\frac{7}{8}\%$ of $x = \frac{27}{100} \times 500$

$x = 800$

Required accounts opened = $(800 - 500) = 300$

7. (e); NRE accounts opened in 4th quarter

$= 142\frac{6}{7}\%$ of $\left(\frac{42}{100} \times 750\right) = 450$

Required average = $\frac{450+750}{4}$

$= \frac{1200}{4} = 300$

8. (d); Let

NRE accounts = $3x$

NRO accounts = $2x$

$(3x - 750) = (2x - 500)1.5x$

We can't determine the value of x.

9. (a); IV quarter (NRE accounts) $= 240 + \frac{28}{100} \times 750$

$= 210 + 240 = 450$

Required $\% = \frac{450}{1200} \times 100 = 37.5\%$

10. (d); Since we don't know total no. of accounts. Hence we can't give the required answer

11. (d); Production of Cricket bats in 1st quarter = $2000 \times \frac{28}{100}$

According to the question,

560 = 25% of total production of bats

Total production = $\frac{560}{25} \times 100 = 2240$

Production of 4th quarter = 2240 – 2000 = 240

12. (b); Cricket- balls produced in 4th quarter

$= \left(5000 \times \frac{30}{100}\right) \times \left(1 - \frac{1}{3}\right) = 1000$

Total production including 4th quarter = 5000 + 1000 = 6000

Required answer = $\frac{1000}{6000} \times 100 = 16.67\%$

13. (b); Total production of Cricket- bats in 2nd and 3rd quarter

$= \frac{2000 \times (40+32)}{100} = 1440$

Total production of Cricket- balls in 2nd and 3rd quarter

$= \frac{5000 \times (30+45)}{100} = 3750$

Required answer $= \frac{1440}{3750} \times 100 = 38.4\%$

14. (a); Total production of Cricket- bats in 1st and 2nd quarter

$= \frac{2000 \times (28+32)}{100} = 1200$

Average production = $\frac{1200}{2} = 600$

Production of Cricket- balls in 3rd quarter = $\frac{5000 \times 45}{100}$

$= 2250$

Required answer = $\frac{(2250 - 600)}{2250} \times 100 = 73.33\%$ less

15. (b); Production of Cricket- bats in 2nd quarter = $\frac{2000 \times 32}{100}$

$= 640$

Production of Cricket- balls in 4th quarter

$= \frac{640 \times (100 + 35)}{100} = 864$

Production of 4th quarter Cricket- bats = $\frac{864 \times (100 - 25)}{100}$

$= 648$

Total production of Cricket- bats all the quarter together = 2000 + 648 = 2648

Required answer = $\frac{\left(2000 \times \frac{32}{100}\right) \times 100}{2648}$ = 24.17%

16. (c); Let total person travelling through Delhi metro in all six days = 10x

So total person travelled through Mumbai metro in all six days = 9x

According to condition

$\frac{10x}{100} \times \frac{50}{3} - \frac{9x}{100} \times \frac{40}{3} = 70$

500x – 360x = 70 × 300

140x = 70 × 300

x = 150

Total person travelled through Delhi metro in all six days = 1500

Total person travelled through Mumbai metro in all six days = 1350

Total fare of Delhi metro on Saturday

$= \frac{35}{300} \times 1500 \times 18 = Rs.3150$

Total fare of Mumbai metro on Saturday

$= \frac{5}{27} \times 1350 \times 20 = Rs.5000$

Required difference = 1850

17. (e); $\frac{\frac{35}{300} \times 1500 - x}{\frac{5}{27} \times 1350 - x} = \frac{2}{3}$

$\frac{175 - x}{250 - x} = \frac{2}{3}$

525 – 3x = 500 – 2x

x = 25

18. (a); Total people travelling in Delhi metro on Wednesday and Thursday

$= \frac{10x}{100} \times \left(\frac{50}{3} + \frac{50}{3}\right) = \frac{10x}{3}$

Total people travelling in Mumbai metro on Monday and Saturday together

$= \frac{9x}{100} \times \left(\frac{200}{9} + \frac{500}{27}\right) = \frac{11x}{3}$

Required percentage $= \frac{\frac{10x}{3}}{\frac{11x}{3}} \times 100$

$= \frac{1000}{11}\% = 90\frac{10}{11}\%$

19. (c); 20 × 15 × 10x + $\frac{100}{9}$ × 13.5 × 9x = 4350

3000x + 1350x = 4350

4350x = 4350

x = 1

∴ Required percentage $= \frac{15 \times \frac{70}{3} \times 10 - 13.5 \times \frac{500}{27} \times 9}{13.5 \times \frac{500}{27} \times 9} \times 100$

$= \frac{3500 - 2250}{2250} \times 100 = \frac{1250}{2250} \times 100$

$= \frac{500}{9}\% = 55\frac{5}{9}\%$

Alternate Method

Person travelled on Delhi metro on Monday

$= 1500 \times \frac{70}{300} = 350$

Person travelled on Mumbai metro on Saturday

$= 1350 \times \frac{500}{2700} = 250$

Let fare per person of Delhi metro and Mumbai metro is 10x and 9x respectively

Required percentage

$= \frac{350 \times 10x - 250 \times 9x}{250 \times 9x} \times 100 = \frac{1250x}{2250x} \times 100 = 55\frac{5}{9}\%$

20. (d); Total person travelling both metro on Sunday

$= \frac{120}{100} \times 15 \times \frac{35}{3} + \frac{130}{100} \times 13.5 \times \frac{500}{27}$

= 210 + 325 = 535

Total people travelled by both metro on Monday

$= 15 \times \frac{70}{3} + 13.5 \times \frac{200}{9}$

= 350 + 300 = 650

Required percentage $= \frac{535}{650} \times 100 = 82\frac{4}{13}\%$

21. (c); Requirted ratio $= \frac{\frac{30}{100} \times 1090}{\frac{25}{100} \times 408} = \frac{30 \times 1090}{25 \times 408} = \frac{109}{34}$

22. (b); Number of Environmental Engineers recruited from IITs $= \frac{4}{5} \times \frac{72^\circ}{360^\circ} \times 6800 = 1088$

Number of non-IITians Environmental Engineers recruited $= \frac{15}{100} \times 12600 - 1088$

$= 1890 - 1088 = 802$

23. (a); Number of Transport Engineers from IITs

$= \frac{64.8^\circ}{360^\circ} \times 6800$

Total number Transport Engineers $= \frac{17}{100} \times 12600$

$= 2142$

Non-IITian Transport Engineers $= 2142 - 1224$

$= 918$

$Required\ percent = \frac{1224 - 918}{918} \times 100$

$= \frac{306}{918} \times 100 = 33\frac{1}{3}\%$

24. (d); Total number recruited structural Engineers

$= \frac{21}{100} \times 12600 = 2646$

Number of Engineers should be recruited from IITs

$= \frac{1}{2} \times 2646 = 1323$

Initially number of structural Engineers recruited from IITs $= \frac{79.2}{360} \times 6800 = 1496$

Required percent $= \frac{1496 - 1323}{1496} \times 100 = 11.56\%$

25. (b); Average = $\frac{918 + 1090}{2} = \frac{2008}{2} = 1004$

26. (c); HP laptop sold by A $= \frac{18}{100} \times 48{,}000 - \frac{24}{100} \times 28000$

$= 8640 - 6720 = 1920$

HP laptop sold by B $= \frac{28}{100} \times 48000 - \frac{14}{100} \times 28{,}000$

$= 13{,}440 - 3{,}920 = 9{,}520$

HP laptop sold by A and B together = 11,440

Asus laptop sold by E and F together $= \frac{18}{100} \times 28{,}000$

$= 5040$

$Required\ percentage = \frac{11{,}440 - 5040}{5040} \times 100$

$= \frac{6400}{5040} \times 100 \cong 127\%$

27. (d); Asus laptop sold by D and E together $= \frac{20}{100} \times 28{,}000$
$= 5600$
HP laptop sold by A and B = 11,440
HP laptop sold by F $= \frac{20}{100} \times 48{,}000 - \frac{10}{100} \times 28{,}000$
$= 9600 - 2800 = 6800$
Desired difference = 11,440 + 6,800 – 5,600 = 12,640

28. (b); HP laptop sold D and F together
$= \frac{(20+11)}{100} \times 48{,}000 - \frac{(12+10)}{100} \times 28{,}000$
$= 14{,}880 - 6{,}160 = 8{,}720$
HP laptop sold by B and E together
$= \frac{(28+8)}{100} \times 48{,}000 - \frac{(14+8)}{100} \times 28{,}000$
$= 17{,}280 - 6{,}160 = 11{,}120$
$Desired\ Ratio = \frac{8{,}720}{11{,}120} = \frac{109}{139}$

29. (a); Asus laptop sold by A $= \frac{24}{100} \times (28{,}000) = 6{,}720$
HP laptop sold by A
$= \frac{18}{100}(8{,}000) - \frac{24}{100}(28{,}000) = 1{,}920$
Total profit of A = 40 × 1,920 + 70 × 6,720
= 76,800 + 4,70,400 = Rs. 5,47,200

30. (e); Number of Asus laptop sold by E $= \frac{8}{100} \times 28{,}000$
$= 2240$
Total loss = 2,240 × 30 = 67,200
Total S.P. of HP laptop = 67,200 + 3,200 = 70,400
Total no. of HP laptop sold by E
$= \frac{8}{100} \times 48{,}000 - \frac{8}{100} \times 28{,}000$
$= 3{,}840 - 2240 = 1600$
Profit should be gain on HP laptop $= \frac{70{,}400}{1{,}600}$
$= Rs.44\ each$

31. (b); Let total no. of males = x
total no. of females = y
ATQ,
$\frac{12 \times y}{100} \times \frac{100}{15 \times x} = \frac{32}{45}$
$\frac{y}{x} = \frac{8}{9}$
Number of males and females 8a, 9a
No. of males in E → $\frac{23 \times 9a}{100} = 2.07a$
No. of females in C $= \frac{16 \times 8a}{100} = 1.28a$
Required % $= \frac{0.79a}{1.28a} \times 100 \approx 62\%$

32. (e); Total males and females = 21000 × 2 = 42000
Now let total no. of males is 'x' and total no. of females is 'y'
ATQ,
$\frac{16 \times x}{100} - \frac{16 \times y}{100} = 320$
x – y = 2000 ...(i)
x + y = 42000 ...(ii)
Solving (i) and (ii)
x = 22000
y = 20000
$Female\ in\ company\ A = \frac{18 \times 20000}{100} = 3600$

33. (a); Total no. of males $= \frac{3900 \times 100}{26} = 15000$
Total no. of females $= \frac{15000 \times 2}{3} = 10{,}000$
Required average $= \frac{3900+2400+1200}{3} = 2500$

34. (e); Let number of females in company A = 4y
So, number of males in company A = 5y
Total number of males $= \frac{5y}{20} \times 100 = 25y$
Total number of females $= \frac{4y}{18} \times 100 = \frac{200}{9}y$
ATQ,
$\frac{200y}{9 \times 25y} = \frac{x^3}{(x+1)^2}$
$\frac{8}{9} = \frac{x^3}{(x+1)^2}$
Value of x = 2

35. (d); Let total no. males = x
total no. of females = y
So, average no. of male in company A, B and C
$= \frac{(20+16+15)x}{100 \times 3} = \frac{17x}{100}$
Average no. of females of company A, B and E
$= \frac{(18+12+30)y}{100 \times 3} = \frac{20y}{100}$
Ratio →
$\frac{17x}{100} : \frac{20y}{100} = 51 : 65$
$\frac{x}{y} = \frac{12}{13}$
Required percentage $= \frac{1}{12} \times 100 = 8.33\%$

36. (b); If Varun did not pay for 'others' he can fully pay for fuel (8%), phone & electricity bill (10%) and rent (20%) or clothing (25%).

37. (a); To get the least number of heads of expenses paid by more than one person, Varun (45%) must pay for clothing (25%) and rent (20%), Tarun (30%) must pay for food (30%), Arun (10%) must pay for the phone and electricity bill (10%) and Karan (9%) must pay for fuel.
Only 'others' (7%) is paid by Charan (6%) and Karan (9%)

38. (b); If Varun does not spent any amount on food, his expenditure will be only on the remaining items. As remaining items constitute 70% out of which 45 percent points are contributed by Varun. If Varun fully contributes to fuel, phone and electricity bill and others, then his contribution on rent and clothing will become the least.
∴ The required percentage = $\frac{45-(10+8+7)}{45} \times 100$
= 44.44%

39. (c); The bill for food is 30%, and at most 40% of each person's income can be paid for food. If we use 40% of each person's income, we get 40% of the total. As we need only 30%, i.e., 75% of 40%, 25% of the total income need not be used. As the sum of the incomes of Arun, Karan and Charan is 25%, if we use 40% of incomes of only Varun and Tarun, all expenses of food can be accounted for.

40. (c); Assuming exactly 5% of the total expences under each head is paid from karan's income, it will account for 5% of the total income. As Karan's income is 9% of the total income, the remaining = 4% of total income. For the percentage share of karan's payment under any head to be maximum, he should contribute all his remaing income for the head under which the expenditure is the least, i.e 'others'. As he has already paid for 5% of the expenses under that head, together with the remaing 4%, his share for payment under the head 'others' would be $5\% + \frac{4}{7} \times 100 = 62.14\%$.

41. (a); Let Total sale in 2015 = $4x$

Let total sale in 2016 = $5x$

Sale of pulsar in 2015 = $\frac{4x}{100} \times \frac{200}{7} = \frac{8x}{7}$

Sale of pulsar in 2016 = $\frac{5x}{360} \times 111 = \frac{37x}{24}$

Required percentage = $\frac{\frac{37x}{24} - \frac{8x}{7}}{\frac{8x}{7}} \times 100$

$= \frac{67}{24 \times 8} \times 100 \Rightarrow \frac{67}{192} \times 100 \approx 35\%$ increase

42. (c); Total sale of bike in 2016 = $\frac{120}{100} \times 84000 = 100800$

Sale of splender in 2015 = $\frac{84000}{100} \times \frac{100}{7} = 12000$

Sale of splendor in 2016 = $\frac{100800}{360} \times 67 = 18760$

Required difference = 18760 – 12000 = 6760

43. (d); Let sale of Pulsar in 2015 = $3x$

Let sale of Bullet in 2016 = $7x$

Sale of Suzuki in 2015 = $\frac{3x \times 7}{200} \times \frac{100}{6} = \frac{7x}{4}$

Sale of discover in 2016 = $\frac{7x}{82} \times 56$

Required % = $\frac{\frac{7x \times 56}{82}}{\frac{7x}{4}} \times 100$

$= \frac{112}{41} \times 100 \approx 273\%$

44. (a); Let total sale in 2015 = $2x$

Let total sale in 2016 = $3x$

Sale of Suzuki in 2015 = $\frac{2x}{100} \times \frac{100}{6} = \frac{x}{3}$

Sale of Suzuki in 2016 = $\frac{3x}{360} \times 44 = \frac{11x}{30}$

Required ratio = $\frac{\frac{x}{3} \times 45000}{\frac{11x}{30} \times 54000} = \frac{25}{33}$

45. (e); Let total sale for both years = x

Sale of Bullet in 2015 = $\frac{x}{100} \times \frac{100}{3} = \frac{x}{3}$

Sale of Bullet in 2016 = $\frac{x}{360} \times 82$

Required % = $\frac{\frac{x}{3} - \frac{41x}{180}}{\frac{41x}{180}} \times 100 = \frac{19x}{41x} \times 100 \approx 46\%$

46. (a); Let, no. of children in all five states be 'x'

And no. of schools in all five states be 'y'

Ratio of students to no. of schools in Karnataka

$= \frac{\frac{15}{100} \times x}{\frac{10}{100} \times y} = \frac{3}{2}\left(\frac{x}{y}\right)$

This is max. among all the states.

47. (b); Students per school in Bihar = $\frac{10x}{20y} = \frac{1x}{2y}$

Students per school in Orissa = $\frac{20x}{15y} = \frac{4x}{3y}$

No. of schools in Orissa should be increased by '5y', so that

$= \frac{4x}{(3y+5y)} = \frac{4x}{8y} = \frac{1x}{2y}$

Percentage increase = $\frac{5y}{3y} \times 100 = 166.66\%$

$= 166\frac{2}{3}\%$

48. (c); Average no. of children in Karnataka & West Bengal

$= \frac{100000 \times \frac{100}{20} \times \frac{(15+25)}{100}}{2} = \frac{500000 \times 40}{200} = 100000$

No. of schools in all states excluding Karnataka

$= 500 \times \frac{100}{25} \times \frac{90}{100} = 1800$

Ratio = $\frac{100000}{1800} = \frac{500}{9}$

49. (d); No. of schools in Bihar = $\frac{5000000}{2500} = 2000$

No. of schools in UP = $2000 \times \frac{100}{20} \times \frac{25}{100} = 2500$

Let, total no. of children be 'x', then

$= \frac{30x}{100} - \frac{25x}{100} = 5{,}00{,}000$

$or, x = 1{,}00{,}00{,}000$

Children per school in U.P. = $\frac{\frac{30}{100} \times 10000000}{2500} = 1200$

50. (c); No. of students per school till 5th standard in Orissa

$= \frac{100000}{\frac{15}{100} \times 2000}$

No. of students per school after 5th standard in Orissa

$= \frac{\frac{7}{10} \times 100000}{\frac{15}{100} \times 2000}$

Difference = $\frac{100000}{300} - \frac{70000}{300} = 100$

Chapter 6

Mixed Graph

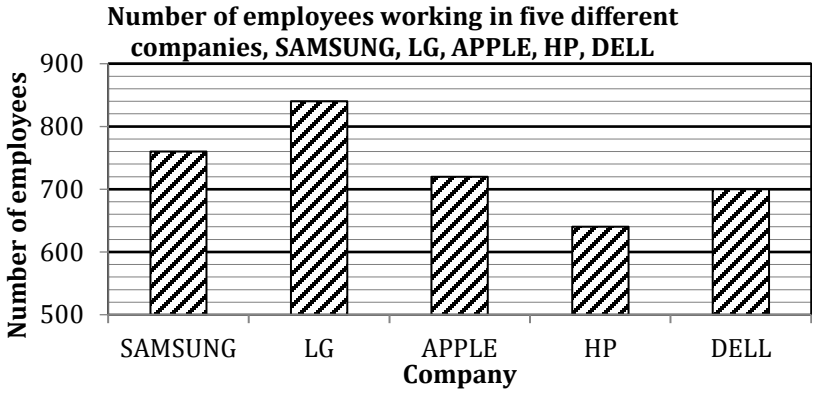
Mixed graphs are a combination of two or more graphs. Sometimes, the data that need to be represented contains numerous variables which are hard to represent through a single representation format. In other cases, the data need to be segregated into small parts for effective representation. Hence, the data is segregated and represented through two or more than two suitable graphs. These graphs may or may not represent similar variables. If the variables represented by these graphs are not similar, we have to understand the relationships between these variables which are described through some additional statements.

This chapter contains:

- Solved Examples
- Previous Year Questions
- Practice Set Level I
- Practice Set Level II

Solved Eamples

Directions (1 - 5): Study the following bar diagram and table carefully to answer the questions :
Bar graph shows number of total employee working in five different company and table shows Ratio of male to female in these five company.



Companies →	Samsung	LG	Apple	HP	DELL
Ratio of male to female	13 : 6	4 : 3	7 : 8	9 : 11	13 : 12

1. What is the ratio of female employees in company Samsung and H.P. together to the females in company DELL and Apple together.
(a) 43 : 53 (b) 54 : 59 (c) 37 : 45 (d) 23 : 27 (e) 20 : 23

Sol. **(c);** $Required\ ratio = \frac{\frac{6}{19}\times760+\frac{11}{20}\times640}{\frac{12}{25}\times700+\frac{8}{15}\times720} = \frac{240+352}{336+384} = \frac{592}{720} = 37:45$

2. Males from company Samsung and HP together is what percent of total employees in company Apple. (approximately)
(a) $125\frac{2}{9}\%$ (b) $112\frac{2}{9}\%$ (c) $130\frac{2}{9}\%$ (d) $135\frac{2}{9}\%$ (e) $138\frac{2}{9}\%$

Sol. **(b);** Males from company Samsung and HP together
$= 760 \times \frac{13}{19} + 640 \times \frac{9}{20} = 520+288 = 808$
$Required\ percentage = \frac{808}{720} \times 100 = 112\frac{2}{9}\%$

3. If 20% females from LG company resigns and 12.5% females resigns from company H.P. then what is the ratio of remaining employees in LG to remaining employees in HP.
(a) 192 : 149 (b) 153 : 129 (c) 72 : 73 (d) 53 : 42 (e) 57 : 49

Sol. **(a);** $Required\ ratio = \frac{840-\frac{3}{7}\times840\times\frac{20}{100}}{640-\frac{11}{20}\times640\times\frac{12.5}{100}} = \frac{840-72}{640-44} = 768:596 = 192:149$

4. What is the difference between average of males from Samsung and HP together to the average of females from company Apple and DELL together.
(a) 40 (b) 42 (c) 44 (d) 36 (e) 28

Sol. **(c);** Average of males from Samsung and HP
$= \left(760 \times \frac{13}{19} + 640 \times \frac{9}{20}\right)\frac{1}{2} = (520+288)\frac{1}{2} = 404$
Average of females from Apple and DELL
$= \left(720 \times \frac{8}{15} + 700 \times \frac{12}{25}\right)\frac{1}{2} = (384+336)\frac{1}{2} = 360$
Required difference
= 404 – 360 = 44

5. If ratio of number of females at present to the number of females next year in company Apple is 8 : 11 so, what should be increase or decrease in number males in Apple so that overall number of employees in Apple next year is same as present total number of employees in LG.
(a) 24 (b) 6 (c) 12 (d) 20 (e) 16

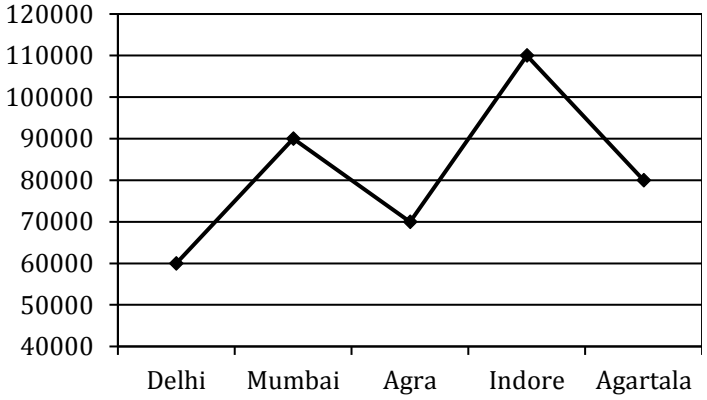
Sol. **(a);** Number of females in company Apple next year
$= 720 \times \frac{8}{15} \times \frac{1}{8} \times 11 = 528$
Male employees in Apple next year

= 840 – 528 = 312

$Males\ at\ present\ in\ Apple = 720 \times \frac{7}{15} = 336$

So, In next year male decreases by = 336 – 312 = 24

Directions (6-10): Read the data given below and answer the following questions.
Given belowis the line graph which shows the population of five cities in 2016 and table shows the ratio of male to female in these five cities .
NOTE- Some values are missing in the table , you have to calculate these values if necessary to answer the questions



Cities	**M : F**
Delhi	3 : 5
Mumbai	7 : 5
Agra	3 : 4
Indore	6 : 5
Agartala	- : 5

6. If there is an increase of 25% and 15% population of male & female live in Delhi in year 2017 with respect to previous year. Then what will be total percentage rise in the population of Delhi in 2017 with respect to previous year?
(a) 18.85% (b) 18.65% (c) 19% (d) 18% (e) 18.75%

Sol. **(e);** In 2017

$= 60{,}000 \times \frac{3}{8} \times \frac{125}{100} + 60{,}000 \times \frac{5}{8} \times \frac{115}{100}$

$28{,}125 + 43{,}125 = 71250$

Total increased population = 71,250 – 60,000 = 11,250

% increase $= \frac{11250}{60{,}000} \times 100 = 18.75\%$

7. In Agartala $\frac{1}{8}$th of person affected from Dengue then what is ratio of un-affected females to unaffected male in Agartala.If no. of un-affected males in agartala is same as no. of males in delhi
(a) 9 : 19 (b) 19 : 9 (c) 17 : 9 (d) 9 : 17 (e) 17:9

Sol. **(b);** Unaffected person $= \frac{7}{8} \times 80{,}000 = 70{,}000$

No. of un-affected males in Agaratala = No. of males in Delhi

$= 60{,}000 \times \frac{3}{8} = 22{,}500$

No. of unaffected females $= 47{,}500$

Ratio$= \frac{47500}{22500} = \frac{475}{225} = \frac{19}{9}$

8. What was the difference. of male & female in Mumbai city in 2014 if there is an increase in 20% of population every year?
(a) 10417 (b) 10217 (c) 10317 (d) 10400 (e) Cannot be determined

Sol. **(e);** Cannot be determined sice ratio of population of males and females in Delhi in 2014 is not given

9. Males of Mumbai is what percent less or more than the male of Agartala if the average number of males in Delhi, Agra & Agartala is 27,500?
(a) 42.86% less (b) 75% less (c) 75% more (d) 42.86% more (e) 62.5% more

Sol. **(c);** Males in Delhi + Agra + Agartala = 27,500 × 3

= 82,500

Males in Agartala = $82500 - \frac{3}{8} \times 60{,}000 - \frac{3}{7} \times 70{,}000$

$= 82500 - 22500 - 30{,}000$

$= 30{,}000$

Males in Mumbai $= \frac{7}{12} \times 90{,}000 = 52{,}500$

required% $= \frac{52{,}500 - 30{,}000}{30{,}000} = 75\%\ more$

10. If $\frac{1}{4}$ th of male and $\frac{1}{5}$ of female of Indore leave the city and all those who leave Indore came to Delhi & Mumbai in the ratio of 3 : 2 respectively then what is the percent increase of the population in Mumbai.

(a) $33\frac{1}{3}\%$ (b) $11\frac{1}{9}\%$ (c) $12\frac{1}{9}\%$ (d) $16\frac{2}{3}\%$ (e) $8\frac{1}{3}\%$

10. (b); Total person who leave indore

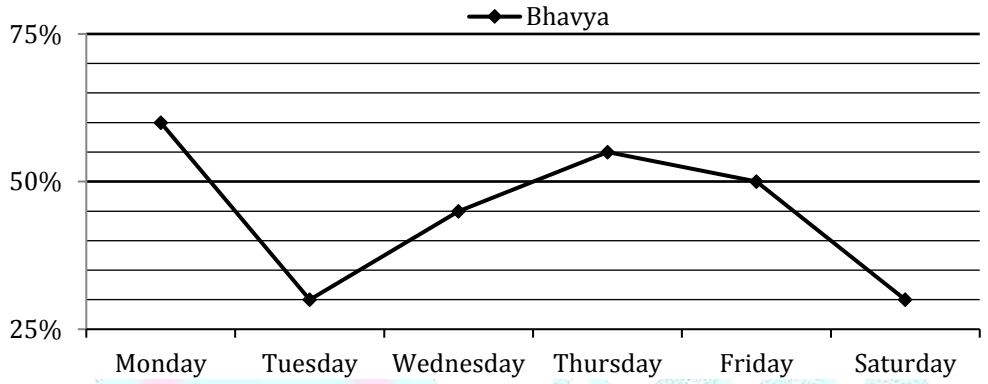
$= \frac{1}{4} \times \frac{6}{11} \times 1{,}10{,}000 + \frac{1}{5} \times \frac{5}{11} \times 1{,}10{,}000 = 25{,}000$

Person come to Mumbai = $25{,}000 \times \frac{2}{5} = 10{,}000$

% increase of population in Mumbai $= \frac{10{,}000}{90{,}000} \times 100 = 11\frac{1}{9}\%$

Directions (11-15): Bhavya and Abhishek are two persons who works in career power and frame different number of questions on six different days of a week. The line graph shows the percentage of questions framed by Bhavya out of total questions framed by both on different days of a week and table shows thetotalnumber of questions framed on different days by both.

Percentage of questions framed By Bhavya



Number of questions framed on different days By both

Days	Question
Monday	1200
Tuesday	1000
Wednesday	800
Thursday	1000
Friday	700
Saturday	1500

11. Questions framed by Bhavya on Monday and Tuesday together is what percent of question framed by Abhishek on Thursday?

(a) $\frac{685}{3}\%$ (b) $\frac{680}{3}\%$ (c) $\frac{690}{3}\%$ (d) $\frac{670}{3}\%$ (e) $\frac{685}{3}\%$

Sol. (b); Questions solved by Bhavya on Monday & Tuesday

$= \frac{60}{100} \times 1200 + \frac{30}{100} \times 1000$

=720+300

= 1020

Questions solved by Abhishek on Thursday

$= \frac{45}{100} \times 100 = 450$

$\therefore$ Percent $= \frac{1020}{450} \times 100 = \frac{680}{3}\%$

12. On Which day of week Abhishek framed minimum number of questions?

(a) Monday (b) Wednesday (c) Thursday (d) Friday (e) Tuesday

Sol. (d); No. of questions solved by Abhishek

Monday $= \frac{40}{100} \times 1200 = 480$

Tuesday $= \frac{70}{100} \times 1000 = 700$

Wednesday $= \frac{55}{100} \times 800 = 440$

Thursday $= \frac{45}{100} \times 1000 = 450$

Friday $= \frac{50}{100} \times 700 = 350$

Saturday $= \frac{70}{100} \times 1500 = 1050$

$\therefore$ Minimum no. of questions solved by Abhishek is on Friday

13. The average no. of questions framed by Abhishek on Monday and Saturday together is what percent more or less than average number of questions framed by Bhavya on Monday, Tuesday and Saturday together?

(a) $\frac{2750}{49}\%$ (b) $\frac{2780}{49}\%$ (c) $\frac{2750}{7}\%$ (d) $\frac{2770}{49}\%$ (e) $\frac{2750}{51}\%$

Sol. **(a);** Avg. no. of questions solved by Abhishek on Monday and Saturday

$= \frac{1}{2}\left(\frac{40}{100} \times 1200 + \frac{70}{100} \times 1500\right) = \frac{480+1050}{2} = 765$

Avg. No. of questions solved by Bhavya on Monday Wednesday and Saturday

$= \frac{1}{3}\left(\frac{60}{100} \times 1200 + \frac{30}{100} \times 1000 + \frac{30}{100} \times 1500\right) = \frac{720+300+450}{3} = 490$

$\therefore Percentage = \frac{765-490}{490} \times 100 = \frac{27500}{490} = \frac{2750}{49}\%$

14. If questions framed by Abhishek on Tuesday of next week is increased by 50% over the tuesday of given week and total number of questions framed on tuesday of next week by both of them is 1800. Then find ratio of number of questions framed by Bhavya to Abhishek on Tuesday of next week?

(a) 10 : 12 (b) 8 : 12 (c) 12 : 10 (d) 5 : 7 (e) 7:5

Sol. **(d);** Total number of questions solved by Abhishek on tuesday of next week$= 150\% of\ 70\% of\ 1000 = 1050$

Required ratio$= (1800 - 1050) : 1050 = 5 : 7$

15. Find the ratio of number of questions framed by Bhavya on Wednesday and Friday together to the number of questions framed by Abhishek on Monday and Wednesday together ?

(a) 72 : 92 (b) 70 : 91 (c) 71 : 92 (d) 92 : 71 (e) 71:93

Sol. **(c);** No. of questions solved by Bhavya on Wednesday and Friday

$= \frac{45}{100} \times 800 + \frac{50}{100} \times 700 = 360 + 350 = 710$

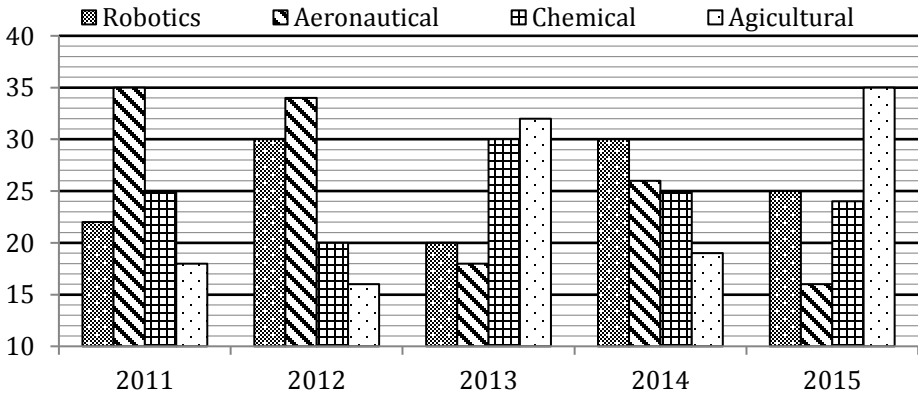
No. of questions solved by Abhishek on Monday and Wednesday

$= \frac{40}{100} \times 1200 + \frac{55}{100} \times 800 = 480 + 440 = 920$

$\therefore Ratio = \frac{710}{920} = 71 : 92$

Directions (16-20): Read the following graph and table carefully and answer the questions given below.

Percentage distribution of admitted students in four different disciplines in a college from 2011 to 2015. Assume that these colleges take admission in given disciplines only.



Total number of admitted students in these years

Year	No. of students admitted
2011	2500
2012	4800
2013	3800
2014	6000
2015	1200

16. What is the average number of students admitted in Aeronautical from 2013 to 2015?
(a) 821 (b) 812 (c) 824 (d) 828 (e) 842

Sol. **(b);** Required average $= \frac{1}{3}\left(3800 \times \frac{18}{100} + 6000 \times \frac{26}{100} + 1200 \times \frac{16}{100}\right) = \frac{1}{3}(684 + 1560 + 192) = 812$

17. The number of students admitted in Robotics in 2014 is what percent of the number of students admitted in Agricultural in 2012?
(a) $278\frac{1}{3}\%$ (b) $279\frac{3}{8}\%$ (c) $234\frac{3}{8}\%$ (d) $263\frac{5}{8}\%$ (e) $231\frac{3}{8}\%$

Sol. **(c);** $Required\ percentage = \frac{30\times60}{16\times48} \times 100 = 234\frac{3}{8}\%$

18. What is the difference between the number of students admitted in Chemical in 2014 and number of admitted students of Robotics in 2015?
(a) 1200 (b) 1250 (c) 1220 (d) 1230 (e) 1210

Sol. **(a);** $Required\ difference = \left[\left(6000 \times \frac{25}{100}\right) - \left(1200 \times \frac{25}{100}\right)\right] = 1500 - 300 = 1200$

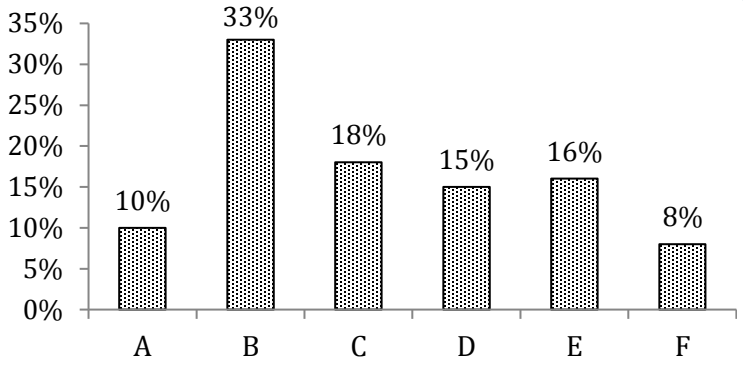
19. Find the ratio between number of Agricultural students admitted in2015 to total number of students admitted in2011?
(a) 13:107 (b) 21:123 (c) 7:50 (d) 21:125 (e) 125 : 21

Sol. **(d);** $Required\ Ratio = \frac{1200\times\frac{35}{100}}{2500} = \frac{420}{2500} = 21 : 125$

20. Find the total number of students admitted in Robotics in 2014 if in that year 5% of students admitted in Agricultural were transferred in Robotics ?
(a) 1587 (b) 1867 (c) 1857 (d) 1757 (e)1957

Sol. **(c);** Required no. of students admitted in Robotics in 2014
$= 6000 \times \frac{30}{100} + 6000 \times \frac{19}{100} \times \frac{5}{100}$
$= 1800 + 57 = 1857$

Direction (21–25): Read the following bar graph and table carefully and answer the questions given below.
Bar graph shows Percentage distribution of flats constructed by six different Real Estate groups in Delhi.
Number of total flats = 8000



Ratio of 2 BHK and 3 BHK flats

Company	Ratio 2 BHK : 3 BHK
A-Group	3 : 2
B-Group	11 : 5
C-Group	9 : 7
D-Group	5 : 3
E- group	7 : 8
F- Group	3 : 1

21. What is the respective ratio between the number of 2 BHK flats in C group and number of 3 BHK flats in B group?
(a) 18 : 23 (b) 11 : 15 (c) 17 : 28 (d) 27 : 16 (e) 54:55

Sol. **(e);** Required ratio $= \frac{18\times8000}{100} \times \frac{9}{16} : \frac{33\times8000}{100} \times \frac{5}{16} = 54 : 55$

22. The number of 2 BHK flats in C group is what percent more than the number of 3 BHK flats in D group?
(a) 80 (b) 75 (c) 78 (d) 83 (e) 76

Sol. **(a);** Required percentage= $\frac{8000\times\frac{18}{100}\times\frac{9}{16}-8000\times\frac{15}{100}\times\frac{3}{8}}{8000\times\frac{15}{100}\times\frac{3}{8}}\times100=\frac{810-450}{450}\times100=80\%$

23. What is approximate average number of 2 BHK flats in D and E group?
(a) 680 (b) 682 (c) 640 (d) 620 (e) 674

Sol. **(e);** Average = $\frac{8000\times\frac{15}{100}\times\frac{5}{8}+8000\times\frac{16}{100}\times\frac{7}{15}}{2}=\frac{750+597.33}{2}=673.665\approx674$

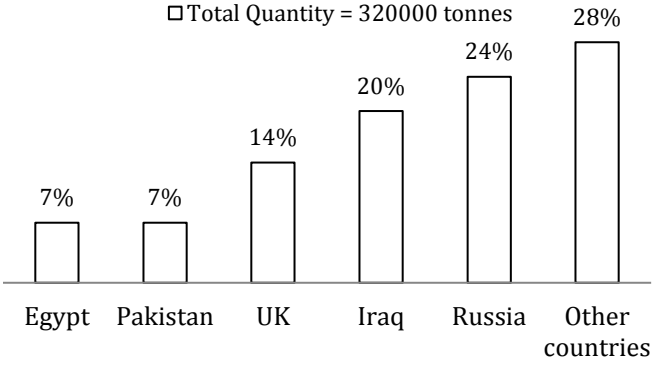
24. The number of 2 BHK flats in F group is approximately what percent of the number of 3 BHK flats in C group?
(a) $75\frac{4}{21}\%$ (b) $76\frac{4}{21}\%$ (c) $77\frac{5}{21}\%$ (d) $78\frac{3}{19}\%$ (e) $76\frac{2}{21}\%$

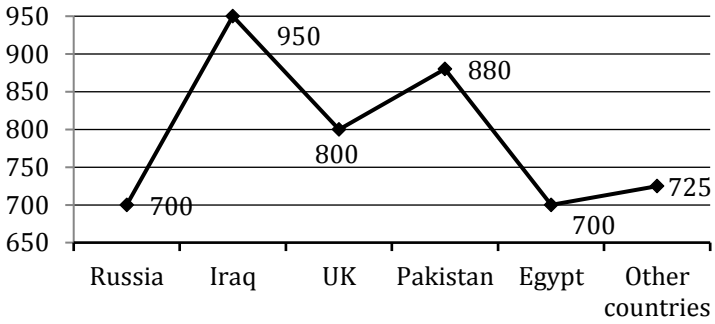
Sol. **(b);** Required %= $\frac{8000\times\frac{8}{100}\times\frac{3}{4}}{8000\times\frac{18}{100}\times\frac{7}{16}}\times100=\frac{480}{630}\times100=76\frac{4}{21}\%$

25. What is the difference between the number of 2 BHK flats in D group and number of 3 BHK flats in B group?
(a) 80 (b) 75 (c) 88 (d) 85 (e) 72

Sol. **(b);** Required Difference= $8000\times\frac{33}{100}\times\frac{5}{16}-8000\times\frac{15}{100}\times\frac{5}{8}=825-750=75$

Directions (26-30): The Bar-graph shows the percentage distribution share of export of Tea from India and the Line-graph shows the price of Tea per tonne in different countries in December 2016?





(**Note:** The price of Tea is given in $ per tonne.)

26. What is the difference between the average of the export of Tea to Russia and Iraq and the average of the export of Tea to other countries, Pakistan and Egypt? (in tonnes)
(a) 25400 (b) 26500 (c) 27600 (d) 24600 (e) 25600

Sol. **(e);** Difference = $=\left(\frac{20+24}{2}-\frac{28+7+7}{3}\right)\%$ of 320000
= 8% of 320000 = 25600

27. If 40% of the export of Tea to other countries goes to the Australia and the export price for the Australia is $900 per tonne then what is the total price of Tea exported to the Australia? (in $ thousand)
(a) 36525 (b) 35256 (c) 32256 (d) 32265 (e) 35525

Sol. **(c);** Total price of Tea exported to the Australia = $\frac{40}{100}\times\frac{28}{100}\times320000\times900=32256$ $ thousand

28. If the export of Tea to Pakistan is 20% less in September compared to that in December and the price of export of Tea to Pakistan is 10% more in September compared to that in December, then find the total price of Tea exported to Pakistan in September (in $ thousand).
(a) 1770.6560 (b) 1734.8560 (c) 1634.7560 (d) 2283.8560 (e) 17346.560

Sol. **(e);** Total price of tea exported to Pakistan = $\frac{80}{100}\times\frac{7}{100}\times320000\times880\times\frac{110}{100}=17346.560$$ (thousand)

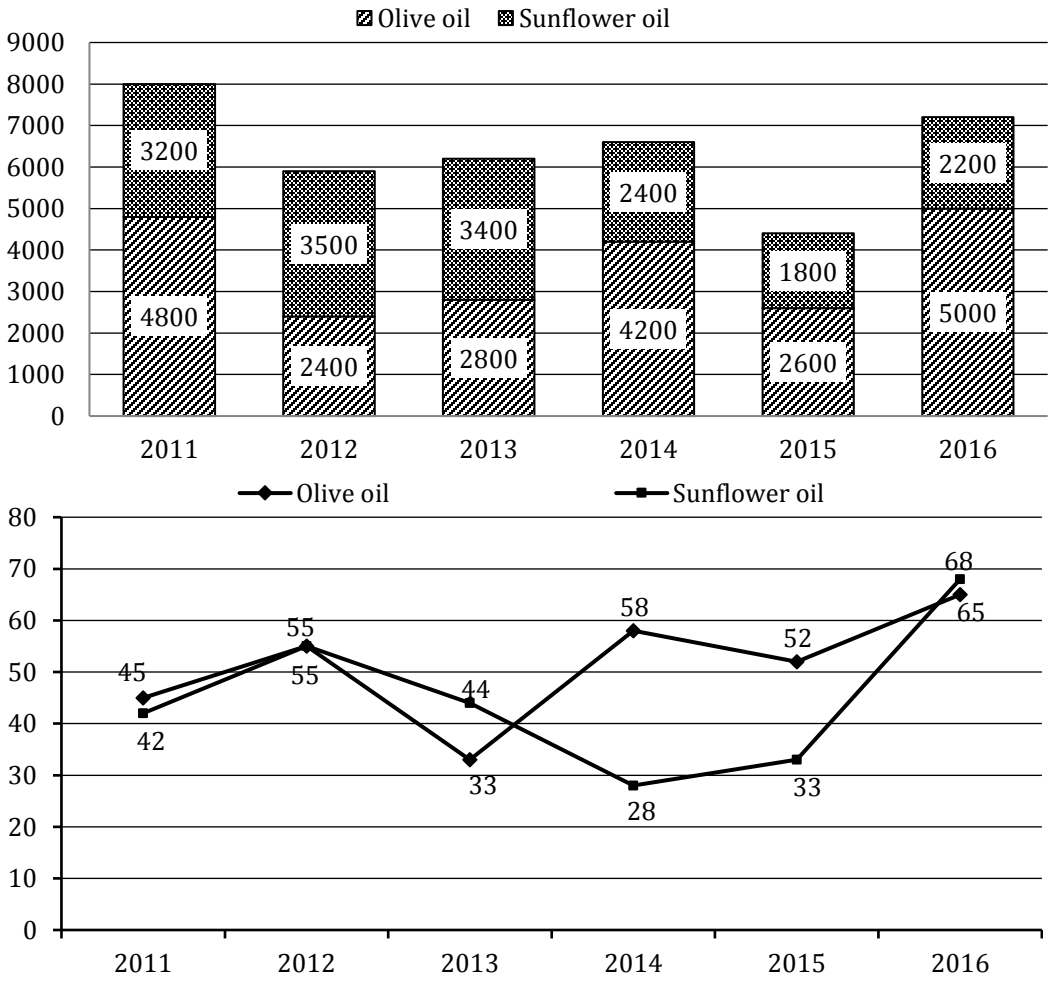
29. What is the ratio of total price of exported Tea to Egypt to the total price of exported Tea to Other countries?
(a) 7 : 31 (b) 7 : 19 (c) 7 : 27 (d) 7 : 29 (e) 7:25

Sol. **(d);** Required Ratio = $\frac{7\times700}{28\times725} = \frac{7}{29}$

30. What is the difference between the total price of tea exported to Russia and the total price of tea exported to UK and Egypt together? (in $ thousand)
(a) 2240 (b) 2400 (c) 2248 (d) 2420 (e) 2244

Sol. **(a);** Total price of tea exported to Russia $= \frac{24}{100} \times 320000 \times 700 = 53760$\$ (thousand)
Total price of tea exported to UK and Egypt
$= \left(\frac{14}{100} \times 800 + \frac{7}{100} \times 700\right) \times 320000 = (112 + 49) \times 320000 = 51520$ \$ (thousand)
Difference = 53760 – 51520 = 2240 $ thousand

Directions (31-35): Read the following graph carefully and answer the questions given below.
Bar graph shows the production (in litres) of Olive oil and Sunflower oil by a firm in 6 different years and the line graph shows the percentage of these two oils exported in respective years.



31. Find the quantity of Olive oil exported throughout the given years?
(a) 11342 l (b) 11440 l (c) 11442 l (d) 11242 l (e) 11042 l

Sol. **(c);** Olive oil exported= $4800\times\frac{45}{100}+2400\times\frac{55}{100}+2800\times\frac{33}{100}+4200\times\frac{58}{100}+2600\times\frac{52}{100}+5000\times\frac{65}{100}$
$= 2160 + 1320 + 924 + 2436 + 1352 + 3250 = 11442\ l$

32. What is the ratio of sunflower oil exported in 2011 to Olive oil exported in 2014 ?
(a) 16 : 31 (b) 15 : 29 (c) 16 : 29 (d) 29 : 16 (e)16:27

Sol. **(c);** Required ratio = $\frac{0.42\times3200}{0.58\times4200} = \frac{1344}{2436} = \frac{16}{29}$

33. What is the approximate percentage increase in the export of Olive oil during year 2015-16?
(a) 135% (b) 140% (c) 130% (d) 132% (e) 148%

Sol. **(b);** Required percentage increase $= \frac{5000\times\frac{65}{100}-2600\times\frac{52}{100}}{2600\times\frac{52}{100}}\times 100 = \frac{3250-1352}{1352}\times 100 \approx 140\%$

34. What is the difference in the average quantity, of the two oils produced in all the years together?

(a) $883\frac{1}{3}$ l (b) $883\frac{2}{3}$ l (c) 883.57 l (d) 883 l (e) $883\frac{2}{5}$ l

Sol. **(a);** Average of Sunflower oil produced $= \frac{1}{6}\times 16500 = 2750\ l$

Average of Olive oil produced $= \frac{1}{6}\times 21800 = 3633\frac{1}{3}$

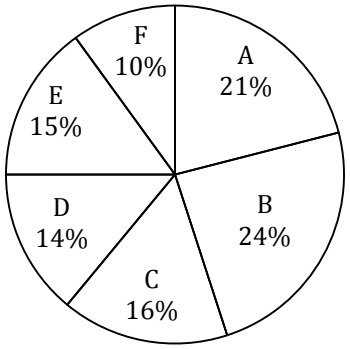
$\therefore$ Required difference $= 883\frac{1}{3}$ l

35. Find the quantity of Sunflower oil that was not exported from year 2012 to 2014.
(a) 5007 l (b) 5107 l (c) 5200 l (d) 5207 l (e) 5720 l

Sol. **(d);** Sunflower oil, which not exported from year 2012-2014 $= 3500\times\frac{45}{100}+3400\times\frac{56}{100}+4200\times\frac{24}{100}$

Required quantity $= 1575 + 1904 + 1728 = 5207\ l$

Directions (36-40): The following pie chart shows the distribution of the total population of six cities and the table shows the percentage of adults in these cities and the ratio of males to females among these adult populations. Total population of six cities together is 8.5 lakh.



City	% Adult	Males : Females
A	72	7 : 5
B	65	8 : 5
C	75	3 : 2
D	80	9 : 7
E	70	4 : 3
F	60	7 : 5

36. The number of adults population of City A is how many times the adult population of city D ?
(a) 0.85 (b) 1.35 (c) 1.75 (d) 1.45 (e) 2

Sol. **(b);** $\frac{City\ D:}{City\ A:}\ \frac{8.5\times14\times80}{8.5\times21\times72} = \frac{20}{27}$

Required value $= \frac{27}{20} = 1.35$ times

37. What is the difference between total Adult population of cities C and D together and total male (adults) from C, D and F together ?
(a) 52700 (b) 52000 (c) 57000 (d) 52900 (e) 57500

Sol. **(a);** Required difference $= 8.5\times\left(\frac{16}{100}\times\frac{75}{100}+\frac{14\times80}{10000}\right)-8.5\left(\frac{16\times75\times3}{10000\times5}+\frac{14\times80}{10000}\times\frac{9}{16}+\frac{10\times60\times7}{10000\times12}\right)$
$= 85[1200 + 1120] - 85[720 + 630 + 350] = 52700$

38. What is the ratio between the adult females of city A and B together to the adult male population of city D and E together?
(a) 1 : 2 (b) 1 : 3 (c) 1 : 1 (d) 1 : 4 (e) 2 : 1

Sol. **(c);** $\frac{8.5\left[\frac{21\times72\times5}{10000\times12}+\frac{24\times65\times5}{10000\times13}\right]}{8.5\left[\frac{14\times80\times9}{10000\times16}+\frac{15\times70\times4}{10000\times7}\right]} = \frac{630+600}{630+600} = 1:1$

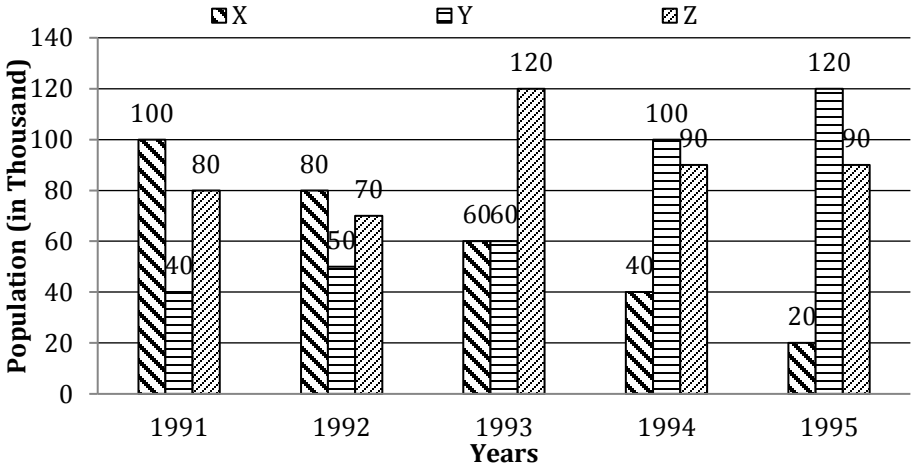
39. What is difference between total central angle of A, B and F together and C, E and F together ?
(a) 49.4° (b) 45° (c) 50° (d) 50.4° (e) 50.8°

Sol. **(d);** A + B + F = 21 + 24 + 10 = 55%
C + E + F = 16 + 15 + 10 = 41%
Difference = 14% = $14 \times \frac{18}{5} = 50.4°$

40. If 10% of adults from City A is graduate, then what is the ratio between graduate from City A and adult female population from city B ?
(a) 25 : 63 (b)63:25 (c) 63 : 29 (d) 29 : 57 (e) 63:250

Sol. **(e);** $\frac{1}{10}\left[\frac{850000\times21\times72}{100\times100}\right]$ = 12852 graduates are 10% of Adults from city A
Adult females from B = $\frac{24}{100} \times \frac{65}{100} \times \frac{5}{13} \times 850000$
Ratio = $\frac{85\times21\times7.2}{24\times25\times85} = 63 : 250$

Directions (41-45): The following graph indicates the population of three different villages in five successive years, and bar graph shows ratio of male to female of three villages in five successive years.



Ratio of male to female population

years / Villages	1991	1992	1993	1994	1995
X	11 : 9	5 : 3	5 : 3	3 : 5	2 : 3
Y	3 : 5	2 : 3	8 : 7	3 : 7	1 : 1
Z	9 : 7	3 : 4	3 : 2	5 : 4	4 : 5

41. What is the ratio between total number of males of village X & Y together in 1992 to the population of village Z in 1995 ?
(a) 3 : 7 (b) 7 : 9 (c) 11 : 9 (d) 9 : 7 (e) 7:8

Sol. **(b);** Males in X in 1992 : $80 \times \frac{5}{8} = 50$ thousand
Males in Y in 1992 : $50 \times \frac{2}{5} = 20$ thousand
No. of population in Village Z in 1995 = 90 thousand
Required Ratio = $\frac{70}{90} = 7 : 9$

42. Which of the following villages shows continuous and uniform increase/decrease in their population over the years ?
(a) Y (b) Z (c) X (d) X & Y (e) All of the above

Sol. **(c);** It is clearly visible from the graph that Population in village X decline continuously and uniformly

43. Number of males in village Z over the years is how many times the number of females in village X over the years?(around t wo decimal places)
(a) 1.76 (b) 1.56 (c) 2.76 (d) 2.54 (e) 1.45

Sol. **(a);** No of males in Z over the years = $80 \times \frac{9}{16} + 70 \times \frac{3}{7} + 120 \times \frac{3}{5} + \frac{5}{9} \times 90 + \frac{4}{9} \times 90$
= 45 + 30 + 72 + 50 + 40 = 237 thousand
No. of females in X over the years = $100 \times \frac{9}{20} + 80 \times \frac{3}{8} + 60 \times \frac{3}{8} + \frac{5}{8} \times 40 + \frac{3}{5} \times 20$
= 45 + 30 + 22.5 + 25 + 12 = 134500
∴ Required Ratio = $\frac{237000}{134500} = 1.76$ times

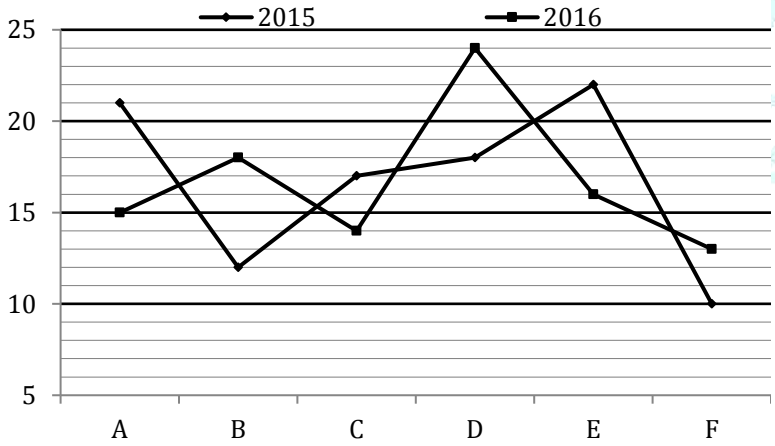
44. Number of males from all villages in 1993 & 1994 together is how much percent more or less than the number of females of village Y in same years?(approx..)
(a) 135 % less (b) 141.3 % less (c) 135 % more (d) 141.3 % more (e)145.3% more

Sol. **(d);** No. of males in 1993 = $60 \times \frac{5}{8} + 60 \times \frac{8}{15} + 120 \times \frac{3}{5} = 141.5$ thousand
No. of males in 1994 = $40 \times \frac{3}{8} + 100 \times \frac{3}{10} + 90 \times \frac{5}{9} = 95$ thousand
Total males = 236.5 thousand
$No.\ of\ females\ from\ Y\ in\ 1993 = 60 \times \frac{7}{15} = 28$
$No.\ of\ females\ from\ Y\ in\ 1994 = 100 \times \frac{7}{10} = 70$ $\Big]\ Total = 98$
Difference = 236.5 – 98 = 138.5 thousand.
Required% = $\frac{138.5}{98} \times 100 = 141.3\%$ more

45. Find the difference between the average of females from village X and average population of village Z over the entire years?
(a) 63100 (b) 65200 (c) 63300 (d) 60000 (e) 63000

Sol. **(a);** Average No. of female in X over the years=
$\frac{1}{5}(100 \times \frac{9}{20} + 80 \times \frac{3}{8} + 60 \times \frac{3}{8} + 40 \times \frac{5}{8} + 20 \times \frac{3}{5}) = \frac{134500}{5} = 26{,}900$
Average population of village Z over the years = $\frac{1}{5}[80 + 70 + 120 + 90 + 90] = \frac{450000}{5} = 90000$
Required difference = $90000 - 26900 = 63{,}100$

Directions (46-50): Read the following graph carefully and answer the questions given below:
The line graph shows the percentage distribution of total number of students who got placed successfully in campus placement in two successive year after their graduation from six different universities while the table provides their female to male ratio.
Total placed students are 42500 and 44000 in 2015 and 2016 respectively.



Year→ University↓	2015 F : M	2016 F : M
A	11 : 4	1 : 2
B	10 : 7	7 : 9
C	5 : 12	9 : 11
D	13 : 12	2 : 1
E	1 : 4	1 : 4
F	3 : 2	5 : 3

46. Total number of females placed from University B in 2015 are what percent of total males placed from University C in same year ?
(a) $54\frac{14}{17}\%$ (b) $55\frac{14}{17}\%$ (c) $58\frac{14}{17}\%$ (d) $60\frac{14}{17}\%$ (e) $62\frac{14}{17}\%$

Sol. **(c);** Placed females from B in 2015 = $\frac{10}{17} \times \frac{12}{100} \times 42{,}500 = 3{,}000$
Placed males from C in 2015 = $\frac{12}{17} \times \frac{17}{100} \times 42{,}500 = 5{,}100$
∴ Required percent = $\frac{3{,}000}{5{,}100} \times 100 = 58\frac{14}{17}\%$

47. Find the difference between total females placed from university D in both years and that of from university E in both years.
(a) 7040 (b) 7470 (c) 7740 (d) 7570 (e) 7470

Sol. **(c);** Placed female from D = $\frac{13}{25} \times \frac{18}{100} \times 42{,}500 + \frac{2}{3} \times \frac{24}{100} \times 44{,}000 = 3978 + 7040 = 11{,}018$
Placed females from E = $\frac{1}{5} \times \frac{22}{100} \times 42{,}500 + \frac{1}{5} \times \frac{16}{100} \times 44{,}000 = 1870 + 1408 = 3278$
∴ Required difference = 7,740

48. What is the ratio of male students from university F in 2015 to male studentsfrom university C in 2015 who got placement ?

(a) 3 : 4 (b) 3 : 1 (c) 4 : 3 (d) 1 : 3 (e)1:4

Sol. **(d);** Required ratio = $\frac{\frac{2}{5}\times\frac{10}{100}\times42500}{\frac{12}{17}\times\frac{17}{100}\times42500} = \frac{1}{3}$

49. Find the average number of placed students from all universities except university D in 2015.

(a) 6790 (b) 6970 (c) 6975 (d) 7690 (e) None of these

Sol. **(b);** Required average $=\frac{42500}{5}\times\frac{1}{100}(21+12+17+22+10)$

$\frac{425}{5}\times 82 = 6970$

50. Female students placed from university E in 2015 are what percent less than female students placed from university A in 2016 ?

(a) 25% (b) 20% (c) 15% (d) 12% (e) 16%

Sol. **(c);** Female students placed from university E in 2015 = $\frac{1}{5}\times\frac{22}{100}\times 42{,}500 = 1{,}870$

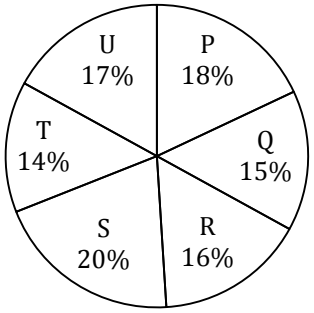
Female students placed from university A in 2016 = $\frac{1}{3}\times\frac{15}{100}\times 44000 = 2200$

$\therefore$ Required percentage = $\frac{2200-1870}{2200}\times 100 = 15\%$

PREVIOUS YEARS QUESTION

Directions (1-5): The following pie-chart shows the distribution of the total population of six villages and the table shows the percentage of illiterate population in these villages and the ratio of males to females among literate population.

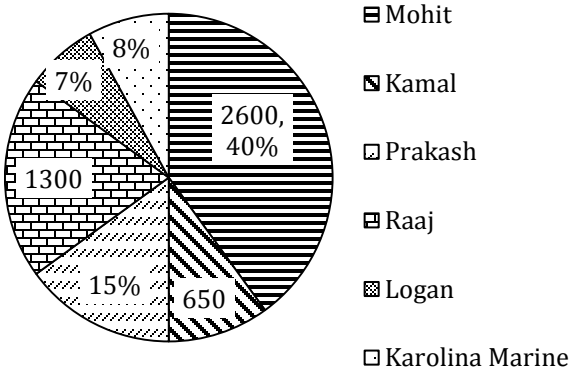
Total population = 8.5 lakhs



Village	% Illiterate	Males : Females
P	80	2:3
Q	75	4:1
R	60	5:3
S	72	4:3
T	65	2:5
U	70	8:7

1. Find the average number of literate population of the given village except village R.
(a) 39010 (b) 30915 (c) 39015 (d) 42015 (e) 38015
2. The number of literate males of village S is what percent of literate population of village T ?
(a) $60\frac{15}{49}\%$ (b) $65\frac{15}{49}\%$ (c) $68\frac{15}{49}\%$ (d) $63\frac{15}{49}\%$ (e) $58\frac{15}{49}\%$
3. Among the literate females of village R, 20% are graduate, 25% are postgraduate, 50% are having master degree. If the remaining females have PhD degree, then find the number females having PhD degree.
(a) 1025 (b) 2010 (c) 1030 (d) 1020 (e) 1012
4. Find the total number of literate females in the village P, R and T together.
(a) 58510 (b) 68510 (c) 68150 (d) 65810 (e) 68015
5. Literate males of village P are by what percent (approx.) more or less than literate females of Village U ?
(a) 38% more (b) 35% more (c) 40% less (d) 45% less (e) 48% more

Directions (6 – 10): Eminent writer Bhule Tripathi has to publish a book of two different editions. Prior to publishing, the pages of books have been proofread by several scholars. Pie chart represents the no. of pages proofread by Scholars while the following table represents the errors found. Read the following questions and answer the questions.



Scholars	Number of mistakes found
Mohit	400
Kamal	130
Prakash	25
Raaj	130
Logan	76
Karolina Marine	85

6. No of pages proofread by Karolina Marine and Mohit together is approximately how many times than pages proofread by Kamal and Prakash together?
(a) 2.5 (b) 2 (c) 3 (d) 1.5 (e) 1
7. Pages per error is maximum for which person when considering minimum 600 pages being proofread?
(a) Prakash (b) Logan (c) Karolina (d) Mohit (e) Raaj
8. Prakash refuses to read 40% of the pages allotted to him which is now distributed equally among Kamal and Logan. Now, the no of pages being proofread by Kamal is what % less than that by Mohit?
(a) 65 % (b)66 % (c) 67.5 % (d) 68 % (e) 69%
9. What will be the ratio of Errors found by Mohit and Kamal together to the average no of errors found by all of them?
(a) 530 : 141 (b) 543 : 200 (c) 427 : 143 (d) 734 : 353 (e) 147 : 141
10. In order to complete the proceedings in time, One more scholar Siddharta Singh included in for proofreading. Everyone other than Logan and Karolina Marine was asked to allocate 10 percent of their pages allocated to them while Mohit was asked to allocate 30% of his pages to Siddharta Singh for proofreading. What will be the total no. of pages proofread by Siddharta Singh (approximately).
(a) 1030 pages (b) 1053 pages (c) 1073 pages (d) 1000 pages (e) 1100 pages

Direction (11-15): Study the given Chart carefully to answer the following questions.
Total number of people in the 5 villages comprising Men, women and children is shown in pie chart

Total number of people from all villages = 70,000

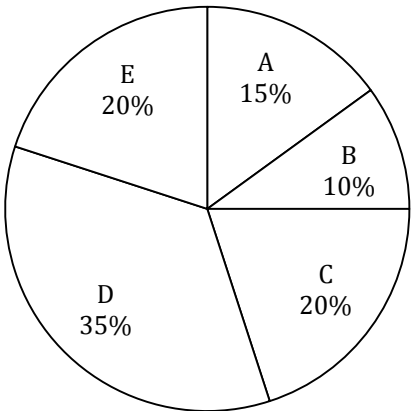


Table shows the Ratio of men to women and percentage of children in five villages.
(Person who have attained age equal to or above 18 years are men and women and person below 18 years are children)

	Men : Women (Above or equal to 18 years of age)	% of children (below 18 years)
A	7 : 8	28
B	9 : 5	15
C	3 : 4	18
D	13 : 12	20
E	2 : 3	15

11. What is the ratio of number of men from village C to the number of women from village A and B together ? (approximately)
(a) 0.8 (b) 0.5 (c) 1.1 (d) 0.4 (e) 1.8
12. What is the average of the number of children from all five villages ?
(a) 2530 (b) 2670 (c) 2850 (d) 2480 (e) 2702
13. Number of women from village C and E together are approximately what percent less or more than number of women from village B and D together ?
(a) 15% (b) 19% (c) 23% (d) 13% (e) 29%
14. If 25% children from village A attains 18 years of age after one year then what is the percentage increase in the number of adults (equal to or above 18 years) in village A (approximately)
(a) 7% (b) 12% (c) 6% (d) 10% (e) 18%
15. What is the number of women above or equal to 18 years from all villages together.
(a) 25472 (b) 29265 (c) 26583 (d) 14391 (e) 26568

Directions (16-20): The following pie-chart shows the percentage of passed candidate in SBI exam from cities X, Y, Z, K, L and M out of the total passed candidates from all six cities together in year 2010.

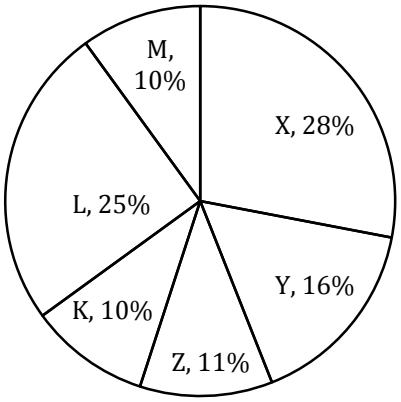


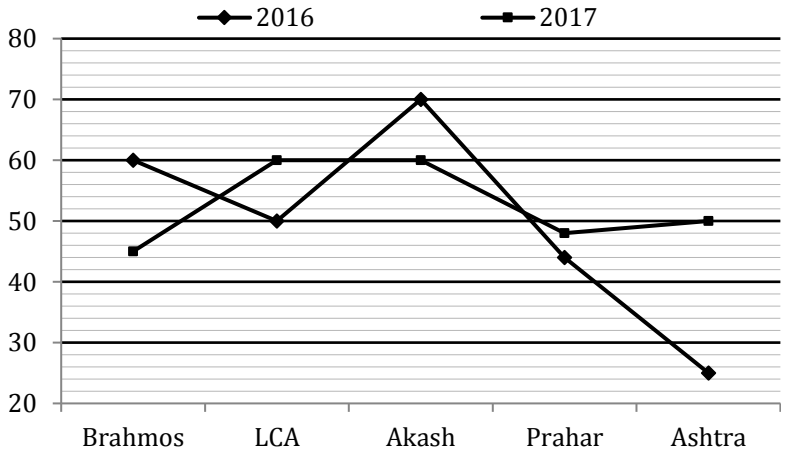
Table shows the percentage of fresher candidate who passed from each city out of the total candidates passed from that city in year 2010.

Cities	Percentage of fresher candidates passed in SBI exam
X	20%
Y	25%
Z	15%
K	25%
L	12%
M	11%

16. If in year 2010, total number of freshers passed from city K was 320, then how many freshers candidates passed the SBI exam from city L ?
(a) 384 (b) 284 (c) 364 (d) 360 (e) 424
17. If in year 2010, total passed candidates from all cities was 1250, then what is the number of the non-fresher candidate from city X who passed the SBI exam in same year?
(a) 140 (b) 210 (c) 420 (d) 280 (e) 320
18. If the non-fresher candidates passed from city Y in year 2010 were 180, then how many total candidates passed the SBI exam from all cities together?
(a) 1450 (b) 1200 (c) 1500 (d) 1250 (e) 1650
19. If there is an increase of 10% and 20% in the number of passed candidates in city X and Y in year 2011 respectively from year 2010 and total passed candidate from city Z in 2010 was 770. Then what would be the difference in no. of passed candidates from city X and Y in year 2011?
(a) 712 (b) 812 (c) 912 (d) 880 (e) 972
20. If total passed candidates from city Y in year 2010 was 320, then what is the ratio between the no. of freshers passed from city X and that of non-fresher passed from city Z?
(a) 112 : 187 (b) 113 : 186 (c) 3 : 5 (d) 187 : 112 (e) None of these

Directions (21-25): Carefully study the following bar graph and line graph to answer the questions that follow.
Bar graph is showing the number of weapons of different types exported by DRDO in 2016 and 2017

Line graph is showing the percentage of weapons not exported



21. DRDO decided to import same number of Assault rifles as the number of Brahmos missiles manufactured by it in 2017, what is the number of Assault rifles imported ?
(a) 320 (b) 210 (c) 190 (d) 200 (e) 220

22. Find the difference in the number of Prahar missile manufactured in 2016 and that Akash missiles not exported in 2017.
(a) 22 (b) 25 (c) 35 (d) 20 (e) 28

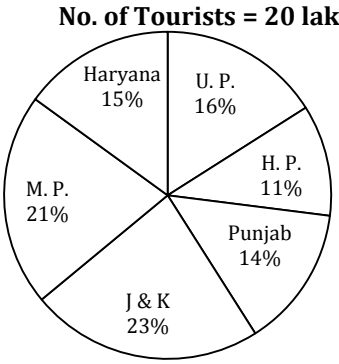
23. What is the ratio of total number of Ashtra missiles manufactured in 2017 and that of LCA manufactured in 2016 ?
(a) 5 : 9 (b) 3 : 10 (c) 4 : 9 (d) 2 : 5 (e) 9 : 4

24. Prahar missiles not exported in 2017 are by what percent more or less than Ashtra missiles that were not exported in 2016 ?
(a) 200% (b) 120% (c) 300% (d) 150% (e) 210%

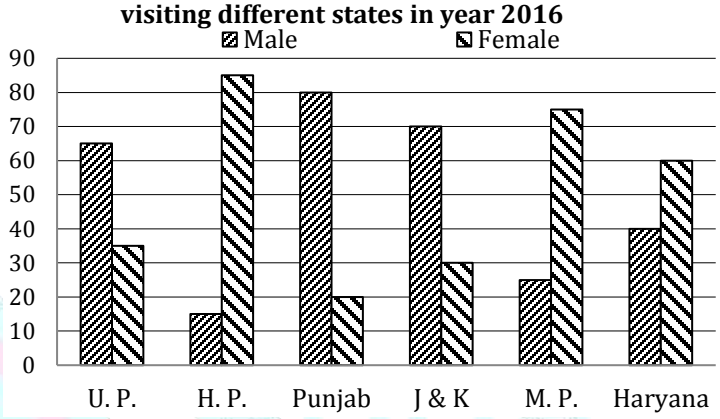
25. LCA exported in 2016 contributed what percent of total LCA produced in the given two years together ?
(a) $21\frac{13}{19}\%$ (b) $27\frac{13}{19}\%$ (c) $26\frac{13}{19}\%$ (d) $19\frac{13}{19}\%$ (e) $23\frac{13}{19}\%$

Directions (26-30): Study the graph and answer the following questions

Percentage distribution of total tourists visiting different states in year 2016



Percentage of male and female tourist visiting different states in year 2016



26. If total tourist visiting in year 2017 in U.P. is increased by 25% from total tourist visiting U.P. in year 2016 and percentage of male and female tourist visiting U.P. in 2017 remains same as visiting in 2016 in U.P, then find the difference of male and female tourist visiting U.P. in 2017? (in lakh)
(a) 1.6 (b) 2.1 (c) 1.2 (d) 1.4 (e) 2.2

27. Tourist visiting in state J&K in year 2016 speaks three language that is Hindi, English and Urdu are in ratio 2:3:5. Then find the total number of tourist who can speak both Urdu and Hindi? (in lakh)
(a) 3.22 (b) 4.22 (c) 2.60 (d) 3.36 (e) 2.33

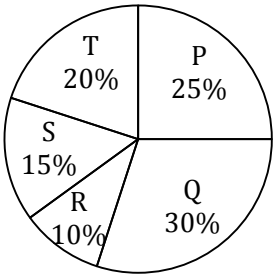
28. 20% of tourist who are visiting Haryana in year 2016 left Haryana and visited Punjab such that number of female tourist in Punjab remain same. Then find the ratio of male and female tourist in Punjab?
(a) 14:71 (b) 71:14 (c) 2:5 (d) 5:2 (e) 81 : 14

29. If number of tourists visiting M.P. in year 2017 is increased by $7\frac{1}{7}$ %, then find the ratio of male and female tourists visiting M.P. in year 2017 ?
(a) 5:13 (b) 5:12 (c) Cannot be determined
(d) 3:5 (e) None of these

30. Female tourist visiting H.P in year 2016 is what percent of male tourists visiting M.P. in year 2016 ?
(a) 128% (b) $278\frac{1}{21}\%$ (c) $158\frac{4}{21}\%$ (d) $178\frac{2}{21}\%$ (e) $168\frac{2}{21}\%$

Directions (31-35): Given below, pie graph show distribution of total number of male employee of HCL in five branches, P Q R S and T, and table shows ratio ofmale to female employee in each branch. Give the answer of the question according to given data:

Total male employee = 1500



Branch	Male : Female
P	15 : 8
Q	3 : 2
R	3 : 4
S	9 : 7
T	12 : 11

31. What is ratio between total male and female employee from branch T and R together to total number of female employee from branch S and T together ?
(a) 33 : 19 (b) 35 : 18 (c) 37 : 18 (d) 37 : 17 (e) 18 : 37

32. What is the difference between average of male employee from branch S, T and Q and average of female employee from branch S and R ?
(a) $\frac{265}{2}$ (b) $\frac{275}{2}$ (c) $\frac{255}{2}$ (d) $\frac{285}{2}$ (e) None of these

33. 20% and 40% of male from branch T and Q respectively are married and ratio between married male to married female from company T and Q is 4 : 5 and 3 : 2 respectively. Then find total unmarried male and female employee from both branches ?
(a) 900 (b) 860 (c) 870 (d) 890 (e) 990

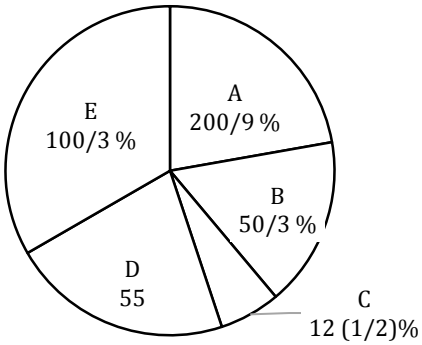
34. 20% male employee from branch P are B. tech and 40% female employee from branch R are MBA. Then find total B.tech male employee from branch P, are how much percent more or less then total MBA female employee from branch T ?
(a) 6.25% (b) 5% (c) 3% (d) 8.25% (e) 12.25%

35. Total male and female employee from branch T and S together is what percent of total male and female employee from branch R and Q together ?
(a) $81\frac{7}{11}\%$ (b) $80\frac{7}{11}\%$ (c) $88\frac{7}{11}\%$ (d) 72% (e) $91\frac{7}{11}\%$

Directions (36-40): Table given below shows five types of article sold by a seller andselling price of each article. There is also a pie chart which shows the percentage distribution of these five articles (except article D), sold by the seller.
Distribution for article D is given in absolute value

Article	Selling Price of each article
A	150
B	120
C	180
D	200
E	140

.



36. Total amount got by selling article A is what percent more thanthe total amount got by selling article B?
(a) $66\frac{2}{3}\%$ (b) $62\frac{2}{3}\%$ (c) 65% (d) $53\frac{1}{3}\%$ (e) 52%

37. What is the average amount got by selling article B, C and E together?
(a) 11700 (b) 12560 (c) 10700 (d) 12500 (e) 10520

38. Suppose the seller wanted to sell another article named F whose total selling price is $11\frac{1}{9}\%$ more than the total selling price of article C and no. of article of F is equal to the no. of article of type E. Then find the difference between price of each article of F and that of each article B ?
(a) 35 (b) 45 (c) 60 (d) 50 (e) 60

39. If the seller sells $\frac{2}{5}^{th}$ of number of article of type C at 40% more than the price of each article of type B and sells the remaining article of type C at 3/5 th of price of each article of type A. Then find the difference between total new price of article of type C and the average of total price of article of type B and D?
(a) 2645 (b) 3246 (c) 3356 (d) 3646 (e) 3426

40. Find the ratio of averageof total selling price of article A and E together to the average of total selling price of article if B and C together?
(a) 32 : 17 (b) 17 : 32 (c) 32 : 19 (d) 5 : 3 (e) 33 : 17

Directions (41- 45): Study the following pie chart and table carefully and answer the questions.
Pie chart shows the percentage distribution of cars sold by a seller in six different cities (except city F).
Distribution for city F is given in absolute value

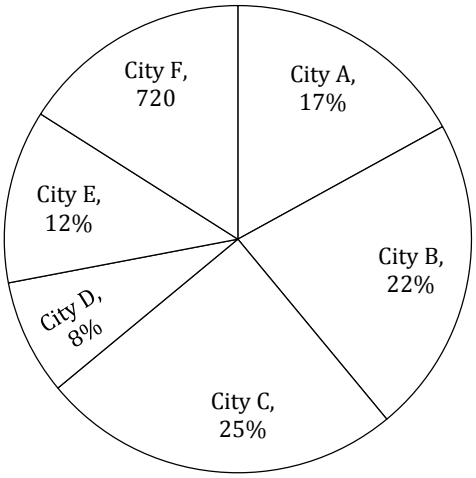
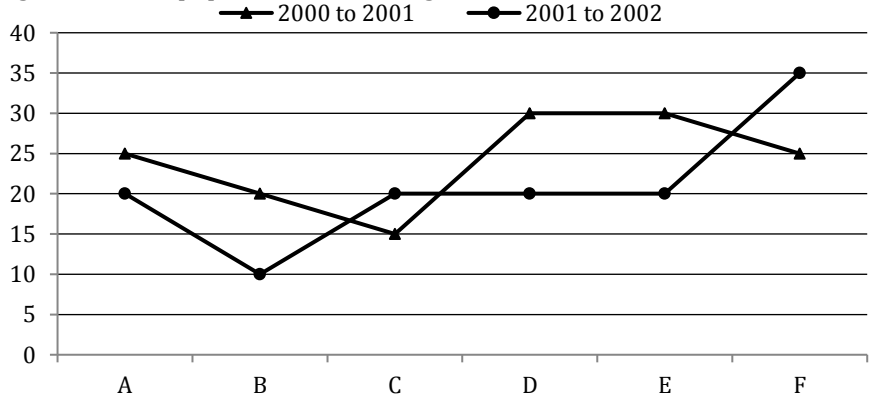


Table shows the ratio of no. of cars sold of company Tata toCompany Suzuki sold in different cities.

City	Tata : Suzuki
A	7 : 8
B	5 : 4
C	2 : 3
D	5 : 7
E	8 : 7
F	9 : 7

41. What is the ratio of cars sold of company Suzuki to city A to the cars sold of same company in city E?
(a) 21 : 34 (b) 34 : 21 (c) 31 : 21 (d) 34 : 19 (e) 34:31
42. What is the difference of average of cars sold of company Tata in city B and C together and average of Cars Sold of Company Suzuki in city D, F and E together?
(a) 241 (b) 231 (c) 280 (d) 211 (e) 341
43. The number of cars sold of company Tata in city D is what percent more/less than the number of cars sold of company Suzuki in city C?
(a) $83\frac{21}{27}\%$ (b) $72\frac{21}{27}\%$ (c) $77\frac{21}{27}\%$ (d) $68\frac{21}{27}\%$ (e) $62\frac{21}{27}\%$
44. If the seller stopped $9\frac{1}{11}\%$ of the supply of company Tata in city B and distributed the stopped supply of city B among the other five cities in equal number. Then find the new total Tata cars sold in city D and City A together?
(a) 678 (b) 625 (c) 547 (d) 587 (e) 527
45. If cars sold in city C is increased by $11\frac{1}{9}\%$ and cars sold in city D is increased by $66\frac{2}{3}\%$. Find the difference of new total Tata cars sold in city C and D together to new total Suzuki cars sold in city C and D together?(ratio of car sold of Tata and Suzuki remain same)
(a) 375 (b) 420 (c) 450 (d) 350 (e) 400

Directions (46 – 50): Read the following table carefully and answer the questions given below.
Line graph showsPercentage increase in population of six villages from 2000 to 2001 and from 2001 to 2002.



Actual population of these villages in 3 different years.

Years / Village	2000	2001	2002
A	–	–	3750
B	–	1980	–
C	–	–	1518
D	–	–	–
E	1250	–	–
F	1200	–	–

46. What is the ratio of population of village E in 2002 to village A in 2000?
(a) 41:50 (b) 37:45 (c) 48:31 (d) 44:53 (e) 39:50

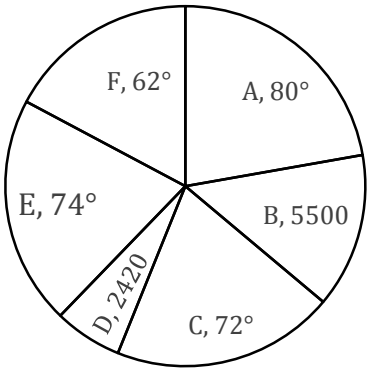
47. Population of village A in 2000 is what percent more than population of village C in 2000?
(a) $129\frac{3}{11}\%$ (b) $127\frac{3}{11}\%$ (c) $135\frac{3}{11}\%$ (d) $123\frac{3}{11}\%$ (e) $117\frac{3}{11}\%$

48. Ratio of Population of village C and D in 2000 is 22:27 respectively, what will be population of village D in 2002?
(a) 1350 (b) 2108 (c) 1250 (d) 2106 (e) 2601

49. The population of village F in 2000 is what percent of the population of the same village in 2002?
(a) $53\frac{7}{27}\%$ (b) $59\frac{7}{27}\%$ (c) $49\frac{7}{27}\%$ (d) $57\frac{7}{27}\%$ (e) $59\frac{7}{27}\%$

50. Total population in 2000 is approximate what percent less than the total population in 2002?(Ratio of Population of village C and D in 2000 is 22:27 respectively)
(a) 33 (b) 39 (c) 37 (d) 38 (e) 40

Directions (51-55): The pie chart given below shows the distribution of number of literate persons in six villages in terms of absolute value or degree measures.
The table shows the value of percentage by which illiterate persons are more or less than literate personsin six villages.
Note: Difference between degree measure of village B and D is 28°



Villages	Percentage by which illiterates are more or less than literates
A	$13\frac{7}{11}\%$ more
B	$9\frac{1}{11}\%$ less
C	25% more
D	$18\frac{2}{11}\%$ more
E	25% less
F	$18\frac{2}{11}\%$ more

51. Find the total number of illiterate persons in village B and E together?
(a) 11150 (b) 10105 (c) 11105 (d) 11050 (e) 10050

52. Illiterate persons of village A are what percent of total literate persons of all villages together?
(a) $25\frac{25}{99}\%$ (b) $23\frac{25}{99}\%$ (c) $24\frac{25}{99}\%$ (d) $22\frac{25}{99}\%$ (e) $28\frac{25}{99}\%$

53. Find the ratio of total literate persons of villages A and D together and these of villages F and B together?
(a) 65 : 51 (b) 51 : 76 (c) 56: 51 (d) 51 : 56 (e) 51:57

54. If 15/26 thof total illiterate persons in village F are males while 13/22 th of total literate persons in same village are males, then find the total number of males in village F.
(a) 5870 (b) 8680 (c) 6860 (d) 8750 (e) 8570

55. What is the average (in terms of degree measures) of the contribution of literate persons of villages B, C, D and E together?
(a) 55.4° (b) 56.8° (c) 54.5° (d) 52.5° (e) None of these

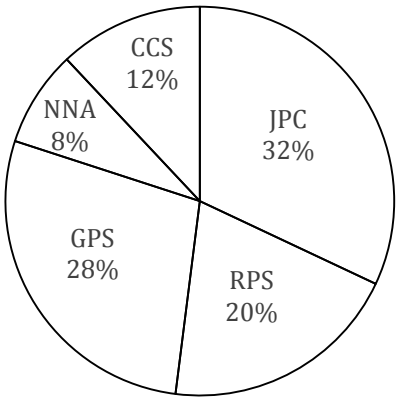
Directions (56-60): Study the following graph and table carefully to answer the questions given below.
The annual income of Arunoday and Annual expenditure of Veer in tonnes from 2012-2016
The table given below represents the respective ratio of the annual income of Veer and (Arunoday+Veer) and the respective ratio of the annual expenditure of Arunoday and (Arunoday+Veer)

Year	Annual Income	Annual Expenditure
2012	4 : 9	3 : 5
2013	4 : 11	2 : 5
2014	3 : 8	4 : 7
2015	2 : 9	5 : 8
2016	3 : 11	3 : 5

Note: Annual income = Annual expenditure + Annual saving

56. Find the difference (in thousands) in the average of annual savings of Arunoday in years 2012 and 2016 together and that of Veer in same two years together?
(a) 160 (b) 165 (c) 155 (d) 175 (e) 150
57. Find the ratio of annual income of Veer in 2013 and 2015 together to annual expenditure of Arunoday in 2014 and 2016 together.
(a) 6 : 11 (b) 5 : 7 (c) 3 : 7 (d) 6 : 7 (e) 7:6
58. Annual saving of Veer in 2015 and 2016 together is approximately what percent more or less than saving of Arunoday in 2013 and 2016 together ?
(a) 82% (b) 88% (c) 85% (d) 90% (e) 86%
59. In 2017, Annual saving of Arunoday decreased by 12% while that of Veer increased by 15% as compared to that in 2016. Find their total expenditure in 2017 if their annual income in 2017 was same as in 2014 ?
(a) 485 thousand (b) 495 thousand (c) 478 thousand (d) 458 thousand (e) 475 thousand
60. Find the average value (in thousand) of expenditure of Arunoday in 2015, saving of Veer in 2016 and income of Veer in 2013.
(a)210 (b) 215 (c) 225 (d) 205 (e) 250

Directions (61-65): The pie chart given below shows the percentage of students appeared in different schools of same state in year 2015.



And the table given below shows the percentage of qualified students for different schools of same state in year 2015 and ratio of qualified boys to qualified girls.

School	Percentage qualified	Ratio of qualified boys to girls
JPC	32	1 : 3
RPS	28	5 : 2
GPS	25	3 : 2
NNA	30	1 : 2
CCS	24	5 : 3

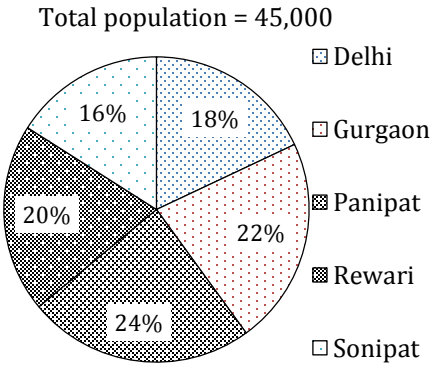
61. If unqualified student in school JPC are 2176. Then find the difference between qualified boys and girls in school CCS.
(a) 92 (b) 144 (c) 72 (d) 128 (e) 115
62. If qualified boys in school NNA is 120. Then qualified girls in school RPS is what percent more than the qualified boys in school NNA ?
(a) 100% (b) 200% (c) 50% (d) 150% (e) 80%

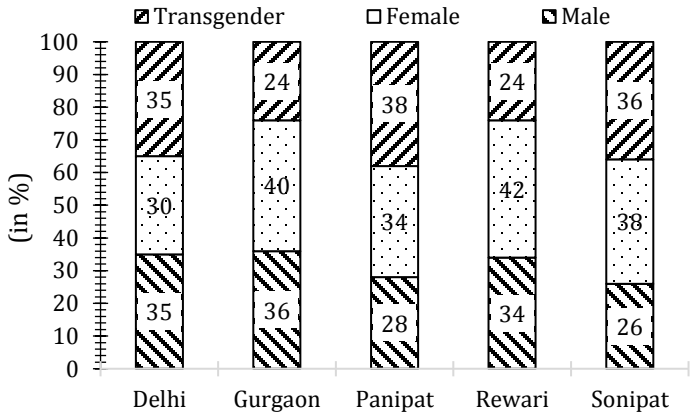
63. If the difference of appeared student of school CCS and JPC is 1500. Then find the average number of qualified boys of school RPS, GPS and NNA ?
(a) 275 (b) 250 (c) 325 (d) 225 (e) 260

64. If the student appeared in 2016 of school RPS are 1200 which is $33\frac{1}{3}\%$ more than those in 2015, and qualified boys in school RPS in 2016 is same as qualified boys in GPS in 2015. Then find the number of qualified girls in RPS in year 2016 ? [Given that percentage of qualified students in RPS are same in both years]
(a) 147 (b) 247 (c) 167 (d) 189 (e) 184

65. If there is another school formed in year 2016 with the name JSS which has number of qualified boys $33\frac{1}{3}\%$ more than the qualified boys in school NNA in year 2015, and number of qualified girls $66\frac{2}{3}\%$ less than qualified girls in school GPS in year 2015. Then find the ratio of qualified boys to qualified girls in school JSS ?
[Given that total appeared student in year 2015 is 9000].
(a) 7 : 8 (b) 8 : 7 (c) 3 : 8 (d) 8 : 5 (e) 6:7

Directions (66-70): Pie chart given below shows the percentage distribution of population in five cities. Graph given below show the percentage distribution of male, female and transgenders among them. Study the data carefully and answer the questions.





66. Maximum number of females in which city?
(a) Rewari (b) Delhi (c) Panipat (d) Gurgaon (e) Sonipat

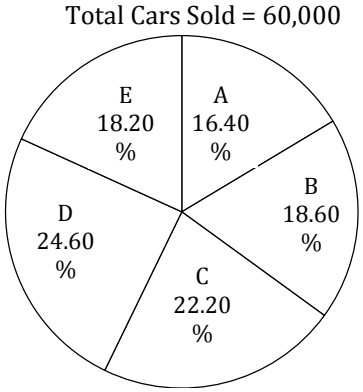
67. Find the ratio of population of transgender in city Gurgaon & Panipat together to population of city Rewari except transgender?
(a) 17 : 18 (b) 19 : 18 (c) 18 : 19 (d) 17 : 19 (e) 18:13

68. Male population in city Gurgaon and Panipat together is how much more than female population of city Rewari and Sonipat together?
(a)72 (b)64 (c) 24 (d) 42 (e) 46

69. Transgender population of city Delhi and Sonipat together is what percent more than female population of city Gurgaon?
(a) $37\frac{2}{11}\%$ (b) $37\frac{3}{22}\%$ (c) $74\frac{1}{11}\%$ (d) $37\frac{1}{22}\%$ (e) $37\frac{5}{22}\%$

70. Female and transgender population of city Panipat is how much more than male & female population of city Gurgaon?
(a) 248 (b) 212 (c) 238 (d) 226 (e) 252

Directions (71 – 75): Pie chart given below shows total cars sold in five different cities. Table given below show the ratio of three models of cars sold in these cities. Study the data carefully and answer the follow questions.



City \ Model	X	Y	Z
A	3	4	5
B	4	3	2
C	6	5	4
D	7	8	9
E	4	5	5

71. 'Y' type car sold in city 'D' is what percent more than 'Z' type car sold in city 'A'.
(a) 18% (b) 14% (c) 28% (d) 20% (e) 10%

72. Find the average number of 'X' type car sold in city 'C', D and E together?
(a) 4152 (b) 4251 (c) 4215 (d) 4125 (e) 4521

73. Find the ratio of 'X' and 'Y' type car sold in city 'A' together to 'X' and 'Y' type car sold in city 'B' together?
(a) 37 : 41 (b) 62 : 41 (c) 41 : 62 (d) 41 : 37 (e) 42 : 37

74. Find the average no. of 'Y' car sold in city 'B', 'C' and 'D' together?
(a) 4036 (b) 4630 (c) 4603 (d) 4306 (e) 4360

75. 'X' and 'Z' type car sold by in 'City 'D' together is what percent more than same type cars sold in city 'C' together?
(a) $9\frac{31}{41}\%$ (b) $10\frac{30}{37}\%$ (c) $9\frac{21}{41}\%$ (d) $10\frac{20}{37}\%$ (e) 56%

PREVIOUS YEARS SOLUTIONS

1. (c); Total literate population = $(0.2 \times 0.18) + (0.25 \times 0.15) + (0.28 \times 0.20) + (0.35 \times 0.14) + (0.3 \times 0.17) \times 850000$
$= 195075$
$\therefore$ Required average $= \frac{1}{5} \times 195075 = 39015$

2. (b); Required percentage $= \frac{\frac{4}{7}\times\frac{28}{100}\times\frac{20}{100}\times 850000}{\frac{35}{100}\times\frac{14}{100}\times 850000} \times 100$
$= \frac{32}{49} \times 100 = 65\frac{15}{49}\%$

3. (d); Females having PhD degree $= \frac{5}{100} \times \frac{3}{8} \times \frac{40}{100} \times \frac{16}{100} \times 850000 = 1020$

4. (b); Number of literate females=
$(850000 \times \frac{20}{100} \times \frac{18}{100} \times \frac{3}{5} + 850000 \times \frac{40}{100} \times \frac{16}{100} \times \frac{3}{8} + 850000 \times \frac{35}{100} \times \frac{14}{100} \times \frac{5}{7})$
$= \frac{3}{5} \times 30600 + \frac{3}{8} \times 54400 + \frac{5}{7} \times 41650$
$= 18360 + 20400 + 29750 = 68510$

5. (c); Literate males in village P $= \frac{2}{5} \times \frac{20}{100} \times \frac{18}{100} \times 850000 = 12240$
Literate females in village U $= \frac{7}{15} \times \frac{30}{100} \times \frac{17}{100} \times 850000 = 20230$
$\therefore$ Required percentage $= = \frac{7990}{20230} \times 100 \approx 40\%$ less

6. (b); Total $\rightarrow$ 48% by Mohit and Karolina Marine
$40\% \rightarrow 2600$
$\therefore 100\% \rightarrow \frac{2600}{40} \times 100$
Total 6500 pages to be proofread
$\therefore 650 \rightarrow 10\%$ by Kamal
Total by Kamal and Prakash = 25%
$\therefore$ Desired value $= \frac{48}{25} \approx 2$ times

7. (a); Logan and Karoline Marine are not applicable
Mohit $\rightarrow \frac{2600}{400} = 6.5$ pages for one mistake
Kamal $\rightarrow \frac{650}{130} = 5$ pages for one mistake
Prakash $\rightarrow \frac{6500\times\frac{15}{100}}{25} = 39$ pages for one mistake
Raaj $\rightarrow \frac{1300}{130} = 10$ pages for one mistake
Clearly, Prakash has taken 39 pages which is maximum for a mistake.

8. (c); Pages refused to be proofread by Prakash $= \frac{40}{100} \times \frac{15}{100} \times 6500 = 390$
Now, Pages to be proofread by Kamal = $650 + \frac{390}{2} = 845$
Desired value $= \frac{2600-845}{2600} \times 100 = 67.5\%$

9. (a); Error found by Mohit and Kamal = 400 + 130 = 530
Avg.$= \frac{530+25+130+76+85}{6} = 141$
Ratio = 530 : 141

10. (c); Mohit :$2600 \times \frac{30}{100} = 780$
Kamal :$650 \times \frac{10}{100} = 65$
Prakash :$\frac{15}{100} \times 6500 \times \frac{10}{100} = \frac{195}{2} \approx 98$
Raj : $1300 \times 10\% = 130$
$\therefore$ Total pages proofread by Siddharth Singh = 780 + 65 + 98 + 130 = 1073 pages

11. (a); Number of children from village C $= \frac{18}{100} \times \frac{20}{100} \times 70{,}000 = 2520$
Number of men from village C $= \frac{3}{7}(14000 - 2520)$
$= 4920$
Number of women from village A and B together
$= \frac{8}{15}(10500 - 2940) + \frac{5}{14}(7000 - 1050)$
$= 4032 + 2125$
Required ratio $= \frac{4920}{6157} \approx 0.8$

12. (e); Number of children from all five villages
$=0.28 \times 10500 + 0.15 \times 7000 + 0.18 \times 14000 + 0.2 \times 24500 + 0.15 \times 14000$
$= 2940 + 1050 + 2520 + 4900 + 2100 = 13510$
Average = 2702

13. (b); Number of women from C and E together
$= \frac{4}{7}(11480) + \frac{3}{5}(11900)$
$= 6560 + 7140 = 13700$
Number of women from village B and D together
$= \frac{5}{14}(7000 - 1050) + \frac{12}{25}(24500 - 4900)$
$= 2125 + 9408 = 11533$
Required % $= \frac{2167}{11533} \times 100 \approx 19\%$

14. (d); Required% $= \frac{0.25\times0.28\times0.15\times70000}{(10500-2940)}$
$= \frac{735}{7560} \times 100 = 9.72\% \approx 10\%$

15. (b); Number of women from all villages together
$= \frac{8}{15}(10500 - 2940) + \frac{5}{14}(7000 - 1050) + \frac{4}{7}(11480) + \frac{12}{25}(24500 - 4900) + \frac{3}{5}(11900)$
$= 4032 + 2125 + 6560 + 9408 + 7140 = 29265$

16. (a); Let total no. of candidate passed in exams for city K be x.
$\therefore 25\%$ of x = 320
$x = \frac{320\times100}{25} = 1280$
$\therefore$ Total passed candidate from city K is 1280
Let total no. of candidates passed from all cities be y.
10% of y = 1280
y =12800
total passed from city L
$= \frac{25}{100} \times 12800 = 3200$
$\therefore$ Total fresher candidates passed from city L
$= \frac{12}{100} \times 3200 = 384$

17. (d); Non-fresher candidate who passed the exam from city X
$= 1250 \times \frac{28}{100} \times \frac{80}{100} = 280$

18. (c); Total passed candidates from city Y
$= \frac{180\times100}{75} = 240$

∴ total candidates passed from all cities
$= \frac{240\times100}{16} = 1500$

19. (b); Total no. of candidates passed in 2010 $= \frac{770\times100}{11} = 7000$
No. of candidates passed from city X in 2010
$= \frac{28}{100} \times 7000 = 1960$
Candidates passed in 2011 from city X
$= \frac{110}{100} \times 1960 = 2156$
No. of candidates passed from city Y in 2010
$= \frac{16}{100} \times 7000 = 1120$
Candidates passed in 2011 from city Y
$= \frac{120}{100} \times 1120 = 1344$
∴ Required difference = 2156 – 1344 = 812

20. (a); Total candidates passed $= \frac{320\times100}{16} = 2000$
Candidates passed from city Z $= \frac{11}{100} \times 2000 = 220$
Non-fresher candidates passed from Z
$= \frac{85}{100} \times 220 = 187$
Candidates passed from city X
$= \frac{28}{100} \times 2000 = 560$
Fresher candidates passed from X $= \frac{20}{100} \times 560 = 112$
∴ required ratio $= \frac{112}{187}$

21. (d); Number of Brahmas missiles manufactured in 2017
$= 110 \times \frac{100}{55}$ =200
∴ 200 Assault rifles were imported.

22. (b); Prahar missiles manufactured in 2016
$= 140 \times \frac{100}{56} = 250$
Akash missiles not exported in 2017
$= 150 \times \frac{100}{40} \times \frac{60}{100} = 225$
∴ Required difference = 25

23. (c); $Required\ ratio = \frac{80\times\frac{100}{50}}{180\times\frac{100}{50}} = \frac{4}{9}$

24. (a); Prahar missiles not exported in 2017
$= 130 \times \frac{48}{52} = 120$
Ashtra missiles not exported in 2016
$= 120 \times \frac{25}{75} = 40$
∴ $Required\ percentage = \frac{80}{40} \times 100 = 200\%$

25. (e); Total LCA manufactured
$= 180 \times \frac{100}{50} + 160 \times \frac{100}{40} = 760$
∴ $Required\ percentage = \frac{180}{760} \times 100 = 23\frac{13}{19}\%$

26. (c); Total tourist in year 2017 in U.P $= 20 \times \frac{16}{100} \times \frac{5}{4} = 4\ Lakhs$
And we know percentage of male and female tourist is same in 2017 as in 2016 for U.P.
∴ $Required\ difference = \frac{30}{100} \times 4{,}00{,}000 = 1{,}20{,}000$

27. (a); Tourist visiting in year 2016 in J&K $= 20 \times \frac{23}{100} = 4.6\ Lakh$
Who can speak both Hindi and Urdu $= \frac{7}{10} \times 4.6 = 3.22\ Lakh$

28. (b); Tourists who left Haryana
$= 20 \times \frac{15}{100} \times \frac{20}{100} = 0.6\ Lakh$
Female in Punjab in year 2016 $= 20 \times \frac{14}{100} \times \frac{20}{100} = 0.56\ Lakh$
Male in Punjab in year 2016 $= 20 \times \frac{14}{100} \times \frac{80}{100} = 2.24\ Lakh$
After increase male in Punjab $= 2.24 + 0.6 = 2.84$ Lakh
∴ $Required\ ratio = \frac{2.84}{0.56} = \frac{284}{56} = 71 : 14$

29. (c); Since percentage of male and female tourist of year 2017 is not given.

30. (d); $Required\ percentage = \frac{20\times\frac{11}{100}\times\frac{85}{100}}{20\times\frac{21}{100}\times\frac{25}{100}} \times 100 = \frac{187}{105} \times 100 = 178\frac{2}{21}\%$

31. (c); Total employee from T and R
$= \left(1500 \times \frac{20}{100} + 1500 \times \frac{20}{100} \times \frac{11}{12}\right) + \left(1500 \times \frac{10}{100} + 1500 \times \frac{10}{100} \times \frac{4}{3}\right)$
= (300 + 275) + (150 + 200) = 925
Total number of female from S and T
$= 1500 \times \frac{15}{100} \times \frac{7}{9} + 1500 \times \frac{20}{100} \times \frac{11}{12}$
= 175 + 275 = 450
$Required\ ratio = \frac{925}{450} = 37 : 18$

32. (b); Average of male employee from S, T and Q
$= \frac{1500\times\frac{15}{100}+1500\times\frac{20}{100}+1500\times\frac{30}{100}}{3} = \frac{225+300+450}{3} = 325$
Average of female employee from branch S and R
$= \frac{1500\times\frac{15}{100}\times\frac{7}{9}+1500\times\frac{10}{100}\times\frac{4}{3}}{2}$
$= \frac{175+200}{2} = \frac{375}{2}$
$Required\ difference = 325 - \frac{375}{2} = \frac{275}{2}$

33. (d); Total unmarried male from T and Q
$= \left(1500 \times \frac{20}{100} - 1500 \times \frac{20}{100} \times \frac{20}{100}\right) + \left(1500 \times \frac{30}{100} - 1500 \times \frac{30}{100} \times \frac{40}{100}\right)$
= (240 + 270) = 510
Total unmarried female from T and Q
$= \left(1500 \times \frac{20}{100} \times \frac{11}{12} - 1500 \times \frac{20}{100} \times \frac{20}{100} \times \frac{5}{4}\right) + \left(1500 \times \frac{30}{100} \times \frac{2}{3} - 1500 \times \frac{30}{100} \times \frac{40}{100} \times \frac{2}{3}\right)$
= (275 – 75) + (300 – 120)
= 200 + 180 = 380
Required sum = 510 + 380 = 890

34. (a); Total B. Tech male employee from branch P
$= 1500 \times \frac{25}{100} \times \frac{20}{100} = 75$

Total MBA female employee from branch $R = 1500 \times \frac{10}{100} \times \frac{4}{3} \times \frac{40}{100}$ =80

$Required\ \% = \frac{80-75}{80} \times 100 = 6.25\%$

35. (c); Total (Male + female) employee from branch T and S

$= \left(1500 \times \frac{20}{100} + 1500 \times \frac{20}{100} \times \frac{11}{12}\right) + \left(1500 \times \frac{15}{100} + 1500 \times \frac{15}{100} \times \frac{7}{9}\right)$

= (300 + 275) + (225 + 175) = 975

Total male and Female employee from branch R and Q

$= \left(1500 \times \frac{10}{100} + 1500 \times \frac{10}{100} \times \frac{4}{3}\right) + \left(1500 \times \frac{30}{100} + 1500 \times \frac{30}{100} \times \frac{2}{3}\right)$

= (150 + 200) + (450 + 300) = 1100

$Required\ \% = \frac{975}{1100} \times 100 = 88\frac{7}{11}\%$

Solution (36-40)

Percentage distribution of article of type D

$= 100 - \left(\frac{100}{3} + \frac{200}{9} + \frac{50}{3} + 12.5\right) = \frac{275}{18}\% = 55$

Total number of article = 100% = $55 \times \frac{1800}{275} = 360$

∴ No. of article of type A

$= 360 \times \frac{200}{900} = 80$

No. of article of type B

$= 360 \times \frac{50}{300} = 60$

No. of article of type C

$= 360 \times \frac{12.5}{100} = 45$

No. of article of type E

$= 360 \times \frac{100}{300} = 120$

Article	No. of article
A	80
B	60
C	45
D	55
E	120

36. (a); Total selling price of article of type A = 80 × 150 = 12000

Total selling price of article of type B = 60 × 120 = 7200

∴ $Required\ percentage = \frac{12000-7200}{7200} \times 100 = 66\frac{2}{3}\%$

37. (c); Required average

$= \frac{1}{3}(60 \times 120 + 45 \times 180 + 120 \times 140)$

$= \frac{32100}{3} = 10700$

38. (b); Total selling price of article C = 45 × 180 = 8100

Therefore, total selling price of article F

$= 8100 \times \frac{10}{9} = 9000$

No. of article of type F

= No. of article of type E = 120

∴ Price per article type F

$= \frac{9000}{120} = 75$

∴ Required difference = 120 – 75 = 45

39. (d); $\frac{2}{5}$th of article of type C

$= \frac{2}{5} \times 45 = 18$

Total sellingprice of 2/5th of article of type C

$= 18 \times 120 \times \frac{140}{100} = 3024$

$Price\ of\ \frac{3}{5}th\ of\ article\ of\ type\ C$

$= 27 \times 150 \times \frac{3}{5} = 2430$

Total new price of article C

= 3024 + 2430 = 5454

Required difference

$= 5454 \sim \frac{(60\times120+200\times55)}{2}$

= 5454 ~ 9100 = 3646

40. (a); $Required\ ratio = \frac{80\times150+120\times140}{45\times180+60\times120} = \frac{28800}{15300} = 32:17$

41. (b); Total cars sold by manufacturer

$= \frac{720}{16} \times 100 = 4500$

∴ Required ratio $= \frac{\frac{8}{15}\times\frac{17}{100}\times4500}{\frac{7}{15}\times\frac{12}{100}\times4500}$

$= \frac{8\times17}{7\times12} = 34:21$

42. (a); Required difference

$= \frac{1}{2}\left[\frac{5}{9} \times \frac{22}{100} \times 4500 + \frac{2}{5} \times \frac{25}{100} \times 4500\right] - \frac{1}{3}\left[\frac{7}{12} \times \frac{8}{100} \times 4500 + \frac{7}{15} \times \frac{12}{100} \times 4500 + \frac{7}{16} \times 720\right]$

$= \left[\frac{550+450}{2}\right] - \left[\frac{210+252+315}{3}\right]$

= 500 – 259 = 241

43. (c); Required percentage

$= \frac{\frac{25}{100}\times\frac{3}{5}\times4500 - 4500\times\frac{8}{100}\times\frac{5}{12}}{\frac{25}{100}\times\frac{3}{5}\times4500} \times 100 = 77\frac{21}{27}\%\%$

44. (e); Stopped no. of cars which are not sold to city B

$= \frac{5}{9} \times \frac{22}{100} \times 4500 \times \frac{1}{11}$

$= 550 \times \frac{1}{11} = 50$

Since distributed equally $= \frac{50}{5} = 10$

∴ new total Tata cars sold to city D and A.

$= \frac{5}{12} \times \frac{8}{100} \times 4500 + \frac{7}{15} \times \frac{17}{100} \times 4500 + 20$

= 150 + 357 + 20 = 527

45. (d); New total car sold to city C

$= \frac{25}{100} \times 4500 \times \frac{10}{9} = 1250$

Tata cars sold to city C $= 1250 \times \frac{2}{5} = 500$

Suzuki cars sold to city D $= 1250 \times \frac{3}{5} = 750$

New total cars sold to city D

$= \frac{8}{100} \times 4500 \times \frac{5}{3} = 600$

Tata cars sold to city D $= 600 \times \frac{5}{12} = 250$

Suzuki cars sold to city D

$= 6000 \times \frac{7}{12} = 350$

∴ Required difference = (750 + 350) – (500 + 250) = 350

46. (e); population of E in 2002

$1250 \times \frac{(100+30)}{100} + \frac{(100+20)}{100} = 1950$

Population of A in 2000

$= 3750 \times \frac{100}{125} \times \frac{100}{120} = 2500$

required ratio $= \frac{1950}{2500} = 39:50$

47. (b); Population of village A in 2000 = 2500

Population of village C in 2000 = $1518 \times \frac{100}{120} \times \frac{100}{115}$ = 1100

Required percentage = $\frac{2500-1100}{1100} \times 100 = 127\frac{3}{11}\%$

48. (d); population of D in 2000 = $\frac{27}{22} \times 1100 = 1350$

Population of D in 2002 = $1350 \times \frac{130}{100} \times \frac{120}{100} = 2106$

49. (e); Population of F in 2002 = $1200 \times \frac{125}{100} \times \frac{135}{100} = 2025$

required percentage = $\frac{1200}{2025} \times 100 = 59\frac{7}{27}\%$

50. (a); total population in 2000 = 2500 + 1650 + 1100 + 1350 + 1250 + 1200 = 9050

total population in 2002 = 3750 + 2178 + 1518 + 2106 + 1950 + 2025 = 13527

required percentage = $\frac{13527-9050}{13527} \times 100 \approx 33\%$

Solution (51-55)

Degree measure of B + D = 360° - (80° - 72° - 74° + 62°) = 72°

Also, difference b/w degree measures of B & D = 28°

∴ Degree measure of B and D is 50° and 22° respectively as B is more than D.

Now total literates in all villages together

$= \frac{5500}{50} \times 360 = 39600$

51. (c); Illiterate persons in village B

$= \left(1 - \frac{1}{11}\right) \times 5500 = 5000$

Illiterates in Village E

$= \frac{75}{100} \times \frac{74}{360} \times 39600 = 6105$

∴ Total sum = 5000 + 6105 = 11105

52. (a); Illiterate persons of village A

$= 39600 \times \frac{80}{360} \times \left(1 + \frac{3}{22}\right) = 10{,}000$

∴ Required % = $\frac{10{,}000}{39600} \times 100 = 25\frac{25}{99}\%$

53. (d); Required ratio = $\frac{A+D}{B+F} = \frac{80^\circ + 22^\circ}{50^\circ + 62^\circ} = \frac{51}{56}$

54. (b); Total illiterate male persons in village F

$= 39600 \times \frac{62}{360} \times \left(1 + \frac{2}{11}\right) \times \frac{15}{26} = 4650$

Total literate male persons in village F

$= 39600 \times \frac{62}{360} \times \frac{13}{22} = 4030$

∴ Total number of males in village F = 4650 + 4030 = 8680

55. (c); Required average

$= \frac{1}{4}(50 + 72 + 22 + 74) = 54.5°$

56. (b); For Arunoday:

In 2012 :

Annual income = Rs. 650 thousands

Annual expenditure = $400 \times \frac{3}{2}$

=Rs. 600 thousands

∴ saving (annual) = 50 thousand

Similarly, annual saving in 2016

$= 800 - \left(200 \times \frac{3}{2}\right) = 500$ thousand

For Veer,

Annual saving in 2012

$= \left(650 \times \frac{4}{5}\right) - 400 = 120$ thousands

Annual saving in 2016

$= \left(800 \times \frac{3}{8}\right) - 200 = 100$ thousands

∴ Required difference of average

$= \frac{1}{2}[(500 + 50) - (120 + 100)] = 165$ thousands

57. (d); income of Veerin 2013 and 2015

$= 700 \times \frac{4}{7} + 700 + \frac{2}{7} = Rs.\,600\ thousand$

expenditure of Arunodayin 2014 and 2016

$= 300 \times \frac{4}{3} + 200 \times \frac{3}{2}$

$= Rs.\,700\ thousand$

$\therefore\ Required\ ratio = \frac{600}{700} = 6:7$

58. (c); Saving of Veer in 2015 and 2016

$(700 \times \frac{2}{7} - 150) + (800 \times \frac{3}{8} - 200)$

= Rs. 150 thousands

Saving of Arunodayin 2013 and 2016

$= 700 - \frac{2}{3} \times 300 + 800 - 200 \times \frac{3}{2} = 1000$ thousand.

$\therefore\ Required\ percentage = \frac{850}{1000} \times 100 = 85\%$

59. (a); Annual saving of Arunoday in 2017

$= \frac{88}{100} \times 500 = 440\ thousand$

Annual saving of Veer in 2017

$= \frac{115}{100} \times 100 = 115$ thousand

∴ Their total expenditure

$= (650 - 440) + (650 \times \frac{3}{5} - 115)$

= 210 + 275

= 485 thousands

60. (e); Required average

$= \frac{1}{3}\left[\frac{5}{3} \times 150 + \left(800 \times \frac{3}{8} - 200\right) + 700 \times \frac{4}{7}\right]$

$= \frac{1}{3}(250 + 100 + 400)$

$= Rs.\,250\ thousand$

61. (c); Qualified student in school JPC= $\frac{2176}{68} \times 32 = 1024$

Total appeared student in school JPC = $\frac{102400}{32} = 3200$

Total appeared student in school CCS = $\frac{3200}{32} \times 12 = 1200$

Total qualified student in school CCS = $1200 \times \frac{24}{100} = 288$

Required difference = $288 \times \frac{2}{8} = 72$

62. (a); Qualified student in school in school NNA = 120 × 3 = 360.

Total appeared student in school NNA = $\frac{360}{30} \times 100 = 1200$

Total appeared student in school RPS = $\frac{1200}{8} \times 20 = 3000$

Total qualified girls in school RPS = $3000 \times \frac{28}{100} \times \frac{2}{7} = 240$

Required percentage

$= \frac{240-120}{120} \times 100 = 100\%$

63. (d); Total appeared student = 1500 × 5 = 7500

∴ Required average

$= \frac{7500}{3}\left[\frac{20}{100}\times\frac{28}{100}\times\frac{5}{7}+\frac{28}{100}\times\frac{25}{100}\times\frac{3}{5}+\frac{8}{100}\times\frac{30}{100}\times\frac{1}{3}\right] = \frac{675}{3} = 225$

64. (a); Appeared student in year 2015 in school RPS $= \frac{1200}{4}\times 3 = 900$

Total appeared student in year 2015 = 900 × 5 = 4500

∴ qualified boys in school GPS in 2015 $= 4500 \times \frac{28}{100}\times\frac{1}{4}\times\frac{3}{5}$ = 189 = qualified boys in school RPS in 2016

∴ qualified girls in school RPS in 2016 $= 1200 \times \frac{28}{100}$ – 189 = 147

65. (b); Qualified boys in school NNA in 2015 $= 9000 \times \frac{8}{100}\times\frac{30}{100}\times\frac{1}{3} = 72$

Qualified boys in school JSS in year 2016

$= 72 \times \frac{4}{3} = 96$

Qualified girls in school GPS in 2015

$= 9000 \times \frac{28}{100}\times\frac{25}{100}\times\frac{2}{5} = 252$

Qualified girls in school JSS in 2016

$= 252 \times \frac{1}{3} = 84$

$\therefore$ *Required ratio* $= \frac{96}{84} = 8:7$

66. (d); *Number of females in Delhi*

$= 45000 \times \frac{18}{100}\times\frac{30}{100} = 2430$

Number of females in Gurgaon

$= 45000 \times \frac{22}{100}\times\frac{40}{100} = 3960$

Number of females in Panipat

$= 45000 \times \frac{24}{100}\times\frac{34}{100} = 3672$

Number of females in Rewari

$= 45000 \times \frac{20}{100}\times\frac{42}{100} = 3780$

Number of females in Sonipat

$= 45000 \times \frac{16}{100}\times\frac{38}{100} = 2736$

Maximum number of female is in Gurgaon

67. (c); Transgender population in Gurgaon and Panipat together

$= 45{,}0000\left[\frac{22}{100}\times\frac{24}{100}+\frac{24}{100}\times\frac{38}{100}\right]$

$= 45000 \times \frac{24}{100}\left[\frac{60}{100}\right] = 6480$

Male and female together in Rewari

$= 45000 \times \frac{20}{100}\times\frac{76}{100} = 6840$

Required ratio $= \frac{6480}{6840} = \frac{18}{19}$

68. (a); Male population in city Gurgaon, Panipat together

$= 45000\left[\frac{22}{100}\times\frac{36}{100}+\frac{24}{100}\times\frac{28}{100}\right]$

= 4.5 × [792 + 672] = 6588

Female population in city Rewari and Sonipat together

$= 45000\left[\frac{20}{100}\times\frac{42}{100}+\frac{16}{100}\times\frac{38}{100}\right]$

= 4.5 × [840 + 608] = 6516

Required difference = 6588 – 6516 = 72

69. (d); Transgender population of city Delhi and Sonipat together

$= 45{,}000\left[\frac{18}{100}\times\frac{35}{100}+\frac{16}{100}\times\frac{36}{100}\right]$

= 4.5 × [630 + 576] = 5427

Female population of city Gurgaon

$= 45{,}000 \times \frac{22}{100}\times\frac{40}{100} = 3960$

$Required\% = \frac{5427-3960}{3960}\times 100$

$= 37\frac{1}{22}\%$

70. (e); Female & transgender population of Panipat

$= 45{,}000 \times \frac{24}{100}\times\frac{72}{100} = 7776$

Male & Female population of city Gurgaon

$= 45000 \times \frac{22}{100}\times\frac{76}{100} = 7524$

Required difference = 7776 – 7524 = 252

71. (d); 'Y' type car sold in city 'D'

$= 60000 \times \frac{24.6}{100}\times\frac{8}{24} = 4920$

'Z' type car sold in city 'A' $= 60000 \times \frac{16.4}{100}\times\frac{5}{12} = 4100$

Required % $= \frac{4920-4100}{4100}\times 100$ =20%

72. (b); 'X' type car sold in city 'C' $= 60000 \times \frac{22.2}{100}\times\frac{6}{15}$

= 5328

'X' type car sold in city 'D' $= 60000 \times \frac{24.6}{100}\times\frac{7}{24}$

= 4305

'X' type car sold in city 'E' $= 60000 \times \frac{18.2}{100}\times\frac{4}{14} = 3120$

Required average $= \frac{5328+4305+3120}{3}$

$= \frac{12753}{3} = 4251$

73. (c); 'X' and 'Y' type car sold in city 'A' together

$= 60000 \times \frac{16.4}{100}\times\frac{7}{12} = 5740$

'X' and 'Y' type car sold in city 'B' together

$= 60000 \times \frac{18.6}{100}\times\frac{7}{9} = 8680$

Required % $= \frac{5740}{8680} = \frac{41}{62}$

74. (e); *'Y' type car sold in city 'B'* $= 60000 \times \frac{18.6}{100}\times\frac{3}{9}$

= 3720

'Y' type car sold in city 'C' $= 60000 \times \frac{22.2}{100}\times\frac{5}{15}$

=4440

'Y' type car sold in city 'D' $= 60000 \times \frac{24.6}{100}\times\frac{8}{24} =$ 4920

Required average $= \frac{3720+4440+4920}{3}$

$= \frac{13080}{3} = 4360$

75. (b); 'X' and 'Z' type car sold in city 'D' together

$= 60000 \times \frac{24.6}{100}\times\frac{16}{24} = 9840$

'X' and 'Z' type car sold in city 'C' together

$= 60000 \times \frac{22.2}{100}\times\frac{10}{15} = 8880$

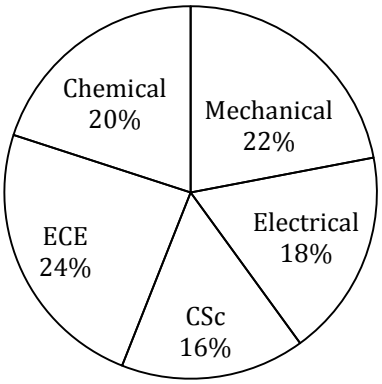
Required % $= \frac{9840-8880}{8880}\times 100 = \frac{960}{8880}\times 100 = 10\frac{30}{37}\%$

PRACTICE SET (LEVEL–I)

Direction (1-5): Study the following table carefully and answer the questions that follow.
The table shows the percentage of students of five branches who vote in favour of different lecturers participating for election of DEAN in a college. The pie chart shows the percentage distribution of students in different branches.

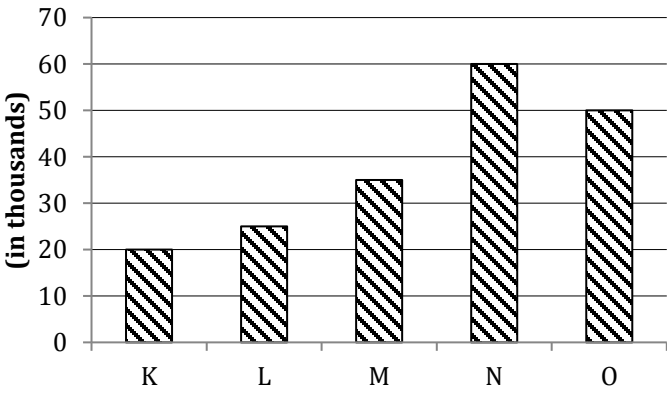
Lecturers→ Branches↓	K. L. Bali	VirajTyagi	Varun Gandhi	Yogesh Gupta	Deepak Mittal	Prince Saini
Mechanical	14	15	16	22	20	13
Electrical	16	12	18	22	12	20
CSc	22	8	14	23	15	18
ECE	20	15	10	16	18	21
Chemical	12	18	22	20	16	12

Total number of students is 5000



1. Find the difference between total number of votes casted for varun Gandhi and that of Deepak Mittal?
(a) 26 (b) 28 (c) 34 (d) 38 (e) 32
2. Total number of students who favour Prince Saini are what percent of total number of students in ECE?
(a) $65\frac{11}{12}\%$ (b) $69\frac{11}{12}\%$ (c) $71\frac{11}{12}\%$ (d) $68\frac{11}{12}\%$ (e) $67\frac{11}{12}\%$
3. Among the supporters of Varun Gandhi in mechanical branch,boys to girls are in ratio of 5 : 3. If total number of girls in all branch are 36 times of mechanical girls, who in supporting varun Gandhi. Then find the total number of boy in all branch?
(a) 2634 (b) 2264 (c) 2642 (d) 2624 (e) 2614
4. Find the ratio of total number of students who support K.L. Bali to number of students in chemical branch?
(a) 437:500 (b) 407:500 (c) 427:500 (d) 471:500 (e) 417:500
5. By what percent of total votes Yogesh Gupta beats Virajtyagi?
(a) $4\frac{19}{50}\%$ (b) $5\frac{19}{50}\%$ (c) $6\frac{19}{50}\%$ (d) $7\frac{19}{50}\%$ (e) $8\frac{19}{50}\%$

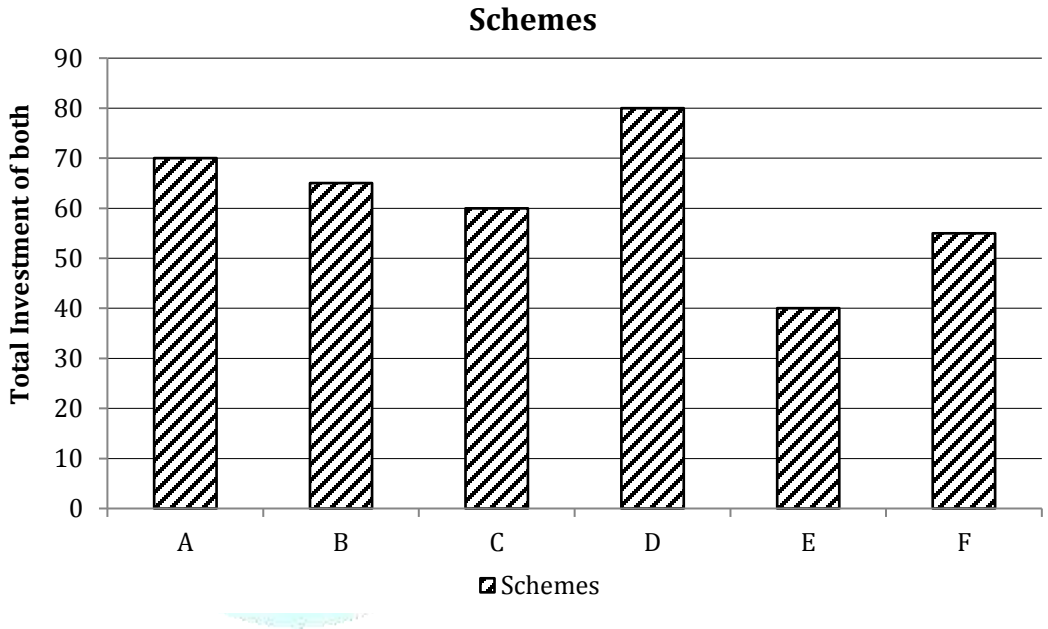
Directions (6-10): Study the bar-graph and table given below carefully and answer the question accordingly.Bar-graph shows the number of people in five different cities and table shows the percentage of male in five cities and the ratio of literate and illiterate people in five different cities.



City	Percentage of Males	Literate : Illiterate
K	40%	1 : 3
L	60%	7 : 3
M	20%	1 : 4
N	75%	3 : 2
O	68%	9 : 11

6. If 40 percent of male from city K went to city L then what is the total number of males in city L ?
(a) 17200 (b) 19200 (c) 16200 (d) 18200 (e) None of these
7. What is the percentage of literate people from city L to the illiterate people from city M?
(a) 52.5% (b) 72.5% (c) 62.5% (d) 42.5% (e) None of these
8. If 30 percent of male from city M are illiterate. Then find the ratio of illiterate male to the illiterate female from city M?
(a) 21 : 259 (b) 21 : 269 (c) 22 : 259 (d) 23 : 259 (e) None of these
9. What is the average of illiterate people in five cities?
(a) 25000 (b) 20400 (c) 21000 (d) 23000 (e) None of these
10. What is the ratio of total females from city M and O to the total illiterate males from city K and city L?
(a) 2 : 5 (b) 7 : 5 (c) 5 : 7
(d) Cannot be determined (e) None of these

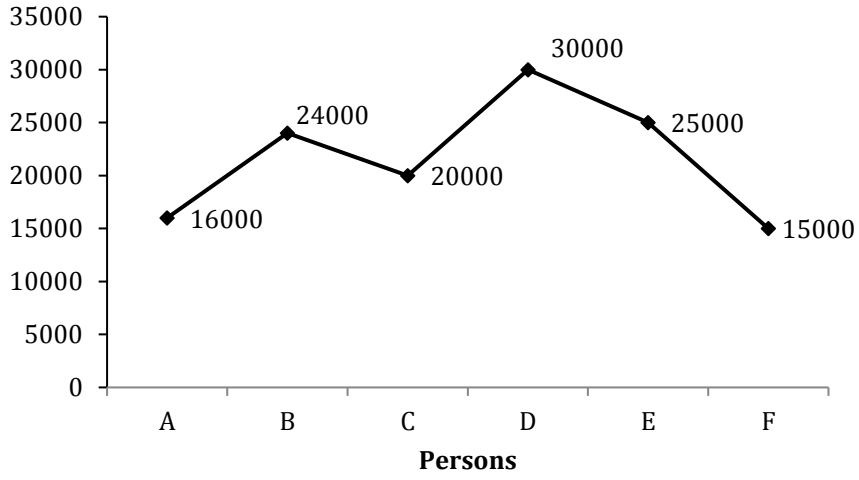
Directions (11-15): Read the given data carefully and answer the given question
Bar graph shows Total Investment in thousand made by Abhimanyu and Arunoday is 6 different schemes (A, B, C, D, E, & F) .
Table shows the ratio of investment of Abhimanyu to Arunoday.



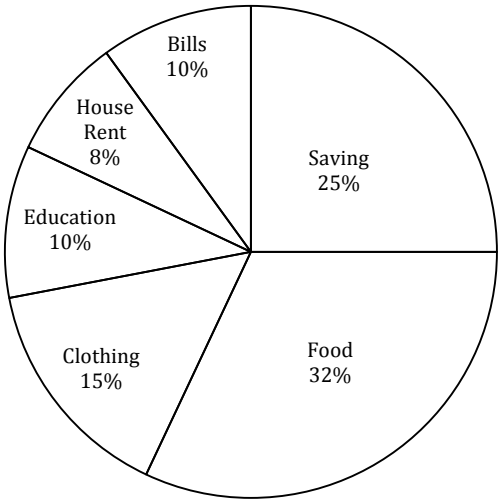
Scheme	A	B	C	D	E	F
Ratio of Investment	11 : 14	7 : 13	1 : 1	2 : 3	3 : 7	2 : 3

11. If scheme A offers simple Interest at R% per annum and total interest obtained from schemes A for 2 years is 11200 then find R% and share of interest of Abhimanyu
(a) 8%, 4928 (b) 6%, 7312 (c) 5%, 5724 (d) 8%, 5321 (e) 8% 4982
12. What is ratio of total investment of abhimanyu in scheme A, B and D together to the total investment made in scheme C,E and F by Arunoday
(a) 913 : 2222 (b) 1652 : 1325 (c) 1711 : 1820 (d) 1820:1711 (e)1802:1711
13. Average of investment made by Abhimanyu in scheme A, C is what % of average of investment made by Arunoday in scheme E and F (Approximately)
(a) 80% (b) 75% (c) 100% (d) 90% (e) 110%
14. If scheme B and C offers simple interest at the rate of 10% and $\frac{100}{3}$ %respectively then find the total interest obtained from scheme B & C in 3 year given that Abhimanyu withdraw his total amount from scheme B in 3rd year whereas Arunoday withdraw his total amount in second year from scheme C.
(a) 52520 Rs (b) 53373 Rs (c) 57225 Rs (d) 62250 Rs (e) 57252 Rs.
15. What is the ratio of total amount invested by Abhimanyu to total amount invested by Arunoday in all the schemes together except schemes E and F.
(a) $\frac{2311}{3189}$ (b) $\frac{2225}{1333}$ (c) $\frac{1553}{1120}$ (d) $\frac{1852}{2021}$ (e) $\frac{2301}{3198}$

Directions (16-20): Study the following graphs carefully and answer the questions given below:
Graph given below line graph shows the monthly expenditure by 6 persons



Given below is the pie chart, which shows the percentage breakup of monthly Income of person B. Income = Expenditure (bill+house rent+education+clothing+food)+ Saving



Note: Consider person B don't have any other expenditure.

16. If ratio of expenditure of person D on food and clothing is 8 : 7 and expenditure of D on clothing is $16\frac{2}{3}\%$ more than the expenditure of B on clothing then what is the sum of expenditure of person D on food and clothing together ?
(a) 10500 (b) 8700 (c) 12000 (d) 14000 (e) 12500

17. If D and F spend 20% and $\frac{100}{3}\%$ of their monthly expenditure on house rent then expenditure of B on Education is what percent of expenditure of D and F together on house rent ?
(a) $29\frac{1}{11}\%$ (b) $13\frac{1}{13}\%$ (c) $133\frac{1}{3}\%$ (d) 45% (e) $29\frac{7}{11}\%$

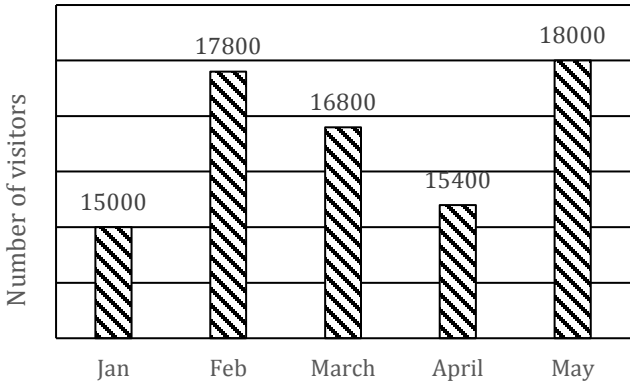
18. If income of C is $\frac{1100}{3}\%$ more than expenditure of B on clothing then saving of C is approximately what percent more or less than saving of B ?
(a) 30% (b) 40% (c) 70% (d) 60% (e) 35%

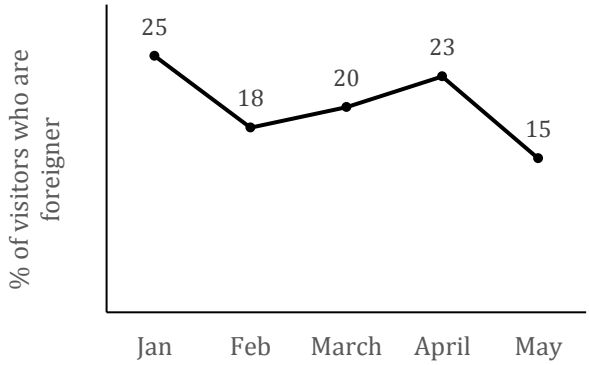
19. If saving of A, B, C, D, E and F are in the ratio 1 : 2 : 1 : 3 : 2 : 1 then what is the average of their income ?
(a) 30520 (b) 70252.33 (c) 28333.33 (d) 27089.33 (e) 28166.66

20. Expenditure of person E on bill is equal to the expenditure of B on bills. If Income of B is decreased by $17\frac{1}{2}\%$ then expenditure on bill for person E is changed by what percent ?
(a) 20% (b) 165 (c) 12.5% (d) 17.5% (e) 8.5%

Directions (21-25): Given below is the bar graph which shows the total number of persons who are visiting Taj Mahal in 5 different months of years. Line graph shows the percentage of foreigners in number of visitors in different months.

Note → total visitors = Indian Visitors + Foreign visitors





21. If in June Month of same year total visitors increases by 20% over the January Month. And total foreigner increases by 30% then total Indian visitor in June month is what percent of total foreigners visiting Taj Mahal in Jan and Feb together. (approximately)
(a) 188% (b) 198% (c) 178% (d) 208% (e) 125%

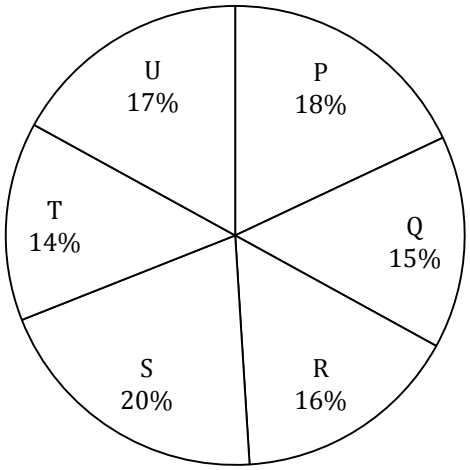
22. If 50% and 40% of total people who visited Taj Mahal in Feb and May respectively are females and ratio of male to female in foreign visitors in Feb and May is 5 : 4 and 3 : 1 respectively then, find total Indian females who visited Taj Mahal in Feb is what percent of total Indian males visiting Taj Mahal in May. (approximately)
(a) 85% (b) 90% (c) 80% (d) 75% (e) 95%

23. Total foreign visitors in Feb and March month together are how much more/less than total Indian visitors in month of Jan and April together.
(a) 18528 (b) 17268 (c) 14548 (d) 12500 (e) 16544

24 50% of Indian visitors and $16\frac{2}{3}\%$ of foreign visitors in Feb month are married couples. If 50% of remaining Indian visitor are females and $66\frac{2}{3}\%$ of remaining foreign visitors are males then find the total number of males who visited Taj Mahal in February.
(a) 7349 (b) 8258 (c) 9345 (d) 9870 (e) 8569

25. Foreign visitors in Feb month are what percent more or less than foreign visitors of May month.
(a) $14\frac{2}{7}\%$ (b) $18\frac{2}{3}\%$ (c) $16\frac{2}{3}\%$ (d) $15\frac{2}{3}\%$ (e) $14\frac{2}{3}\%$

Directions (26-30): Given below is the pie chart which shows the percentage distribution of females in 6 villages out of total female population in these 6 villages and table shows the percentage of males out of total population in each village



Total females = x

Villages	% of males in villages
P	$\frac{700}{13}\%$
Q	$\frac{400}{9}\%$
R	$\frac{1500}{31}\%$
S	$\frac{500}{9}\%$
T	$\frac{1100}{25}\%$
U	$\frac{1300}{30}\%$

26. Total population of village U is what percent of total population of village T?
(a) 100% (b) 120% (c) 75% (d) 80% (e) 90%

27. What is the ratio of total females from village S and T together to the total of males from village R and U together?
(a) 17 : 14 (b) 21 : 23 (c) 13 : 17 (d) 14 : 15 (e) 12 : 17

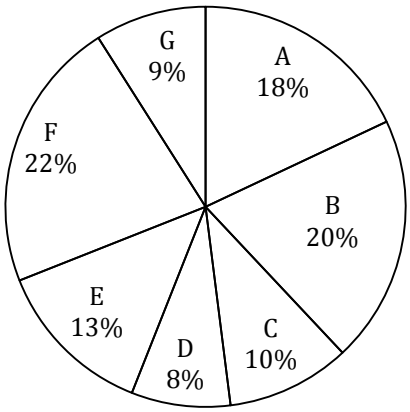
28. If $15\frac{5}{13}\%$ of total population of village P is illiterate and 20% of female in village P are illiterate then what percent of male are illiterate in village P?

(a) $\frac{100}{7}\%$ (b) $\frac{90}{7}\%$ (c) $\frac{50}{3}\%$ (d) $\frac{80}{7}\%$ (e) $\frac{100}{3}\%$

29. If number of males in village P is equal to 17850 then what is the total number of males and females in village T and U together?
(a) 36500 (b) 46750 (c) 48250 (d) 42300 (e) 54200

30. Total females in village R is 27200 and 30% of females in village R and 20% of males in village R are not registered in voter list. In an election, votes polled in village R is 60% of total population of village R. What is the difference in total registered voters who did not cast vote and total persons who are not registered in voter list ?
(a) 4120 (b) 5150 (c) 5530 (d) 4250 (e) 5440

Directions (31-35): Given below is the pie chart which shows the percentage distribution of books of publisher 'X' sold by 7 different books store in year 2016. Table shows the ratio of books sold of publisher X to publisher Y in these seven book stores. Some values are missing in the table. You have to calculate these values if required to answer the questions.



Total books sold of Publisher X = 25,700

Book store	Ratio of books sold of publisherX to publisher Y
A	3 : –
B	– : 5
C	2 : 3
D	– : –
E	13 : 5
F	11 : –
G	3 : 4

31. What is the total number of books sold by store A and B together if books sold by store A of publisher Y is $33\frac{1}{3}\%$ more than that of publisher X and Books sold by store B of publisher X is 20% less than that of publisher Y.
(a) 22359 (b) 21257 (c) 20256 (d) 23244 (e) 22556

32. What is the total number of books sold by store D if books sold of publisher Y in store D is 25% more than that of books sold by store D of publisher X
(a) 2520 (b) 4020 (c) 4626 (d) 4422 (e) 4528

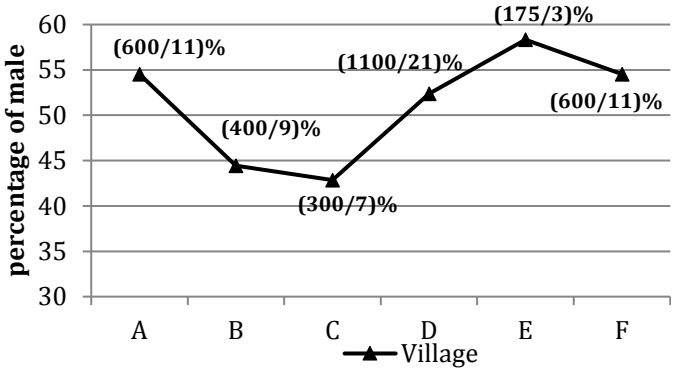
33. Books sold by store E, F and G together of publisher X is what percent more or less than books sold by these store of publisher Y if books sold by store F of publisher Y is $\frac{100}{11}\%$ more than that of books sold by F of publisher X.
(a) $\frac{400}{31}\%$ (b) $\frac{300}{41}\%$ (c) $\frac{200}{9}\%$ (d) $\frac{100}{9}\%$ (e) $\frac{100}{11}\%$

34. If in year 2017 total books sold by store E is increased by $33\frac{1}{3}\%$ over previous year and ratio of books sold of publisher X and Y by store E in 2017 is 11 : 13 then books sold by store E of publisher X in 2016 is what percent more or less than that of books sold of publisher X by store E in 2017.
(a) $\frac{200}{11}\%$ (b) $\frac{200}{9}\%$ (c) $\frac{100}{11}\%$ (d) $\frac{100}{9}\%$ (e) None of these

35. Average of books of publisher X sold by store B and C together is what percent more or less than that of average of books of publisher Y sold by store E and G together
(a) $\frac{1100}{12}\%$ (b) $\frac{1100}{17}\%$ (c) $\frac{1300}{17}\%$ (d) $\frac{1400}{7}\%$ (e) $\frac{1700}{11}\%$

Directions (36-40): Given below is the line graph which shows the percentage of male out of total population in 6 villages in year 2016.
Table shows the total illiterate females and percentage of females who are literate in the given villages in year 2016

Total females = Total literate females + Total illiterate females



Village	Illiterate females	% of females who are literates
A	6000	40%
B	4500	55%
C	–	35%
D	3500	–
E	1000	80%
F	2000	60%

Note : In table some data are missing. If these data are required in any question then find them first and then proceed.

36. Total literate females from village E are what percent less than total males from village A.
(a) $33\frac{1}{3}\%$ (b) $12\frac{2}{5}\%$ (c) $16\frac{2}{3}\%$ (d) $66\frac{2}{3}\%$ (e) $14\frac{2}{7}\%$

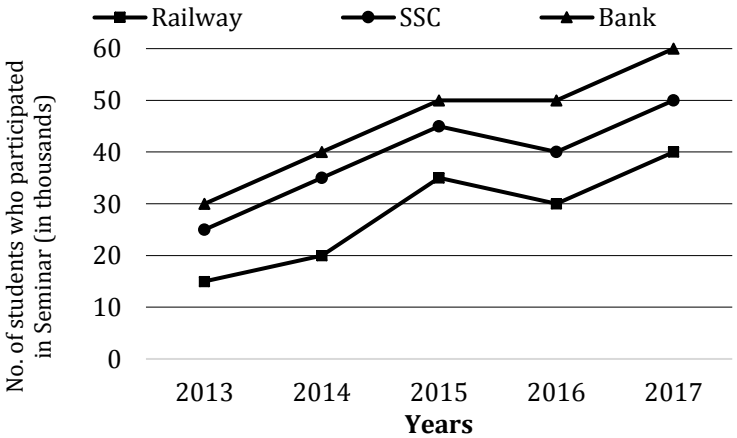
37. If total illiterate female in village C are $8\frac{1}{3}\%$ more than total males in village A, then total illiterate females in village C are how much more than total literate females in village F.
(a) 6,000 (b) 10,000 (c) 5,000 (d) 4,500 (e) 6,500

38. If total literate female in village D is $44\frac{4}{9}\%$ more than total illiterate female in village B, then find the difference between total males in village D and total males in village F.
(a) 6000 (b) 7000 (c) 8000 (d) 7000 (e) 5000

39. What is the ratio between total males in village F to the total males in village B.
(a) 3 : 4 (b) 4 : 5 (c) 5 : 2 (d) 4 : 3 (e) 5 : 4

40. If the illiterate female from village C decreases by $\frac{200}{13}\%$ and literate female from same village increases by $\frac{100}{13}\%$ in year 2017 but total person (Male + female) remains same in village C in year 2017 then number of male in village C is decreased or increased by what percent.
(a) $3\frac{23}{31}\%$ (b) $9\frac{29}{39}\%$ (c) $21\frac{6}{7}\%$ (d) $33\frac{3}{4}\%$ (e) None of these

Directions (41-45): The following line graph shows the total no. of students who are preparing for three different exam viz. SSC, Bank and Railway who participated in a seminar organized by career power in five different years.
The table shows the ratio of male to female who participated in seminar.
Study both the graph carefully and answer the questions that follows.



Year	Ratio of male to female who participated in seminar		
	Bank(M:F)	SSC(M:F)	Railway(M:F)
2013	4:1	4:1	4:1
2014	5:3	5:2	7:3
2015	7:3	7:2	6:1
2016	3:2	5:3	3:1
2017	2:1	7:3	3:2

41. The total no. of male students in 2014 from all examwho are participating in seminar is what percent of total no. of female students from all exam who are participating in seminar in 2013?
(a) $547\frac{1}{7}\%$ (b) $457\frac{1}{7}\%$ (c) $455\frac{1}{7}\%$ (d) $452\frac{1}{7}\%$ (e) $745\frac{1}{7}\%$

42. If 10% of male students and 5% offemale students preparing for Bank exam in year 2015 asked questions to the speaker in seminar and 10% of total students preparing forSSC asked the question to the speaker in the same year, then total no. of student from banking who asked question is what percent of the total no. of students from SSC who asked question in year 2015?

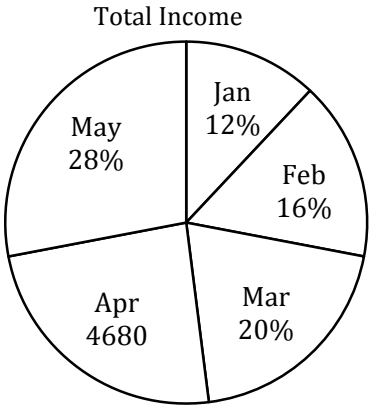
(a) $90\frac{4}{9}\%$ (b) $92\frac{4}{9}\%$ (c) $94\frac{4}{9}\%$ (d) $97\frac{4}{9}\%$ (e) $98\frac{4}{9}\%$

43. What is the average no. of male students preparing forRailway exam who participated in seminar throughout all the five years ?
(a) 22 thousands (b) 25 thousands (c) 20.5 thousands (d) 21.5 thousands (e) 19.5 thousands

44. Total no. of male students preparing for Bank exam in 2016 and 2017 together is approximately what percent more than the total no. of female students preparing for SSC exam who participated in the seminar together in the same years?
(a) $133\frac{2}{3}\%$ (b) $133\frac{1}{3}\%$ (c) $138\frac{1}{3}\%$ (d) $131\frac{1}{3}\%$ (e) $135\frac{1}{3}\%$

45. In 2012 the career power had organized the seminar in which the total no. of student participating in seminar who are preparing for bank, SSC and Railway exam is 10%, 20% and 25% less than that in 2013 respectively and total no. of boys who participated in the seminar in year 2012 preparing for Bank, SSC and railway exam were 1000, 1500 and 2000 less than that in 2013 respectively. Find the total no. of girls participated in seminar in 2012 preparing for Bank, SSC and Railway exam together?
(a) 6,850 (b) 5, 670 (c) 7,650 (d) 6,750 (e) 7,550

Directions (46-50): pie chart given below shows the income of Satish on five different months Table shows his saving percentage and ratio of his total expense on three different itemsX,Y and Z. Study the data carefully and answer the following questions : Some value given in percentage and for April month absolute value is given in the Pie chart.



Month	Saving (%)	Rate of expense
Jan	$57\frac{9}{13}\%$	3 : 5 : 7
Feb	$38\frac{6}{13}\%$	7 : 8 : 9
Mar	52%	4 : 5 : 4
Apr	$38\frac{8}{9}\%$	4 : 3 : 4
May	$43\frac{1}{3}\%$	6 : 7 : 4

46. Expense in the month of Jan on 'Z' is what percent less than expense in the month of Feb on 'X'
(a) 25% (b) 20% (c) 22.5% (d) 17.5% (e) 15%

47. Find the difference between expense on 'Z' in the month of April to the expense on 'X' in the month of May ?
(a) 48 (b) 52 (c) 56 (d) 60 (e) 64

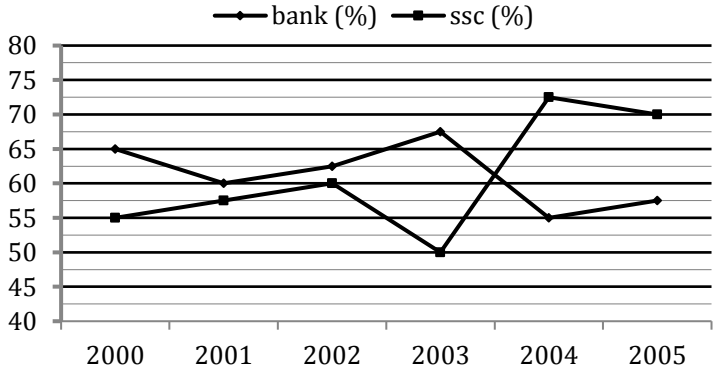
48. Total expense in the month of Jan is what percent of the total saving in the month of April ?
(a) $53\frac{36}{91}\%$ (b) $51\frac{55}{91}\%$ (c) $48\frac{36}{91}\%$ (d) $45\frac{55}{91}\%$ (e) $54\frac{36}{91}\%$

49. Find the average expense on 'X' in the month of Jan, Mar and May together ?
(a) 618 (b) 612 (c) 622 (d) 628 (e) 632

50. Find the ratio of total expense in Feb to total expense in April ?
(a) $\frac{96}{143}$ (b) $\frac{57}{125}$ (c) $\frac{87}{143}$ (d) $\frac{57}{143}$ (e) $\frac{87}{125}$

Directions (51-55): Study the data given below carefully and answer following questions based on these data.
Given below is the table which shows number of students participated (in thousand) in BANK exam and SSC exams from year 2000 to year 2005. There is also a line graph which shows percentage of qualified students in BANK exam and SSC exam

Year	No. of student (in thousand)	
	BANK	SSC
2000	85	90
2001	90	100
2002	95	105
2003	110	85
2004	80	85
2005	90	95



51. Number of qualified candidates in BANK exam in 2002 is what percent more or less than the failed candidates of SSC exam in 2001.
(a) $41\frac{12}{17}\%$ (b) $39\frac{12}{17}\%\%$ (c) $36\frac{12}{17}\%$ (d) 42.5% (e) $35\frac{12}{17}\%$

52. Maximum growth of qualified candidates in BANK exam is recorded in which year ,comparison to previous year ?
(a) 2001 (b) 2002 (c) 2003 (d) 2004 (e) 2005

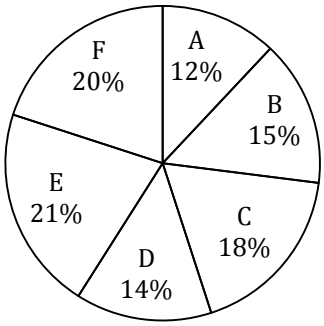
53. Ratio between the total failed student in 2004 in both exam and qualified student of BANK exam in 2000 is:-
(a) 351 : 442 (b) 451 : 342 (c) 442 : 453 (d) 229 : 189 (e) 475:442

54. Find the average number of students qualified in SSC exam in all year. (Consider nearest integer).
(a) 55938 (b) 54620 (c) $56770\frac{5}{6}$ (d) 52940 (e) 58478

55. Find the difference between sum of qualified student of SSC exam in 2002, 2003, 2004 and sum of qualified students of BANK exam in 2001, 2003, 2005.
(a) 11350 (b) 12455 (c) 13775 (d) 12875 (e) 14780

Directions (56-60): Pie-chart shown below shows percentages of cars sold by six Honda dealers.
Table shows the ratio of three type of cars out of total cars sold by different dealers. Study the data carefully and answer the following questions:

Total Cars sold = 12,000



Type of Cars → Dealers ↓	Accord : Civic : City
A	4 : 2 : 3
B	3 : 4 : 3
C	7 : 4 : 4
D	6 : 8 : 7
E	3 : 6 : 5
F	5 : 4 : 6

56. What is the difference between the number of Accord cars sold by dealers D and E together and the number of City cars sold by dealers B and F together?
(a) 360 (b) 420 (c) 540 (d) 480 (e)460

57. The number of Accord and Civic cars sold by dealer A together is what percent of the number of Civic and City cars sold by dealer D together?
(a) 90% (b) 80% (c) 75% (d) 60% (e) 50%

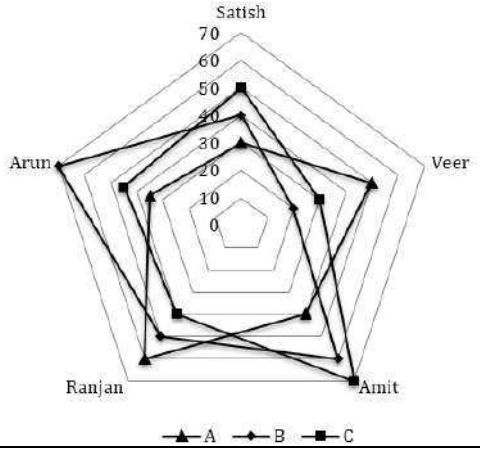
58. What is the average number of Civic cars sold by dealers A, B, D and E together?
(a) 670 (b) 710 (c) 690 (d) 650 (e) 680

59. What is the ratio of the number of Civic to City cars sold together by dealer B to that by dealer E?
(a) 11 : 7 (b) 7 : 11 (c) 5 : 8 (d) 8 : 5 (e) 7:12

60. Out of six dealers, which dealer sold the minimum number of City cars?
(a) B (b) C (c) D (d) E (e) A

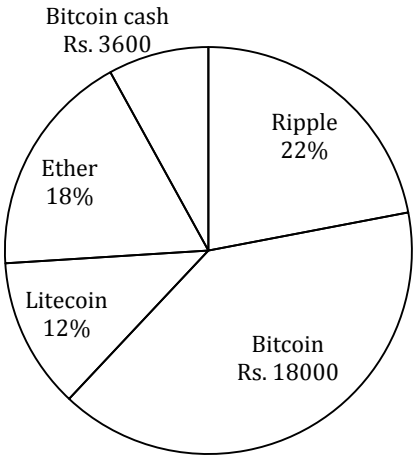
Direction (61- 65): Five traders bought 3 types of markers i.e. A, B and C on different price. The table given below shows the total number of markers bought and Radar graph shows per unit price of markers A, B and C to traders.

Traders	Total markers bought	A, B and C
Satish	165	3: 4: 4
Veer	195	4: 5: 4
Amit	175	2: 2: 1
Ranjan	210	4: 6: 4
Arun	198	1 : 3 : 5



61. Amount spend by Satish and Veer on Marker B is how much less than amount spend by Arun and Ranjan on marker C?
(a) 3150 (b) 3250 (c) 3350 (d) 3450 (e) 3550
62. Total amount spent by Amit is what percent of the total amount spent by Veer?
(a) 125% (b) 150% (c) 165% (d) 175% (e) 140%
63. Amount spend on marker A by Amit, Ranjan and Arun together is how much more or less than amount spend on marker C by Satish, Veer and Amit together?
(a) 180 (b) 160 (c) 80 (d) 60 (e) 40
64. What is the ratio of the total amount spent by Satish to the total amount spent by Ranjan?
(a) 7: 15 (b) 4: 5 (c) 7: 13 (d) 9: 14 (e) 7:16
65. Arun sold marker A at 10% profit, marker B at 20% profit and Marker C at 30% profit. Find the amount Arun got after selling all the markers?
(a) 12,826 (b) 10,340 (c) 11,456 (d) 12,656 (e) 11,734

Directions (66-70): Study the following pie chart and table to answer the questions that follow.
The pie-chart shows the distribution (either in percentage or in absolute value) of investment made by Arunoday in five Cryptocurrencies in 2017 in month of November.



The table shows the profit or loss (by selling respective currencies at the end of November) in terms of percentage with respect to total amount invested on that currency.

Cryptocurrency	%Profit or % loss
Ripple	$90\frac{10}{11}$% Profit
Bitcoin	$22\frac{2}{9}$% loss
Litecoin	$27\frac{7}{9}$% loss
Ether	$55\frac{5}{9}$% profit
Bitcoin cash	$33\frac{1}{3}$% profit

66. Find the price per unit of Ripple bought by Arunoday if he sold 160 units at Rs. 75 each and remaining at Rs. 46 each. (take purchasing price rounded to nearest integer)
(a) Rs. 38 (b) Rs. 32 (c) Rs. 22 (d) Rs. 28 (e) Rs. 16
67. Find the difference in the profit earned on Ripple and Bitcoin cash.
(a) Rs. 7650 (b) Rs. 7850 (c) Rs. 7500 (d) Rs. 7800 (e) Rs. 5000
68. Profit earned on Litecoin and Ether together are what percent of the total investment made by Arunoday ?
(a) $6\frac{2}{3}$% (b) $8\frac{2}{3}$% (c) $6\frac{1}{3}$% (d) $4\frac{4}{7}$% (e) $8\frac{1}{3}$%
69. Find the overall profit or loss on Bitcoin, Litecoin and Ripple together.
(a) Rs. 3550 (b) Rs. 3800 (c) Rs. 3500 (d) Rs. 3680 (e) Rs. 3050
70. When Arunoday bought Bitcoin, the rate was Rs. 12,00,000 per Bitcoin. Had he not sold the currency in the end of November but only at the end of December when the price of Bitcoin increased by 0.6% as compared to the price at which he bought it, then find the new profit or loss on Bitcoins.
(a) Rs. 1080 (b) Rs. 2280 (c) Rs. 505 (d) Rs. 1108 (e) Rs. 108

Directions (71- 75): Given below is the bar-graph which shows the total number of persons who are visiting Hotel Shivoy in 5 different months of year.

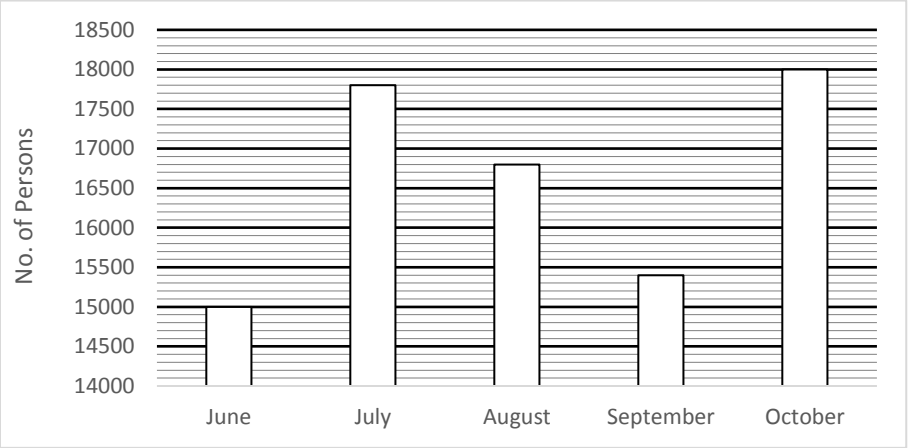


Table shows the percentage of foreigners in number of persons visiting in different months.

Months	% of persons who are foreigners
June	25%
July	18%
August	18%
September	23%
October	15%

Note- Total person= Indians + foreigners

71. If total Indian visitors in November are $2\frac{1}{17}$% of the total Indians visitors in October and total visitors are 4/3 rd of the total visitors in June. Then find the difference of foreigner and Indian who visited in November?
(a) 19820 (b) 18315 (c) 19370 (d) 17370 (e) 20210

72. If the ratio of male and female foreigners visiting Hotel Shivoy in month of September is 3 : 4, then foreigner males are what percent of foreigner females in September?
(a) 75% (b) 85% (c) 92% (d) 60% (e) 70%

73. If $33\frac{1}{3}$%of foreigners visiting in August are married and 25% of Indians are also married, and 1/4th of the remaining foreigner are unmarried females and $33\frac{1}{3}$% of the remaining Indians are unmarried females. Then find the total females visiting Hotel Shivoy in month of August (there are no polygamy males or females)?
(a) 6252 (b) 5468 (c) 6220 (d) 6174 (e) 6184

74. If the ratio of Indian male and female visitors in June is 2 : 3 and ratio of foreigner male & female visitors in August is 1 : 5, then find the ratio of Indian females visitors in June to foreigner males in August?
(a) 365 : 28 (b) 28 : 375 (c) 375 : 28 (d) 355 : 28 (e) 375 : 23

75. Foreigner visitors in October are what percent of Indian visitors in June?
(a) 28% (b) 27% (c) 36% (d) 32% (e) 24%

PRACTICE SET (LEVEL–I) SOLUTIONS

1. (c); Total votes casted for varun Gandhi
$=\frac{5000(22\times22+18\times22+14\times16+24\times10+20\times22)}{10000}=790$
Total votes casted for Deepak mittal=
$\frac{5000(22\times20+18\times12+16\times15+24\times18+20\times16)}{10000}=824$
Required difference=824-790 = 34

2. (b); Required percentage
$=\frac{\frac{5000}{10000}(22\times13+18\times20+16\times18+24\times21+20\times21}{5000\times\frac{24}{100}}\times100$
$=\frac{\frac{1}{2}(286+360+288+504+240)}{1200}\times100$
$=\frac{839}{1200}\times100=69\frac{11}{12}\%$

3. (d); Girls in mechanical $=\frac{3}{8}\times\frac{16}{100}\times\frac{22}{100}\times5000=66$
$\therefore$ Total number of girls $=66\times36=2376$
So, total number of boys $=5000-2376=2624$

4. (e); Number of students supporting K.L.
Bali=$\frac{\frac{5000}{10000}(22\times14+18\times16+16\times22+24\times20+20\times12)}{5000\times\frac{20}{100}}$
$\therefore$ Required ratio $=\frac{834}{1000}=\frac{417}{500}$

5. (c); Total votes casted for Yogesh gupta
$=\frac{5000(22\times22+18\times22+16\times23+24\times16+20\times20)}{10000}$
$=\frac{1(484+396+368+384+400)}{2}=1016$
Total votes casted for vijay tyagi
$=\frac{5000(22\times15+18\times12+16\times8+24\times15+20\times18)}{10000}$
$=\frac{1(330+216+128+360+360)}{2}=697$
Difference in votes $1016-697=319$
$\therefore$ Required percentage $=\frac{319}{5000}\times100=6\frac{19}{50}\%$

6. (d); Number of males in city K $=\frac{40}{100}\times20{,}000=8000$
Number of males who left city K $=\frac{40}{100}\times8000=3200$
Number of males in city L $=\frac{60}{100}\times25{,}000=15000$
Total number of males in city L after Males who joined city L
= 15000 + 3200 = 18200

7. (c); Literate people from city L
$=\frac{7}{10}\times25{,}000=175{,}00$
Illiterate people from city M
$=\frac{8}{10}\times35{,}000=28000$
$\therefore$ Percentage $=\frac{17500}{28000}\times100=62.5\%$

8. (a); 30 percent of male from city M
$=\frac{20}{100}\times35{,}000\times\frac{30}{100}=2100$
$\therefore$ 2100 male from city M are illiterate
Female from city M who are illiterate
$=\frac{4}{5}\times35{,}000-2100$
$=28000-2100=25900$
$\therefore$ Ratio $=\frac{2100}{25900}=21:259$

9. (b); Required average $=\frac{15000+7500+28000+24000+27500}{5}=20400$

10. (d); Since the illiterate males from city K and city L cannot be determined.

11. (a); According to Question
$11200=\frac{70{,}000\times R\times2}{100}$
$R=8\%$
Share of Abhimanyu$=\frac{11}{25}\times11200=4928$

12. (c); Required ratio $=\frac{\frac{11}{25}\times70+\frac{7}{20}\times65+\frac{2}{5}\times80}{\frac{1}{2}\times60+\frac{7}{10}\times40+\frac{3}{5}\times55}$
$=\frac{30.8+22.75+32}{30+28+33}=\frac{85.55}{91}=1711:1820$

13. (c); Average of investment made by Abhimanyu in scheme A and C together is
$=\frac{\frac{11}{25}\times70+\frac{1}{2}\times60}{2}=\frac{60.8}{2}=30.4$
Average of investment made in scheme E & F by Arunoday
$=\frac{\frac{7}{10}\times40+\frac{3}{5}\times55}{2}=\frac{28+33}{2}=\frac{61}{2}$
$\Rightarrow30.5$
Required % $=\frac{30.4}{30.5}\times100\approx100\%$

14. (c); Interest obtained from scheme B
$=\frac{7}{20}\times65\times\frac{20}{100}+\frac{13}{20}\times65\times\frac{30}{100}$
$=4.55+12.675$
$=17225\ Rs$
Interest obtained from C
$=\frac{1}{2}\times60\times3\times\frac{1}{3}+\frac{1}{2}\times60\times\frac{1}{3}=30+10$
$=40\ thousands=40{,}000\ Rs$
Total Interest = 57225 Rs

15. (a); Required ratio
$=\frac{\frac{11}{25}\times70+\frac{7}{20}\times65+\frac{1}{2}\times60+\frac{2}{5}\times80}{\frac{14}{25}\times70+\frac{13}{20}\times65+\frac{1}{2}\times60+\frac{3}{5}\times80}=\frac{30.8+22.75+30+32}{39.2+42.25+30+48}$
$=\frac{115.55}{159.45}=\frac{2311}{3189}$

16. (c); Expenditure of B on clothing $=\frac{24000}{75}\times100\times\frac{15}{100}=4800$
Expenditure of D on clothing $=\left(100\%+16\frac{2}{3}\%\right)4800=5600$
Sum of expenditure of D on food and clothing $=\frac{5600}{7}\times15$
$=800\times15=12000$

17. (a); Sum of Expenditure of D and F on house rent $=30000\times\frac{20}{100}+\frac{1}{3}\times15000$
$=6000+5000=11000$
Expenditure of B on Education=$\frac{24000}{75}\times100\times\frac{10}{100}$
= 3200
Required percentage = $\frac{3200}{11000}\times100=\frac{320}{11}=29\frac{1}{11}\%$

18. (c); Expenditure of B on clothing = 4800
Income of C $=\left(100\%+\frac{1100}{3}\%\right)4800$
$=\frac{14}{3}\times4800=22400$
Saving of C = 22400 – 20000 = 2400
Required % = $\frac{5600}{8000}\times100=70\%$

19. (c); Saving of A, B, C, D, E and F are 4000, 8000, 4000, 12000, 8000 and 4000 respectively
Income of A, B, C, D, E and F are 20000, 32000, 24000, 42000, 33000 and 19000 respectively

Required average = $\frac{170000}{6} = 28333.33$

20. (d); Expenditure of E on bills = $32000 \times \frac{10}{100} = 3200$

Income of B after decrement = $\left(100\% - \frac{35}{2}\%\right) 32000$

= 26400

Now expenditure of B on bills = $26400 \times \frac{10}{100} = 2640$

Required percentage = $\frac{3200-2640}{3200} \times 100 = 17.5\%$

21. (a); Total visitors in June

$= \frac{6}{5} \times 15000 = 18000$

Foreigner in June month

$= 1.3 \times \frac{1}{4} \times 15000 = 4875$

Total foreign visitors in Jan and Feb together

$= \frac{1}{4} \times 15000 + 17800 \times \frac{18}{100}$

= 3750 + 3204 = 6954

$Required\ \% = \frac{(18000-4875)}{6954} \times 100 \approx 188\%$

22. (a); Total females visiting in Feb month

$= 17{,}800 \times \frac{1}{2} = 8{,}900$

Total males visiting in May month

$= 18000 \times \frac{3}{5} = 10800$

Foreign females visitors in Feb

$= \frac{4}{9} \times 17800 \times \frac{18}{100} = 1424$

Foreign male visitors in May

$= \frac{3}{4} \times 18000 \times \frac{15}{100} = 2025$

$Required\ \% = \frac{8900-1424}{10800-2025} \times 100$

$\approx \frac{8900-1400}{10800-2000} \times 100$

$\approx \frac{7500}{8800} \times 100 \approx 85\%$

23. (e); Total foreign visitors in Feb and March month together

$= 17800 \times \frac{18}{100} + 16800 \times \frac{20}{100}$

= 3204 + 3360 = 6564

Total India visitors in Jan and April

$= 15000 \times \frac{75}{100} + 15400 \times \frac{77}{100}$

= 11250 + 11858 = 23108

Required difference = 23108 – 6564 =16544

24. (c); Total married Indian couples in Feb

$= \frac{1}{2} \times 17800 \times \frac{82}{100} = 7298$

Total married foreign couples in Feb

$= \frac{1}{6} \times 17800 \times \frac{18}{100} = 534$

Remaining Indian male visitors = 3649

Remaining foreign males visitors = 1780

Required total number of males

$= \frac{7298}{2} + \frac{534}{2} + 3649 + 1780 = 9345$

25. (b); $Required\% = \frac{3204-2700}{2700} \times 100 = \frac{504}{27}\%$

$= \frac{56}{3}\% = 18\frac{2}{3}\%$

26. (b); Total population of female in village U = $\frac{17}{100}x$

So,

$\frac{17}{100}x = \left(100 - \frac{1300}{30}\right)\% \rightarrow \frac{17}{100}x$

$\frac{1700}{30}\% \rightarrow \frac{17}{100}x$

$100\% \rightarrow \frac{17}{100}x \times \frac{30}{1700} \times 100$

Population of female in village T = $\frac{14}{100}x$

$\left(100 - \frac{1100}{25}\right)\% \rightarrow \frac{14}{100}x$

$100\% \rightarrow \frac{14}{100}x \times \frac{25}{1400} \times 100$

Required % $= \frac{\frac{17}{100}x \times \frac{30}{1700} \times 100}{\frac{14}{100}x \times \frac{25}{1400} \times 100} \times 100$

$= \frac{30x}{25x} \times 100 = 120\%$

27. (a); Total females from village S and T together

= (20% + 14%)x = $\frac{34}{100}x$

Males from village R = $\frac{16x}{16} \times 15 = 15x$

Males from village U = $\frac{17x}{17} \times 13 = 13x$

Required ratio

$= \frac{34x}{(15x+13x)} = \frac{34}{28} = 17:14$

28. (d); Total females in village P = $0.18x$

$Total\ males\ in\ village\ P = \frac{0.18x}{\left(100\% - \frac{700}{13}\%\right)} \times \frac{700}{13}\%$

$= \frac{0.18x}{\frac{600}{13}} \times \frac{700}{13} = 0.21x$

Total population of village P = $0.21x + 0.18x = 0.39x$

$Total\ illiterate\ in\ P = \frac{2}{13} \times 0.39x = 0.06x$

$Total\ male\ illiterate\ in\ P = 0.06x - \frac{20}{100} \times 0.18x$

$= 0.06x - 0.036x = 0.024x$

$Required\ percentage = \frac{0.024x}{0.21x} \times 100 = \frac{80}{7}\%$

29. (b); $\frac{700}{13}\% \rightarrow 17850$

$\frac{600}{13}\% \rightarrow 17850 \times \frac{13}{700} \times \frac{600}{13} \rightarrow 15300$

$\frac{18x}{100} = 15300$

x = 85000

Total females in T and U together = $\frac{30}{100} \times 85000$

= 26350

Males in village T = $\frac{14}{100} \times 85000 \times \frac{25}{1400} \times \frac{1100}{25} = 9350$

Male in village U = $\frac{17}{100} \times 85000 \times \frac{30}{1700} \times \frac{1300}{30} = 11050$

Total male and female in village T and U together

= 26350 + 9350 + 11050 = 46750

30. (e); Total male and female who are not registered in voter list

$= \frac{30}{100} \times 27200 + \frac{20}{100} \times \frac{27200}{\left(100\% - \frac{1500}{31}\%\right)} \times \frac{1500}{31}\% =$

$8160 + \frac{1}{5} \times \frac{27200}{\frac{1600}{31}\%} \times \frac{1500}{31}\%$

= 8160 + 5100 = 13260

$Total\ population\ of\ village\ R$

$= \frac{27200}{\left(100\% - \frac{1500}{31}\%\right)} \times 100\% = \frac{27200}{\frac{1600}{31}} \times 100 = 52700$

$Total\ polled\ in\ R = \frac{60}{100} \times 52700 = 31620$

Total registered voter who did not cast their vote

= 52700 – 13260 – 31620 = 7820

Required difference = 13260 – 7820 = 5440

31. (a); Total books sold by store A

$= 18 \times 257 + \frac{18}{3}\% \times 4 \times 25700$

$= 18 \times 257 + 24 \times 257$
$= 257 \times 42$
Total books sold by store B
$= 20 \times 257 + \frac{20 \times 257 \times 5}{4} = 257 \times 45$
Total books sold by both store
$= 257(45 + 42) = 257 \times 87 = 22{,}359$

32. (c); Total books sold by store D
$= 8 \times 257 + 8 \times 257 \times \frac{5}{4} = 257(8 + 10)$
$= 257 \times 18 = 4626$

33. (b); Total books of publisher X sold by store E, F and G together = 44×257
Total books of publisher Y sold by store E, F and G together
$= 25700\left(\frac{13\%}{13} \times 5 + 22\% \times \frac{12}{11} + 9\% \times \frac{4}{3}\right)$
$= 25700(5\% + 24\% + 12\%)$
$= 25700(41\%)$
$Required\ percentage = \frac{257(44-41)}{257 \times 41} \times 100 = \frac{3}{41} \times 100 = \frac{300}{41}\%$

34. (a); Total books sold by store E in 2017
$= \frac{4}{3}(13 \times 257 + 5 \times 257)$
$= 4 \times 257 \times 6$
$= 257 \times 24$
$Required\ percentage = \frac{257 \times 13 - 257 \times 24 \times \frac{11}{24}}{257 \times 24 \times \frac{11}{24}} \times 100$
$= \frac{257(13-11)}{257 \times 11} \times 100 = \frac{200}{11}\%$

35. (c); Average of books of publisher X sold by store B and C
$= \frac{30 \times 257}{2} = 15 \times 257$
Average of books of publisher Y sold by store E and G
$= \left(13 \times 257 \times \frac{5}{13} + 9 \times 257 \times \frac{4}{3}\right)\frac{1}{2}$
$= (5 \times 257 + 12 \times 257)\frac{1}{2} = 8.5 \times 257$
$Required\ percentage = \frac{15 \times 257 - 8.5 \times 257}{8.5 \times 257} \times 100 = \frac{6.5}{8.5} \times 100 = \frac{13}{17} \times 100 = \frac{1300}{17}\%$

36. (d); Total literate female from E
$= \frac{1000}{20} \times 80 = 4000$
Total female in village A = $6000 + \frac{6000}{60} \times 40$
$= 10{,}000$
$Total\ male\ in\ village\ A = \frac{10000}{100\% - 54\frac{6}{11}\%} \times 54\frac{6}{11}\%$
$= \frac{10000}{\left(100\% - \frac{600}{11}\%\right)} \times \frac{600}{11}\% = 12000$
Required percentage
$= \frac{8000}{12000} \times 100 = 66\frac{2}{3}\%$

37. (b); Total males in village A = 12000 (solved above)
Illiterate female in village C = $12000\left(1 + \frac{1}{12}\right)$
$= 12000 \times \frac{13}{12} = 13000$
Total literate female in village F = $\frac{2000}{40} \times 60 = 300$
Required value = 13000 – 3000 = 10000

38. (e); Total literate female in village D
$= \left(1 + \frac{4}{9}\right) \times 4500 = \frac{13}{9} \times 4500 = 6500$
Total female in D = 3500 + 6500 = 10000
Total males = $\frac{10000}{\left(100\% - 52\frac{8}{21}\%\right)} \times 52\frac{8}{21}\%$
$= \frac{10000}{\frac{10}{21}} \times \frac{11}{21} = 11000$
Total females in F = $2000 + \frac{2000}{40} \times 60 = 5000$
Total males in F = $\frac{5000}{\left(1 - \frac{6}{11}\right)} \times \frac{6}{11}$
$= \frac{5000}{\frac{5}{11}} \times \frac{6}{11} = 6000$
Required difference = 11000 – 6000 = 5000

39. (a); Total males in F = 6000 (Solved above)
Total females in B = $4500 + \frac{4500}{45} \times 55 = 10000$
Total males in B = $\frac{10000}{\left(1 - \frac{4}{9}\right)} \times \frac{4}{9} = \frac{10000}{5} \times 4 = 8000$
Required ratio = 3 : 4

40. (b); Let, total persons in 2016 in C = 9,100
So males in C in 2016
$= 9100 \times \frac{3}{7} = 3900$
Now illiterate females in 2017
$= 5200 \times \frac{65}{100} \times \frac{11}{13} = 2860$
And literate female in 2017
$= 5200 \times \frac{35}{100} \times \frac{14}{13}$
$= 1960$
Now total females in 2017 = 4820
Percentage increase in males in 2017 with respect to previous year
$= \frac{(5200 - 4820)}{3900} \times 100 = 9\frac{29}{39}\%$

41. (b); Total male students participating in seminar in 2014
$= \left(\frac{5}{8} \times 40 + \frac{5}{7} \times 35 + \frac{7}{10} \times 20\right)$ thousands
= 64 thousands
Total female students who participated in 2013
$= \left(\frac{1}{5} \times 30 + \frac{1}{5} \times 25 + \frac{1}{5} \times 15\right)$ thousands
= 14 thousands
∴Required percentage = $\frac{64}{14} \times 100 = 457\frac{1}{7}\%$

42. (c); Total students (both male and female) preparing forbanking who asked questions in seminar in 2015
$= \frac{10}{100} \times \frac{7}{10} \times 50 + \frac{5}{100} \times \frac{3}{10} \times 50$
= (3.5 + 0.75) = 4.25 thousands
Total students preparing for SSC who asked question in 2015
$= \frac{10}{100} \times 45000 = 4.5$ thousands
$\therefore Required\ percentage = \frac{4.25}{4.5} \times 100 = 94\frac{4}{9}\%$

43. (c); Required average = $\frac{1}{5} \times \left(\frac{4}{5} \times 15 + \frac{7}{10} \times 20 + \frac{6}{7} \times 35 + \frac{3}{4} \times 30 + \frac{3}{5} \times 40\right) = \frac{1}{5} \times 102.5 = 20.5$ thousands

44. (b); Total no of male students preparing for bank exam in 2016 and 2017 together
$= \frac{3}{5} \times 50 + \frac{2}{3} \times 60 = 70$ thousands
Total no of female students preparing for SSC exam in 2016 and 2017 together
$= \frac{3}{8} \times 40 + \frac{3}{10} \times 50 = 30$ thousands
∴ Required percentage = $\frac{40}{30} \times 100 = 133\frac{1}{3}\%$

45. (d); In 2012,
Total students who participated in seminar preparing for Banking
$= 30{,}000 \times \frac{90}{100} = 27{,}000$

SSC = $\frac{80}{100} \times 25,000 = 20,000$

Railway = $\frac{75}{100} \times 15,000 = 11,250$.

No. of boys who participated in seminar in 2012

Banking = $\frac{4}{5} \times 30,000 - 1000 = 23,000$

SSC = $\frac{4}{5} \times 25,000 - 1500 = 18,500$

Railway = $\frac{4}{5} \times 15,000 - 2000 = 10,000$

∴ Required no of girls = (27, 000 – 23,000) + (20,000 – 18,500) + (11,250 – 10,000) = 6, 750

46. (d); $Total\ Income = \frac{4680}{\frac{24}{12}} \times 100 = 19500$

$Income\ in\ Jan = \frac{12}{100} \times 19500 = 2340$

$Expense\ in\ month\ of\ Jan = 2340\left[1 - \frac{750}{1300}\right] = 990$

$Expense\ in\ month\ of\ Jan\ on\ 'Z' = \frac{990}{15} \times 7 = 462$

$Expense\ in\ month\ of\ Feb = 19500 \times \frac{16}{100} \times \left[1 - \frac{500}{1300}\right] = 1920$

$Expense\ in\ month\ of\ Feb\ on\ 'X' = \frac{1920}{24} \times 3 = 560$

$Required\% = \frac{560 - 462}{560} \times 100 = 17.5\%$

47. (b); $Expense\ o\ 'Z'\ in\ Apr = 4680 \times \left[1 - \frac{350}{900}\right] \times \frac{4}{11} = 1040$

$Expense\ on\ 'X'\ in\ May = 19500 \times \frac{28}{100} \times \left[1 - \frac{130}{300}\right] \times \frac{6}{17} = 1092$

Required difference = 1092 – 1040 = 52

48. (e); Total expense in month of Jan

$= 19500 \times \frac{12}{100}\left[1 - \frac{750}{1300}\right] = 990$

Total saving in month of April

$= 4680 \times \frac{350}{900} = 1820$

$Required\% = \frac{990}{1820} \times 100 = 54\frac{36}{91}\%$

49. (c); Expense on 'X' in Jan

$= 19500 \times \frac{12}{100\left[1 - \frac{750}{1300}\right]} \times \frac{3}{15} = 198$

Expense on 'X' in Mar

$= 19500 \times \frac{20}{100} \times \left[\frac{100 - 52}{100}\right] \times \frac{4}{13} = 576$

Expense on 'X' in May

$= 19500 \times \frac{28}{100} \times \left[1 - \frac{130}{300}\right] \times \frac{6}{17} = 1092$

$Required\ average = \frac{1}{3}[198 + 576 + 1092]$

$= \frac{1}{3} \times 1866 = 622$

50. (a); $Required\ ratio = \frac{19500 \times \frac{16}{100} \times \left[1 - \frac{500}{1300}\right]}{4680 \times \left[1 - \frac{350}{900}\right]} = \frac{1920}{2860} = \frac{96}{143}$

51. (b); Number of qualified candidates in BANK exam in 2002 = $95000 \times \frac{62.5}{100} = 59375$

Failed candidates in SSC exam in 2001 = $100000 \times \frac{42.5}{100} = 42500$

Required percentage = $\frac{59375 - 42500}{42500} \times 100$

$= \frac{16875}{425}\% = 39\frac{12}{17}\%$

52. (c); Qualified candidates of BANK exam in different year,

In year, $2000 \Rightarrow 85000 \times \frac{65}{100} = 55250$

$2001 \Rightarrow 90000 \times \frac{60}{100} = 54000$ **decrease**

$2002 \Rightarrow 95000 \times \frac{62.5}{100} = 59375$ **increase**

$2003 \Rightarrow 110000 \times \frac{67.5}{100} = 74250$ **increase**

$2004 \Rightarrow 80000 \times \frac{55}{100} = 44000$ **decrease**

$2005 \Rightarrow 90000 \times \frac{57.5}{100} = 51750$ **increase**

Maximum growth is recorded in 2003 i.e; 74250 - 59375 = 14875

53. (e); Total failed student in 2004

$= 80000 \times \frac{45}{100} + 85000 \times \frac{27.5}{100} = 59375$

Qualified students of BANK exam in 2000 = 55250

Required ratio = 59375 : 55250 = 475 : 442

54. (c); Required average

$= \frac{1}{6}\left[90000 \times \frac{55}{100} + 100000 \times \frac{57.5}{100} + 105000 \times \frac{60}{100} + 85000 \times \frac{50}{100} + 85000 \times \frac{72.5}{100} + 95000 \times \frac{70}{100}\right]$

$= \frac{1}{6}[340625] = 56770\frac{5}{6}$

55. (d); Sum of qualified student in SSC exam = $105000 \times \frac{60}{100} + 85000 \times \frac{50}{100} + 85000 \times \frac{72.5}{100} = 167125$

Sum of qualified student in BANK exam = $90000 \times \frac{60}{100} + 110000 \times \frac{67.5}{100} + 90000 \times \frac{57.5}{100} = 180000$

Required difference = 180000 – 167125 = 12875

56. (d); Number of Accord cars sold by dealers D and E together

$= \left(\frac{6}{21} \times \frac{14}{100} + \frac{3}{14} \times \frac{21}{100}\right) \times 12000 = 480 + 540 = 1020$

Number of City cars sold by dealers B and F together

$= \left(\frac{3}{10} \times \frac{15}{100} + \frac{6}{15} \times \frac{20}{100}\right) \times 12000 = 540 + 960 = 1500$

Required Difference = 1500 - 1020 = 480

57. (b); Number of Accord and Civic cars sold by dealer A together = $\frac{6}{9}$ of 12% = 8%

Number of Civic and City cars sold by dealer D together = $\frac{15}{21}$ of 14% = 10%

Required Percentage = $\frac{8}{10} \times 100 = 80\%$

58. (c); Total number of Civic cars sold by dealers A, B, D and E together

$= \left(\frac{2}{9} \times \frac{12}{100} + \frac{4}{10} \times \frac{15}{100} + \frac{8}{21} \times \frac{14}{100} + \frac{6}{14} \times \frac{21}{100}\right) \times 12000$

= 320 + 720 + 640 + 1080 = 2760

Required Average = $\frac{2760}{4} = 690$

59. (b); Civic and City cars sold together by dealer B

= $\frac{7}{10}$ of 15% = $\frac{21}{2}\%$

Civic and City cars sold together by dealer E

= $\frac{11}{14}$ of 21% = $\frac{33}{2}\%$

Required Ratio = $\frac{21}{2}\% : \frac{33}{2}\% = 7 : 11$

60. (e); Percentage of City cars sold by:

Dealer A = $\frac{3}{9}$ of 12% = 4%

Dealer B = $\frac{3}{10}$ of 15% = 4.5%

Dealer C = $\frac{4}{15}$ of 18% = 4.8%

Dealer D = $\frac{7}{21}$ of 14% = 4.67%

Dealer E = $\frac{5}{14}$ of 21% = 7.5%

Dealer F = $\frac{6}{15}$ of 20% = 8%

Hence, dealer A sold the minimum number of City cars.

61. (d); Marker B bought by Satish= $\frac{165}{11} \times 4 = 60$

Marker B bought by Veer = $\frac{195}{13} \times 5 = 75$

Amount spend by Satish & Veer on marker B

= 60 × 40 + 75 × 20 = 2400 + 1500 = 3900

Marker C bought by Ranjan = $\frac{210}{14} \times 4 = 60$

Marker C bought by Arun= $\frac{198}{9} \times 5 = 110$

Amount spend by Ranjan &Arun on Marker C

= 60 × 40 + 110 × 45 = 2400 + 4950= 7350

Required difference = 7350 – 3900 = 3450

62. (b); Amount spend by Veer = $\frac{195}{13} \times 4 \times 50 + \frac{195}{13} \times 5 \times 20 + \frac{195}{13} \times 4 \times 30$ = 15[200+ 100 + 120] = 6300

Amount spend by Amit = $\frac{175}{5}$[2 × 40 + 2 × 60 + 70]

= 35 [80 + 120 + 70] = 9450

Required % = $\frac{9450}{6300} \times 100 = 150\%$

63. (c); Amount spend on maker A by Amit, Ranjan and Arun= $\frac{175}{5} \times 2 \times 40 + \frac{210}{14} \times 4 \times 60 + \frac{198}{9} \times 1 \times 35$

= 2800 + 3600 + 770 = 7170

Amount spend on Maker C by Satish, Veer and Amit

= $\frac{165}{11} \times 4 \times 50 + \frac{195}{13} \times 4 \times 30 + \frac{175}{5} \times 1 \times 70$

=3000 + 1800 + 2450 = 7250

Required difference= 7250 – 7170= 80

64. (d); Total amount spent by Satish = $\frac{165}{11}$[3 × 30 + 4 × 40 + 4 × 50]

= 15 [90 + 160 + 200] = 6750

Total Amount spent by Ranjan = $\frac{210}{14}$[4 × 60 + 6 × 50 + 4 × 40]

= 15[240+ 300 + 160] = 10500

Required ratio = $\frac{6750}{10500} = \frac{9}{14}$

65. (a); Required value = $\frac{198}{9}\left[1 \times 35 \times \frac{11}{10} + 3 \times 70 \times \frac{12}{10} + 5 \times 45 \times \frac{13}{10}\right]$ = 22[38.5 + 252 + 292.5] = 12826

Direction (66-70)

Currencies	Amount invested	Profit or loss
Ripple	9900	9000 profit
Bitcoin	18000	4000 loss
Litecoin	5400	1500 loss
Ether	8100	4500 profit
Bitcoin cash	3600	1200 profit
	Total = 45000	

66. (b); Total amount after selling Ripple = 9900 + 9000 = Rs. 18900

∴ 18900 = 160 × 75 + x × 46

⇒ $x = \frac{18900 - 12000}{46} = 150\ units$

So, Arunoday bought a total of 160 + 150 = 310 units of Ripple

∴ Price per unit of Ripple

= $\frac{9900}{310} \approx 32\ Rs.$

67. (d); Required difference in profit = 9000 – 1200 = 7800 Rs.

68. (a); Required percentage = $\frac{4500-1500}{45000} \times 100 = 6\frac{2}{3}\%$

69. (c); Required profit = 9000 – 4000 – 1500 = Rs. 3500

70. (e); Quantity of Bitcoin bought

= $\frac{18000}{12,00,000} = 0.015\ units$

$New\ selling\ price = \frac{100.6}{100} \times 12,00,000 = 12,07,200$

∴ Amount collected after selling at new price

= 1207200 × 0.015 = Rs. 18108

So, required profit = 18108 – 18000 = Rs.108.

71. (c); Total Indians in November

= $\frac{35}{1700} \times \frac{85}{100} \times 18000 = 315$

Total visitors in November

= $\frac{4}{3} \times 15000 = 20000$

∴ Foreigners visiting in November

= 20000 – 315 = 19685

∴ Required difference

= 19685– 315 = 19370

72. (a); Males visiting who are foreigner in September

= $\frac{3}{7} \times \frac{23}{100} \times 15400 = 1518$

Females foreigner in September

= $\frac{4}{7} \times \frac{23}{100} \times 15400 = 2024$

∴ Required percentage = $\frac{1518}{2024} \times 100 = 75\%$

Alternately,

Required ratio = $\frac{3}{4} \times 100 = 75\%$

73. (d); Foreigner who are married

= $\frac{18}{100} \times 16800 \times \frac{1}{3} = 1008$

Indians who are married

= $\frac{82}{100} \times 16800 \times \frac{1}{4} = 3444$

remaining foreign females visitors

= $\frac{2016}{4} = 504$

Remaining Indian females visitors = $\frac{10332}{3} = 3444$

∴ Required total females

= $\frac{1008}{2} + \frac{3444}{2} + 504 + 3444 = 6174$

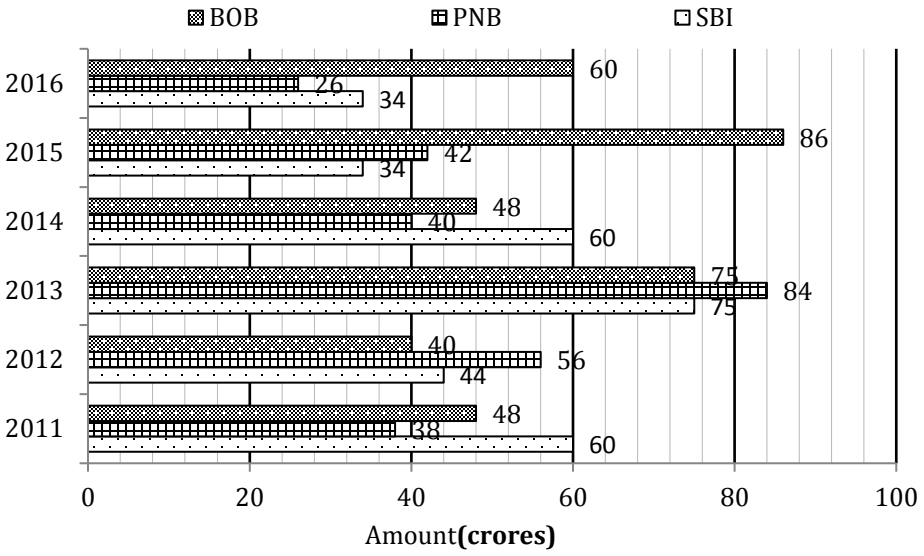
74. (c); Required ratio

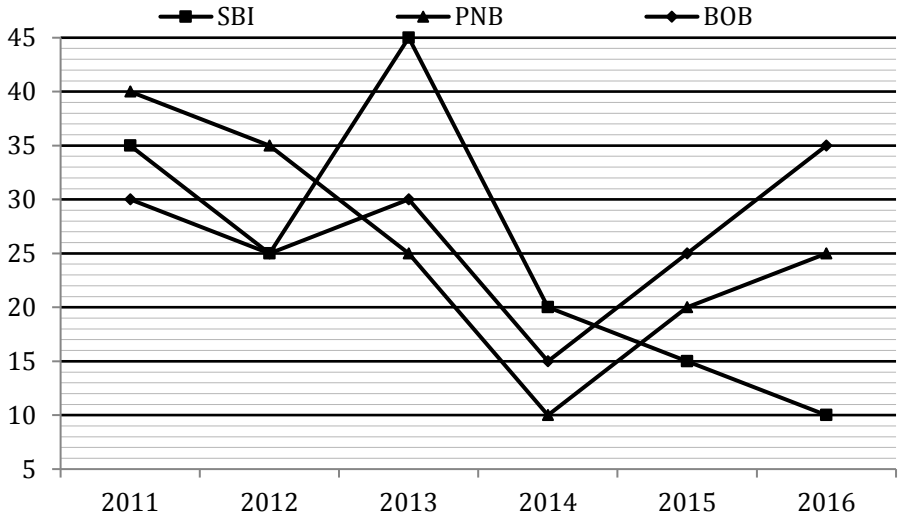
= $\frac{\frac{3}{5} \times \frac{75}{100} \times 15000}{\frac{1}{6} \times \frac{18}{100} \times 16800} = \frac{6750}{504} = 375 : 28$

75. (e); Required percentage = $\frac{\frac{15}{100} \times 18000}{\frac{75}{100} \times 15000} \times 100 = 24\%$

PRACTICE SET (LEVEL–II)

Directions (1-5): Given below is the bar graph showing the amount of loan (in crores) sanctioned by three banks namely SBI, PNB and BOB in six different years and The line graph shows the percentage of total loan that is sanctioned as Education Loan by the banks. Read the graphs carefully and answer the following questions.

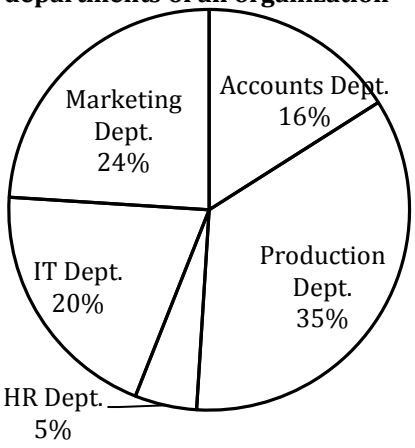




1. Find the difference between(in crores)the total educational loan sanctioned by PNB from year 2011 to 2013 and total educational loan sanctioned by BOB from year 2014 to 2016?
   (a) 5.6 (b)5.1 (c) 6.1 (d) 7.6 (e)6.7
2. Find the average of loan amount (in crores) sanctioned by SBI which is sanctioned not for education throughout the given years except year 2015?
   (a) 34.87 (b) 35.67 (c) 33.87 (d) 38.37 (e) 38.67
3. By approximately what percent the educational loan sanctioned by PNB in year 2012 and 2016 together is more or less than the educational loansanctioned by SBI in year 2015 and 2016 together?
   (a) 143% (b) 207% (c) 148% (d) 121% (e) 140%
4. What is the ratio of total loan amount sanctioned by SBI to total educational loan sanctioned by PNB throughout the given years?
   (a) 7030:747 (b) 3670:747 (c) 3007:477 (d)3700:747 (e) 3070:747
5. Educational loan sanctioned by BOB in year 2014 is what percent of total sanctioned loan amount by PNB in that year?
   (a) 18% (b) 22% (c) 17% (d) 23% (e)16%

Directions (6-10): Study the following pie chart and answer the following question given below : –
Number of male in the organization is two times of the number of females in the organization

Percentage breakup of male employees working in various departments of an organization



Number of females in Each Department	
Production Department	2400
Accounts Department	3200
HR Department	2800
IT Department	3800
Marketing Department	2100

6. Number of males in Accounts, IT and Marketing department together are approximately what percent more/less than the total number of females in the same departments?
(a) 85% (b) 89% (c) 94% (d) 79% (e) 95%

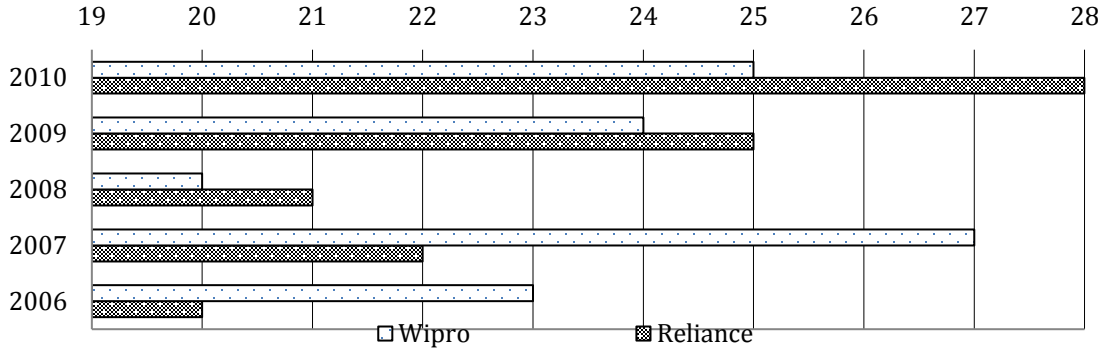
7. Out of the total number of employees from HR department, 30% of the employees got promoted then find the ratio of the number of employees from HR department who get promoted to the total number of male employees in the organization ?
(a) 28600 : 1269 (b) 1170 : 28779 (c) 1269 : 14300 (d) 1269 : 28600 (e) 28779 : 1170

8. If one male from production department can do a work in 20020 days and the female from production department are 20% less efficient than that of male in production department. Find the total no. of days by employees from production department to do the same job ?
(a) $\frac{2002}{2009}$ days (b) $\frac{2002}{1096}$ days (c) $\frac{1008}{1001}$ days (d) $1\frac{809}{1193}$ days (e) $\frac{2097}{2002}$ days

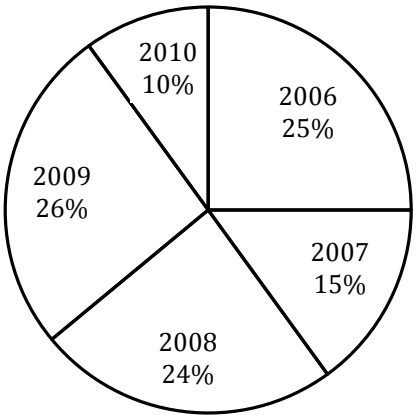
9. Find the difference between the average number of males in all departments of the organization and the average of females in all departments of the organization?
(a) 2860 (b) 2440 (c) 2630 (d) 2920 (e) None of these

10. Number of females in IT department is what percent of the total number of employees in Organization except HR department (approx.)
(a) 12% (b) 8% (c) 6% (d) 15% (e) 10%

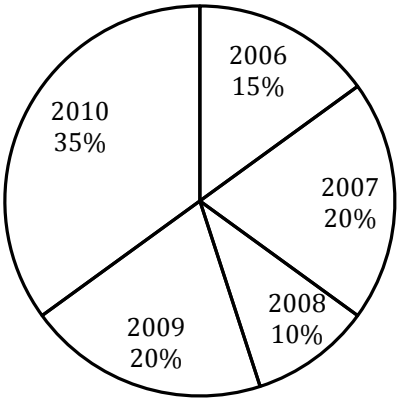
Directions (11-15): Given below is the line graph showing the profit percentage of 2 manufacturing firms, Reliance and Wipro from year 2006 to 2010. The pie charts show the percentage distribution of total income of each company in different years. Study the data carefully and answer the following questions{Note:%profit=$\frac{income-expenditure}{expenditure} \times 100$}



Reliance(total income=1500 Cr)



Wipro(Total income=1800 Cr)



11. The expenditure of Reliance in 2008 is approximately how much percent less/more than that of Wipro in 2009 ?
(a) 3% (b) 4% (c) 5% (d) 7% (e) 8%

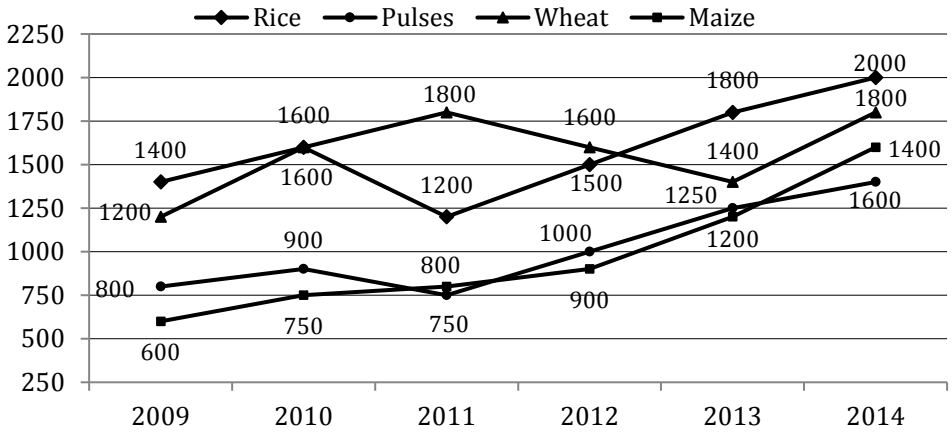
12. The total income of Reliance in years 2006, 2007 and 2008 together is what percent more than the total income of Wipro for the same years ? (Calculate up to two decimal points)
(a) 16.66% (b) 18.51% (c) 27.4% (d) 20.4% (e) 22.22%

13. The income of Wipro in 2010 is approximately how much less/more than the average expenditure of Reliance for years 2009, 2010 and 2007 ?
(a) 107% (b) 407% (c) 307% (d) 207% (e) 507%

14. What is approximately the collective profit of Reliance and Wipro for years 2009 and 2010 ?
(a) 350 cr. (b) 270 cr. (c) 290 cr. (d) 307 cr. (e) 298 cr.

15. Calculate the difference of expenditures of Reliance and Wipro in 2011 if their expenditure in 2011 is 80% and 90% of their income in 2010 respectively ?
(a) 567 cr. (b) 257 cr. (c) 447 cr. (d) 120 cr. (e) None of these

Directions (16-20): Study the following line graph and table carefully to answer the given questions.
Total production under various heads(in tons)



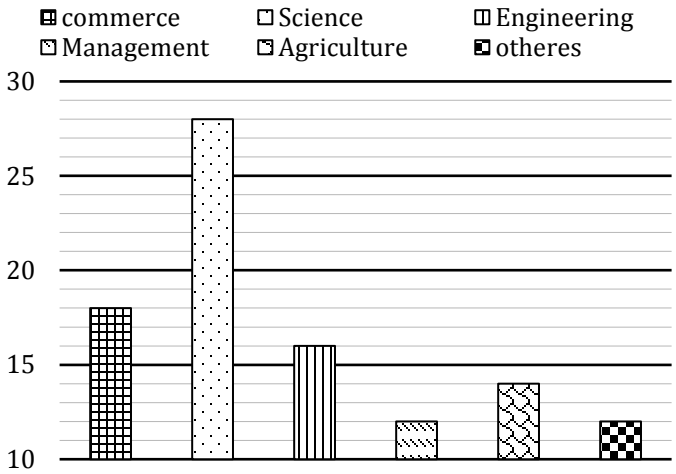
Percentage of total production used only under these three heads-

Year	Export	PDS Supply	Supply in open market
2009	42%	38%	-
2010	55%	-	25%
2011	48%	22%	-
2012	-	20%	18%
2013	-	33%	32%
2014	40%	-	35%

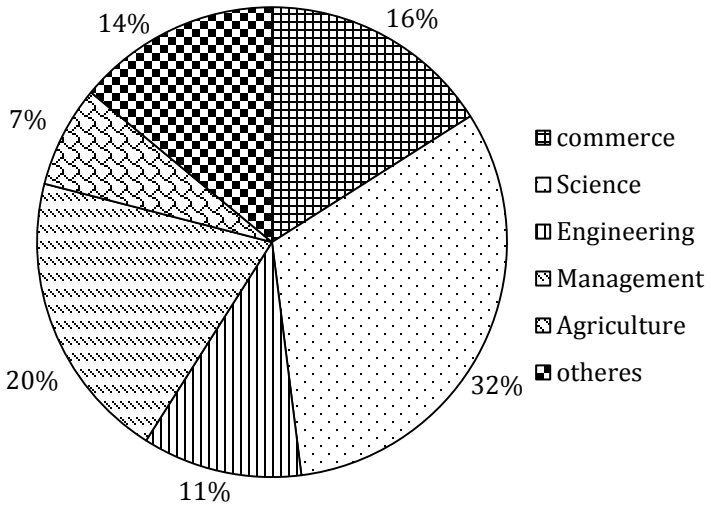
16. The average production of wheat and Mazes in 2011 is what percent of the supply in open market in year 2009 ?
(a) 162.5% (b) 150.4% (c) 170% (d) 165.4% (e) None of these
17. What is the ratio of export in 2012 to PDS supply in 2014 ?
(a) 31 : 19 (b) 31 : 17 (c) 41 : 31 (d) 19 : 13 (e) None of these
18. What is the difference between the overall production of maize in years 2009 to 2014 and production that exported in 2012 ?
(a) 3000 tons (b) 2500 tons (c) 2550 tons (d) 2200 tons (e) None of these
19. The average production of all four crops in 2012 is what percent less than the average export in year 2009 and 2014 ? (Calculate up to two decimal points)
(a) 52.8% (b) 40.46% (c) 53.71% (d) 43.18% (e) None of these
20. If 20% of the supply in open market in 2011 is retained and stored, then calculate the approximate percent decrease/increase in supply in open market in 2011 as compared to 2010 ?
(a) 10% (b) 13% (c) 12% (d) 15% (e) 8%

Directions (21-25): Study the following charts carefully and answer the questions given below:
Discipline wise breakup of number of candidates appeared in interview and Total no. of candidates selected after interview by the organization.

Total No. of candidates appeared in the interview=25750(in thousands)
Percentage of students in different discipline

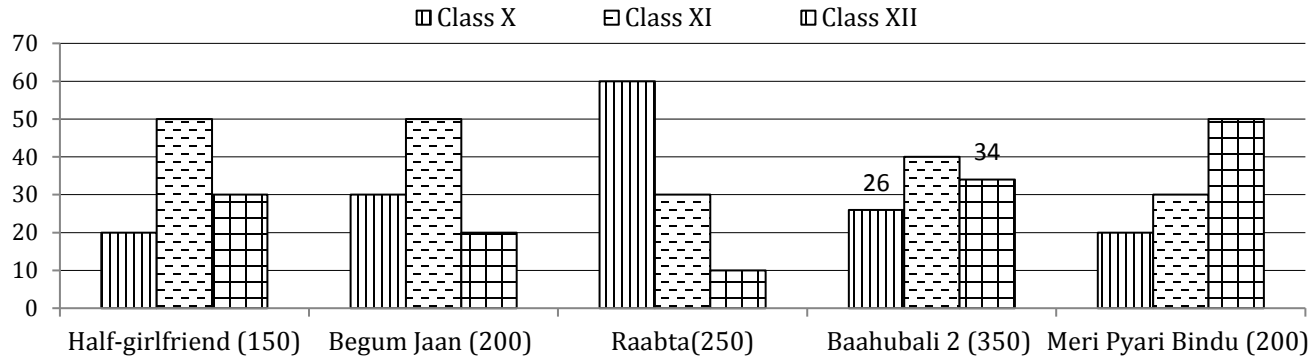


Total No. of candidates selected after interview=7300(in thousands)
Percentage of students in different discipline



21. The number of candidates who were selected after interview from commerce is what percent of number of candidates who were not selected after interview from Agriculture ? (Rounded off to two decimal points)
(a) 37.75% (b) 46.43% (c) 42.5% (d) 52.5% (e) 55.55%
22. Calculate the average number of candidates who got selected after interview from Science, Engineering and Agriculture as a percentage of the number of candidates who did not get selected from same three disciplines ? (Rounded off to two decimal points)
(a) 35.16% (b) 32.34% (c) 30.46% (d) 37.42% (e) 33.43%
23. The average number of candidates selected after interview from 'others' and Management is what percent of the number of candidates who appeared in interview from Engineering ? (Rounded off to two decimal points)
(a) 24.26% (b) 28.18% (c) 30.12% (d) 34.17% (e) 29.14%
24. What percent of the total appeared candidates is the sum of the students who were selected after interview from Science and those who were not selected from others ? (Rounded off to two decimal points)
(a) 25.45% (b) 21.26% (c) 12.74% (d) 17.10% (e) 17.89%
25. What is the ratio of students appeared in interviews from Management and those who got selected in interview from Commerce, others and Engineering together ?
(a) 3017 : 2747 (b) 3015 : 2991 (c) 3090 : 2993 (d) 3417 : 2817 (e) None of these

Directions (26-30): Study the bar graph given below and answer the following questions:



Note: no Student went to watch more than one movie.
The bar graph shows the percentage break-up of number of students for different films in a theatre.
The table below shows total number of students in classes X, XI and XII.

Class	No. of students
X	420
XI	480
XII	400

26. If the ratio of girls and boys, who went to watch 'Raabta' from class X, was 7 : 8, then what percent of the total number of students from class X who went to watch a movie is the number of girls who went to watch Raabta ? (approximate)
(a) 19% (b) 23% (c) 25% (d) 15% (e) 21%

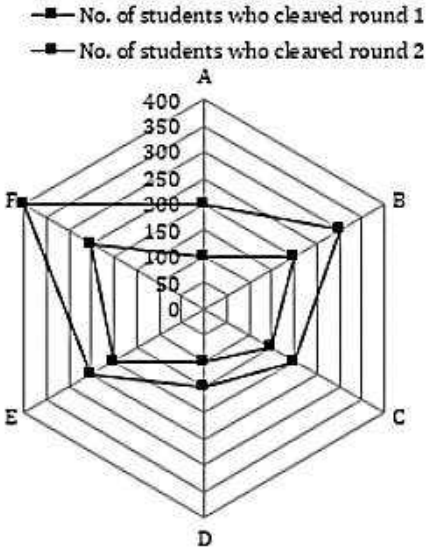
27. What is the difference between the number of students from class XI who did not got to watch any movie and that of the number of students from class XII ?
(a) 19 (b) 41 (c) 27 (d) 21 (e) None of these

28. If all the students from class XII who did not go to watch any movie, later changed their mind and went to watch 'Meri Pyari Bindu', then calculate the % mark-up in the number of students who watched 'Meri Pyari Bindu' ?
(a) 30% (b) 25.5% (c) 35.5% (d) 42.6% (e) None of these

29. The number of students from class XI and XII who watched Raabta is what percent of the number of students from class X who watched Begum Jaan, Half girlfriend and Meri Pyari Bindu ? (approximate)
(a) 81% (b) 72% (c) 75% (d) 77% (e) 70%

30. Number of student who not go to watch movie from all the three classes is what percent of the total student.
(a) $12\frac{1}{2}\%$ (b) $11\frac{7}{13}\%$ (c) $13\frac{2}{5}\%$ (d) $14\frac{7}{13}\%$ (e) $5\frac{1}{13}\%$

Directions (31-35): Study the graph given below and answer the questions that follow.
The table shows the no. of students from different schools in a contest. The graph shows the no. of students who cleared round 1 and round 2.
Note : Only those who clear round 1 participate in round 2.



No. of students from different schools in a contest	
A	400
B	500
C	300
D	250
E	450
F	600

31. What is the ratio of number of students from school A and C together who were rejected in round 2 to the number of students from school B and F together who were rejected in round 1 ?
(a) 3 : 8 (b) 2 : 5 (c) 7 : 8 (d) 3 : 7 (e) None of these

32. The number of students rejected in round 2 from all the schools together is what percent of the number of students rejected in round 1 from all the schools together ?
(a) 75% (b) 50% (c) 20% (d) 25% (e) None of these

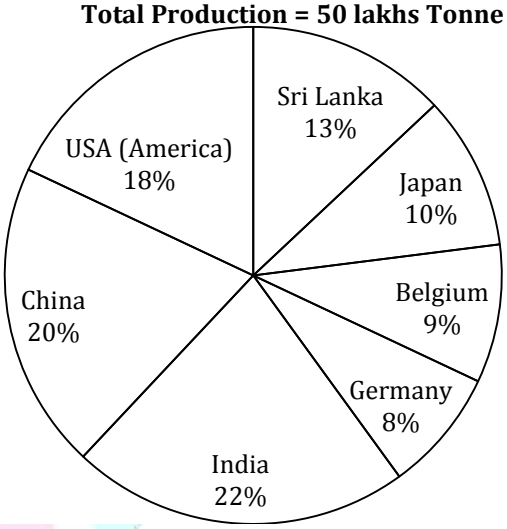
33. The ratio of girls to boys from school E who got rejected in round 2 is 2 : 3 and that from school C is 1 : 4. Then find the ratio of number of girls from both these schools who got rejected in round 2 to that of boys from the same school ?
(a) 7 : 10 (b) 3 : 8 (c) 3 : 7 (d) 7 : 8 (e) None of these

34. If 20% of the students from school C, D and E together, who cleared round 1, failed to attend round 2, then find the number of students from these schools, who got rejected in round 2 ?
(a) 40 (b) 60 (c) 50 (d) 30 (e) None of these

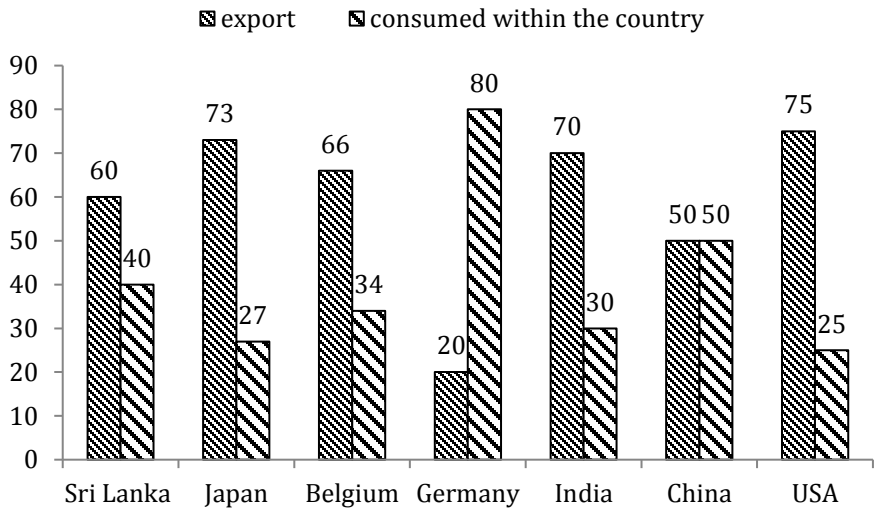
35. Number of student who cleared round 2 from all school are what percent of the total student from all school.
(a) 40% (b) 50% (c) 30% (d) 39% (e) 25%

Directions(36-40) : Study the graphs given below & answer the questions that follow.

Production of wheat in different countries
Total Production = 50 lakhs Tonne



Percentage of export and consumed within the country out of total production is also given-



36. If out of the amount consumed in India, 91/11% was wasted due to bad storage, then find the difference between actual amount consumed in India and the amount exported by Srilanka ? (in tonnes)
(a) 90000 (b) 100000 (c) 10000 (d) 80000 (e) None of these

37. If the production in USA includes the production in Mexico and production in Mexico was $44\frac{4}{9}\%$ of the total given production under the head 'USA (America)', then production in Mexico is equal to the production in which % of the given countries ?
(a) Belgium (b) Germany (c) Sri Lanka (d) Japan (e) None of these

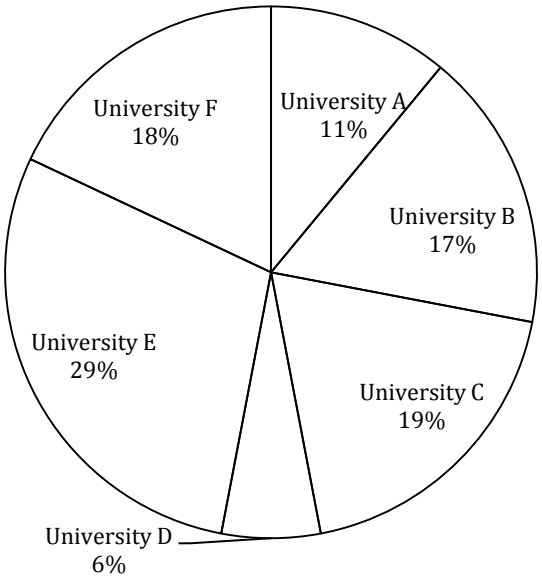
38. Calculate the ratio between the average amount of production exported from China and Belgium to the average amount of production consumed in Japan and Germany ?
(a) 797 : 555 (b) 797 : 565 (c) 797 : 455 (d) 797 : 465 (e) None of these

39. If Germany and USA donate 30% of their export to financially backward countries, then what percent of their total production do these two countries donate together ? (calculate up to two decimal points)
(a) 19.41% (b) 18.64% (c) 21.46% (d) 17.42% (e) 17.17%

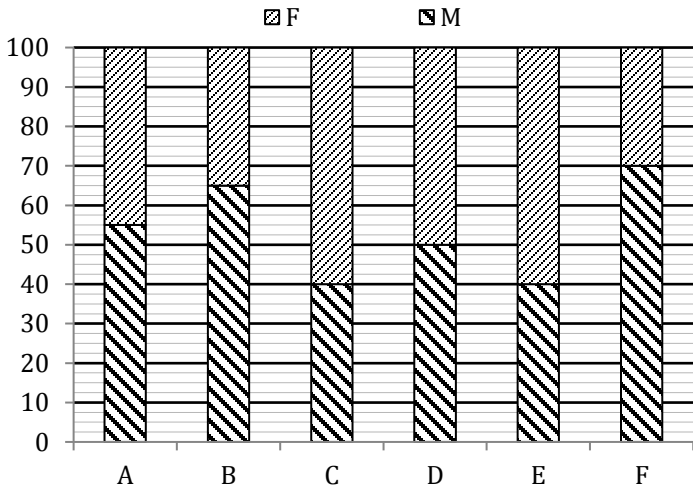
40. What is the difference between the quantity exported by Sri lanka, Japan and USA to the quantity consumed within thesecountries?
(a) 3.3 lakh ton (b) 2.2 lakh ton (c) 8.3 lakh ton (d) 8.1 lakh ton (e) 10 lakh ton

Directions (41-45): Study the following pie chart and answer the following questions.
Percentage-wise distribution of teachers in six different universities

Total number of teachers = 50000



Percentage of male and female in different universities



41 If one-thirty sixth of the number of teachers from university F is professors and the salary of each professor is Rs. 96000, what will be the total salary of all the professors together from university F ?
(a) Rs. 307.2 lakh (b) Rs. 32.64 lakh (c) Rs. 3.072 lakh (d) Rs. 3.264 lakh (e) None of these

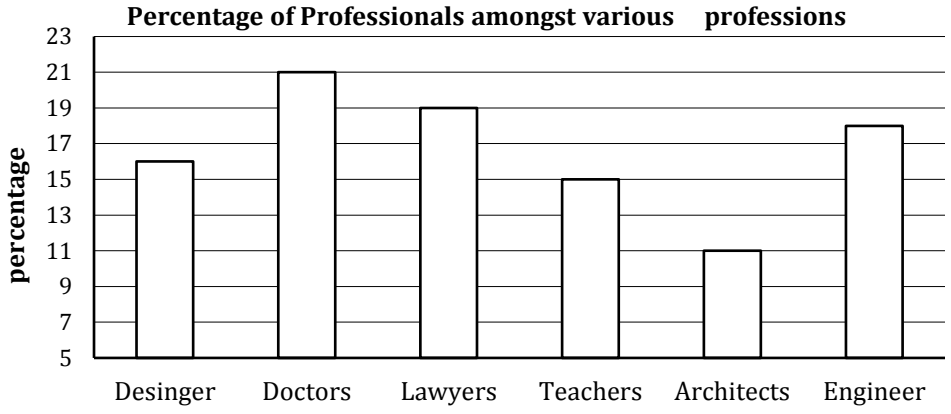
42. Difference between the total number of teachers in university A, university B and university C together and the total number of teachers in university D, university E and university F together is exactly equal to the number of teachers of which university ?
(a) University A (b) University B (c) University C (d) University D (e) University F

43. Number of female teachers in university D is approximately what per cent of the total number of male teachers in university B together ?
(a) 55% (b) 59% (c) 27% (d) 45% (e) 35%

44. Total number of male teachers from university B and C together are what percent more/less than the total number of female teachers from university D and E together ? (calculate upto two decimal points)
(a) 9.18% (b) 9.38% (c) 9.47% (d) 9.31% (e) 10.31%

45. What is the ratio between the number of male teacher of universities A to the number of female teachers of university C.
(a) $\frac{220}{99}$ (b) $\frac{190}{99}$ (c) $\frac{121}{228}$ (d) $\frac{89}{190}$ (e) $\frac{250}{99}$

Directions (46-50): Study the following graphs carefully and answer the questions given below:
Survey Conducted on 10500 People to find out six various professional in the town and percentage of female among those six professional. Graph shows the percentage of various professional out of total professional (Consider every person has a profession from these 6 profession)

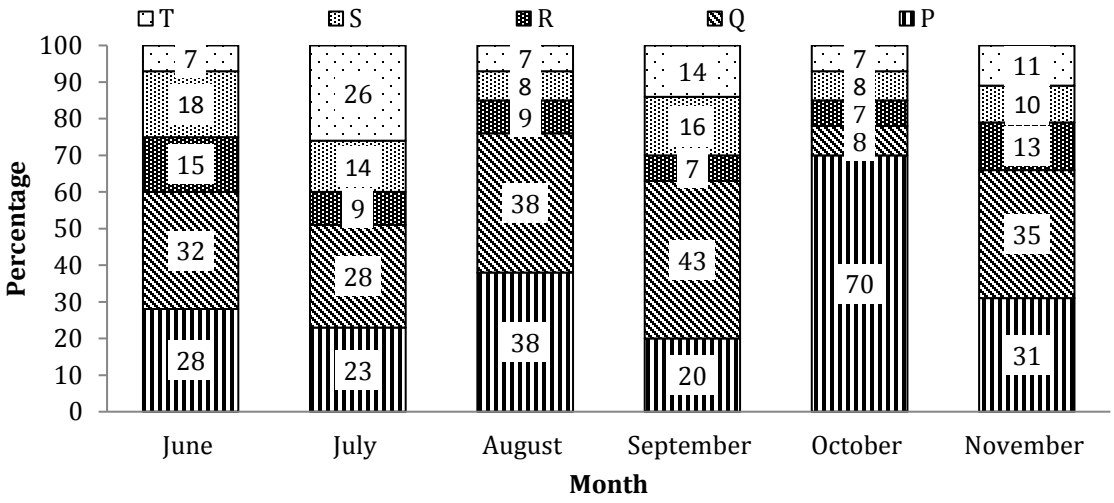


Percentage of female professionals

Doctors	20%
Engineers	60%
Architects	40%
Teachers	80%
Lawyers	40%
Designers	35%

46. What is the ratio of the male Engineers and male designers together to the same occupation female professionals together in the town?
(a) 44: 41 (b) 55: 53 (c) 31: 35 (d) 44: 35 (e) None of these
47. The total number of lawyers in town is **approximately** what percent of the total number of doctors in town?
(a) 95 (b) 98 (c) 90 (d) 85 (e) 81
48. What is the difference between the total number of male and female professionals in the town?
(a) 1284 (b) 1134 (c) 1054 (d) 1164 (e) 1124
49. Female Doctors are what percent of the female teachers in the town?
(a) 42 (b) 28 (c) 15 (d) 35 (e) 32
50. What is the ratio of the number of male architects to the number of male teachers in the town?
(a) 11: 5 (b) 3 : 2 (c) 5: 11 (d) 2 : 3 (e) 6:11

Directions (51-55) : Read the following chart and answer the following questions given below it.
There are five companies which produces Diwali Fireworks in different months.
Bar graph showsPercentage wise distribution of production by these five companies in six different months



Following table shows the production of fireworks in units by these companies together in different months

June	P+Q	1920
July	R+S+T	1715
August	Q+R	1833
September	P+Q+T	3311
October	R	266
November	S+T	1218

Note- first row implies the production of P and Q together in June and as all rows.

51. If in December the no. of fireworks produced was 20% more than the firework prodced in the month of November and the ratio between the fireworks produced in december by the company P, Q, R, S and T is 11 : 13 : 17 : 5 : 41, then find the no. of firework produced by company T in the month of December?
(a) 3370 (b) 3140 (c) 3280 (d) Can't determined (e) 3480

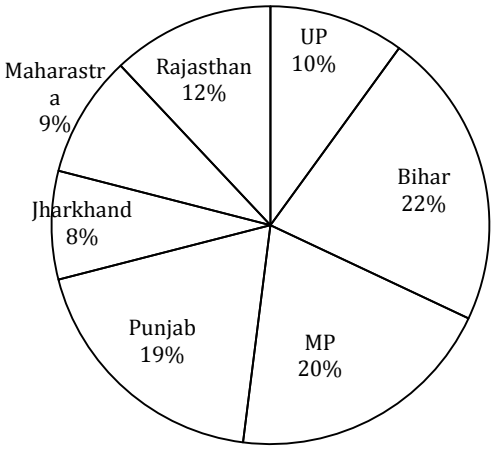
52. No. of fireworks produced by company P and R together in July is Approximate what percent more/less then that of company S and T together in the month of November ?
(a) 6% (b) 8% (c) 10% (d) 12% (e) 15%

53. What is the ratio of the total no. of fireworks produced in the month of July, August and September together to the total no. of fireworks produced in the month of October and November together?
(a) 131 : 29 (b) 143 : 97 (c) 153 : 17 (d) 41 : 32 (e) 39 : 32

54. In October month, 70% of the fireworks produced by P wassold, 75% of the fireworks produced by S was sold and 50% of the total no. of fireworks produced by Q, R and T was together sold, then find the no. of fireworks sold by all of these companies in October?
(a) 2508 (b) 2602 (c) 2498 (d) 2568 (e) 2580

55. In which month the difference between the no. of fireworks produced by all off the companies together to the previous month is maximum.
(a) November (b) July (c) August (d) September (e) October

Directions (56-60): Given below is a pie chart which shows the percentage distribution of population in 7 states in year 2016and table shows the ratio of male to female and ratio of married to unmarried person in the respective states.



Total population in 2016 = 500 million

State		Ratio of married to unmarried persons		
	M : F	Married	:	Unmarried
Bihar	6 : 5	3	:	8
MP	3 : 2	9	:	11
Punjab	11 : 8	4	:	1
UP	3 : 2	3	:	2
Rajasthan	7 : 5	3	:	1
Maharastra	5 : 4	7	:	2
Jharkhand	3 : 5	2	:	3

NOTE:- Number of married male/female = $\frac{married\ persons}{2}$

56. What is the ratio of unmarried female from state MP and Punjab together to the married female from UP and Bihar together?
(a) 7 : 10 (b) 13 : 20 (c) 17 : 22 (d) 23 : 25 (e) 18 : 23

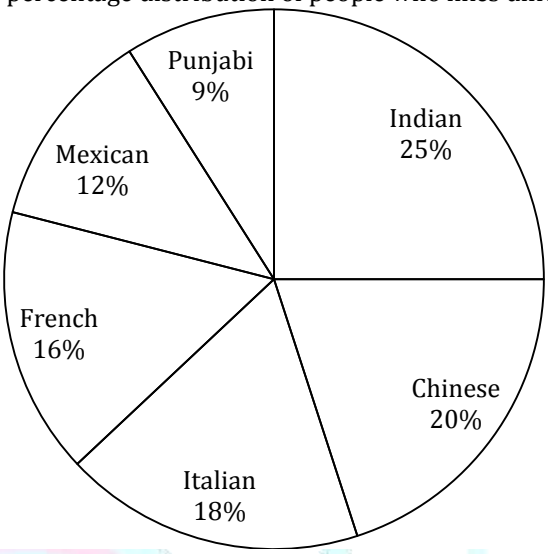
57. Unmarried males from state Jharkhand and Rajasthan together are what percent of total married persons from state M.P.?
(a) 25% (b) 68% (c) $\frac{127}{4}$% (d) $\frac{130}{3}$%(e) $\frac{122}{3}$%

58. What is the difference between average of married male from state Bihar and M.P. together to the average of married female from Maharastra and Jharkhand together.
(a) 6 milloin (b) 8 million (c) 9 million (d) 9.5 million (e) 10 million

59. Married females from state Punjab and UP together are what percent of Unmarried males from state Maharastra and Jharkhand together.
(a) $\frac{10600}{29}\%$ (b) $\frac{10580}{29}\%$ (c) $\frac{9823}{29}\%$ (d) $\frac{12385}{29}\%$ (e) $\frac{10540}{29}\%$

60. If $\frac{100}{3}\%$ of married persons get divorce from state Bihar, then umarried females are increased by what percent in Bihar state.
(a) $16\frac{1}{6}\%$ (b) $16\frac{2}{7}\%$ (c) $33\frac{1}{3}\%$ (d) $16\frac{2}{3}\%$ (e) $14\frac{2}{7}\%$

Directions (61-65): Pie chart shows the percentage distribution of people who likes different types of food.



The table shows the ratio of male to female above and below 25 years who likes different types of food
Note: Consider no person has exactly 25 years age.

	Below 25 years	**Above 25 years**
	Male : Female	**Male : Female**
Indian	8 : 5	9 : 7
Chinese	4 : 3	5 : 4
Italian	5 : 6	7 : 3
French	11 : 12	13 : 12
Mexican	3 : 4	5 : 6
Punjabi	5 : 4	3 : 5

61. Total number of people who likes Italian is 48 lakh. Total number of people comprising male above 25 years who likes Punjabi and females below 25 years who like Punjabi food is 10 lakh, then find the total number of people who likes Punjabi for people below 25 yr.
(a) 8 L (b) 10 L (c) 9.5 L (d) 15 L (e) 14.4 L

62. If the total number of female below 25 years who likes Chinese and male above 25 years whose likes Chinese is 9.6 lakh and 14 lakh respectively, then what is the total number of people who likes Indian.(in lakhs)
(a) 55.5 (b) 64.6 (c) 72.8 (d) 59.5 (e) 57.2

63. If people below 25 years who likes French are 23,000 and difference between people below 25 years and above 25 years who likes French is 11,600 then, find the difference between total number of people who likes Mexican and Indian.
(a) 43244 (b) 46254 (c) 27950 (d) 50130 (e) None of these

64 If total number of people who likes Indian is 1 lakh then what is the difference of people whose likes Mexican and French.
(a) 1 L (b) 2.5 L (c) 0.5 L (d) 0.16 L (e) 0.2 L

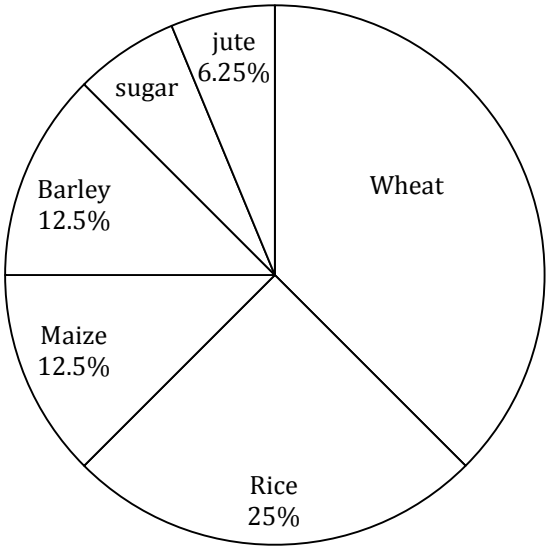
65. Total number of people who likes Chinese is 80,000 then find the number of people above 25 years who likes Mexican if number of people above 25 years who likes Mexican and people below 25 year who likes Punjabi are same.
(a) 30,000 (b) 20,000 (c) 25,000 (d) Can't be determined (e) None of these

Directions (66-70): Given below is the pie chart which shows the percentage distribution of production of 6 different types of crop. Table shows the ratio of amount exported to the amount consumed within India, total sale obtained on selling whole quantity produced and percentage of sales obtained from export.

Note → Some values are missing in the pie chart and table, you have to calculate the values if required to answer the question.

$$Total\ production = total\ amount\ consumed\ in\ India + total\ amount\ exported$$

Total Production = 200000 tonnes



Crops	Ratio of amount exported to the consumed within India	Percentage of total sale obtained in export	Total sale (in Rs.)
Wheat	7 : 8	—	—
Rice	2 : 3	45%	6,00,000
Maize		35%	4,00,000
Barley	4 : 1	—	5,00,000
Sugar		$44\frac{4}{9}\%$	—
Jute	1 : 1	40%	3,12,500

66. If selling price per tonne of jute in India is equal to two times of selling price per tonne of Barley which is exported, then find the total sales of Barley in India?
(a) 250000 (b) 200000 (c) 350000 (d) 400000 (e) 300000

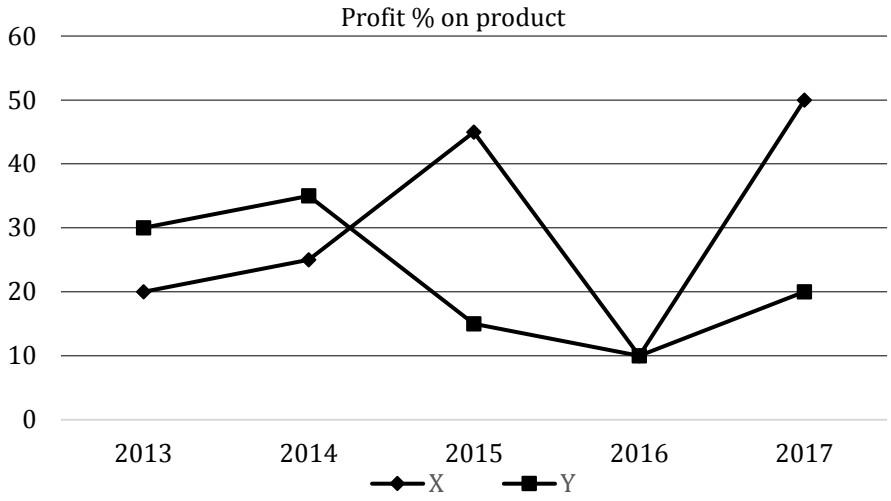
67. Selling price of one tonne of Rice which is exported is what percent more or less than selling price per tonne of Jute which is sold in India?
(a) 52% (b) 55% (c) 47% (d) 48% (e) 53%

68. If amount Maize exported is 25% of amount of Maize consumed in India then price per tonne of maize consumed in India is what percent of price per tonne of Jute consumed in India.
(a) $66\frac{2}{3}\%$ (b) $33\frac{1}{3}\%$ (c) $43\frac{1}{3}\%$ (d) $53\frac{1}{3}\%$ (e) $45\frac{1}{3}\%$

69. If quantity of sugar consumed in India is 30% of the quantity of Barley exported and total production of Sugar is 250/3% less than total quantity of wheat produced from then find the total quantity of sugar exported
(a) 4000 (b) 7000 (c) 6000 (d) 4500 (e) 6500

70. If the total sale of wheat wasRs. 5719000 and the ratio of selling price of one unit of wheat exported to selling price of one unit of wheat consumed within India is 2 : 3, then Find the selling price of one unit of wheat exported from India. It is also given that total production of wheat is 600% of total production of sugar
(a) Rs. 60.2 (b) Rs. 40.2 (c) Rs. 30.1 (d) Rs. 50.2 (e) None of these

Directions(71-75): The line graph given below shows the profit percentage on a product P sold by two companies X and Y in five years and table shows the production (in quintals) of products P and Q by both companies in five years. Study the graph and table carefully to answer the questions based.



company / year	X		Y	
	products		products	
	P (in quintals)	Q (in quintals)	P (in quintals)	Q (in quintals)
2013	40	60	50	100
2014	100	60	90	50
2015	70	30	110	30
2016	60	30	30	20
2017	50	100	50	70

71. In 2013 ratio between cost price per quintal of product P and cost price per quintal of product Q for both company is 4 : 7. What is the approximate profit percent on product Q in 2013 for both company, if ratio of profit of both product in 2013 is 2 : 3 (P : Q) by both company. (profit percent on product Q for both company is same)
(a) 8% (b) 16% (c) 10% (d) 14% (e) 12%

72. In 2014 and 2016 cost price of both products per quintal are same for company X and profit percentage are also same for both product for company X then profit on product P is what percent of the profit on product Q in these two years for company X.(approx.)
(a) 180% (b) 145% (c) 172% (d) 155% (e) 160%

73. What is the ratio of total selling price of product Q for company Y in year 2016 to 2017 if cost price of the products per quintal are in ratio 3 : 4 (P : Q) for both years 2016 and 2017 and profit for both product remain same in both year (2016, 2017) for company Y.
(a) 89:310 (b) 34:41 (c) 91:300 (d) 95:341 (e) 65:344

74. What is the total profit earned by company Y in the year 2013,2014 and 2015 on product Q if cost price is 250 per quintal all over the year and profit percent on product Q is same as profit on product P of company Y.
(a) 12370 (b) 10000 (c) 13000 (d) 15250 (e) 12000

75. Find the difference b/w the total production of P product and production of Q product by both companies in all over the years.
(a) 150 quintals (b) 100 quintals (c) 129 quintals (d) 130 quintals (e) 120 quintals

PRACTICE SET (LEVEL–II) SOLUTIONS

1. (c); Ed. loan sanction by PNB
$= (38\times.40 + 56\times.35 + 84\times.25)$
$= 15.2 + 19.6 + 21 = 55.8$ cr
Ed. Loan sanction by BOB
$= (48\times.15 + 86\times.25 + 60\times.35)$
$= 7.2 + 21.5 + 21 = 49.7$ cr
∴ Required difference =(55.8 -49.7)= 6.1 crores

2. (d); Required average
$= \frac{(60\times.65 + 44\times.75 + 75\times.55 + 60\times.80 + 34\times.90)}{5}$
$\frac{(39 + 33 + 41.25 + 48 + 30.6)}{5}$
$= \frac{191.85}{5} = 38.37$

3. (b); Ed. Loan by PNB in 2012 and 2016
$= (56\times.35 + 26\times.25)$
=19.6+ 6.5 = 26.1 crores
Ed. Loan by SBI in 2015 and 2016
$= (34\times.15 + 34\times.10) = 5.1 + 3.4 = 8.5$ crores
∴ Required percentage
$= \frac{26.1 - 8.5}{8.5}\times 100 = 207.06 \approx 207\%$

4. (e); Required ratio
$= \frac{(60 + 44 + 75 + 60 + 34 + 34)}{(38\times.40 + 56\times.35 + 84\times.25 + 40\times.10 + 42\times.20 + 26\times.25)}$
$= \frac{3070}{747}$

5. (a); Required percentage $= \frac{48\times\frac{15}{100}}{40}\times 100$
$= \frac{7.2}{40}\times 100 = 18\%$

Solutions (6-10)

Departments	Male	Female
Production Dept.	10010	2400
Accounts Dept.	4576	3200
HR Dept.	1430	2800
IT Dept.	5720	3800
Marketing Dept.	6864	2100
Total	28600	14300

6. (b); Number of male in Accounts, IT and Marketing Dept.
= 4576 + 5720 + 6864 = 17160
Number of female in Account, IT and Marketing Dept.
= 3200 + 3800 + 2100 = 9100
Required % $= \frac{17160 - 9100}{9100}\times 100$
$= \frac{8060}{9100}\times 100 = 88.57\% \approx 89\%$

7. (d); Required Ratio $= \frac{30}{100}(2800 + 1430) : 28{,}600$
= 1269 : 28600

8. (d); M → 20020 days
F → 25025 days
Required No. of days
$1/(\frac{10010}{20020} + \frac{2400}{25025}) = 1/(\frac{1}{2} + \frac{95}{1001}) = 1\frac{809}{1193}$

9. (a); Required difference $= \frac{1}{5}(28600 - 14300)$
$= \frac{1}{5}\times 14300 = 2860$

10. (e); Employees except HR dept. = 42900 – 2800 – 1430 = 38670
Female in IT department = 3800
$Required\ \% = \frac{3800\times 100}{38670} \approx 10\%$

11. (a); Expenditure of Reliance in 2008 $= \frac{24}{100}\times 1500\times\frac{100}{121} \approx$ 298 cr.
Expenditure of Wipro in 2009 $= \frac{20}{100}\times 1800\times\frac{100}{124} \approx$ 290 cr.
Required % $= \frac{298 - 290}{290}\times 100 \approx 3\%$

12. (b); Total income of Reliance in years 2006, 2004 and 2008
$= \frac{(25+15+24)}{100}\times 1500 = 960$ cr.
Total income of Wipro in years 2006, 2004 and 20008
$= \frac{(15+20+10)}{100}\times 1800 = 810$ cr.
Req. percentage $= \frac{960 - 810}{810}\times 100 = \frac{1500}{81} = 18.51\%$

13. (c); Average expenditure of Reliance in years 2007, 2009 and 2010
$= \frac{(\frac{15}{100}\times 1500\times\frac{100}{122} + \frac{26}{100}\times 1500\times\frac{100}{125} + \frac{10}{100}\times 1500\times\frac{100}{128})}{3}$
$\approx \frac{610}{3} = 205$
Req. percentage $= \frac{\frac{35}{100}\times 1800}{205}\times 100 = 307\%$

14. (d); Profit of Reliance in 2009 $= \frac{26}{100}\times 1500\times\frac{25}{125} = 78$
Profit of Reliance in 2010 $= \frac{10}{100}\times 1500\times\frac{28}{128} =$ 32.8125
Profit of Wipro in 2009 $= \frac{20}{100}\times 1800\times\frac{24}{124} = 70$
Profit of Wipro in 2010 $= \frac{35}{100}\times 1800\times\frac{25}{125} = 126$
Total profit = 78 + 32.8125+ 70 + 126 = 306.8125 cr.

15. (c); Expenditure of Reliance in 2011 $= \frac{80}{100}\times\frac{10}{100}\times 1500 =$ 120 cr.
Expenditure of Wipro in 2011 $= \frac{90}{100}\times\frac{35}{100}\times 1800 =$ 567 cr.
Difference = 567 – 120 = 447 cr.

16. (a); Supply in open market in 2009 $= \frac{20}{100}\times 4000 = 800$ tons
Average production of wheat and mazes in 2011 $= \frac{1800+800}{2} = 1300$ tons
Req. Percentage $= \frac{1300}{800}\times 100 = 162.5\%$

17. (b); Export in 2012 $= \frac{62}{100}\times(1600 + 1500 + 1000 + 900) = 3100$ tons.
PDS supply in 2014 $= \frac{25}{100}\times(2000 + 1800 + 1400 + 1600) = 1700$ tons
Ratio = 3100 : 1700 = 31 : 17

18. (c); Export in 2012 = 3100 tons

Overall production of maize in the given years = 600 + 750 + 800 + 900 + 1200 + 1400
= 5650 tons
Difference = 5650 – 3100 = 2550 tons

19. (d); Average production of all four crops in 2012 = $\frac{1600+1500+1000+9000}{4}$ = 1250 tons
Average export in 2009 and 2014
$= \frac{\left(\frac{42}{100}\times 4000+\frac{40}{100}\times 6800\right)}{2} = 2200$ tons
Required % = $\frac{2200-1250}{2200}\times 100$
$= \frac{950}{2200}\times 100 = 43.18\%$

20. (a); Actual amount of crop supplied in open market in 2011
$= \frac{80}{100}\times\frac{30}{100}\times 4550 = 1092$ tons.
Amount supplied in open market in 2010 $= \frac{25}{100}\times 4850 = 1212.5$
Decrease% $= \frac{1212.5-1092}{1212.5}\times 100 = 9.9\% \approx 10\%$

21. (a); No. of candidates selected after interview from Commerce = $\frac{16}{100}\times 7300 = 1168$
No. of unselected candidates after interview from agriculture = $\frac{14}{100}\times 25750 - \frac{7}{100}\times 7300 = 3094$
Required % = $\frac{1168}{3094}\times 100 = 37.75\%$

22. (b); No. of students who got selected = $\frac{(32+11+7)}{100}\times 7300 = 3650$
No. of students who did not selected = $\frac{(28+16+14)}{100}\times 25750 - 3650$
$= 14935 - 3650 = 11285$
Required % = $\frac{3650}{11285}\times 100 = 32.34\%$

23. (c); Average no. of selected candidates from 'others' and management = $\frac{1}{2}\times\frac{(20+14)}{100}\times 7300 = 1241$
Required % = $\frac{1241}{\frac{16}{100}\times 25750}\times 100 = \frac{1241}{4120}\times 100$
$= 30.12\%$

24. (d); Students selected from 'Science'
$= \frac{32}{100}\times 7300 = 2336$
Unselected students from 'others'
$= \frac{12}{100}\times 25750 - \frac{14}{100}\times 7300 = 3090 - 1022 = 2068$
Req. % = $\frac{(2336+2068)}{25750}\times 100 = \frac{4404}{25750}\times 100 = 17.10\%$

25. (c); No. of students appeared from 'management'
$= \frac{12}{100}\times 25750 = 3090$
No. of students who got selected from Commerce, others and Engineering together = $\frac{(16+11+14)}{100}\times 7300$
$= \frac{41}{100}\times 7300 = 2993$
Req. Ratio = $\frac{3090}{2993}$

26. (a); No. of students from class X who watched 'Raabta' = $\frac{60}{100}\times 250 = 150$
No. of girls from class X who watched 'Raabta' = $\frac{7}{15}\times 150 = 70$
Total no. of students from class X who went to watch a movie
$= \frac{20}{100}\times 150 + \frac{30}{100}\times 200 + \frac{60}{100}\times 250 + \frac{26}{100}\times 350 + \frac{20}{100}\times 200$
$= 30 + 60 + 150 + 91 + 40 = 371$
Required % = $\frac{70}{371}\times 100 \approx 19\%$

27. (b); No. of students from class XI who didn't watch any movie = $450 - \left(\frac{50}{100}\times 150 + \frac{50}{100}\times 200 + \frac{30}{100}\times 250 + \frac{40}{100}\times 350 + \frac{30}{100}\times 200\right)$
$= 450 - (75 + 100 + 75 + 140 + 60)$
$= 480 - 450 = 30$
No. of students from class XII who didn't watch any movie = $400 - \left(\frac{30}{100}\times 150 + \frac{20}{100}\times 200 + \frac{10}{100}\times 250 + \frac{34}{100}\times 350 + \frac{50}{100}\times 200\right)$
$= 400 - (45 + 40 + 25 + 119 + 100)$
$= 400 - (329) = 71$
Req. Difference = $71 - 30 = 41$

28. (c); Using solution of previous question,
Required % = $\frac{71}{200}\times 100 = 35.5\%$

29. (d); No. of students who watched Raabta from class XI and XII = $\frac{30+10}{100}\times 250 = 100$
No. of students from class X who watched Begum Jaan, Half Girlfriend and Meri Pyari Bindu = 30 + 60 + 40 = 130
Req. % = $\frac{100}{130}\times 100 \approx 77\%$

30. (b); No. of student not go to watch movie
From class X = 49
From class XI = 30
From class XII = 71
Required % = $\frac{150}{1300}\times 100 = 11\frac{7}{13}\%$

31. (a); No. of students from school A and who were rejected in round 2 = (200 – 100) + (200 – 150)
= 100 + 50 = 150
No. of students from school B and F who were rejected in round 1 = (500 – 300) + (600 – 400)
= 200 + 200 = 400
Req. Ratio = $\frac{150}{400} = \frac{3}{8}$

32. (b); No. of students from all schools who got rejected in round 2 = (200 – 100) + (300 – 200) + (200 – 150) + (150 – 100) + (250 – 200) + (400 – 250)
= 100 + 100 + 50 + 50 + 50 + 150 = 500
No. of students from all schools who got rejected in round 1 = (400 – 200) + (500 – 300) + (300 – 200) + (250 – 150) + (450 – 250) + (600 – 400)
= 200 + 200 + 100 + 100 + 200 + 200 = 1000
Req.% = $\frac{500}{1000}\times 100 = 50\%$

33. (c); No. of students from school E who got rejected in round 2 = 250 – 200 = 50
No. of students from school C who got rejected in round 2 = 200 – 150 = 50
Required ratio = $\frac{\frac{2}{5}\times 50+\frac{1}{5}\times 50}{\frac{3}{5}\times 50+\frac{4}{5}\times 50} = \frac{3}{7}$

34. (d); No. of students from school C who attended round 2
$= \frac{80}{100}\times 200 = 160$

No. of students from school D who attended round 2 $= \frac{80}{100} \times 150 = 120$

No. of students from school E who attended round 2 $= \frac{80}{100} \times 250 = 200$

No. of students rejected in round 2 = (160 – 150) + (120 – 100) + (200 – 200)

= 10 + 20 + 0 = 30

35. (a); Total student cleared round 2 = 100 + 200 + 150 + 100 + 200 + 250 = 1000

Total student = 400 + 500 + 300 + 250 + 450 + 600 = 2500

$Required\% = \frac{1000}{2500} \times 100 = 40\%$

36. (a); Actual amount consumed in India $= \frac{10}{11} \times \frac{30}{100} \times \frac{22}{100} \times$ 50,00,000 = 3 lakh tonnes

Amount exported by Sri Lanka $= \frac{60}{100} \times \frac{13}{100} \times$ 50,00,000 $= 3{,}90{,}000$

Difference $= 390000 - 30000 = 90000$ tonnes

37. (b); Production in Mexico $= \frac{4}{9} \times 18/100 \times 50$ lakh tonnes

$= \frac{8}{100} \times 50$ lakh tonnes = 8% of 50 lakh tonnes

= production in Germany

38. (c); Average amount exported from China and Belgium $= \frac{\left(\frac{50}{100} \times \frac{20}{100} + \frac{66}{100} \times \frac{9}{100}\right) \times 50 \ lakh \ tonnes}{2} = 398500$ tonnes

Average amount consumed in Japan & Germany $= \frac{\left(\frac{27}{100} \times \frac{10}{100} + \frac{80}{100} \times \frac{8}{100}\right) \times 50}{2} = 227500$ tonnes

Ratio $= \frac{398500}{227500} = \frac{797}{455}$

39. (d); Required percentage

$= \frac{(0.3 \times 0.75 \times 0.18 + 0.3 \times 0.2 \times 0.08) 50 \ lakh \ tonnes}{(0.18 + 0.08) 50 \ lakh \ tonnes} \times 100$

$= 17.42\%$

40. (d); Srilanka

Exported = 3.9 lakh ton

Consumed = 2.6 lakh ton

Japan

Export = 3.65 lakh ton

Consumed = 1.35 lakh ton

U.S.A.

Export = 6.75 lakh ton

Consumed = 2.25 lakh ton

Required difference = 14.3 – 6.2 = 8.1 lakh ton

41. (e); No. of teacher from F = 18% of 50000 = 9000

No. of professors from F $= \frac{1}{36} \times 9000 = 250$

∴ Required salary = $250 \times 96000 = 240$ lakhs

42. (d); Difference in both = (53 – 47)%

$= (53 - 47)\% = 6\%$

Thus, the difference is exactly equal to the no. of teachers in university D.

43. (c); No. of male teachers in university B

$= \frac{65}{100} \times \frac{17}{100} \times 50000 = 5525$

No. of female teachers in university D $= \frac{50}{100} \times \frac{6}{100} \times 50000 = 1500$

Required percentage $= \frac{1500}{5525} \times 100 = 27.14\% \approx 27\%$

44. (b); Total no. of male teachers from B and C together

$= \frac{65}{100} \times \frac{17}{100} \times 50{,}000 + \frac{40}{100} \times \frac{19}{100} \times 50000$

$= 5525 + 3800 = 9325$

Total no. of female teachers from D and E together

$= \frac{50}{100} \times \frac{6}{100} \times 50000 + \frac{60}{100} \times \frac{29}{100} \times 50000$

$= 1500 + 8700 = 10{,}200$

Required % $= \frac{10200 - 9325}{9325} \times 100 = 9.38\%$

45. (c); $Required \ ratio = \frac{11 \times 500 \times \frac{55}{100}}{19 \times 500 \times \frac{60}{100}} = \frac{121}{228}$

46. (a); Male Engineers +Male Designers= 40% of (18% of 10500)+65% of (16% of 10500)=756+1092=1848

Female engineers+female designers=60 % of (18% of 10500+35% of (16 % of 10500)=1134+588=1722

∴ required ratio $= \frac{1848}{1722} \Rightarrow 44 : 41$

47. (c); Required % $= \frac{19}{21} \times 100 = 90\% \ approx$

48. (b); female Professionals = 10500(20% of 21% + 60% of 18% + 40% of 11% + 80% of 15% + 40% of 19% + 35% of 16%)= 4683

Male= 10500- 4683 = 5817

Difference = 5817 – 4683 = 1134

49. (d); Required %

$= \frac{20\% of 21}{80\% of 15} \times 100\% \Rightarrow \frac{20 \times 20}{80 \times 15} \times 100\% \Rightarrow \frac{420}{12} \Rightarrow 35\%$

50. (a); Required ratio $= \frac{60 \times 11}{20 \times 15} \Rightarrow 11 : 5$

51. (c); December $\rightarrow \frac{120}{100} \times \left(\frac{1218}{21} \times 100\right) = 6960$

Required no of firework produced by T

$= \frac{41}{87} \times 6960 = 3280$

52. (b); Fireworks produced by P and R in July

$= \frac{(23+9) \times 1715}{(9+14+26)} = 35 \times 32 = 1120$

Fireworks produced by S and T in November

$= \frac{(11+10) \times 1218}{21} = 1218$

Required % $= \frac{1218 - 1120}{1218} \times 100 = 8.04\% \approx 8\%$

53. (e); Required Ratio = (3500 + 3900 + 4300) : (3800 + 5800)

= 11700 : 9600 = 117 : 96 = 39 : 32

54. (a); Required No of fireworks sold

= (0.7 × 2660) + (0.75 × 304)+ 0.5 × (836)

= 1862 + 228 + 418 = 2508

55. (a); July → (3500 – 3200) = 300

August → (3900 – 3500) = 400

September (4300 – 3900) = 400

October (3800 – 4300) = 500

November (5800 – 3800) = 2000

56. (b); Married persons from MP $= 20 \times 5 \times \frac{9}{20} = 45$ million

Unmarried female from state MP $= 20 \times 5 \times \frac{2}{5} - \frac{45}{2}$

$= 17.5$ million

Similarly,

Unmarried female from Punjab $= 19 \times 5 \times \frac{8}{19} - 19 \times 5 \times \frac{4}{5} \times \frac{1}{2} = 40 - 38 = 2$million

Married female from Up and Bihar together

$= 10 \times 5 \times \frac{3}{5} \times \frac{1}{2} + 22 \times 5 \times \frac{3}{11} \times \frac{1}{2}$

$= 15 + 15 = 30$ million

Required ratio = 39 : 60 = 13 : 20

57. (d); Unmarried males from state Jharkhand
$= 8 \times 5 \times \frac{3}{8} - 8 \times 5 \times \frac{2}{5} \times \frac{1}{2} = 15 - 8 = 7$ million
Unmarried males from State Rajasthan
$= 12 \times 5 \times \frac{7}{12} - 12 \times 5 \times \frac{3}{4} \times \frac{1}{2}$
$= 35 - 22.5 = 12.5$ million
Required percentage $= \frac{7+12.5}{20 \times 5 \times \frac{9}{20}} \times 100$
$= \frac{19.5}{45} \times 100 = \frac{130}{3}\%$

58. (a); Average of married males from state Bihar & M.P. together
$= \frac{1}{2}\left(22 \times 5 \times \frac{3}{11} \times \frac{1}{2} + 20 \times 5 \times \frac{9}{20} \times \frac{1}{2}\right)$
$= \frac{1}{2}\left(15 + \frac{45}{2}\right) = \frac{75}{4}$ million
Average of married female from Maharastra and Jharkhand together
$= \frac{1}{2}\left(9 \times 5 \times \frac{7}{9} \times \frac{1}{2} + 8 \times 5 \times \frac{2}{5} \times \frac{1}{2}\right) = \frac{1}{2}\left(\frac{35}{2} + 8\right)$
$= \frac{51}{4}$ million
Required difference $= \frac{75}{4} - \frac{51}{4} = 6$ million

59. (a); Married females from state Punjab and UP together
$= 19 \times 5 \times \frac{4}{5} \times \frac{1}{2} + 10 \times 5 \times \frac{3}{5} \times \frac{1}{2} = 38 + 15$
= 53 million
Unmarried males from state Maharastra
$= 9 \times 5 \times \frac{5}{9} - 9 \times 5 \times \frac{7}{9} \times \frac{1}{2}$
$= 25 - 17.5 = 7.5$ million
Unmarried males from Jharkhand
$= 8 \times 5 \times \frac{3}{8} - 8 \times 5 \times \frac{2}{5} \times \frac{1}{2}$
$= 15 - 8 = 7$ million
Required percentage
$= \frac{53}{(7.5+7)} \times 100 = \frac{530}{145} \times 100$
$= \frac{10600}{29}\%$

60. (e); Unmarried females in Bihar
$= 22 \times 5 \times \frac{5}{11} - 22 \times 5 \times \frac{3}{11} \times \frac{1}{2}$
$= 50 - 15 = 35$ million
Number of persons who get divorced
$= \frac{1}{3} \times 22 \times 5 \times \frac{3}{11} = 10$ million
So, Number of females who got divorce
$= \frac{10}{2} = 5$ million
Required percentage
$= \frac{5}{35} \times 100 = \frac{100}{7}\%$
$= 14\frac{2}{7}\%$

61. (e); Total people who likes Punjabi = $\frac{48}{18} \times 9 = 24$ lakh
Let total people below 25 yrwho likes Punjabi = x
Then, $(24 - x)\frac{3}{8} + \frac{4}{9}x = 10$
$x = 14.4$ L

62. (d); Total number of people below 25 years who likes Chinese $= \frac{9.6}{3} \times 7$
$= 3.2 \times 7 = 22.4$ L
Total number of people above 25 years who likes Chinese $= \frac{14}{5} \times 9$
$= 2.8 \times 9 = 25.2$ L
Total people who likes Indian $= \frac{(22.4+25.2)}{20} \times 25 =$ 59.5 Lakh

63. (c); Let total people who like French food = x
Then,
$23000 - (x - 23000) = 11600$
$46000 - x = 11600$
$x = 46000 - 11600 = 34400$
Required difference $= \frac{34400}{16} \times 13 = 27950$

64. (d); Total people in the town $= \frac{1}{25} \times 100 = 4$ L
Required difference $= \frac{4}{100} \times 4 = 0.16$ L

65. (d); we can't determine these values individually.

66. (b); Total sale of Jute in India = $\frac{3}{5} \times 312500 = 187500$ Rs
Amount of Jute consumed in India
$= \frac{1}{2} \times \frac{6.25}{100} \times 200000 = 6250$
Price per unit of jute in India $= \frac{187500}{6250} = 30$ Rs/tonnes
Price per tonne of Barey export = 15 rs/tonnes
Total barley exported
$= \frac{4}{5} \times \frac{12.5}{100} \times 200000 = 20000$ tonnes
Total sale barley in India
= 500000 – 20000 × 15 = 200000 Rs

67. (b); Rice exported
$= \frac{25}{100} \times 200000 \times \frac{2}{5} = 20000$ tonne
Total sale of rice exported
$= \frac{45}{100} \times 600000 = 270000$
Selling price of one tonne of exported rice
$= \frac{270000}{20,000} = 13.5$ Rs/ tonnes
Jute consumed in India
$= \frac{1}{2} \times \frac{6.25}{100} \times 200000 = 6250$
Total sale of Jute in India = $\frac{60}{100} \times 312500 = 187500$
Per tonne price of jute consumed in India
$= \frac{187500}{6250} = 30$ Rs /tonne
Required % $= \frac{30-13.5}{30} \times 100 = 55\%$

68. (c); Let amount of maize consumed in India =x
$x + \frac{25}{100}x = \frac{12.5}{100} \times 200000 = 25000$
$\frac{125x}{100} = 25000$ x= 20000
Total sale of maize in India $= \frac{65}{100} \times 400000$
= 260,000
Per tonne price of maize consumed in India
$= \frac{2,60,000}{20,000} = 13$ Rs/ tonne
Price per toone of jute consumed in India = 30 Rs/ tonne
Required percentage
$= \frac{13}{30} \times 100 = 43\frac{1}{3}\%$

69. (e); Quantity of barley exported
$= \frac{4}{5} \times \frac{12.5}{100} \times 200000 = 20000$ tonne
Quantity of sugar consumed in India = 30 × 200
= 6000
Let total wheat produced = x
So,
Total sugar produced $= \left(100\% - \frac{250}{3}\%\right) of\ x$

$= \frac{50}{3}\% \ of \ x = \frac{x}{6}$

So,

$200000 = x + \frac{x}{6} + \frac{56.25}{100} \times 200000$

$x + \frac{x}{6} = 87500$

$x = 75000$

Total sugar produced in India $= \frac{75000}{6} = 12500$

Total sugar exported

= 12500 – 6000 = 6500tonne

70. (a); Let total sugar produced is x

so total wheat produced will be 6x

percentage distribution of production of sugar and wheat $= 100\% - 56.25\% = 43.75\%$

percentage distribution of production of wheat

$= \frac{43.75}{7} \times 6 = 37.5\%$

Amount of wheat exported $= \frac{7}{15} \times \frac{3}{8} \times 200000$

$= 35000$t

Amount of wheat consumed $= \frac{8}{15} \times \frac{3}{8} \times 200000$

$= 40000$ t.

Let, selling price of one tonne of wheat exported be Rs. $2x$ and that consumed be Rs. $3x$

Then, $35000 \times 2x + 40000 \times 3x = 5719000$

or, $190000x = 5719000$

or, $x = 30.1$

Selling price of one tonne of wheat

Exported from India = Rs. $2x$ = Rs. 2 × 30.1 = Rs. 60.2

71. (e); Let cost price of product P and Q per quintal for both company be 4x and 7x respectively

Profit on product P by company X $= \frac{(4x \times 40) \times 20}{100} = 32x$

Profit on product P by company Y $= \frac{(4x \times 50) \times 30}{100} = 60x$

Total profit on P = 92x

Total profit on Q $= \frac{92x}{2} \times 3 = 138x$

Cost price of product Q by both companies

= 7x (60 + 100) = 7x ×160

Required % $= \frac{138x}{7x \times 160} \times 100 \approx 12\%$

72. (c); Let cost price per quintal of product P and Q be x

In 2014

Profit on P → $\frac{100x \times 25}{100} = 25x$

Profit on Q → $\frac{60x \times 25}{100} = 15x$

In 2016

Profit on product P $= \frac{60x \times 10}{100} = 6x$

Profit on product Q $= \frac{30x \times 10}{100} = 3x$

Required % $= \frac{25x + 6x}{15x + 3x} \times 100 \approx 172\%$

73. (a); Let cost price of P and Q per quintal be 3x and 4x respectively.

In 2016

Profit $= \frac{(3x \times 30) \times 10}{100} = 9x$

Selling price of product Q = (4x ×20) + 9x = 89x

In 2017,

$Profit = \frac{(3x \times 50) \times 20}{100} = 30x$

Selling price of product Q = (4x × 70) + 30x = 310x

Required ratio $= \frac{89x}{310} = 89 : 310$

74. (c); Profit in 2013 $\frac{250 \times 100 \times 30}{100} = 7500$

Profit in 2014 $= \frac{250 \times 50 \times 35}{100} = 4375$

Profit in 2015 $= \frac{250 \times 30 \times 15}{100} = 1125$

Total profit = Rs. 13000

75. (b); Production of product P by both Companies = 650 quintals

Production of product Q by both companies = 550 quintals

Required difference = 100 quintals

Chapter 7

Arithmetic DI

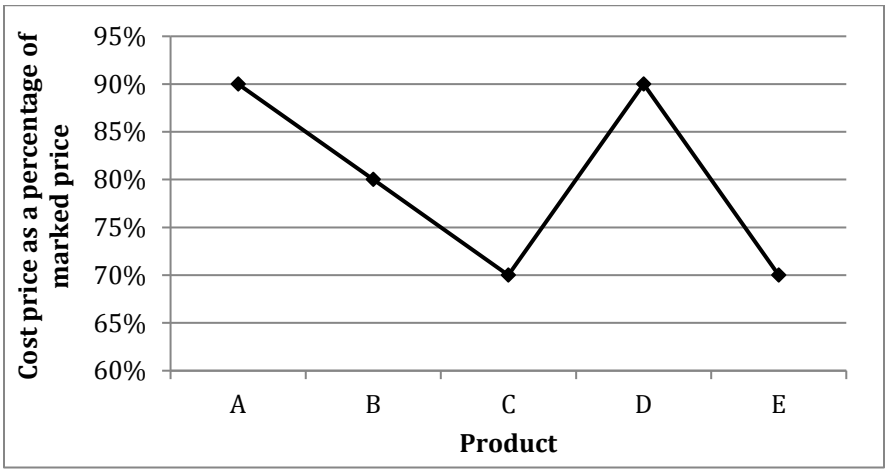
Arithmetic DI are the type of representation in which the values of variables are represented in proportion with the distances with respect to a central point. This Graph is based on Arithmetic Concepts like Time and Distance, Profit and Loss, Time and Work, Boat ad Stream, SI and CI and other topics. These are very important as in the recent Examinations we have seen these types of DI being asked frequently.

This chapter contains:

- Solved Examples
- Previous Year Questions
- Practice Set Level I
- Practice Set Level II

SOLVED EXAMPLES

Directions (1-5): Given below is the line graph which shows the cost price of five products as a percentage of marked price. Table shows the quantity of these five products sold.
Marked price = Discount on marked price + selling price
Selling price = Cost price + profit on cost price



Product →	A	B	C	D	E
Quantity sold → (in Kg)	8	12	9	20	15

1. If a discount of 8% is applied on product A then there is a profit of 300 Rs. on selling 1 kg of product A. Find the total selling price of product A.
(a) 1,00,250 (b) 1,10,400 (c) 1,20,500 (d) 98,250 (e) 90,500

Sol. **(b);** Let marked price of product A = x
So,
$\frac{92}{100}x - \frac{90}{100}x = 300$
$x = 15000$
Total selling price of product A = 8 × 0.92 × 15000 = 1,10,400

2. If 4 kg of impurity free of cost is mixed in product B and product B is sold at 10% discount then, what will be the percentage profit in selling the mixture
(a) 48% (b) 60% (c) 50% (d) 40% (e) 55%

Sol. **(c);** Let marked price of product B = $100x$
So cost price of product B will be = $80x$
Selling price of product B = $90x$
Total cost price = $80x \times 12 = 960x$
Total selling price = $16 \times 90x = 1440x$
$Percentage\ profit = \frac{1440x - 960x}{960x} \times 100 = \frac{480}{960} \times 100 = 50\%$

3. If marked price per kg of product C and product D are in the ratio 4 : 5, then what will be the ratio of total cost price for product C to total cost price for product D.
(a) 5 : 36 (b) 7 : 31 (c) 3 : 19 (d) 7 : 25 (e) 4 : 27

Sol. **(d);** Let marked price per kg of product C and D be 400 and 500
Cost price per kg of product C = $\frac{70}{100} \times 400 = 280$
Cost price per kg of product D = $\frac{90}{100} \times 500 = 450$
$Required\ ratio = 9 \times 280 : 20 \times 450 = 7 : 25$

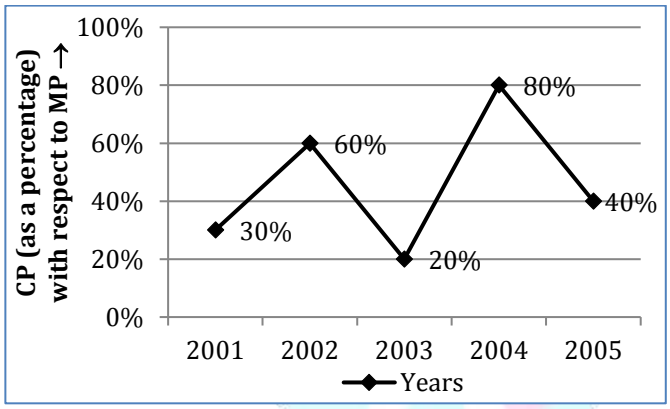
4. If cost price of product C and product D is same and there is a profit of 10% on both product then what will the ratio of discount offered on product C to discount offered on product D.
(a) 207 : 7 (b) 198 : 3 (c) 203 : 2 (d) 502 : 3 (e) 403 : 2

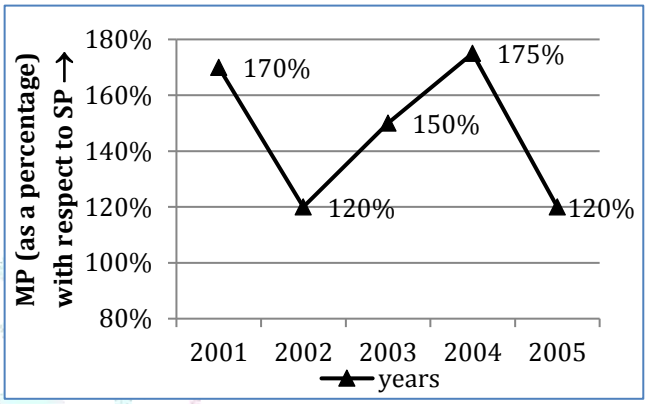
Sol. **(a);** Let Marked price product C and Product D be x and y respectively
So,
$0.7x = 0.9y$
$\frac{x}{y} = \frac{9}{7}$
Let cost price product C = 0.7 × 9 = 6.3
and cost price of product D = 0.9 × 7 = 6.3
Selling price of C will be = 6.93
Selling price of D will be = 6.93
Required ratio = (9 – 6.93) : (7 – 6.93) = 2.07 : 0.07 = 207 : 7

5. If marked price of product A, B and C are in the ratio 10 : 15 : 14 the what is the average of cost price of product A, B and C together. Cost price of product A is 900 Rs.
(a) $1251\frac{2}{3}$ (b) $1028\frac{1}{3}$ (c) $1155\frac{2}{3}$ (d) $928\frac{1}{3}$ (e) $1026\frac{2}{3}$

Sol. **(e);** Let marked price of product A, B and C be $100x, 150x$ and $140x$
Cost price of A, B and C will be = $90x, 120x$ and $98x$
$Required\ average = \frac{900+1200+980}{3} = \frac{3080}{3} = 1026\frac{2}{3}$

Directions (6-10): First line graph shows the Cost Price as a percentage of mark price of a product and second line graph shows the mark price as a percentage with respect to the selling price of a product in five different years from 2001 to 2005.





6. If the mark price of the product in the year 2002, 2003 and 2005 was same then the CP of the product in year 2002 and 2003 together was what percent more than the cost price of the product in the year 2005?
(a) 100% (b) 125% (c) 150% (d) 200% (e) 50%

Sol. **(a);**

		2002	2003	2005
Let	MP	100	100	100
	CP	60	20	40

Required % = $\frac{80-40}{40} \times 100 = 100\%$

7. If the CP of the product in year 2006 was $\frac{3}{8}$ th times of the CP of the product in year 2005 and there was same profit (in Rs.) in year 2006 as in year 2005, then find the selling price (in Rs) of the product in year 2006 if selling price of the product in year 2005 is 100 Rs.
(a) 50 Rs (b) 60 Rs. (c) 70 Rs (d) 40 Rs. (e) 80 Rs

Sol. **(c);** Given
SP of the product in 2005 = 100
∴ MP of the product in 2005 = 120
∴ CP of the product in 2005 = $\frac{40}{100} \times 120 = 48$
Profit (in Rs) = 100 – 48 = 52 Rs
Now, CP of the product in 2006 = $\frac{3}{8} \times 48 = 18$ Rs
∴ Required SP = 18 + 52 = 70 Rs.

8. If the cost price of the product in year 2001, 2002 and 2003 were same then find the ratio of mark price of the product in the same year?
(a) 1:3:2 (b) 3:2:1 (c) 1:2:3 (d) 2:1:3 (e) 1:4:2

Sol **(d);** Let marked price of Product in year 2001 = M_1
Let marked price of Product in year 2002 = M_2
Let marked price of Product in year 2003 = M_3
According to question,
30% of M_1 = 60% of M_2 = 20% of M_3
So,
$M_1 : M_2 : M_3 = \frac{1}{3} : \frac{1}{6} : \frac{1}{2}$ or $M_1 : M_2 : M_3 = 2 : 1 : 3$

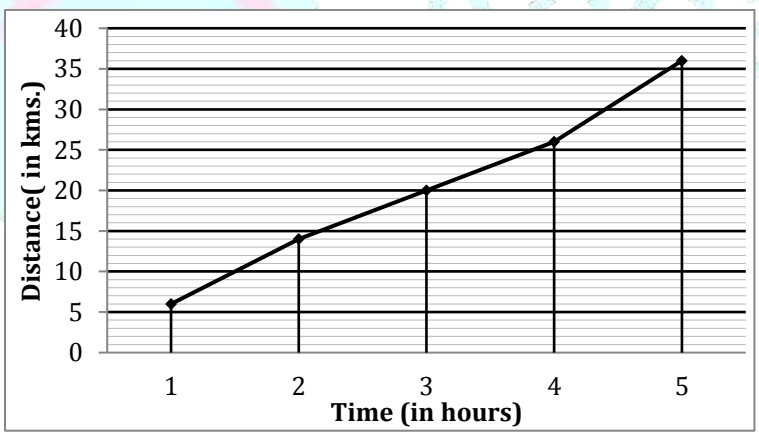
9. If the mark price of the product in year 2003 was 1050 Rs and cost price of the product in year 2004 was 700 Rs then find the average selling price of the product in year 2003 and 2004 together?
(a) $Rs.560$ (b) $Rs.350$ (c) $Rs.450$ (d) $Rs.800$ (e) Rs. 600

Sol. **(e);** Given
MP of the product in year 2003 = 1050
$\therefore$ SP of the product in year 2003 $= \frac{100}{150} \times 1050 = 700\ Rs$
And, Given CP of the product in year 2004 = 700 Rs
MP in 2004 = $700 \times \frac{100}{80} = 875$
$\therefore$ Sp of the product in 2004 = $\frac{100}{175} \times 875 = 500$ Rs
$\therefore$ Average Selling price $= (700 + 500) \times \frac{1}{2} = 600$ Rs.

10. Total CP of the products in all of the given years together was what % less then the total MP of the product in all of the given years?
(a) 64% (b) 52% (c) 62% (d) 65% (e) Can't be determined

Sol. **(e);** Since we don't know exact values of M.P. and C.P. Hence the answer can't be determined.

Directions (11-15): The graph here shows a car following a linear path. Study the graph and answer the questions that follow.



11. What is the average speed of car for the duration 3rd and 4thhours ?
(a) 6 km/hr (b) 9 km/hr (c) 10 km/hr (d) 12 km/hr (e) None of these

Sol. **(a);** Average speed = $\frac{Total\ Distance}{Total\ time\ taken} = \frac{12}{2} = 6$ km/hr

12. What is the difference between the average speed of car for 3rd to 5th hour and that of 2nd to 4th hour?
(a) $\frac{1}{3}$ km/hr (b) $\frac{2}{3}$ km/hr (c) $\frac{5}{3}$ km/hr (d) $\frac{4}{3}$ km/hr (e) None of these

Sol. **(b);** Average speed for hours 3rd to 5th= $\frac{22}{3}$
Average speed for hours 2nd to 4th= $\frac{20}{3}$
Difference = $\frac{22}{3} - \frac{20}{3} = \frac{2}{3}$ km/hr

13. At what speed should car run if it has to cover equal distance every hour ?
(a) 8.5 km/hr (b) 9 km/hr (c) 7.2 km/hr (d) 6.5 km/hr (e) None of these

Sol. **(c);** To cover equal distance every hour, the car must move at its average speed for the overall journey.
Req. speed = $\frac{36}{5} = 7.2$ km/hr

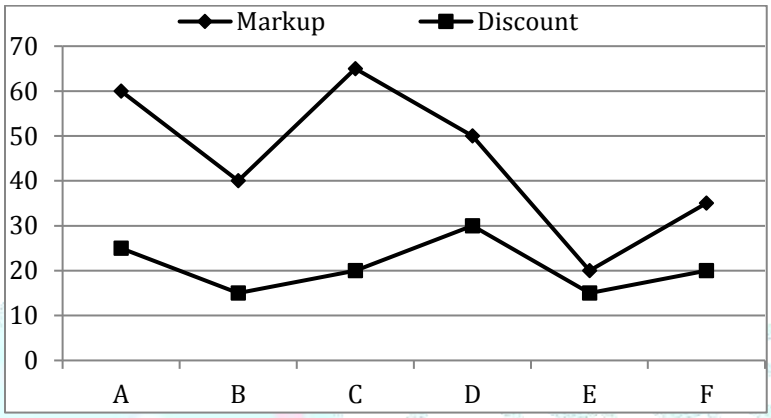
14. If the car travels another 28 kms in 4 hours after the fifth hour, then what is the ratio of average speed of car for 4th to 8th hour to that of 6th to 9th hour?
(a) 35 : 31 (b) 42 : 31 (c) 43 : 34 (d) Can not determined (e) None of these

Sol. **(d);** Average speed for hours 6th to 9th = $\frac{28}{4} = 7$ km/hr
But, distance covered for 6th, 7th or 8th hour individually is unknown. Hence the average speed of car for hours 4th to 8th can not be calculated. Hence we can't determine the desired ratio.

15. How much time will the car take to travel a distance of 72 kms.running at a speed equal to $\frac{3}{2}$ of its average speed for the given data ?
(a) $6\frac{2}{3}$hrs. (b) $7\frac{4}{5}$hrs. (c) 6 hrs (d) $8\frac{2}{3}$hrs. (e) None of these

Sol. **(a);** Required time = $\frac{72}{\frac{3}{2}\times 7.2} = \frac{72}{10.8} = \frac{20}{3} = 6\frac{2}{3}$ hrs.

Direction (16-20): Refer the following line graph and answer the questions based on it.
The line graph shows the percentages of markup on CP and discount offered on MP of six different articles sold by a shopkeeper.



16. Selling price of article C is Rs.528 and the marked prices of articles C and E are the same. What is the average selling price of both the articles?
(a) $Rs.534.5$ (b) $Rs.544.5$ (c) $Rs.554.5$ (d) $Rs.524.5$ (e) $Rs.527.5$

Sol. **(b);** Marked price of article C = $528 \times \frac{100}{(100-20)}$ = Rs.660
Then, marked price of article E = Rs.660
Selling price of article E = $660 \times \frac{(100-15)}{100}$ = Rs.561
Required average = $\frac{(528+561)}{2} = Rs.544.5$

17. Cost Price of article A is Rs.450 and that of article D is Rs.600. What is the ratio of marked price of both the articles?
(a) 5 : 6 (b) 3 : 4 (c) 3 : 5 (d) 4 : 5 (e) 3 : 7

Sol. **(d);** Required Ratio = $450 \times \frac{(100+60)}{100} : 600 \times \frac{(100+50)}{100} = 4 : 5$

18. If the cost price of article E is double to that of article A, the marked price of article E is how much percent more than that of article A?
(a) 50% (b) 40% (c) 60% (d) 30% (e) 45%

Sol. **(a);** Let the cost price of article A be Rs.100
Then, the cost price of article E = Rs.200
Marked price of article A = 100 + 60% of 100 = 160
Marked price of article E = 200 + 20% of 200 = 240
Required Percentage = $\frac{(240-160)}{160} \times 100 = 50\%$

19. For which article, the profit percent is the minimum?
(a) D and E (b) D (c) E (d) E and F (e) None of these

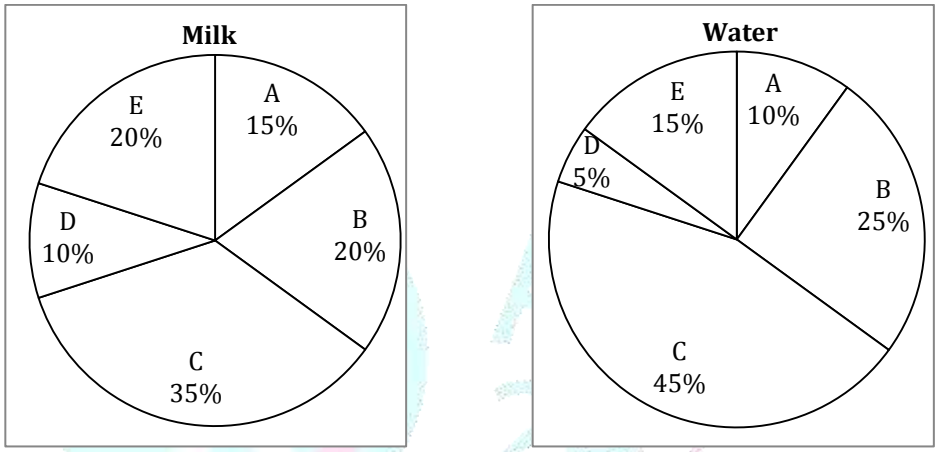
Sol. **(c);** Profit % = $(100 + Markup\%) \times \frac{(100 - Discount\%)}{100} - 100$
Profit % for article A = $(100 + 60) \times \frac{(100-25)}{100} - 100 = 20\%$

Similarly,
Profit % for article B = 19%
Profit % for article C = 32%
Profit % for article D = 5%
Profit % for article E = 2%
Profit % for article F = 8%
Hence, minimum profit % is for article E

20. If the cost price of each of the article B and F is Rs.800, then what is the total profit earned by shopkeeper on both the articles?
(a) Rs.152 (b) Rs.248 (c) Rs.184 (d) Rs.216 (e) Cannot be determined

Sol. **(d);** Profit % = $(100 + Markup\%) \times \frac{(100 - Discount\%)}{100} - 100$
Profit % for article B = 19%
Profit % for article F = 8%
Total Profit = 19% of 800 + 8% of 800 = 27% of 800 = Rs.216

Directions (21-25): Read the given data carefully and answer the given question
Pie chart shows percentage distribution of total quantity of milk and water in five different vessel namely A, B, C, D and E



Total milk = 500 Lt
Total Water = 250 Lt

21. What is ratio of milk and water in F. If the mixture of vessel A and B is poured in the other vessel F.
(a) 1 : 2 (b) 3 : 5 (c) 2 : 1 (d) 4 : 3 (e) None of these

Sol. **(c);** $Total\ quantity\ of\ milk\ in\ vessel\ A = 500 \times \frac{15}{100} = 75\ Lt$
$Total\ quantity\ of\ milk\ in\ vessel\ B = 500 \times \frac{20}{100} = 100$
$Total\ quantity\ of\ Water\ in\ vessel\ A = \frac{250 \times 10}{100} = 25$
$Total\ quantity\ of\ Water\ in\ vessel\ B = \frac{250 \times 25}{100} = 62.5$
Required ratio = (100 + 75) : (25 + 62.5) = 2:1

22. With the intention of cheating a shopkeeper sells mixture of vessel-D showing that he is taking only 4% profit over cost price. Find his actual profit. If he proffesses to sell pure milk and cost price is due to milk only
(a) 40% (b) 30% (c) 25% (d) 35% (e) None of these

Sol. **(b);** $Quantity\ of\ milk\ in\ D = 500 \times \frac{10}{100} = 50$
$Quantity\ of\ Water\ in\ D = 250 \times \frac{5}{100} = 12.5$
Total quantity = 50 + 12.5 = 62.5
Let CP of 1 Lt = Rs. 10
Total cost for customer = 62.5 × 10 = 625
$SP = 625 \times \frac{26}{25} = 650$
Actual cost = 50 × 10 = 500
$Profit\% = \left(\frac{650 - 500}{500}\right) \times 100 = 30\%$

23. If 40% from vessel A and 50% from vessel E is taken out mixed together. Find the quantity of water in resultant mixture.
(a) 28.75 (b) 29.25 (c) 27.50 (d) 25 (e) None of these

Sol. **(a);** $Water\ in\ A = \frac{250\times10}{100} = 25\ Lt.$
$Water\ in\ E = \frac{250\times15}{100} = 37.5\ Lt.$
$Required\ answer = 25\times\frac{40}{100} + 37.5\times\frac{50}{100} = 10 + 18.75 = 28.75\ Lt$

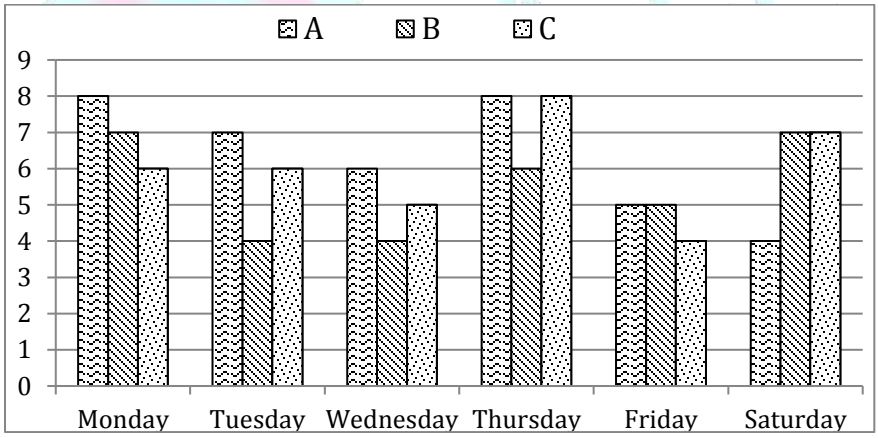
24. What will be the final ratio of milk and water if all the vessels are poured into the bigger vessel except from vessel C only 50% of mixture is taken out
(a) 2 : 1 (b) 66 : 31 (c) 3 : 2 (d) 55 : 21 (e) None of these

Sol. **(b);** $Required\ AM = 500 - \left(\frac{500\times35}{100}\right)\times\frac{1}{2} : 250 - \left(250\times\frac{45}{100}\right)\times\frac{1}{2}$
$= 412.5 : 193.75 \Rightarrow 66 : 31$

25. Find profit% after selling mixture at cost price from vessel B, C and D together. If one proffesses to sell pure milk and cost price is due to milk only (approximately)
(a) 54% (b) 60% (c) 63% (d) 58% (e) 62%

Sol. **(d);** $Milk\ in\ B, C\ and\ D\ together = 65\times\frac{500}{100} = 325\ Lt.$
$Water\ in\ B, C\ and\ D\ together = 250\times\frac{75}{100} = 187.5\ Lt.$
Total mixture = 512.5 Lt
$\%\ profit = \frac{187.5}{325}\times100 \cong 57.6\% = 58\%$

Directions (26 – 30): The following data shows the working hours for three employees in week days to complete a task. The working hours also indicates the time taken by them to complete the same task alone. Read the following questions and answer carefully.



26. What is the difference between average of working hours of A on Monday and Saturday together and average of working hours B on Friday and Saturday together?
(a) 0 (b) 1 (c) 0.5 (d) 2 (e) 2.5

Sol. **(a);** A : $\frac{8+4}{2} = 6$
B : $\frac{5+7}{2} = 6$
Difference = 0

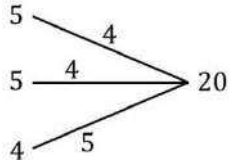
27. On Tuesday, If A takes half the working hour time to complete a work while B takes equal time as A and C takes 50% more time to complete the same work alone. What will be the ratio of their working efficiency to complete a work?
(a) 7 : 7 : 18 (b) 7 : 18 : 18 (c) 18 : 18 : 7 (d) 18 : 7 : 18 (e) 9 : 9 : 4

Sol. **(c);**
$A \rightarrow \frac{7}{2}$ hrs
$B \rightarrow \frac{7}{2}$ hrs
$C \rightarrow 6+3 = 9$ hrs
18
18
7
63
Ratio = 18 : 18 : 7

28. Working hours on Friday by A, B and C are the time taken by them to complete a work alone. How much time will they take to complete thrice the same work working together?

(a) $6\frac{2}{13}$ days (b) $4\frac{8}{13}$ days (c) $3\frac{8}{13}$ days (d) 4 days (e) $4\frac{3}{13}$ days

Sol. **(b);** On Friday

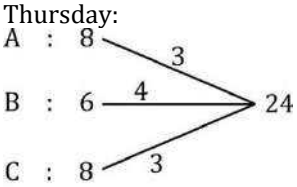


Time taken to complete thrice the work = $\frac{20\times3}{13} = 4\frac{8}{13}$days

29. On Thursday, A was supposed to complete the task in time. Due to illness, he stopped when only one-third of the task was complete. Half of the remaining work was completed by B alone and rest by C alone. Find the total time taken by them to complete the task.

(a) 8 days (b) $7\frac{1}{3}$ days (c) 7 days (d) $7\frac{2}{3}$ days (e) $7\frac{3}{4}$ days

Sol. **(b);** Thursday:



By A $\rightarrow \frac{1}{3}(24) = 8$ units in $\frac{8}{3}$hrs

By B $\rightarrow \frac{24-8}{2} = 8$ units in $\frac{8}{4}$hrs

By C $\rightarrow$ 8 units in $\frac{8}{3}$hrs

Total time taken = $\frac{8}{3} + 2 + \frac{8}{3} = 7\frac{1}{3}$ days

30. What is the ratio of total work hour of A and C together throughout the week to that of B throughout the week ?

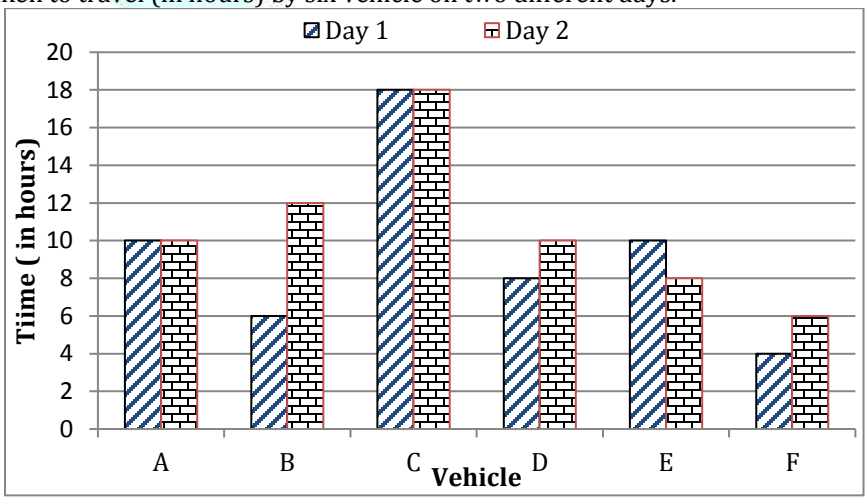
(a) 7 : 5 (b) 5 : 2 (c) 31 : 13 (d) 37 : 15 (e) 74 : 33

Sol. **(e);** A + C = 74 $\Rightarrow$ B = 33

So, required ratio = 74 : 33

Direction(31-35)- Study the following bar –graph and data given in the table carefully and answer the questions asked.

Bar-graph shows Time taken to travel (in hours) by six vehicle on two different days.



Distance covered (in km) by six vehicle on each day.

Vehicle	Day One	Day Two
A	850	840
B	520	500
C	450	630
D	400	800
E	640	320
F	320	480

31. What is difference between the average speed of A on day one and day two together to the average of speed of F on Day one and Day two together? (in km/hr)
(a) 4.5 (b) 6.5 (c) 5.5 (d) 2.5 (e) 3.5

Sol. **(a);** Average speed of A on day one and Day two together = $\frac{total\ distance}{total\ tme}$
$= \frac{1690}{20} = 84.5km/hr$
Average speed of F on Day one and Day two together = $\frac{total\ distance}{total\ tme}$
$= \frac{800}{10} = 80$km/hr
∴ Difference = 84.5 – 80 = 4.5 km/hr

32. Which of the following vehicles travelled at the same speed on both the days?
(a) Vehicle A (b) Vehicle E (c) Vehicle C (d) Vehicle D (e) Vehicle F

Sol. **(e);** From the table and graph
Speed of F on day one $= \frac{320}{4} = 80$km/hr
Speed of F on day two $= \frac{480}{6} = 80$km/hr
∴ Speed on both days is same by vehicle F.

33. What is the ratio of average speed of vehicle D on day one and day two together to the average speed of vehicle E on day one and day two together?
(a) 65 : 53 (b) 5 : 4 (c) 4 : 5 (d) 50 : 63 (e) 7 : 8

Sol. **(b);** Average speed by vehicle D on day one and day two together = $\frac{total\ distance}{total\ tme} = \frac{200}{3}\ km/hr$
Average speed by vehicle E on day one and day two together = $\frac{total\ distance}{total\ tme}$
$= \frac{640+320}{18} = \frac{960}{18} km/hr = \frac{160}{3} km/hr$
∴ Ratio $= 200 : 160 = 5/4$

34. Which vehicle have maximum speed on day two?
(a) Vehicle D (b) Vehicle F (c) Vehicle C (d) Vehicle A (e) None of these

Sol. **(d);** From the table and graph it I s clear that vehicle A has maximum speed on day two

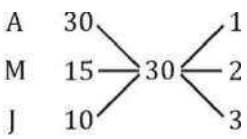
35. The distance travelled on day two by vehicle A, D and F is what percent more than that of the distance travelled on day one by vehicle A and D?
(a) 69.6% (b) 62.6% (c) 65.6% (d) 59.6% (e) 67.5%

Sol. **(a);** Distance travelled on day two day vehicle A, D and F = 840 + 800+ 480 = 2120 km
Distance travelled on day one by vehicle A and D = 850 + 400 = 1250 km
∴ percentage$= \frac{2120-1250}{1250} \times 100 = \frac{87000}{1250} = 69.6\%$

Directions (36-40): The table given below shows the number of days taken by six workers to complete five different tasks in a field individually. Study the table carefully to answer the questions based on it.

Workers	Digging	Watering	Ploughing	Seeding	Leveling
Mayank	15	8	14	8	16
Faisal	12	20	35	6	12
Rakesh	20	10	20	12	18
Jatin	10	15	24	10	20
Lokesh	8	24	10	8	14
Ashfaq	30	12	16	20	16

36. If Ashfaq started digging alone and was coordinated by Mayank and Jatin respectively on alternate days from next day, find the number of days taken by them to complete the work?
(a) $10\frac{2}{3}$days (b) $11\frac{3}{4}$days (c) $9\frac{1}{3}$days (d) $9\frac{3}{4}$days (e) None of these

Sol. **(c);**


Day1 → A : 1 unit

Day 2 + Day 3 work = (A + M) + (A + J) = (1 + 2) + (1 + 3) = 7 unit
2 Days → 7 unit
8 Days → 28 unit
Total required days $= 1 + 8 + \frac{1}{3} = 9\frac{1}{3}$ days

37. Lokesh, Faisal and Jatin started watering in the field. But after 2 days Lokesh left and Jatin also left 2 days before completion of work. Find total number of days Faisal worked?
(a) 7 days (b) 9 days (c) 8 days (d) 10 days (e) None of these

Sol. **(b);** L – 24 5
F – 20 120 6
J – 15 8
Work done in 2 days = 38 units
Remaining work = 120 – 38 = 82 units
∴ Time taken to complete remaining work $= \frac{82+16}{8+6} = 7$ days
So, Faisal work for 7 + 2 ie 9 days

38. What is the difference in the number of days taken by Rakesh and Mayank together for seeding and that of by Faisal and Jatin together for watering?
(a) $3\frac{3}{4}$days (b) $4\frac{27}{35}$days (c) $3\frac{27}{31}$days (d) $3\frac{27}{35}$days (e) None of these

Sol. **(d);** Total time for seeding $= \frac{1}{\frac{1}{12}+\frac{1}{8}} = \frac{24}{5}$ days
Total time for watering $= \frac{1}{\frac{1}{20}+\frac{1}{15}} = \frac{60}{7}$ days
So, required difference $= 3\frac{27}{35}$ days

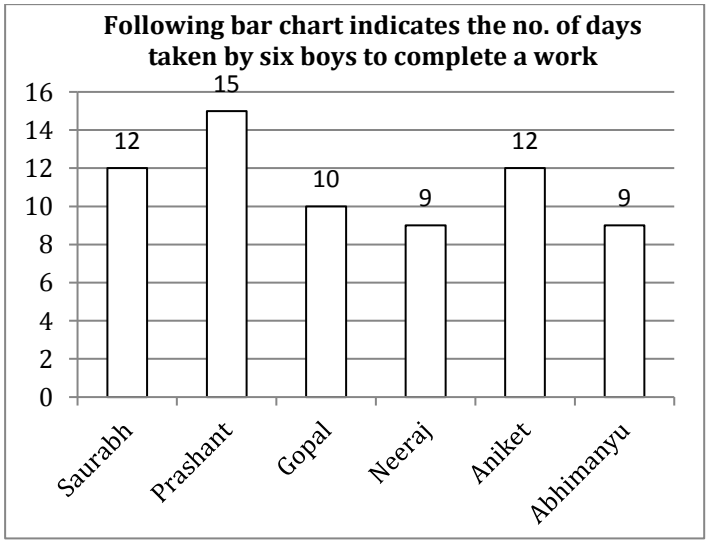
39. What is the ratio of the average number of working days of Rakesh and that of Faisal for all the activities?
(a) 17 : 16 (b) 16 : 17 (c) 17 : 18 (d) 19 : 20 (e) None of these

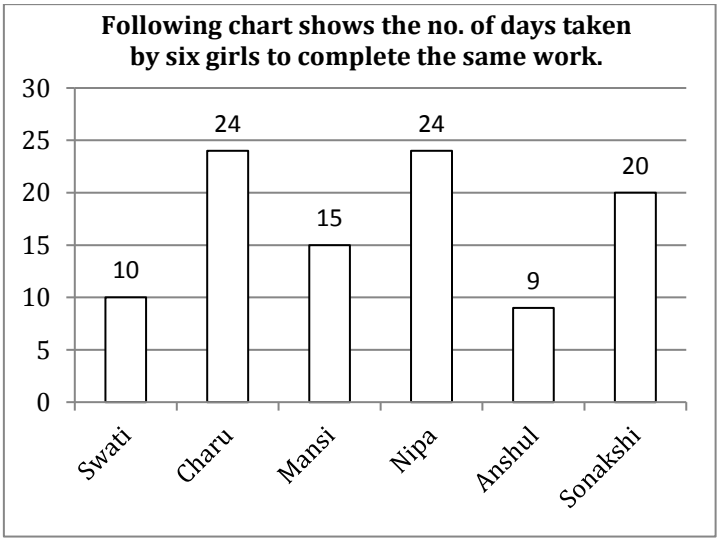
Sol. **(b);** Required ratio $= \frac{\frac{1}{5}\times 80}{\frac{1}{5}\times 85} = \frac{16}{17}$

40. Mayank, Faisal and Rakesh together started ploughing while at the same time Jatin, Lokesh and Ashfaq started watering. What is the time difference in the completion of the two works?
(a) $3\frac{31}{67}$days (b) $3\frac{3}{7}$days (c) $1\frac{3}{7}$days (d) $1\frac{31}{67}$days (e) $1\frac{31}{69}$ days

Sol. **(e);** Time for ploughing= $\frac{1}{\frac{1}{14}+\frac{1}{35}+\frac{1}{20}} = \frac{20}{3}$ days
Time for watering $= \frac{1}{\frac{1}{15}+\frac{1}{24}+\frac{1}{12}} = \frac{120}{23}$ days
∴Required difference $= 1\frac{31}{69}$ days

Directions (41-45): Read the following bar chart carefully and answer the following questions –





41. If Neeraj and Abhimanyu started working and after 2 days they were replaced by Charu, Anshul and Nipa and then they worked for 2 days together. How much work is still left?

(a) 1/10 (b) 1/6 (c) 1/9 (d) 1/12 (e) None of these

Sol. **(b);** 2 days' work of Neeraj and Abhimanyu $= \frac{2}{9}+\frac{2}{9}=\frac{4}{9}$

2 days work of Charu, Anshul and Nipa $= \frac{2}{24}+\frac{2}{9}+\frac{2}{24} = \frac{6+16+6}{72}=\frac{28}{72}=\frac{7}{18}$

Total work done in 4 days $= \frac{4}{9}+\frac{7}{18} = \frac{8+7}{18}=\frac{15}{18}$

Remaining work $= 1-\frac{15}{18}=\frac{3}{18}=\frac{1}{6}$

42. If all the boys work together then time taken by them will be how much less than the time taken by Swati, Mansi, Charu and Nipa together to do the work?

(a) 2 days (b) 2.1 days (c) 2.2 days (d) 2.3 days (e) None of these

Sol. **(c);** Work done by all the boys in one day $= \frac{1}{12}+\frac{1}{15}+\frac{1}{10}+\frac{1}{9}+\frac{1}{12}+\frac{1}{9}$

$= \frac{15+12+18+20+15+20}{180}=\frac{100}{180}$

Time taken by the boys =1.8 days

Work done by Swati, Mansi, Charu and Nipa in one day $= \frac{1}{10}+\frac{1}{15}+\frac{1}{24}+\frac{1}{24}=\frac{12+8+5+5}{120}=\frac{30}{120}=\frac{1}{4}$

Time taken by Swati, Mansi, Charu and Nipa = 4 days

Desired difference = 4 - 1.8 = 2.2 days

43. Aniket and Gopal started working, Aniket worked at 120%. of his efficiency and Gopal worked at 5/6 at his efficiency. They started working on alternate days starting with Aniket. How many days will be taken by them to complete the work?

(a) $10\frac{5}{6}days$ (b) $11\frac{5}{6}days$ (c) $10\frac{2}{3}days$ (d) $10\frac{1}{6}days$ (e) None of these

Sol. **(a);** Aniket one day work with 120% efficiency $= \frac{1}{12}\times\frac{120}{100}=\frac{1}{10}$

Gopal one day work with 5/6 of his efficiency $= \frac{5}{6}\times\frac{1}{10}=\frac{1}{12}$

$2\ days'work = \frac{1}{10}+\frac{1}{12}=\frac{11}{60}$

10 days's work starting with Aniket = $\frac{55}{60}$

$Remaining\ work = 1-55/60=\frac{5}{60}=\frac{1}{12}$

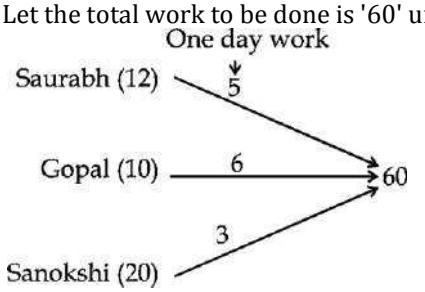
$Time\ taken\ by\ Aniket\ to\ complete\ the\ remaining\ work = \frac{\frac{1}{12}}{\frac{1}{10}}=\frac{10}{12}=\frac{5}{6}$

$Total\ time\ taken = 10\frac{5}{6}\ days$

44. How many days will it take to complete the work if saurabh does the 25% of the work alone, 10% is done by Gopal alone, the remaining work is done by Sonakshi and only one of them is working at a time?

(a) 19 days (b) 16 days (c) 13 days (d) 17days (e) None of these

Sol. **(d);** Let the total work to be done is '60' units.



$Time\ taken\ by\ Saurabh = \frac{25\%\times 60}{5}=3\ days$

$Time\ taken\ by\ Gopal = 10\%\times\frac{60}{6}=1\ days$

$Time\ taken\ by\ Sonakshi = 65\%\times\frac{60}{3}=13\ days$

$Total\ time\ taken = 3+1+13 = 17\ days$

Or

Time taken by saurabh to do 25% of work = 25% × 12 days = 3 days

Time taken by Gopal to do 10% of work = 10% of 10 days = 1 day

Time taken by Sonakshi to do 65% of work = 65% × 20 days = 13 days

Total time taken = 3 + 1 + 13 = 17 days

45. Prashant started working alone but after 5 days of working he found that he has done only 25% work so to complete the remaining work on time he was expected to complete the work, by how much percentage he should increase his efficiency?

(a) 52.5% (b) 55% (c) 50% (d) 45% (e) None of these

Sol. **(c);** 25% of the work is done in 5 days. Then, total work will be done in 20 days.

Efficiency/day = $\frac{1}{20}$

Remaining 75% of the work has to be done in 10 days (15 – 5 days). Total work will be done in $10 \times \frac{100}{75}$ days with the same efficiency.

New Efficiency/day = $\frac{1}{10} \times \frac{100}{75} = \frac{3}{40}$

$Percentage\ increase\ in\ efficiency\ to\ do\ the\ work\ in\ time = \frac{\frac{3}{40} - \frac{1}{20}}{\frac{1}{20}} \times 100 = \frac{\frac{1}{40}}{\frac{1}{20}} \times 100 = 50\%$

Directions (46-50): Study the following table carefully to answer the questions that are based on it. The table shows the dimensions of various shapes of iron blocks.

Blocks	Length (cm)	Breadth (cm)	Height (cm)	Radius (cm)
Cube	20	20	20	—
Cuboid	12	8	5	—
Sphere	—	—	—	35
Cylinder		—	14	8
Cone	—	—	28	21

46. Find the number of cones (of given dimension) that can be formed by melting 18 spheres of given dimension.

(a) 252 (b) 265 (c) 250 (d) 270 (e) 280

Sol. **(c);** Let n number of cones are formed.

So,

Volume of n cones = Volume of 18 spheres

$\Rightarrow n \times \frac{1}{3} \times \pi \times 21^2 \times 28 = 18 \times \frac{4}{3} \times \pi \times 35^3 \Rightarrow n = 250$

47. Find the cost of painting 630 conical blocks of given dimension provided that only the curved surface area is to be painted at Rs. 5 per m². (approx.)

(a) Rs. 777 (b) Rs. 727 (c) Rs. 780 (d) Rs. 725 (e) Rs. 790

Sol. **(b);** $Slant\ height\ of\ cone = \sqrt{21^2 + 28^2} = 35$ cm

$\therefore Required\ cost\ of\ painting = 630 \times \frac{22}{7} \times 21 \times 35 \times \frac{5}{100^2} \approx 727$

48. Find the total number of cubical blocks of given dimension required to raise the water level to the brim of a cylindrical container having dimensions 10 times than that of the given cylinder. Initially container is half filled.

(a) 176 (b) 80 (c) 220 (d) 128 (e) 180

Sol. **(a);** $Volume\ of\ container = \frac{22}{7} \times 80^2 \times 140 = 2816000\ cm^3$

∴ Volume of required number of cubical blocks should be equal to half the volume of container

$So, x \times 20^3 = \frac{2816000}{2} \Rightarrow x = 176$

49. Find the ratio of total surface area of cylinder, cone and sphere.

(a) 88 : 294 : 1225 (b) 575 : 352 : 89 (c) 18 : 119 : 54 (d) 2 : 8 : 13 (e) 5 : 17: 7

Sol. **(a);** Required ratio = $2\pi \times 8(8+14) : \pi \times 21\ (21 + 35) : 4\pi \times 35^2$

= 352 : 1176 : 4900 = 88 : 294 : 1225

50. By what percent the total surface area of cuboid is more or less than the lateral surface area of cube ?

(a) 70.5% (b) 65% (c) 75.5% (d) 80% (e) None of these

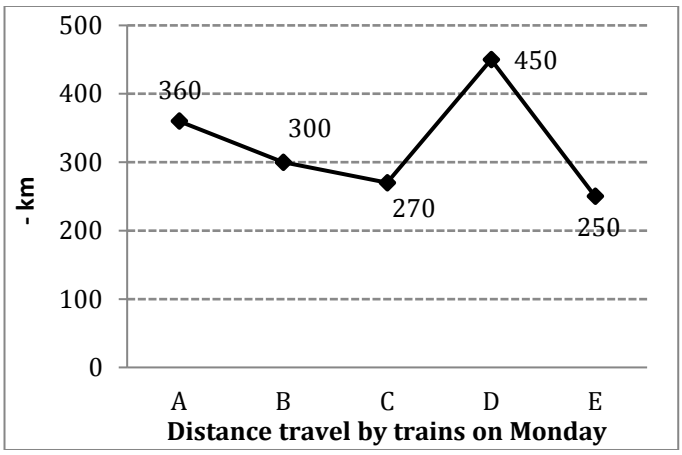
Sol. **(c);** T.S.A. of cuboid = $2(12 \times 8 + 8 \times 5 + 5 \times 12) = 392$ cm²

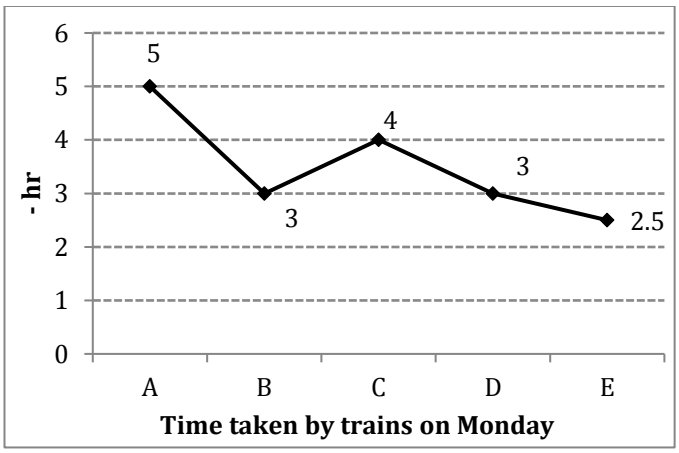
L.S.A. of cube = $4 \times 20^2 = 1600$ cm²

$\therefore\ Required\ percentage = \frac{1208}{1600} \times 100 = 75.5\%$

PREVIOUS YEAR QUESTIONS

Directions (1-5): Study the graph and answer the following questions
Given below are two line graphs. First line graph shows the distance travelled by different trains on Monday and second line graph shows the time taken by different trains on Monday to cover the distance given in first line graph.





1. If speed of the train A is increased by 20% every day, then what was the speed of train on last or previous Saturday?
(a) 45 km/hr (b) 55 km/hr (c) 50 km/hr (d) 57.5 km/hr (e) 60 km/hr
2. What is the approximate speed (in km/hr) of train C, if the distance travel by C is increased by $11\frac{1}{9}$% and time taken is reduced by 12.5%?
(a) 83 (b) 89 (c) 86 (d) 80 (e) 75
3. What is the ratio of the sum of speed of train A & B together to the sum of speed of train C & E together.
(a) $\frac{414}{527}$ (b) $\frac{344}{335}$ (c) $\frac{314}{329}$ (d) $\frac{327}{551}$ (e) None of these
4. The speed of the slowest train is what percent less than the speed of fastest train.
(a) 55% (b) 56% (c) 60% (d) 45% (e) 57.5%
5. What will be the Average speed (in km/hr) of the all 5 trains, if train B and D travel at 20% less than the planned distance.
(a) 88.7 (b) 87.9 (c) 85 (d) 86 (e) None of these

Directions (6-10): In the following table, the Investment and profit of three persons from different states is given.

	Investment (in Rs.)			Profit (in Rs.)		
State	**A**	**B**	**C**	**A**	**B**	**C**
UP	15000	—	25000	—	8000	12500
Rajasthan	—	7000	8000	—	—	14000
Gujarat	4000	5000	4500	—	—	—
Tamil Nadu	9000	10000	—	4500	6000	—
West Bengal	—	—	17000	20000	30000	40000

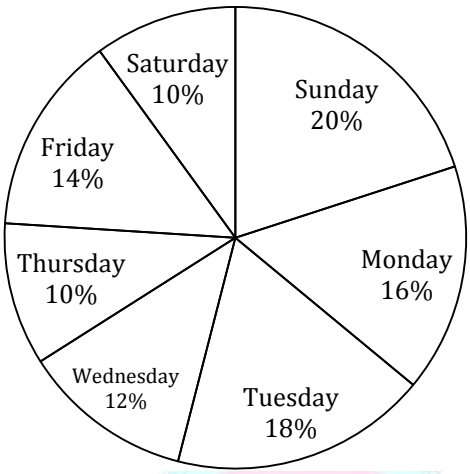
Note : Some values are missing. You have to calculate these values as per data given in the questions: -

6. If Person A invested his amount in UP state for 9 months and person C invested his amount in the same state for 10 months then find the total profit made by all of them from UP state ?
(a) 29250 Rs. (b) 24250 Rs. (c) 27250 Rs. (d) 31200 Rs. (e) 28360 Rs.
7. If the total profit earned from Rajasthan by all of them is 32375 Rs. and each invested for 9 months then find the ratio of investment of A in Rajasthan state to the profit of B from UP state ?
(a) 16 : 7 (b) 7 : 16 (c) 8 : 13 (d) 13 : 8 (e) 5 : 17
8. If A, B and C invested in Gujarat state for 5 months, 8 months and 6 months respectively then profit earned by C from Gujarat state is what % of the profit earned by A and B together from the same state, if total profit earned by all of them from Gujarat state is 8700 Rs.
(a) 45% (b) 50% (c) 55% (d) 40% (e) 60%
9. In West Bengal state total Investment of A and B is 85000 Rs, A and B invested their amount for 4 months and 6 months respectively in the same state, then find the number of months that C invested his amount ?
(a) 8 months (b) 9 months (c) 20 months (d) Can't be determined (e) 15 months

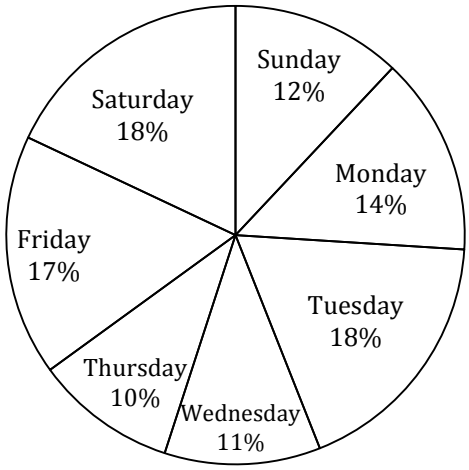
10. Average Investment made by all of them in Tamil Nadu is 10,000 Rs. and average profit earned by all of them from the same state is 6000 Rs. , then profit earned by C in the same state is what percent more/less than the amount invested by C in the same state ?
(a) $35\frac{1}{3}\%$ (b) $37\frac{6}{7}\%$ (c) $32\frac{7}{11}\%$ (d) $33\frac{7}{11}\%$ (e) $31\frac{9}{11}\%$

Directions (11-15): Study the data given below and answer the following questions. The pie charts shown below shows the distance covered by a boat moving upstream and downstream on different days of a week. And the table shows the speed of stream in km/hr. on different days of a week.

Total distance covered upstream = 4800 km



Total distance covered downstream = 2400 km



Day	Speed of stream (km/hr)
Monday	5
Tuesday	2
Wednesday	6
Thursday	—
Friday	1
Saturday	—
Sunday	3

11. If the time taken by boat to travel upstream on Wednesday is $\frac{6}{7}$ times than the time taken to travel downstream on Monday and the speed of boat in still water on Monday is 15 kmph then find the speed of boat in still water on Wednesday? (speed of boat in still water is different for different days)
(a) 52 kmph (b) 62 kmph (c) 42 kmph (d) 48 kmph (e) 46 kmph

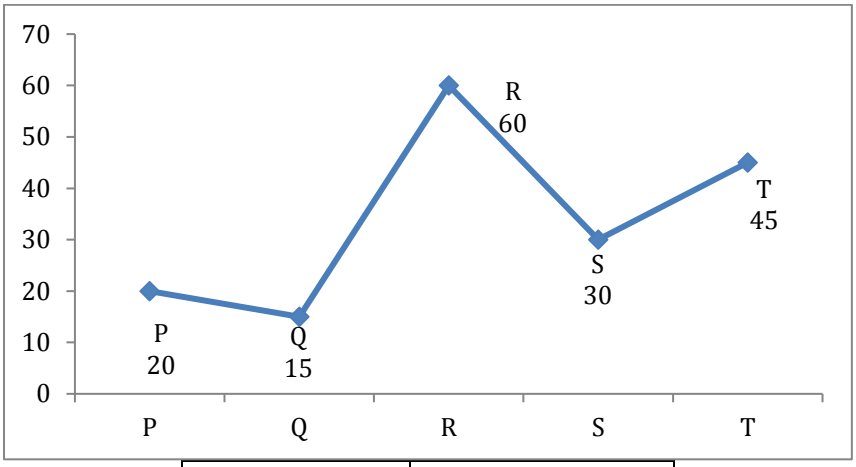
12. If the time taken by boat to travel upstream on Monday is $27\frac{1}{5}$ hrs. more than the time taken by it to travel downstream on the same day, then find the speed of boat in still water on Monday ?
(a) 25 kmph (b) 18 kmph (c) 20 kmph (d) 15 kmph (e) 10 kmph

13. If the speed of boat in still water on Saturday was 27 km/hr and the speed of boat in still water on Wednesday was $66\frac{2}{3}\%$ more than that of Saturday and time taken to travel upstream on Wednesday is $\frac{16}{13}$ times than time taken by it to travel downstream on Saturday, then find the speed of stream (in kmph) on Saturday?
(a) 2 (b) 4 (c) 9 (d) 8 (e) 7

14. The speed of boat in still water on Saturday was 21 km/hr. and that on Sunday was $28\frac{4}{7}\%$ more than that on Saturday and if the time taken by boat to travel upstream on Saturday is $2\frac{1}{2}$ *times* of the time taken to travel downstream on Sunday, then find the time taken by the boat to cover a distance of 125 km upstream on Saturday?
(a) 6 hrs. 45 min. (b) 2 hrs. 45 min. (c) 4 hrs. 30 min. (d) 6 hrs. 15 min. (e) None of these

15. If the time taken by boat to travel upstream on Friday is 30 hours more than the time taken by it to travel downstream on Wednesday and the speed of boat in still water on Friday is 17 kmph, then find the upstream speed of boat on Wednesday? (speed of boat in stiil water is different on different days)
(a) 27 kmph (b) 22 kmph (c) 20 kmph (d) 25 kmph (e) 10 kmph

Directions (16-20): P, Q, R, S and T are five persons employed to complete a job A. Line graph shows the data regarding the time taken by these persons to complete the job A. Table 2 shows the actual time for which every one of them worked on the job A.



Person	Time (in Days)
P	4
Q	–
R	10
S	–
T	4.5

Note 1: Q and S worked on the job A for 'whole number' days.
Note 2: Two jobs B and C are similar to job A and require same effort as required by job A.

16. R and S worked together on job B for 10 days. Q then worked for 'x' days and T worked for '$x + 3$' days. If $\frac{1}{45}$ of the job was still remained, then find the value of 'x'?
(a) $\frac{37}{8}$days (b) $\frac{21}{8}$ days (c) 4 days (d) 3 days (e) 1 day

17. T worked on job 'C' for 15 days. Then P, R and S worked for 15 days working on alternate days starting with P followed by R and S in that order. If Q is supposed to complete the remaining work in $1\frac{1}{2}$ days, then by how much percent must Q increase his efficiency in order to complete the work in given time?
(a) $33\frac{1}{3}\%$ (b) 45% (c) 37.5% (d) $66\frac{2}{3}\%$ (e) None of these

18. If P, Q and R worked on job C for 9 days in the following manner: P and Q work together on day 1, then Q and R work together on day 2 and then R and P work together on day 3, then find the no. of days for which T worked if the ratio of no. of days for which S and T worked to complete the remaining job is 4:3.
(a) 5 days (b) 4 days (c) 3 days (d) 6 days (e) None of these

19. If all five person worked on job A for the number of days as given in table and the ratio of number of days for which Q and S worked on job A 5 : 6, then find the sum of the number of days for which Q and S worked ?
(a) 39 (b) 26 (c) 11 (d) 52 (e) None of these

20. If P and R worked on job B with $\frac{4}{3}$ times their given efficiency and they are assisted by Q every 3rd day ,then find the time taken by both of them to complete the job B together?
(a) 13 days (b) $22\frac{1}{6}$ days (c) $13\frac{1}{2}$ days (d) 3 days (e) 22 days

Directions (21-25): There are five shop owners A, B, C, D and E. They are selling four different items given in the table.
In the table, Discount (as a percentage) is given on mark price of these four products by different sellers. Study the table and answer the following questions:

	Item I	Item II	Item III	Item IV
A	22%	16%	32%	—
B	18%	—	23%	30%
C	—	32%	24%	10%
D	25%	18%	7%	—
E	—	9%	—	4%

Note: 1. Some values are missing. You have to calculate these values as per data given in the questions.
2. Mark price of a particular item is same for all of the shop owners.

21. If the profit percentage of seller A after selling item II is s% and that of seller C for the same item is (3s - 2)% and the ratio of cost price of item II by seller A and seller C is 21 : 17 then find the value of s ?
(a) 2 (b) 3 (c) 4 (d) 1 (e) none of these

22. For seller D, difference between the selling price of item II and that of item III is 4810 Rs. if the sum of the mark price of item II and item III by the same seller is 8000 then find the Mark price (in Rs.) of item II is how much more (in Rs.) than that of item III for the same seller? (Selling price of item II is greater than that of item III)
(a) 5000 (b) 6000 (c) 6500 (d) 5500 (e) 4500

23. Average SP of item II by seller A and B is Rs 4400. Average SP of item II by seller B and C is Rs 3600. Find the SP (in Rs.) of item II by seller C.
(a) 4500 (b) 3600 (c) 5400 (d) 4000 (e) 6800

24. If the cost price of item I and selling price of item III by seller E are in the ratio of 5 : 6. If the seller earned a profit of 25% which is Rs. 750 on item I and 20% on item III then find the total profit (in Rs.) by selling item I and item III together by the same seller?
(a) 1250 (b) 2000 (c) 1750 (d) 1350 (e) 1500

25. If Cost price of item III is 5400 Rs. for all of the sellers and all of them marked the same product at 100% higher than the cost price, then to get a total profit of 13500 Rs. by all of the five sellers after selling item III, what is the minimum discount (as a percentage) should be provided by seller E on item III.
(a) 15% (b) 13% (c) 11% (d) 20% (e) None of these

Directions (26-30): Given below is the table of five persons in a business, time for which investment made, share of profit and percentage of profit. Some values are missing in the table, you have to calculate these value if necessary to answer the questions.
Note- Profit percent is calculated on total profit made by all.

Person	Invest-ment (in Rs.)	Time (in month)	Share of profit	Percentage of profit
A	—	8	—	$\frac{3600}{211}$%
B	20,000	—	—	—
C	—	—	10,000	—
D	—	12	—	$\frac{3600}{211}$%
E	24,000	—	10,800	—

26. What is the sum of profit of A and C together if investment of A and C together is 215% of investment of B and investment of A is 28% less than investment of C. A invested for same time as C invested.
(a) 17200 (b) 18900 (c) 19400 (d) 14200 (e) None of these

27. What is the total profit of all 5 person if profit percentage of E is 50% more than profit % of D.
(a) 40500 (b) 43500 (c) 42200 (d) 53200 (e) 38500

28. What is the total investment of c and e if e invested for one month more than c and ratio between the time taken by both i.e. C and e is 8 : 9.
(a) 48000 (b) 47000 (c) 46000 (d) 49000 (e) 50000

29. Profit of A is what % of profit of C if profit of C is $\frac{350}{9}$% of more than profit of A.
(a) 72% (b) 75% (c) 60% (d) 48% (e) 55%

30. What is the difference between the time for which investment is made by d and e if profit of d is 28% less than profit of c and investment of d is 50% of investment of e.
(a) 3 (b) 4 (c) 5 (d) 6 (e) 7

Directions (31-35): Given below is the table which shows five different schemes and rate of simple interest (S.I.) and rate of compound interest (C.I.) offered on these schemes.
Note : All the interest is calculated annually.

SCHEME	S.I.	C.I.
A	—	8%
B	12%	—
C	—	40%
D	15%	—
E	10%	20%

31. If a sum is invested in scheme B at C.I, then amount obtained after 2 year from this scheme is 1.44 times the sum invested. Rate of simple interest for scheme A is half of the rate of compound interest for scheme B. Find out the interest earned when 8000 was invested for 2 years in Scheme A at S.I and in Scheme B at C.I for 2 years.
(a) 5120 (b) 5000 (c) 4800 (d) Can't be determined (e) None of these

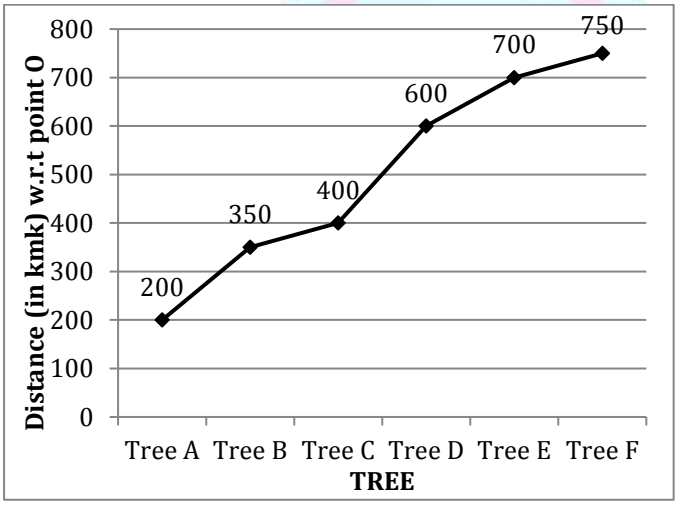
32. A man invested 10,000 in scheme D at S.I. for 6 years, the interest he obtained is divided into equal halves and invested in two different schemes i.e. scheme B and scheme C for 4 year each at S.I. If the ratio of interest obtained in both scheme is 3 : 2, then find out the rate of interest in C scheme.
(a) 10% (b) 8% (c) 11% (d) 5% (e) None of these

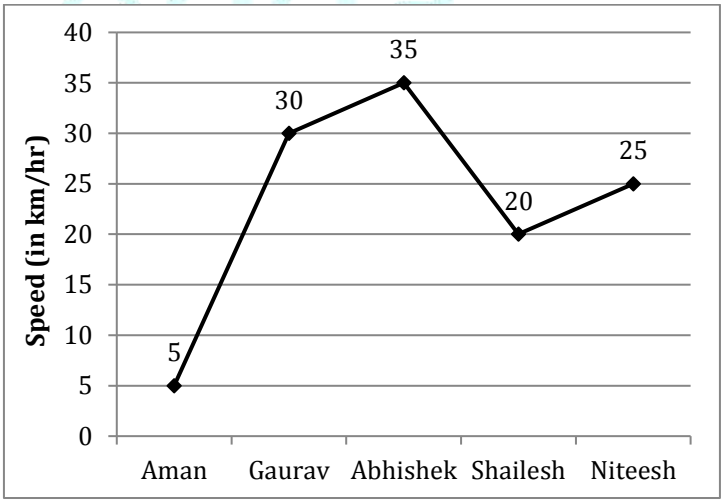
33. A sum is invested in scheme E at S.I. for 2 year and then whole amount obtained is invested at C.I. in same scheme for 2 more years. If same sum would have been invested in scheme D for 4 year with S.I. then, what would have been the ration of amount obtained from scheme E to the amount obtained from scheme D.
(a) 27 : 25 (b) 21 : 23 (c) 40 : 49 (d) Can't be determined (e) None of these

34. A man invests equal sum in two different schemes, D and E at S.I. for 4 year each. The total interest he got is invested in the scheme A for 3 year at C.I. Due to some reason instead of getting interest from scheme A , the scheme is flopped and sum invested in scheme A is depreciated each year with same rate, and he got Rs. 778688 after 3 year. Find the amount he invested in both scheme initially.
(a) 30,00,000 (b) 40,00,000 (c) 20,00,000 (d) 10,00,000 (e) None of these

35. A sum is invested in scheme C for 5 years at S.I. and then the amount received from it is invested in same scheme for 2 years at C.I. Total amount received after 7 years is194% more than the sum invested initially. Find out the rate of interest in scheme C for S.I.
(a) 10% (b) 12.5% (c) 15% (d) 5% (e) None of these

Directions (36-40): Read the following line graphs and answer the following questions-
Various trees are placed in a straight line in the jungle. Distance of each tree is given with respect to point O in the jungle and speed of different persons is also given :-





36. At 8 : 00 A.M. Aman started running from tree E. At 11:00 A.M. a lion, who was at tree E saw Aman and chased him. Aman was running away from the lion and after 10 min. he increased his speed by 100%. At what time will the lion catch Aman? (speed of lion is 20 km/hr)
(a) 12 : 30 pm (b) 12 : 25 pm (c) 01 : 00 pm (d) 01 : 25 pm (e) None of these

37. Gaurav and Abhishek start at same time from tree B to tree D, after reaching tree D they turned to tree B. At approximately how much distance from tree B they meet 1st time?
(a) 235 km (b) 225 km (c) 230 km (d) 215 km (e) 150 km

38. Nitesh covers a distance from point O to tree E, if he stops 30 min after reaching every tree. Find the total time to cover the distance by Niteesh?
(a) 30 hrs (b) 28 hrs (c) 20 hrs (d) 32 hrs (e) 34 hrs

39. If Gaurav is standing at tree D and Shailesh is standing at tree F. In how much time will they meet if they walk towards each other ?
(a) 1 hr (b) $3\frac{1}{2}$ hrs (c) $2\frac{1}{2}$hrs (d) 2 hrs (e) 3 hrs

40. Gaurav covers a distance from point O to tree C then he reduced his speed by 40% and further reach to point F. Find the average speed of Gaurav during his whole journey?
(a) $22\frac{52}{59}$ km/hr (b) $21\frac{51}{59}$ km/hr (c) $19\frac{52}{59}$ km/hr (d) $17\frac{53}{59}$ km/hr (e) $23\frac{51}{59}$ km/hr

Directions (41-45): Study the table and answer the following question
Given below is the table shows five types of laptops sold by two seller (X and Y). Table shows cost price, Profit percentage and Market price of the laptops.

Seller → Laptops ↓	X			Y		
	CP	Profit%	MP	CP	Profit%	MP
Dell	—	—	—	—	25%	—
Lenovo	—	20%	25,000	—	12%	—
HP	—	—	—	—	—	28,000
Asus	—	20%	—	—	—	—
Sony	—	35%	—	16,000	30%	—

Note: (i) Some data is missing, you have to calculate that data if it is required to answer the question.
(ii) Selling price may or may not be equal to M.P.

41. By what percentage C.P. of Lenovo laptop sold by seller X is less than MP of Sony laptop sold by seller Y. If X gave 10% discount on Lenovo laptop while seller Y gave 20% discount on sony Laptop on M.P? (approximately)
(a) 20% (b) 28% (c) 35% (d) 45% (e) 72%
42. What is the ratio between C.P. of Asus sold by seller X to C.P. of Dell sold by seller Y if M.P. of Asus sold by X is 44% more than the M.P. of Lenovo sold by X and M.P. of Dell sold by Y is 56.25% more than the M.P. of Sony sold by Y. [Take S.P. equals to M.P.]
(a) 7 : 13 (b) 14 : 15 (c) 15 : 14 (d) 13 : 15 (e) 15 : 13
43. If seller Y sells HP laptop at 20% discount, he got Rs. 2400 as profit and if he give 30% discount, he losses Rs. 400 .Then what will be the profit percentage if in total 8 laptop sold by seller Y, '2' laptop at 20% discount and '6' Laptop at 30% discount.
(a) 1.5% (b) 15% (c) 5% (d) 8% (e) 12%
44. If the ratio between S.P. of Lenovo and M.P. of HP sold by Y is 3 : 4 then what is the average of Cost price of 2 laptops of Lenovo bought by X and 6 laptops of Lenovo bought by Y if X gave 10% discount of M.P.
(a) 18,000 (b) 19,000 (c) 18,500 (d) 18,705 (e) None of these
45. If the average C.P. of Asus and Sony bought by 'X' is 14,000 and average S.P. of Asus and Sony by 'X' is 18,000 then what will be the difference between the C.P of Asus and Sony laptop bought by seller 'X' ?
(a) 3,500 (b) 4,000 (c) 4,500 (d) Can't be determined (e) None of these

Directions (46-50): Read the following table and line graph carefully and answer the following questions.
Following table shows the time taken by five persons to complete a work on Monday and Ratio of Time taken by these five persons to complete the work on Monday to the time taken to complete the work on Wednesday is also given.
Line graph shows the efficiency (as a percentage) of these five persons on Tuesday with respect to that on Monday.

Person	Time taken to complete the work on Monday	Ratio of Time taken to complete the work on Monday to the time taken to complete the work on Wednesday
Gaurav	25 min.	5 : 4
Abhishek	20 min.	4 : 5
Shailesh	50 min.	10 : 7
Neeraj	10 min.	5 : 13
Arunoday	150 min.	3 : 5

46. Gaurav, Abhishek and Neeraj work in a rotation to complete the job on Tuesday with only 1 person working in a minute. Who should start the job so that the job is completed in the least possible time?
(a) Gaurav (b) Abhishek (c) Neeraj (d) Any one of three (e) Can't determine

47. On Tuesday, Gaurav and Arunoday started the work and they worked for 5 minutes then Gaurav is replaced by Abhishek. In how many minutes Abhishek and Arunoday complete the remaining work ?
(a) $20\frac{3}{7}$ min. (b) $21\frac{4}{21}$ min. (c) $21\frac{5}{21}$ min. (d) $20\frac{4}{17}$ min. (e) None of these

48. On Tuesday, Abhishek, Shailesh and Neeraj work in a rotation in this order to complete the job with only 1 person working in a minute. They earned a total of 875 Rs. Find the share of Shailesh.
(a) 41 Rs. (b) 31 Rs. (c) 51 Rs. (d) 49 Rs. (e) None of these

49. On Tuesday, Aman who is half as efficient as Shailesh, worked for 50 minutes on the same day then he left. In how many minutes Neeraj and Abhishek together will complete the remaining work ?
(a) $5\frac{2}{9}$ mins. (b) $4\frac{3}{7}$ mins. (c) $5\frac{3}{7}$ mins. (d) $4\frac{1}{7}$ mins. (e) $5\frac{5}{7}$ mins.

50. On Wednesday, all of them started the work together. After working for 2 minutes Gaurav left. All except Gaurav worked for another 3 minutes and then all left except Arunoday. In how much time Arunoday will complete the remaining work? (find the approximate value)
(a) 86 minutes (b) 81 minutes (c) 96 minutes (d) 56 minutes (e) 79 minutes

PREVIOUS YEAR SOLUTIONS

1. (c); Speed of train A on Monday $= \frac{360}{5} = 72$ km/h

Now speed increase by 20% everyday so,

Speed on Sunday $= \frac{72}{120} \times 100 = 60$ km/h

Speed on Saturday $= \frac{60}{120} \times 100 = 50$ km/h

2. (c); Distance travel by C = 270 km

Distance increases by $= 270 \times \frac{100}{9\times100} = 30$ km

New Distance travel by C = 300 km

Actual time taken = 4 hr

Time reduced by $= 4 \times \frac{125}{1000} = \frac{1}{2}$ hr

New time taken by C= $3\frac{1}{2}$ hr

Speed $= \frac{300\times2}{7} \approx 86$ km/hr

3. (b); Speed of A + B = 72 + 100 = 172 km/h

Speed of C + E = 67.5 + 100 = 167.5

Ratio $= \frac{172}{167.5} = \frac{344}{335}$

4. (a); Speed of Slowest train is C $= \frac{270}{4} = 67.5$ km/h

Fastest train is D $= \frac{450}{3} = 150$ km/h

Percentage % $= \frac{(150-67.5)\times100}{150} = 55\%$

5. (b); Reduced distance travel by B =300 – $\frac{300\times20}{100} = 240$ km

Reduced distance travel by D = 450 – $\frac{450\times20}{100}$= 360 km

New Speed of B $= \frac{240}{3} = 80$ km/hr, New Speed of D

$= \frac{360}{3} = 120$ km/hr

Average of speed $= \frac{72+80+67.5+120+100}{5} = 87.9$ km/hr

6. (c); $\frac{15000\times9}{25000\times10} = \frac{x}{12500}$

$\frac{27}{50} = \frac{x}{12500}$

x = 6750 Rs.

∴ Required profit = 6750 + 8000 + 12500 = 27250 Rs.

7. (b); $\frac{7000}{8000} = \frac{P_B}{14000}$

$P_B = 12250$ Rs.

$P_A = 32375 - 12250 - 14000$

$P_A = 6125$

Let Investment of A in Rajasthan = x

$\therefore \frac{x}{7000} = \frac{6125}{12250}$

x = 3500 Rs.

Required Ratio = (3500) : (8000) = 7 : 16

8. (a);

	A	:	B	:	C
Profit	(4000×5)	:	(5000×8)	:	(4500×6)
	20	:	40	:	27

$\therefore P_A = \frac{20}{87} \times 8700 = 2000$ Rs.

$P_B = \frac{40}{87} \times 8700 = 4000$ Rs.

$P_C = 2700$ Rs.

Required % $= \frac{2700}{6000} \times 100$

$= 45\%$

Trick :
Required value = $\frac{27}{40+20} * 100 = 45\%$

9. (c); $\frac{x\times4}{(85{,}000-x)6} = \frac{20{,}000}{30{,}000}$

$\frac{2x}{3(85{,}000-x)} = \frac{2}{3}$

$6x = 2 \times 3 \times 85000 - 6x$

$12x = 6 \times 85000$

x = 42500 Rs.

$I_A = 42500$ Rs.

$I_B = 42500$ Rs.

Let Required months = y

$\therefore \frac{42500\times6}{17{,}000\times y} = \frac{30{,}000}{40{,}000}$

y = 20months

10. (e); $I_C = 30000 - 9000 - 10000 = 11000$ Rs.

$P_C = 18000 - 4500 - 6000 = 7500$ Rs.

Required % = $\frac{11000-7500}{11000} \times 100 = 31\frac{9}{11}\%$

11. (e); $\frac{12\times48}{x-6} = \frac{14\times24}{15+5} \times \frac{6}{7}$

$x - 6 = 40 \Rightarrow x = 46$ km/hr

12. (a); $\frac{16\times48}{x-5} = \frac{14\times24}{x+5} + 27\frac{1}{5}$

By option if we put x = 25

Then L.H.S. = R.H.S.

13. (c); Given

Speed of boat in still water on Saturday = 27 km/hr

and Speed of boat in still water on Wednesday

= 27 + 18 = 45 km/hr

Now, $\frac{12\times48}{45-6} = \frac{18\times24}{27+x} \times \frac{16}{13}$

Solving, x = 9 kmph

14. (d); Speed of boat in still water on Saturday = 21 km/hr

Speed of boat in still water on Sunday = 21 + 6 = 27 km/hr

$\frac{10\times48}{21-x} = \frac{5}{2} \times \frac{12\times24}{27+3}$

$21 - x = 20 \Rightarrow x = 1$ km/hr

Required time $= \frac{125}{21-1} = \frac{125}{20} = 6$ hrs 15 min

15. (e); $\frac{14\times48}{17-1} = 30 + \frac{11\times24}{x+6}$

$x + 6 = 22 \Rightarrow x = 16$ km

Upstream speed on Wednesday = 16 – 6 = 10 km/hr

16. (a); As per given condition

$\frac{10}{60} + \frac{10}{30} + \frac{x}{15} + \frac{x}{45} + \frac{3}{45} = \left(1 - \frac{1}{45}\right)$

$\frac{4x}{45} = \frac{44}{45} - \frac{17}{30}$

$x = \frac{45}{4}\left(\frac{88-51}{90}\right) = \frac{37}{8}$ days.

17. (d); Part of work completed by T $= \frac{15}{45} = \frac{1}{3}$

3 day work by (P + R + S) $= \frac{1}{20} + \frac{1}{60} + \frac{1}{30}$

$= \frac{3+1+2}{60} = \frac{1}{10}$

15 day work = (5P + 5R + 5S) = $\frac{1}{2}$

Remaining work $= 1 - \frac{5}{6} = \frac{1}{6}$

Now, this work can be done by Q in $\frac{1}{6} \times 15 = \frac{5}{2}$ days

But it has to be completed in 3/2 days.

Ratio of new efficiency to old efficiency =5:3.
Hence increase in efficiency= $\frac{5-3}{3} \times 100 = 66\frac{2}{3}\%$

18. (c); Suppose total units of job C be 180 units.
Then, units done by P,Q,R,S and T per day is 9,12,3,6 and 4 respectively.
Units completed by P,Q and R in 9 days
= 3(21+15+12)=144
Remaining 180-144 = 36 units are completed by S and T.
ATQ,
$6\times 4x + 4 \times 3x = 36 \Rightarrow x = 1$
Hence, the answer is 3 days.

19. (c); According to question
$\frac{4}{20} + \frac{5x}{15} + \frac{10}{60} + \frac{6x}{30} + \frac{4.5}{45} = 1$
$\Rightarrow \frac{1}{5} + \frac{x}{3} + \frac{1}{6} + \frac{x}{5} + \frac{1}{10} = 1$
$\frac{6+10x+5+6x+3}{30} = 1$
$16x + 14 = 30 \Rightarrow x = 1$
Required sum = $5x + 6x = 5 + 6 = 11$

20. (d); With new efficiency P will complete the job in $\frac{3}{4} \times 20 = 15$ days
And R will complete the job in $\frac{3}{4} \times 60 = 45$ days
3 days work of P and R and 1 day work of Q $= 3(\frac{1}{15} + \frac{1}{45}) + \frac{1}{15} = \frac{1}{3}$
Hence, Days required = 3 days

21. (d); Let marked price for article II is 100x
Cost price of item II for seller A
$= \frac{100}{100+s} \times (100x - 16x) = \frac{100}{100+s}(84x)$
Cost price of item II for seller C
$= \frac{100}{100+3s-2}(100x - 32x) = \frac{100}{98+3s}(68x)$
Given
$\frac{\frac{100}{100+s}84x}{\frac{100}{98+3s}68x} = \frac{21}{17}$
$\frac{98+3s}{100+s} \times \frac{21}{17} = \frac{21}{17}$
$98 + 3s = 100 + s$
$2s = 2 \Rightarrow s = 1$

22. (b); Let marked price for iten II be 100x
Let marked price for iten III be 100y
Let for seller D, Selling price of item II = 82x
Let for seller D, selling price of item III = 93y
Given
$82x - 93y = 4810$ ... (i)
According to question
$100x + 100y = 8000$
$x + y = 80$ ... (ii)
From eqn. (i) and (ii)
$y = 10$
$x = 70$
MP of item II = 100x = 7000
MP of item III = 100y = 1000
Required difference = 7000 – 1000 = 6000 Rs.

23. (e); Let marked price of Item II be 100x
SP of item II by seller A = $100x - 16x = 84x$
Let SP of item II by seller B = y
$\therefore 84x + y = 8800$ ... (i)
And S.P. of item II by seller C = 68x
Now, $y + 68x = 7200$ ... (ii)
From eqn. (i) and (ii)
$16x = 1600 \Rightarrow x = 100$
S.P. of item II by seller C = 68x = 6800 Rs.

24. (d); Let Cost price of item I by seller E = x
Let selling price of item III by same seller = y
Given, $\frac{x}{y} = \frac{5}{6}$
C. P. of item I by seller E $= \frac{750}{25} \times 100 = 3000$ Rs.
S. P. of item III by seller E $= \frac{6x}{5} = \frac{6\times 3000}{5} = 3600$ Rs.
C. P. of item III by seller E $= \frac{100}{100+20} \times 3600$
$= \frac{100}{120} \times 3600 = 3000$ Rs.
Profit on item III by seller E = 3600 – 3000 = 600 Rs.
Total profit by selling item I and III together
= 750 + 600 = 1350 Rs.

25. (c); Here total profit earned by five sellers
$= \frac{13500}{5400\times 5} \times 100 = 50\%$
Let C.P. of each item = 100
Then MP of item III by each seller = 100 + 100 = 200
SP of item III by seller A $= \frac{68}{100} \times 200 = 136$
SP of item III by seller B = 154
SP of item III by seller C = 152
SP of item III by seller D = 186
Total profit excluding that of seller E
= 36 + 54 + 52 + 86 = 228 Rs.
To make 50% profit, minimum profit of item III by seller E = (250 – 228) = 22
Required profit $= \frac{22}{200} \times 100 = 11\%$

26. (a); Investment of A and C together $= 215 \times 200 = 43000$
Investment of A = 18000
Investment of C = 25000
Ratio in which profit between A and C is shared
$(18 \times 8) : (25 \times 8)$
Profit of A $= \frac{18\times 10{,}000}{25} = 7200$
Sum of profit of A & C = 7200 + 10,000 = 17,200

27. (c); Profit %of E $= \frac{3}{2} \times \frac{3600}{211} = \frac{5400}{211}\%$
$\frac{5400}{211}\% \rightarrow 10800$
$1\% \rightarrow \frac{10800\times 211}{5400}$
So $100\% \rightarrow 2 \times 211 \times 100 \rightarrow 42200$

28. (d); Let both take 8x and 9x moth.
So C take 8 month and E take 9 month
$\frac{10000}{10800} = \frac{y\times 8}{24000\times 9}$ where y is C's investment
$y = 25000$
Total of C and E = 49000

29. (a); Let profit of A = x

$\frac{25}{18}x = 10{,}000 \Rightarrow x = 7200$

Required % = $\frac{7200}{10000} \times 100 = 72\%$

30. (a); Profit of D = 7200

Investment of D = 12000

So,

$\frac{72}{108} = \frac{12000 \times 12}{24000 \times x}$ Where x → time investment of E

$\frac{2}{3} = \frac{6}{x}$

$x = 9$ months

Required difference = 12 – 9 = 3 months

31. (a); Let sum invested in B with C.I. = x

Acc. to question $= 1.44x = x\left(1 + \frac{r}{100}\right)^2$

r = rate of interest of C.I. in B = 20%

Rate of interest of S.I. in A = 10%

Interest $= \frac{8000 \times 2 \times 10}{100} + 8000\left[\left(1 + \frac{20}{100}\right)^2 - 1\right]$

$= 5120$

32. (b); Interest accrued $= \frac{10000 \times 6 \times 15}{100} = 9000$

First half 4500 on scheme B for 4 years with S.I.

Interest $= \frac{4500 \times 12 \times 4}{100} = 2160$

Now ratio of interest received = 3 : 2

Interest received in scheme C $= \frac{2160}{3} \times 2 = 1440$

Rate of interest in Scheme C $= \frac{1440 \times 100}{4500 \times 4} = 8\%$

33. (a); Let sum invested in each scheme = 100x

In scheme E

Amount after 2 year at S. I $= 100x + \frac{100x \times 2 \times 10}{100}$

$= 120x$

Then in C. I. $= 120x\left(1 + \frac{20}{100}\right)^2 = \frac{864}{5}x$

In scheme D

Amount after 4 years at S. I.

$= \frac{100x \times 4 \times 15}{100} + 100x = 160x$

Required ratio $= \frac{864x}{5} : 160x = 27 : 25$

34. (c); Let amount he invested in scheme A with x

Now

$778688 = x\left(1 - \frac{8}{100}\right)^3 \Rightarrow x = 10{,}00{,}000$

Now this amount is the interest received from scheme D and E with S.I.

Let amount invested in both scheme = y

Total interest earn in 4 years from both scheme

$10{,}00{,}000 = \frac{y \times 15 \times 4}{100} + \frac{y \times 10 \times 4}{100} \Rightarrow y = 10{,}00{,}000$

sum he invested = 20,00,000

35. (a); Let Initial sum = 100x

After 7 year Amount $= 100x + \frac{194}{100} \times 100x = 294x$

In scheme C with C.I.

Rate of interest = 40%

Time = 2 year

Now,

$294x = y\left(1 + \frac{40}{100}\right)^2$

y = sum invested in scheme C with C.I.

$y = 150x$

amount get from scheme (with S.I.)

Interest = 180x – 100x = 50x

$50x = \frac{100x \times R \times 15}{100} \Rightarrow R = 10\%$

R = rate of interest for scheme C in S.I.

36. (b); Distance covered by Aman in three hours = 3 × 5

= 15 km

In 10 min. relative distance = $(20 - 5) \times \frac{10}{60} = 15 \times \frac{10}{60}$

$= \frac{10}{4} = 2.5$ km

Remaining distance = 15 – 2.5 = 12.5 km

Now, $\frac{12.5}{t} = (20 - 10)$

$\frac{12.5}{t} = 10$

$t = \frac{12.5}{10} = 1.25$ hrs = 1 hr 15 min.

∴ Required time = 11:00 + 0:10 + 1:15 = 12: 25 pm.

37. (c); Ratio of their speed of Abhishek and Gaurav = 35 : 30 = 7 : 6

If Abhishek covers 250 km then at the same time Gaurav covers = $\frac{250}{7} \times 6 = \frac{1500}{7}$

After Abhishek reach at tree D,

Distance between them = $250 - \frac{1500}{7} = \frac{250}{7}$

To cover $\frac{250}{7}$ km, time required to meet them

$= \frac{250}{7 \times (35 + 30)} = \frac{250}{455} = \frac{50}{91}$

Required distance = $\left(250 - \frac{35 \times 50}{91}\right)$

$= \frac{22750 - 1750}{91} \approx 230$ km

38. (a); To reach at tree E, time taken by Nitesh = $\frac{700}{25} = 28$ hr

Stopping time = 4 × 30 min = 120 min = 2 hr

Total time = 28 + 2 = 30 hrs

39. (e); Required time = $\frac{750 - 600}{(30 + 20)} = \frac{150}{50} = 3$ hrs.

40. (a); Average speed = $\frac{750}{\frac{400}{30} + \frac{350}{18}} = \frac{750}{32\frac{7}{9}} = 22\frac{52}{59}$ km/hr

41. (b); S. P. of Lenovo sold by X $= 25{,}000\left[1 - \frac{10}{100}\right]$

= Rs. 22,500

S. P. $= 22{,}500 = \left[1 + \frac{20}{100}\right] \times (\text{C. P.})_{\text{Lenovo}}$

$\Rightarrow (\text{C. P.})_{\text{Lenovo}} = \text{Rs. } 18{,}750$

S. P. of Sony sold by Y $= 16{,}000\left[1 + \frac{30}{100}\right] = 20{,}800$

$(\text{MP})_{\text{sony}} \times \left[1 - \frac{20}{100}\right] = 20{,}800$

$(\text{M. P.})_{\text{Sony}} = 26{,}000$

Desired percentage

$= \frac{26{,}000 - 18{,}750}{26{,}000} \times 100 \simeq 27.88\% \simeq 28\%$

42. (e); Desired Ratio = $\frac{\text{C.P.of Asus by X}}{\text{C.P.of Dell by Y}}$

M. P. of Asus $= \left[1 + \frac{44}{100}\right] \times 25{,}000 = 25{,}000 \times \frac{144}{100}$

C. P. of Asus $= 25{,}000 \times \frac{144}{100} \times \frac{100}{120} = 30{,}000$

M. P. of Dell $= 16{,}000\left[1+\frac{30}{100}\right]\left[1+\frac{56.25}{100}\right]$

$= 16{,}000 \times \frac{130}{100} \times \frac{156.25}{100}$

C. P. of Dell $= 16{,}000 \times \frac{130}{100} \times \frac{156.25}{100} \times \frac{100}{125} = 26{,}000$

Desired Ratio $= \frac{30{,}000}{26{,}000} = \frac{15}{13}$

43. (a); M. P. after 20% discount $= 28{,}000\left[1-\frac{20}{100}\right]$

$= 22{,}400$

C.P. = 22,400 – 2,400 = 20,000

Or,

M. P after 30% discount $= 28{,}000\left[1-\frac{30}{100}\right]$

$= 19{,}600$

C.P. = 19,600 + 400 = 20,000

Net profit = 2 × 2400 – 6 × 400 = 2400

Profit % $= \frac{2400}{8\times 20{,}000} \times 100 = 1.5\%$

44. (e); S. P. of Lenovo by Y $= 28{,}000 \times \frac{3}{4} = 21{,}000$

C. P. of Lenovo bought by X $= 25{,}000 \times \frac{90}{100} \times \frac{100}{120}$

$= 18{,}750$

C. P. of Lenovo bought by Y $= 21{,}000 \times \frac{100}{112} = 18{,}750$

Desired average $= \frac{2\times 18.750+6\times 18{,}750}{8} = 18{,}750$

45. (b); Let, C.P. of Asus = x

C.P. of Sony = y

According to question,

$\frac{x+y}{2} = 14{,}000$

$\Rightarrow x + y = 28{,}000$ ... (i)

$\frac{x\times 1.2+y\times 1.35}{2} = 18{,}000$

$1.2x + 1.35y = 36{,}000$ ... (ii)

On solving (i) and (ii)

$y = 16{,}000 \Rightarrow x = 12{,}000$

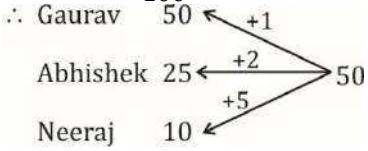
Desired difference = 16,000 – 12,000 = 4,000

46. (c); On Tuesday

Gaurav $= \frac{25\times 100}{50} = 50$ minutes

Abhishek $= \frac{20\times 100}{80} = 25$ minutes

Neeraj $= \frac{10\times 100}{100} = 10$ minutes



Clearly on Tuesday, the efficiency of Neeraj is maximum. So he should start the job so that the job is completed in the least possible time.

47. (b); On Tuesday

Gaurav = 50 minutes

Arunoday $= \frac{150\times 100}{30} = 500$ minutes

Abhishek = 25 minutes

(Gaurav + Arunoday)'s 5 minutes work

$= \frac{5}{50} + \frac{5}{500} = \frac{1}{10} + \frac{1}{100} = \frac{11}{100}$

Remaining work $= 1 - \frac{11}{100} = \frac{89}{100}$

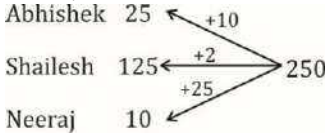
Required time $= \frac{\frac{89}{100}}{\frac{1}{500}+\frac{1}{25}} = 21\frac{4}{21}$ minutes

48. (d); On Tuesday —

Abhishek = 25 min.

Shailesh $= \frac{50\times 100}{40} = 125$ min.

Neeraj = 10 min.



(Abhishek + Shailesh + Neeraj)'s 1 minute work

= 10 + 2 + 25 = 37 units

Shailesh will work on this job for 7 minutes.

∴ Share of Shailesh $= \frac{7\times 2}{250} \times 875 = 49$ Rs.

49. (e); On Tuesday —

Aman = 125 × 2 = 250 min.

Neeraj = 10 min.

Abhishek = 25 min.

Aman's 50 min. work $= \frac{50}{250} = \frac{1}{5}$

Remaining work $= 1 - \frac{1}{5} = \frac{4}{5}$

Required time $= \frac{\frac{4}{5}}{\frac{1}{10}+\frac{1}{25}} = 5\frac{5}{7}$ minutes

50. (a); Let Arunoday worked for x minutes

$\therefore \frac{2}{20} + \frac{5}{25} + \frac{5}{35} + \frac{5}{26} + \frac{x}{250} = 1$

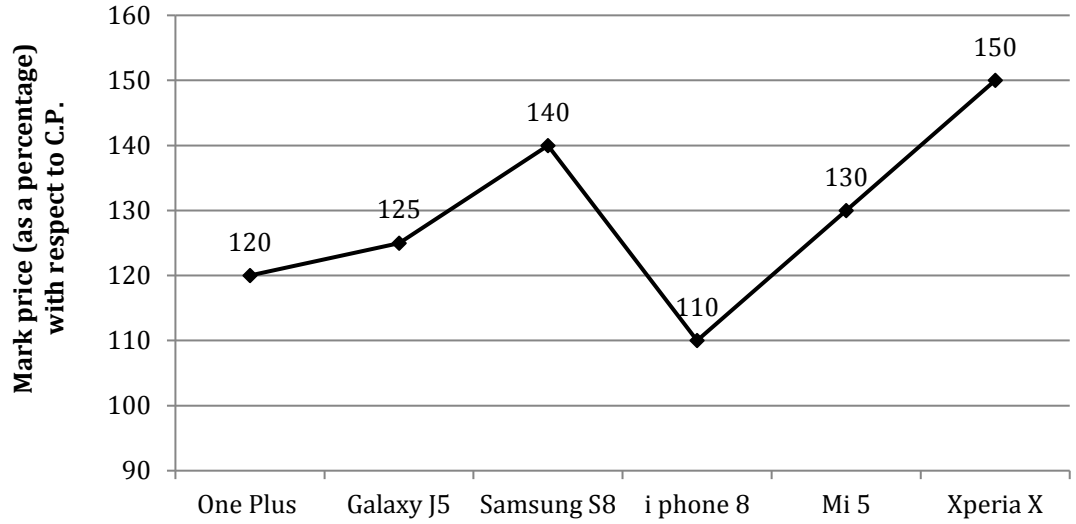
$\frac{x}{250} = 1 - \frac{578}{910}$

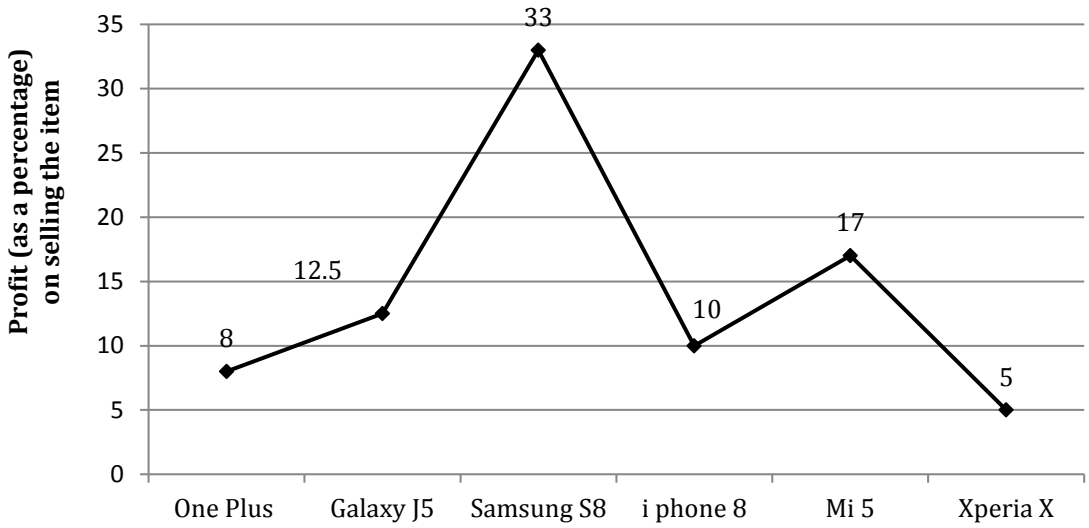
$x \approx 91$ minutes

∴ Required time = 91 – 5 = 86 minutes

PRACTICE SET (LEVEL-I)

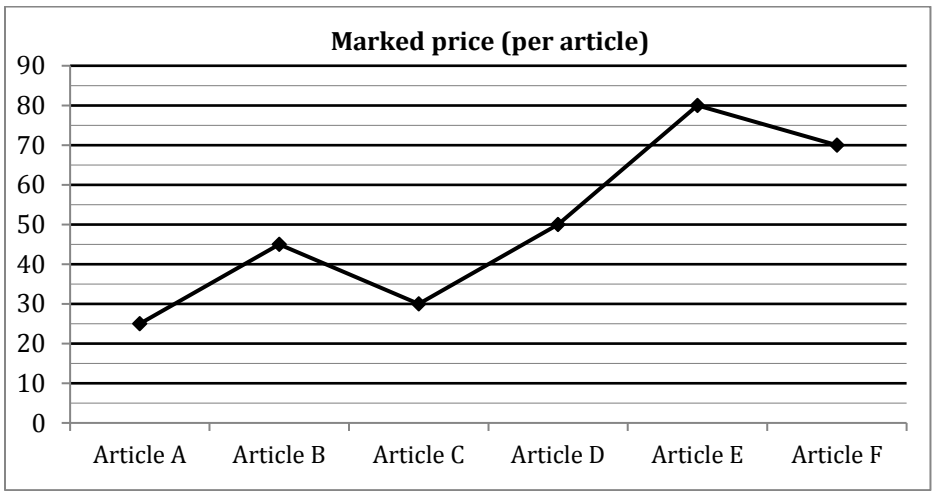
Directions (1-5): Given below are two line graphs, first line graph shows the Mark Price as a percentage of cost price and second line graph shows the profit percentage on selling the phones.





1. Selling price of One plus phone is what percent more/less than the selling price of MI 5 if cost price of One plus is 50% more than the cost price of MI 5 phone ?
   (a) 39.23% (b) 38.46% (c) 38.42% (d) 39.27% (e) 33.16%
2. Find the ratio between the cost price of Galaxy J5 and Xperia X mobile phones if the ratio of selling price between Galaxy J5 and Xperia X is 700 : 500 ?
   (a) 77 : 91 (b) 75 : 98 (c) 98 : 75 (d) 91 : 77 (e) None of these
3. If a Redmi A5 mobile phone is to be launched in the market. Cost price of Redmi A5 is $33\frac{1}{3}\%$ more than that of MI 5 and the selling price of Redmi A5 is 30% more than that of MI 5 then find the profit percent on selling the mobile phone Redmi A5 ?
   (a) 23.015% (b) 19.040% (c) 16.075% (d) 13.050% (e) 14.075%
4. If the average cost price of iphone 8 and Samsung Galaxy S8 is 5000 Rs. and cost price of i-phone 8 is 50% more than that of Samsung Galaxy S8 then find the ratio of the selling prices of i-phone 8 and Samsung Galaxy S8?
   (a) 73 : 161 (b) 161 : 73 (c) 133 : 165 (d) 165 : 133 (e) None of these
5. If marked price of Samsung S8 and Xperia X is same then find the ratio of selling price of Samsung S8 and Xperia X
   (a) 133 : 88 (b) 133 : 98 (c) 144 : 133 (d) 144 : 137 (e) 169 : 143

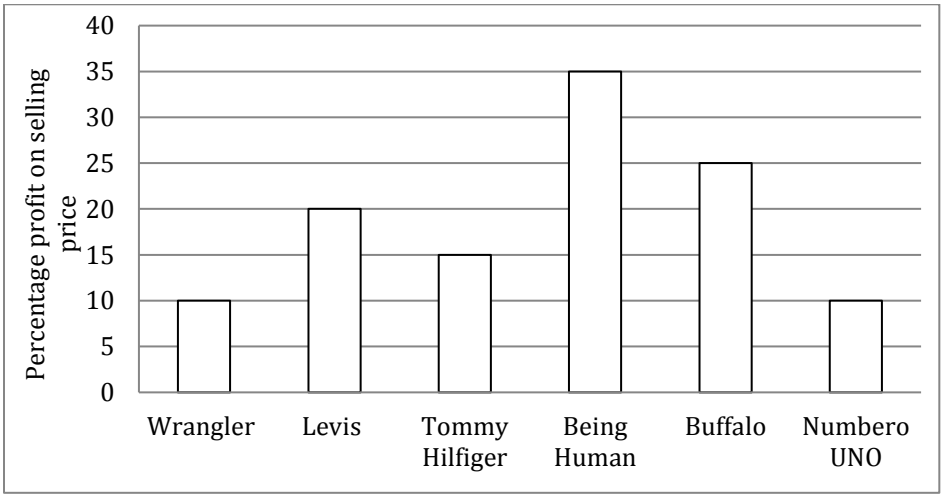
Directions (6-10): Study the graph carefully to answer the following questions:
Given below is the Line graph which shows the Marked price per article of six different articles and table shows the number of six different kinds of articles sold.



Article →	A	B	C	D	E	F
Number of Articles sold	680	560	640	440	360	160

6. If selling price per article A is 125% of its cost price and article A is sold at 25% discount on marked price then what is the total profit on all article of A.
   (a) 2550 (b) 2680 (c) 2420 (d) 2320 (e) 2590
7. If Article E is sold at 25% discount on marked price and number of article sold is doubled. Find the ratio of old profit (article sold at M.P.) to new profit if cost price is 62.5% of marked price.
   (a) 8:7 (b) 3:5 (c) 5:2 (d) 3:2 (e) 9:7
8. On selling of article F at $\frac{100}{7}$% discount on marked price there is the profit of 20%. If $\frac{3}{4}$ of article F are sold at $\frac{100}{7}$% discount and remaining at $\frac{50}{7}$% discount then what is the total profit on selling all articles of F at these rates.
   (a) 2400 (b) 1200 (c) 1500 (d) 1700 (e) 1800
9. Total selling price of article B is what percent more or less then total selling price all article D (all articles are sold at marked price)
   (a) $\frac{170}{12}$% (b) $\frac{160}{11}$% (c) $\frac{180}{11}$% (d) $\frac{150}{12}$% (e) $\frac{130}{11}$%
10. Total selling price of which article is maximum (all articles are sold at marked price)
    (a) A (b) B (c) C (d) D (e) E

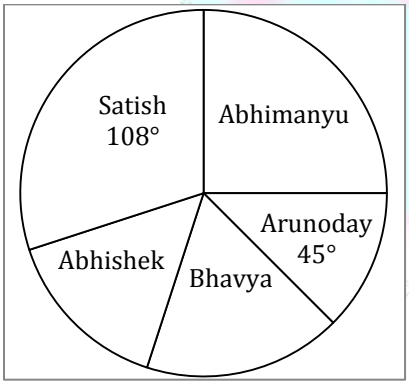
Directions (11-15): Study the following graphs carefully and answer the questions
Given below is the bar graph which shows the percentage profit made on the selling price on selling a Jeans of different brand by a shopkeeper.
Table shows the cost price per Jeans of different brands. Some values are missing in the table. If needed, you have to calculate these value.



Brand	Cost price of one unit (in Rs.)
Wrangler	4500
Levis	—
Tommy Hilfiger	5100
Being Human	5200
Buffalo	—
Numbero UNO	—

11. Profit of Being Human per jeans is what percent more or less than profit per jeans of Buffalo, if cost price per jeans of Buffalo is $41\frac{3}{17}$%less than cost price per jeans of Tommy Hilfiger.
(a) 150% (b) 180% (c) 160% (d) 125% (e) 190%
12. What will be the ratio of profit on selling 3 jeans of tommy Hilfiger to profit on selling 4 jeans wrangler.
(a) 23 : 18 (b) 24 : 19 (c) 25 : 19 (d) 27 : 20 (e) 28 : 23
13. If ratio of profit on selling one wrangler jeans to the profit on selling one Levis jeans is 2 : 3 then, what is the cost price of one Levis je
(a) 3000 (b) 4500 (c) 3600 (d) 2700 (e) 2500
14. If total of cost price per jeans of Buffalo and cost price per jeans of Numero Uno is 6600 then what is the cost price of Numero Uno. Given that selling price per unit for both jeans is same.
(a) 4500 (b) 5400 (c) 3600 (d) 2700 (e) 3000
15. If total profit on selling 'n' unit of Wrangler jeans is 7500 then what is the value of 'n' ?
(a) 10 (b) 18 (c) 15 (d) 12 (e) 8

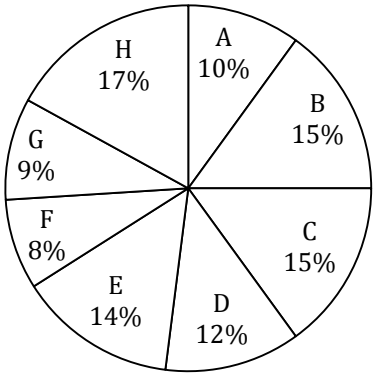
Directions (16-20): Given below is the pie chart which shows the distribution of distance travelled by five people out of total distance of 3200 km. Table shows the average speed and time taken by these five people in covering the distance.
Note: some value in pie chart and table are missing you have to calculate these values if required to answer the question



Person	Speed (in km/hr)	Time (in hrs)
Abhimanyu	—	9
Arunoday	—	5
Bhavya	64	10
Abhishek	120	—
Satish	—	20

16. If speed of Abhimanyu is 50% more than speed of Arunoday then distance travelled by Abhimanu is what percent more or less than that of Bhavya.
(a) 65% (b) 52.25% (c) 68.75% (d) 22.5% (e) 62.5%
17. Find the time of Abhishek if it is known that the distance travelled by Abhimanyu is 87.5% of the distance travelled by Bhavya
(a) $\frac{27}{4}h$ (b) $\frac{16}{3}h$ (c) $\frac{15}{2}h$ (d) $\frac{22}{3}h$ (e) $\frac{8}{3}$h
18. Time taken by Abhishek is how much more less than the time taken by Arunoday if it is known that the speed of Abhimanyu is same as the speed of Arunoday.
(a) 1 hour (b) 2 hour (c) 2.5 hour (d) 1.5 hour (e) 3 hour
19. A train, which is at a distance of 2400 km from Satish starts approaching towards Satish with a speed of x km/hr. After 5 hours from the start of train, Satish also starts to move towards train at his normal speed. If they meet after 6 hours after Satish had started to move, then find the value of x
(a) 180 km/hr (b) 164 km/hr (c) 72 km/hr (d) 144 km/hr (e) 192 km/hr
20. If Bhavya had travelled half of distance at a speed of y km/hr and remaining at a speed of 80 km/hr then find the value of y
(a) $\frac{180}{7}$ km/hr (b) $\frac{160}{3}$ km/hr (c) $\frac{150}{9}km/hr$ (d) $\frac{140}{9}$ km/hr (e) $\frac{170}{9}$ km/hr

Directions (21-25): Pie chart shows the % time taken by 8 different persons namely A, B, C, D, E, F, G and H to reach a particular point but the starting point is not same and total time taken by all of them together is 500 hr. (partly by car and remaining by train)
The table shows % distance travelled by car out of total distance travelled by them individually.

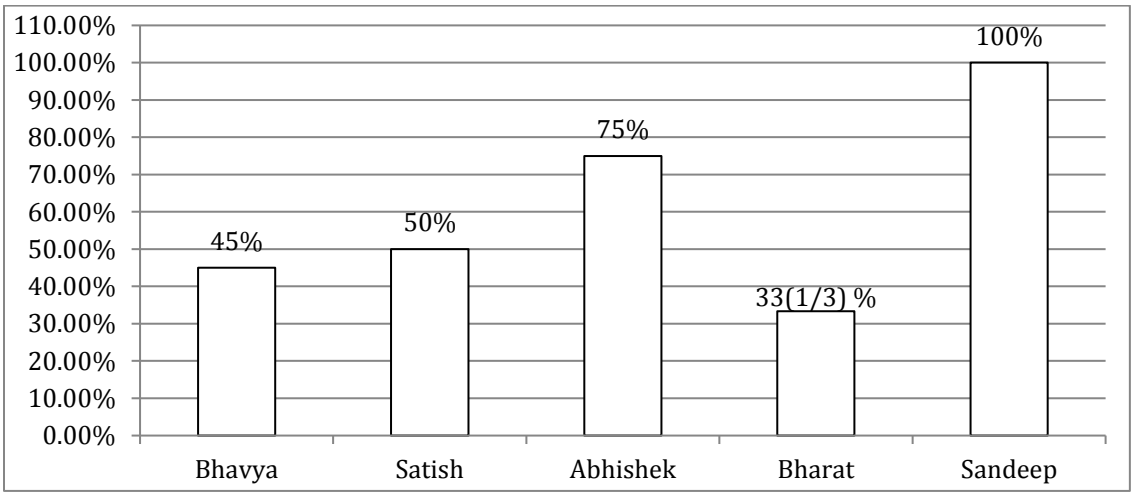


% Distance travelled by car	
A	70
B	50
C	30
D	45
E	60
F	75
G	40
H	60

21. Find speed of F by train, if his speed by car is 60 km/hr and time taken by car and train are in the ratio of 3 : 2.
(a) 50 km/hr (b) 45 km/hr (c) 30 km/hr (d) 20km/hr (e) 25 km/hr
22. Find the speed of C by car, if his speed by train is 22 km/hr and time taken by car is 50% less than that by the train.
(a) $19\frac{2}{7}$ km/hr (b) $18\frac{5}{7}$ km/hr (c) $18\frac{6}{7}$ km/hr (d) 18 km/hr (e) 48 km/hr
23. If the distance travelled by B, C and D together and E,F,G and H together is same, then find the ratio of average speed of B,C and D together and E,F,G and H together.
(a) 6 : 5 (b) 8 : 7 (c) 7 : 8 (d) 5 : 6 (e) 7 : 9
24. Average speed of A and C are in the ratio of 4 : 3 and C have travelled 500 km more than A. Find the speed of A by car if the speed of A by train is 120 km/hr.
(a) 80 km/hr (b) 60 km/hr (c) 65 km/hr (d) 75 km/hr (e) None of these
25. Total distance travelled by A is 2250 and the speed by train is 45 km/hr. Find the speed of A by car.
(a) 50 km/hr (b) 45 km/hr (c) 70 km/hr (d) 40 km/hr (e) None of these

Directions (26-30): Read the following table and bar graph carefully and answer the following questions-
Five persons are travelling on different days of a week. Table shows the speed of the person on Monday and Ratio of time taken on Monday to the time taken on Tuesday for same distance.
Bar graph shows the time (as of percentage) taken by these five persons on Wednesday with respect to that on Monday for same distance.

Person	Speed on Monday (in km/hr)	Ratio of time taken on Monday to time taken on Tuesday for same distance
Bhavya	45 km/h	4 : 9
Satish	60 km/h	11 : 12
Abhishek	120 km/h	2 : 3
Bharat	15 km/h	7 : 5
Sandeep	45 km/h	13 : 9



26. Bhavya covers a certain distance from his house to his office on Tuesday then he is late by 10 min. but if he travels the same distance on Wednesday then he reaches his office 5 min earlier. Find the distance from his home to his office.
(a) $6\frac{3}{4}$ km (b) $6\frac{1}{4}$ km (c) $5\frac{3}{4}$ (d) $5\frac{1}{4}$ km (e) None of these

27. Abhishek goes to a certain place on Monday in a certain time and back to his initial point on Tuesday in a certain time find his average speed during the entire journey.
(a) 96 km/hr (b) 108 km/hr (c) 82 km/hr (d) 72 km/hr (e) None of these

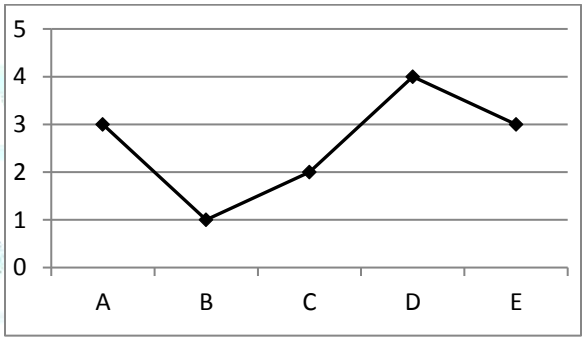
28. Bharat goes Delhi to his home on Monday in certain hours and return on Wednesday in certain hours. If he takes overall 10 hrs during the journey. Find the distance from Delhi to his home?
(a) 150 km (b) 110 km (c) 125 km (d) 112.5 km (e) None of these

29. Arunoday daily starts from his home at a certain time with a certain speed to pick up his girlfriend from office at 6 : 00 PM. One day his girlfriend left his office at 4 : 00 pm and starts walking towards Arunoday home with a speed of 40 km/hr and meet Arunoday in the way who left his home at his usual time. They reached Arunodaya home 40 min. earlier than their usual time. Then speed of Arunday is what percentage of the speed of Abhishek on Wednesday?
(a) 75% (b) 100% (c) 150% (d) 175% (e) None of these

30. To cover a certain distance on Wednesday, Sandeep takes 15 hrs more than Satish to reach the destination. Find the time taken by Satish to reach the destination?
(a) 5 hrs (b) 7 hrs (c) 9 hrs (d) 11 hrs (e) None of these

Directions (31-35): Given below is the table which shows the ratio of Efficiency of X and Y in completing five different works and time taken by X alone to complete these five works. Line Graph shows the number of days Y actually worked on these five works.

Work	Ratio of Efficiency of X and Y	Time taken by X alone to complete work (in days)
A	3 : 2	6
B	4 : 5	5
C	1 : 2	8
D	7 : 6	6
E	3 : 4	6



31. After Y had worked for the given number of days on work C and work D, X completes the remaining of work C and work D. Time taken by X in completing the remaining of work C is what percent more or less than time taken by him in completing the remaining of work D.
(a) $\frac{100}{9}$% (b) $\frac{500}{9}$% (c) $\frac{200}{3}$% (d) $\frac{100}{6}$% (e) $\frac{200}{9}$%

32. X and Y together started working on work D but both left after working for 2 days. Remaining work is completed by M and N together in 4 days. If ratio of efficiency of X and M in completing work D is 7 : 3, then in how much time N alone will complete the work D.
(a) 14 days (b) 28 days (c) 21 days (d) 42 days (e) 35 days

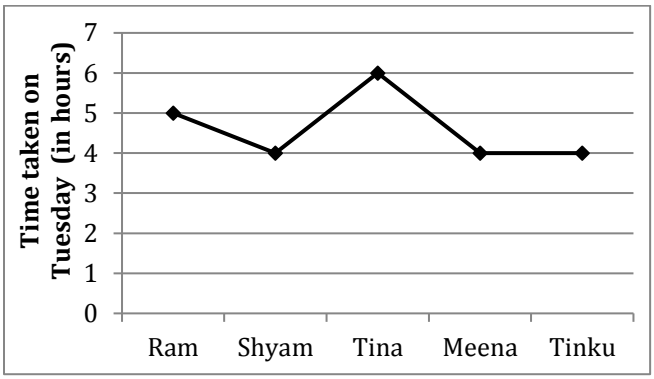
33. If percentage of work C completed by X in 4 days is equal to the percentage of work C completed by 4 women in 5 days and ratio of efficiency of a woman and a child in completing work C is 5 : 3, then in how much time work C will be completed by 6 children.
(a) $\frac{100}{9}$ days (b) $\frac{100}{6}$ days (c) $\frac{50}{7}$ days (d) $\frac{200}{3}$ days (e) $\frac{20}{3}$ days

34. If another person Z can complete work B in (Q – P) days where P and Q are the times taken by X and Y together to complete work B and C respectively, then what is the ratio of efficiency of Y and Z in completing work B?
(a) 2 : 9 (b) 1 : 9 (c) 9 : 17 (d) 5 : 23 (e) 2 : 5

35. After Y had worked for the given numbers of days on work C, D and E, what is the sum of times taken by X in completing the remaining of work C, D and E?
(a) $\frac{90}{7}$ days (b) $\frac{25}{7}$ days (c) $\frac{50}{7}$ days (d) $\frac{100}{7}$ days (e) $\frac{60}{7}$ days

Directions (36-40): Given below is the table which shows the ratio of distance travelled on Monday to Tuesday by five persons and ratio of speed of these persons on Monday to Tuesday. There is also a line graph which shows the time taken by these persons to cover the given distance on Tuesday with the speed of Tuesday.

Person	Ratio of Distance travelled on Monday to Tuesday	Ratio of speed on Monday to Tuesday
Ram	3 : 4	3 : 4
Shyam	5 : 4	1 : 4
Tina	7 : 9	2 : 3
Meena	13 : 11	13 : 22
Tinku	9 : 7	9 : 7



36. If distance travelled on Tuesday by Shyam is $45\frac{5}{11}\%$ more than the distance travelled by Meena on Tuesday, then find the ratio of speed of Shyam on Monday to speed of Meena on Tuesday.
(a) 4 : 11 (b) 11 : 4 (c) 5 : 12 (d) 12 : 5 (e) 6 : 7
37. If Ram and Tinku are 600 km apart and they start moving towards each other with the speed of Tuesday, then they meet after 4 hours. If Ram covered 300 km on Monday then find the distance covered by Tinku on Monday.
(a) 2700 km (b) 300 km (c) 360 km (d) 450 km (e) 500 km
38. Time taken by Tina on Monday is what percent more or less than time taken by Meena on Monday.
(a) $33\frac{1}{3}\%$ (b) $66\frac{2}{3}\%$ (c) $14\frac{2}{7}\%$ (d) $12\frac{1}{2}\%$ (e) $15\frac{2}{5}\%$
39. What is the ratio of distance covered by Ram and Shyam on Monday if difference between Total distance covered by Ram on Monday and Tuesday together and Shyam on Monday and Tuesday together is 740 km and speed of Ram of Tuesday is 20 km/hr more than speed of Monday.
(a) 9 : 11 (b) 7 : 8 (c) 3 : 7 (d) 5 : 3 (e) 3 : 8
40. If Shyam had travelled 800 km on Monday and Tinku had covered 360 km on Monday, then find the ratio of speed of Shyam on Monday to speed of Tinku on Monday.
(a) 9 : 4 (b) 4 : 9 (c) 3 : 2 (d) 2 : 3 (e) 1 : 2

Directions (41-45): In the following table, the investments and profits of three businessmen in different sectors are given. Study the table carefully and solve the following questions:

	Investment (in Rs.)			Profit (in Rs.)		
	Aditya	Veer	Sushant	Aditya	Veer	Sushant
Energy	—	—	15000	—	132000	165000
Finance	—	17000	—	105000	85000	—
Technology	18000	—	—	144000	90000	—
Industrial	—	—	8000	—	30000	24000
Telecom	—	—	6000	—	—	75000

Note: 1. Apart from Telecom and Technology sector, businessmen invested the amount for same period.
2. Some values are missing, you have to calculate these values as per given data.

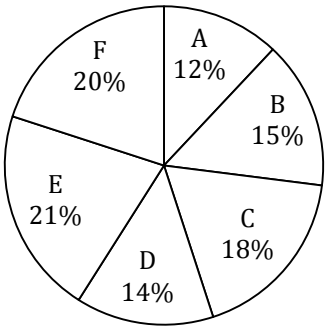
41. If the total profit in Industrial sector is Rs.81000, then find the ratio of investment by Aditya in Finance to Industrial Sector.
(a) 3 : 7 (b) 7 : 3 (c) 5 : 9 (d) 9 : 5 (e) None of these
42. In telecom sector profit earned by Aditya, Veer and Sushant is in the ratio 4 : 5 : 3. Total amount invested by Aditya and Veer is Rs.14000 but Aditya invested for 8 month and Veer invested for 10 months. Find the period that Sushant invested his amount?
(a) 7 Months (b) 5 Months (c) 6 Months (d) 9 Months (e) Can't be determined
43. If the average of total profit earned in Energy sector by all three businessmen is Rs.132000, then amount invested by Aditya is what percentage of the total money invested by all three businessmen in Energy Sector?
(a) $41\frac{2}{3}\%$ (b) $33\frac{1}{3}\%$ (c) 25% (d) 18.67% (e) Can't be determined

44. In technology sector, ratio of time given by Aditya, Veer and Sushant is 4 : 3 : 5 and average of total investment is Rs.19000, then what will be the average profit made by all three businessmen?
(a) Rs.148000 (b) Rs.185000 (c) Rs.160000 (d) None of these (e) Can't be determined

45. Total investment made by Aditya in Finance is what percentage more than the investment made by Veer in Energy sector?
(a) 175% (b) $133\frac{1}{3}\%$ (c) 75% (d) $33\frac{1}{3}\%$ (e) None of these

Directions (46-50): Pie-chart shown below shows percentages of markers sold by six sellers.
Table shows ratio three type of marker out of total markers sold by different sellers. Study the data carefully and solve the following questions.

Total Markers sold = 15,000



Type of markers →	X	Y	Z
A	4	3	2
B	3	4	3
C	9	7	9
D	6	4	5
E	3	2	1
F	4	5	3

46. Seller 'A' fixed his selling price of markers at 40% above the cost price but at the time of selling he gave 40%, 20% and 10% discount on X, Y and Z respectively. Find the total profit or loss percentage if cost price of all the markers is same?
(a) $2\frac{1}{3}\%$ (b) $1\frac{2}{3}\%$ (c) $3\frac{1}{3}\%$ (d) $2\frac{2}{3}\%$ (e) $1\frac{1}{3}\%$

47. Seller 'E' and 'F' keep the S.P. of each X, Y and Z markers same and total S.P. of X, Y, Z sold by E is Rs.47250. Find the total S.P. of all the markers sold by F if E kept the SP of each X, Y, Z marker in the ratio 1 : 1.5 : 3.
(a) Rs. 48250 (b) Rs. 51250 (c) Rs. 54520 (d) Rs. 57520 (e) Rs. 45500

48. Seller 'C' sold all the markers for a certain sum and there was a loss of $11\frac{1}{9}\%$. Had it been sold for Rs.9000 more, there would have been a gain of $11\frac{1}{9}\%$. If seller 'C' wants to earn 20% profit then what would be the total S.P. of Y marker if S.P. of each marker is in the ratio 2 : 3 : 4 respectively.
(a) Rs.13680 (b) Rs.12680 (c) Rs.13608 (d) Rs.12608 (e) None of these

49. There are two customers, Satish and Veer. Seller 'B' sells 60% of X marker to Satish, and remaining to Veer, B also sells 40% of Y marker to Satish and remaining to veer. Find the S.P. of each Y marker if Satish and Veer pays Rs.8370 and Rs.9180 for X and Y marker respectively.
(a) Rs.10 (b) Rs.12 (c) Rs.14 (d) Rs.16 (e) Rs.18

50. Out of six sellers, which seller sells maximum number of X type of marker?
(a) B (b) C (c) D (d) F (e) None of these

PRACTICE SET (LEVEL-I) SOLUTIONS

1. (b); Let CP of MI 5 = 100

∴ CP of One plus = 150

SP of MI 5 = 117

SP of One plus $= \frac{108}{100} \times 150 = 162$

Required % $= \frac{162-117}{117} \times 100 = \frac{45}{117} \times 100 = 38.46\%$

2. (c); Let SP of Galaxy J5 = 700

∴ SP of Xperia X = 500

∴ CP of Galaxy J5 $= \frac{100}{112.5} \times 700$

CP of Xperia X $= \frac{100}{105} \times 500$

∴ Required ratio $= \frac{7}{112.5} : \frac{5}{105}$

$= 735 : 562.5 = 98 : 75$

3. (e); Let CP of MI 5 = 300

∴ CP of Redmi A5 = 400

SP of Redmi A5 $= \frac{130}{100} \times 351 = 456.3$

Required profit % $= \frac{456.3-400}{400} \times 100 = 14.075\%$

4. (d); CP of iphone 8 = 6000 Rs.

CP of Samsung S8 = 4000 Rs.

∴ Required Ratio $= \frac{110}{100} \times 6000 : \frac{133}{100} \times 4000$

$= 110 \times 60 : 133 \times 40$

$= 110 \times 6 : 133 \times 4 = 165 : 133$

5. (b); Let cost price of Samsung S8 and Xperia X be x and y respectively

So,

$140x = 150y$

$\frac{x}{y} = \frac{15}{14}$

So, ratio of selling price is $= \frac{133 \times 15}{105 \times 14} = 133 ; 98$

6. (a); Let cost price per article of A = x

Selling price per article of A = (100% – 25%) × 25

$= \frac{3}{4} \times 25 = 18.75$

and

$\frac{125}{100}x = 18.75 \Rightarrow x = 15$

Total profit of A = (18.75 – 15) 680 = 2550

7. (d); Selling price per article of E = 75% × 80 = 60

Cost price per article of E = 62.5% of 80 $= \frac{5}{8} \times 80 = 50$

Required ratio $= \frac{(80-50) \times 360}{(60-50)360 \times 2} = \frac{30}{20} = 3 : 2$

8. (e); Selling price of article F after discount $= \frac{6}{7} \times 70 = 60$

Cost price of article F $= 60 \times \frac{5}{6} = 50$

Total profit

$= \frac{3}{4} \times 160 \times (60 - 50) + \frac{1}{4} \times 160 \times (65 - 50)$

= 1200 + 600 = 1800

9. (b); Required percentage $= \frac{45 \times 560 - 50 \times 440}{50 \times 440} \times 100$

$= \frac{3200}{50 \times 440} \times 100 = \frac{160}{11}\%$

10. (e); Selling price of all article of A = 17,000

Selling price of all article of B = 25,200

Selling price of all article of C = 19,200

Selling price of all article of D = 22,000

Selling price of all article of E = 28,800

Selling price of all article of F = 11,200

So selling price of all articles is maximum for E.

11. (b); Cost price per Jeans of Buffalo

$= \left(100\% - \frac{700}{17}\%\right) \times 5100$

$= \frac{1000}{100 \times 17} \times 5100 = 3000$

Let selling price of Buffalo and Being Human per unit be x and y

So,

$3000 + \frac{25}{100}x = x \Rightarrow \frac{3}{4}x = 3000 \Rightarrow x = 4000$

and

$5200 + \frac{35}{100}y = y \Rightarrow 5200 = \frac{13}{20}y$

$y = 8000$

Required percentage $= \frac{(8000-5200)-(4000-3000)}{(4000-3000)} \times 100$

$= \frac{2800-1000}{1000} \times 100 = 180\%$

12. (d); Let selling price of Tommy Hilfiger = x

So,

$5100 + \frac{15}{100}x = x$

$1500 = \frac{17}{20}x \Rightarrow x = 6000$

Profit per unit of Tommy Hilfiger = 6000 – 5100 = 900

Let selling price of Wrangler = y

So, $4500 + \frac{10}{100}x = x \Rightarrow x = 5000$

Profit on selling price per unit of Wrangler = 500

Required ratio = 3 × 900 : 4 × 500 = 27 : 20

13. (a); Profit on selling per unit of Wrangler = 500 (solved in previous question)

So profit of Levis $= \frac{500}{2} \times 3 = 750$

Let selling price per unit of Lewis = x

So,

$\frac{20}{100}x = 750 \Rightarrow x = 3750$

So cost price per unit of Levis = 3750 – 750 = 3000

14. (c); Let selling price per unit for both jeans be = x

So for Buffalo je

Cost price $+ \frac{25}{100}x = x$

Cost price of Buffalo $= \frac{3}{4}x$

Similarly,

Cost price of Numero Uno $= \frac{9}{10}x$

Ratio of cost price of Buffalo to cost price of Numero Uno $= \frac{\frac{3}{4}x}{\frac{9}{10}x} = 5 : 6$

Cost price of Numero Uno $= \frac{6}{11} \times 6600 = 3600$

15. (c); Let selling price per unit of wrangler = x
So,
$4500 + \frac{10}{100}x = x \Rightarrow x = 5000$
Profit per unit = 500
So, $n = \frac{7500}{500} = 15$ unit

16. (c); Distance covered by Arunoday $= \frac{3200}{360} \times 45 = 400$ km
Speed of Arunoday $= \frac{400}{5} = 80$ km/hr
Speed of Abhimanyu = 120 km/hr
Required percentage $= \frac{120\times9-64\times10}{64\times10} \times 100$
$= 68.75\%$

17. (b); Distance travelled by Abhimanyu $= \frac{7}{8} \times 64 \times 10$
$= 560$ km
Distance travelled by Arunoday = 400 km
Distance travelled by Bhavya = 640 km
Distnce travelled by Satish = 960 km
Distance travelled by Abhishek = 3200 – 2560 = 640
Time of Abhishek $= \frac{640}{120} = \frac{16}{3}$ hours

18. (a); Speed of Arunoday = 80 km/hr
So, speed of Abhimanyu = 80 km/hr
Distance covered by Abhishek
= 3200 – 80 × 9 – 80 × 50 – 640 – 960 = 480
Time of Abhishek $= \frac{480}{120} = 4$ hours
Required time = 5 – 4 = 1 hour

19. (e); In 5 hours train would have covered = 5x km
Speed of Satish $= \frac{960}{20}$
So, $\frac{2400-5x}{48+x} = 6$
$2400 - 5x = 288 + 6x \Rightarrow x = 192$ km/hr

20. (b); Average speed of Bhavya = 64 km/hr
So,
$$\frac{640}{\frac{320}{y}+\frac{320}{80}} = 64$$
$y = \frac{160}{3}$ km/hr

21. (c); Total time taken by F = $500 \times \frac{8}{100} = 40$ hr
Time taken by car = $40 \times \frac{3}{5} = 24$ hr
Distance travelled by car = $24 \times 60 = 1440$
Distance travelled by train = $\frac{1440}{75} \times 100 \times \frac{25}{100}$
$= 480$ km
Time taken by train = $40 \times \frac{2}{5} = 16$
Speed of train = $\frac{480}{16} = 30$ km/hr

22. (c); Total time taken by C = $500 \times \frac{15}{100} = 75$ hr
Now
ATQ,
$x + \frac{x}{2} = 75$ wherex = time taken by train
$\Rightarrow x = 50$
Time taken by car = $75 - 50 = 25$ hr
Distance travelled by train = $22 \times 50 = 1100$ km
Distance travelled by car = $\frac{1100}{70} \times \frac{30}{100} \times 100$
$= \frac{3300}{7}$ km
Speed of C by car = $18\frac{6}{7}$ km/hr

23. (b); Time taken by B, C and D together = $500 \times \frac{42}{100}$
$= 210$ hr
Time taken by E, F, G and H together = $500 \times \frac{48}{100}$
$= 240$ hr
Let Avg. speed of B, C and D = x
Let Avg. Speed of E, F, G and H = y
ATQ, $210 \times x = 240 \times y$
$\frac{x}{y} = \frac{240}{210} = \frac{8}{7}$
Required answer = 8 : 7

24. (e); Time taken by A = $500 \times \frac{10}{100} = 50$ hr
Time taken by C = $500 \times \frac{15}{100} = 75$ hr
Let Avg. speed of A = 4x
Let Avg. speed of B = 3x
ATQ,
$75 \times 3x - 50 \times 4x = 500 \Rightarrow x = 20$
Avg. speed of A = 4 × 20 = 80 km/hr
Total distance travelled by A = 80 × 50 = 4000 km
Let the speed of A by car =xkm/hr
ATQ,
$$\frac{4000}{\frac{2800}{x}+\frac{1200}{120}} = 80 \Rightarrow x = 70 \text{ km/hr}$$

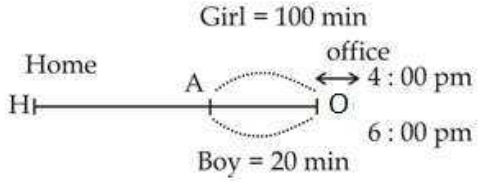
25. (b); Time taken by A = $500 \times \frac{10}{100} = 50$
Avg. speed of A = $\frac{2250}{50} = 45$ km/hr
Distance travelled by train by A = $2250 \times \frac{30}{100} = 675$
Time taken by train = $\frac{675}{45} = 15$ hr
Time taken by car = 50 – 15 = 35 hr
Distance travelled by car = 2250 – 675 = 1575
Speed of A by car = $\frac{1575}{35} = 45$ km/hr

26. (b); Speed of Bhavya on Tuesday = $\frac{45}{9} \times 4 = 20$ km/h
Ratio of time taken by Bhavya on Monday to Wednesday is 100:45.
So, Ratio of speed on Monday to Wednesday is 45:100.
Speed of Bhavya on Wednesday = $\frac{45}{45} \times 100$
= 100 km/h
Let distance =d km
$\therefore \frac{d}{20} - \frac{d}{100} = \frac{15}{60}$
$\frac{4d}{100} = \frac{1}{4}$
$d = \frac{25}{4} = 6\frac{1}{4}$ km

27. (a); Speed of Abhishek on Monday = 120 km/hr
Speed of Abhishek on Tuesday = $\frac{120}{3} \times 2 = 80$ km/hr
Required average speed = $\frac{2\times80\times120}{(120+80)}$
$= \frac{2\times80\times120}{200} = 96$ km/hr

28. (d); Speed of Bharat on Monday = 15 km/hr
Speed of Bharat on Wednesday = 15× 3 = 45 km/hr
Let distance from his home to Delhi = d
$\therefore \frac{d}{15}+\frac{d}{45}=10$
$\frac{4d}{45}=10$
d = 45 × 2.5 ⇒ d = 112.5 km

29. (e);



Today Arunuday don't have to go from A to O or O to A. Hence he saved 20 minutes each on one way and they meet at 5 : 40 pm on the way

	Time	Speed		
Girl friend	100	1	×40 →	40 km/hr
Arunuday	20	5	×40 →	200 km/hr

Speed of Abhishek on Wednesday $=\frac{120}{3}\times 4$
= 160 km/hr
Required % $=\frac{200}{160}\times 100=\frac{5}{4}\times 100=125\%$

30. (c); Time taken by Satish $=\frac{1}{5}\times 45=9$ hrs

31. (b); Y alone will complete work C in $=\frac{8\times 1}{2}=4$ days
Y alone will complete work D in $=\frac{6\times 7}{6}=7$ days
Part of work C and work D completed by Y in given time $=\frac{2}{4},\frac{4}{7}$
Remaining of work C and work D is completed by X
So,
X will complete remaining of work C $=\left(1-\frac{2}{4}\right)\times 8$
= 4 days
X will complete remaining of work D $=\left(1-\frac{4}{7}\right)\times 6$
$=\frac{18}{7}$ days
Required percentage $=\frac{4-\frac{18}{7}}{\frac{18}{7}}\times 100=\frac{500}{9}\%$

32. (d); Y can complete work D in $=\frac{6\times 7}{6}=7$ days
Part of work D completed by X and Y in 2 days $=\frac{2}{6}+\frac{2}{7}$
$=\frac{1}{3}+\frac{2}{7}=\frac{7+6}{21}=\frac{13}{21}$
Time taken by M in completing work D $=\frac{6}{3}\times 7$
= 14 days
So,
In 4 days M will complete $=\frac{4}{14}=\frac{2}{7}$ part
M and N together complete $=\left(1-\frac{13}{21}\right)=\frac{8}{21}$
But M completes $\frac{2}{7}$ of work D.
Remaining $\left(\frac{8}{21}-\frac{2}{7}=\frac{2}{21}\right)$ is completed by N in 4 days
So, N alone will complete work D in = $4\div\frac{2}{21}=42$ days

33. (a); Percentage of work C completed by X in 4 days
$=\frac{4}{8}\times 100=50\%$
This is equal to work C completed by 4 women in 5 days
So, one woman will complete it in = 40 days
One child will complete it in $\frac{40}{3}\times 5$
6 children will complete it in $=\frac{40\times 5}{3\times 6}=\frac{100}{9}$ days

34. (b); Y will complete work B in $=\frac{4\times 5}{5}=4$ day
Y will complete work C in $=\frac{8\times 1}{2}=4$ day
$P=\frac{5\times 4}{9}=\frac{20}{9}$ days ⇒ $Q=\frac{8\times 4}{12}=\frac{8}{3}$ days
Z will complete work B in $=\frac{8}{3}-\frac{20}{9}=\frac{24-20}{9}=\frac{4}{9}$ days
Ratio of time taken by Y and Z in completing work B
$=4:\frac{4}{9}=9:1$
Ratio of efficiency will be = 1 : 9

35. (e); Y alone will complete work C, D and E in 4 , 7 and $\frac{9}{2}$ days respectively
Part of work of C, D and E done by Y is $\frac{2}{4},\frac{4}{7}$ and $\frac{2}{3}$ days respectively
Remaining of work C, D and E is completed by X in $\frac{1}{2}\times 8$, $\frac{3}{7}\times 6$ and $\frac{1}{3}\times 6$ days respectively
Required sum = $4+\frac{18}{7}+2=6+\frac{18}{7}=\frac{60}{7}$ days.

36. (a); Time taken by Shyam on Tuesday = 4 h
Let distance covered by Shyam on Monday and Tuesday be 5x and 4x respectively
And speed of Shyam on Monday and Tuesday be y and 4y respectively.
So, $\frac{4x}{4y}=4$ ⇒ x = 4y
Let distance covered by Meena on Monday and Tuesday be 13 m and 11 m
And speed of Meena on Monday and Tuesday be 13n and 22n
$\frac{11m}{22n}=4$ ⇒ m = 8n
According to question
$4x=\left(1+\frac{5}{11}\right)11m$
$4x=\frac{16}{11}\times 11$ m ⇒ x = 4 m
Or
x = 4 × 8n ⇒ x = 32 n
Required ratio = y : 22n $=\left(\frac{x}{4}\right):\left(22\times\frac{x}{32}\right)$
$=\frac{x}{4}:\frac{11x}{16}=4:11$

37. (c); Let speed of Ram and Tinku on Tuesday is 4y and 7n respectively
So,
$\frac{600}{4y+7n}=4$
4y + 7n = 150 ... (i)

Let distance covered by Ram on Monday and Tuesday be 3x and 4x

$\frac{4x}{4y} = 5$

$x = 5y$ ... (ii)

But $3x = 300 \Rightarrow x = 100$

Putting x in eq. (ii)

$y = \frac{x}{5} = \frac{100}{5} \Rightarrow y = 20$

Putting value of y in (i)

$4 \times 20 + 7n = 150$

$7n = 150 - 80 \Rightarrow n = 10$

Distance covered by Tinku on Tuesday = $7 \times 10 \times 4$
$= 280$ km

Distance covered by Tinku on Monday

$= \frac{280}{7} \times 9 = 360$ km

38. (d); Let Distance covered by Tina on Monday & Tuesday = 7x and 9x

And speed of Tina on Monday and Tuesday be 2y and 3y

so $\frac{9x}{3y} = 6 \Rightarrow x = 2y$

Time taken by Tina on Monday $= \frac{7x}{2y}$

$= \frac{7 \times 2y}{2y} = 7$ hours

Similarly time taken by Meena on Monday = 8 hour

Required percentage $= \frac{8-7}{8} \times 100 = \frac{100}{8}\% \Rightarrow 12\frac{1}{2}\%$

39. (e); Speed of Ram on Monday and Tuesday will be 60 km/hr, 80 km/hr respectively

Distance covered by Ram on Tuesday = 80×5
$= 400$ km

Distance covered by Ram on Monday = $\frac{400}{4} \times 3$
$= 300$

According to question,

(400 + 300) difference, distance covered by Shyam on both days = 740

Distance covered by Shyam on Monday

$= \frac{740+700}{9} \times 5 = \frac{1440}{9} \times 5 = 800$ km

Required ratio = 3 : 8

40. (b); Distance travelled by Shyam on Tuesday $= \frac{800}{5} \times 4$
$= 640$ km

$\frac{640}{4} = 4y$ when (4y is speed of Shyam on Tuesday)

$y = 40$

Distance travelled by Tinku on Tuesday $= \frac{360}{9} \times 7$
$= 280$ km

$\frac{280}{4} = 7y$ (where 7y speed of Tinku on Tuesday)

$y = 10$

Speed of Tinku on Monday = 9y = 90 km/hr

Required ratio = 4 : 9

41. (b); Profit of Aditya in Industrial sector

= 81000 – 30000 – 24000 = Rs.27000

Let, the investment of Aditya in Industrial sector be Rs.x

$\frac{24000}{8000} = \frac{27000}{x} \Rightarrow x = 9000$

Let, the investment of Aditya in finance sector be Rs.y

$\frac{85000}{17000} = \frac{105000}{y} \Rightarrow y = 21000$

Desired Ratio $= \frac{21000}{9000} = \frac{7}{3}$

42. (a); Profit of Veer $= \frac{75000}{3} \times 5 = 125000$

Profit of Aditya $= \frac{75000}{3} \times 4 = 100000$

Let, the amount invested by Aditya and Veer be Rs.x and Rs.y respectively

According to the question,

$\frac{x \times 8}{y \times 10} = \frac{100000}{125000}$

$\frac{x}{y} = \frac{1}{1}$

And,

$x + y = 14000 \Rightarrow x = 7000, y = 7000$

Let, the time period for which Sushant invested his amount be z months

$\therefore \frac{75000}{6000 \times z} = \frac{100000}{7000 \times 8} \Rightarrow z = 7$ months

43. (c); Profit of Aditya = 396000 – 132000 – 165000
= Rs.99000

Amount invested by Aditya $= \frac{15000}{165000} \times 99000$
= Rs.9000

Amount invested by Veer $= \frac{15000}{165000} \times 132000$
= Rs.12000

Desired Percentage $= \frac{9000}{12000+9000+15000} \times 100$

$= \frac{9000}{36000} \times 100 = 25\%$

44. (d); Let, the time invested by Aditya, Veer Sushant 4x, 3x and 5x respectively

Let, Amount invested by Veer = Rs.y

$\therefore \frac{144000}{18000 \times 4x} = \frac{90000}{y \times 3x} \Rightarrow y = $ Rs.15000

Amount invested by Sushant

$= 3 \times 19000 - 15000 - 18000 =$ Rs.24000

Let, profit of Sushant = Rs.a

$\frac{144000}{18000 \times 4x} = \frac{a}{24000 \times 5x} \Rightarrow a =$ Rs. 240000

Average profit $= \frac{144000+90000+240000}{3} =$ Rs. 158000

45. (c); Investment of Aditya in Finance $= \frac{17000}{85000} \times 105000$
= Rs. 21000

Investment of Veer in Energy $= \frac{15000}{165000} \times 132000$
= Rs. 12000

Desired Percentage $= \frac{21000-12000}{12000} \times 100 = 75\%$

46. (d); Total markers sold by A = 12% × 15,000 = 1800

X marker sold by A $= \frac{1800}{9} \times 4 = 800$

Y marker sold by A $= \frac{1800}{9} \times 3 = 600$

Z marker sold by A $= \frac{1800}{9} \times 2 = 400$

Let C.P. of one marker = 'x'

S. P. of X marker $= \frac{140}{100} \times x \times \frac{60}{100} = 0.84x$

S. P. of Y marker $= \frac{140}{100} \times x \times \frac{80}{100} = 1.12x$

S. P. of Z marker $= \frac{140}{100} \times x \times \frac{90}{100} = 1.26x$

Total C.P. = [800 + 600 + 400]x = 1800x

Total S.P. = 800 × 0.84x + 600× 1.12x + 400×1.26x

= 672x + 672x + 504x = 1848x

Total Profit Percentage $= \frac{1848x-1800x}{1800x} \times 100$

$= \frac{48x}{1800x} \times 100 = 2\frac{2}{3}\%$

47. (b); Total markers sold by E $= \frac{21}{100} \times 15000 = 3150$

X, Y and Z sold by E = 3 : 2 : 1

= 1575; 1050; 525

Let S.P. of each marker sold by E = x, 1.5x, 3x

Total S.P. = x × 1575 + 1.5x × 1050 + 3x × 525

= 4725x = 47250 ⇒ x =10

S.P. of x, y, z = 10, 15, 30

Total marker sold by F $= \frac{20}{100} \times 15000 = 3000$

X, Y and Z sold by F = 4 : 5 : 3 = 1000; 1250; 750

Total S.P. of markers sold by F

= 10 × 1000 + 15 × 1250 + 30 × 750

= 10,000 + 18,750 + 22,500 = Rs. 51250

48. (c); Let, total C.P. = x

ATQ

$x \times \frac{10}{9} - \left[x \times \frac{8}{9}\right] = 9000$

$\frac{2}{9}x = 9000 \Rightarrow x = 40{,}500$

Total S.P. of marks if C wants to earn 20% profit

$= 40500 \times \frac{120}{100} = 48600$

Let, S.P. of each marker = 2x, 3x, 4x

Total marker sold by C $= \frac{18}{100} \times 15000 = 2700$

X, Y and Z marker sold by C = 9 : 7 : 9

= 972; 756; 972

Total S.P =972 × 2x + 756 × 3x + 972 × 4x = 8100x

Total S.P. of Y marker $= \frac{756 \times 3x \times 48600}{8100\,x} = \text{Rs. } 13608$

49. (b); Total markers sold by 'B'$= \frac{15}{100} \times 15000 = 2250$

X, Y and Z markers sold by B = 3 : 4 : 3

= 675; 900; 675

	Satish	Veer
X markers sold	= 60% = 405;	40% 270
Y markers sold	= 40% = 360;	60% 540

Let S.P. of each X and Y marker = x, y

ATQ

405x + 360y = 8370 ... (i)

270x + 540y = 9180 ... (ii)

By solving (i), and (ii)

x = 10, y = 12

50. (e); X type of Marker sold by A $= \frac{4}{9} \times \frac{12}{100} \times 1500 = 800$

X type of Marker sold by B $= \frac{3}{10} \times \frac{15}{100} \times 15000$

$= 675$

X type of Marker sold by C $= \frac{9}{25} \times \frac{18}{100} \times 15000$

$= 972$

X type of Marker sold by D $= \frac{6}{15} \times \frac{14}{100} \times 15000$

$= 840$

X type of Marker sold by E $= \frac{3}{6} \times \frac{25}{100} \times 15000$

$= 1575$

X type of Marker sold by F $= \frac{4}{12} \times \frac{20}{100} \times 15000$

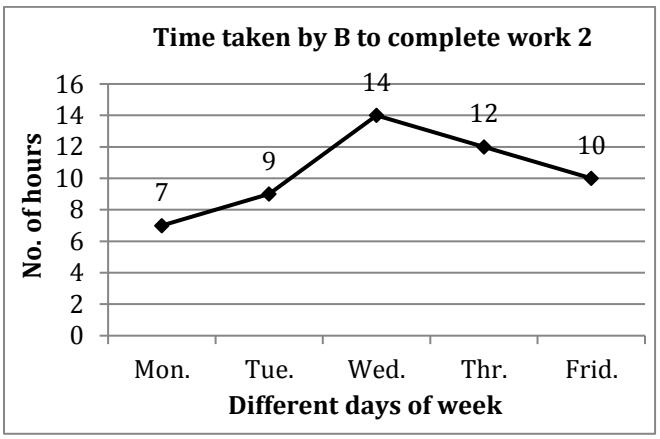
$= 1000$

E sold maximum number of X type of markers

PRACTICE SET (LEVEL-II)

Directions (1-5): Given below is table which shows the ratio of efficiency of both A and B on different days and total time taken by A and B to complete the work 1 if they complete whole work with the efficiency of different days.
There is also the line graph which shows the time taken by B to complete work 2 if it complete whole work with efficiency of different days.

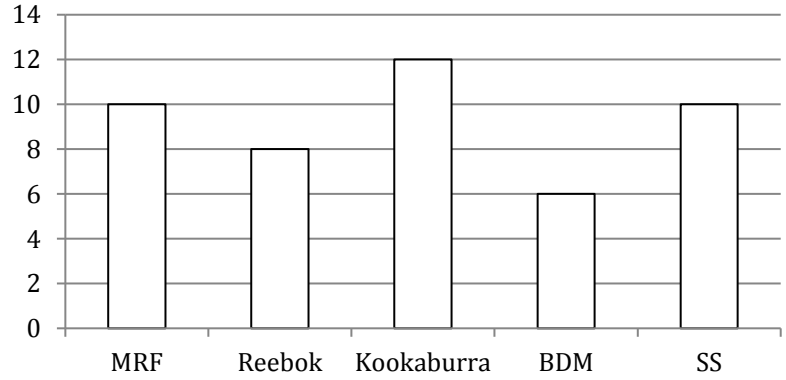
Days	Efficiency of A & B	Time taken by both to complete work 1(hours)
Mon.	3 : 2	3
Tue.	3 : 2	4
Wed.	7 : 9	6
Thr.	8 : 9	5
Frid.	5 : 4	8

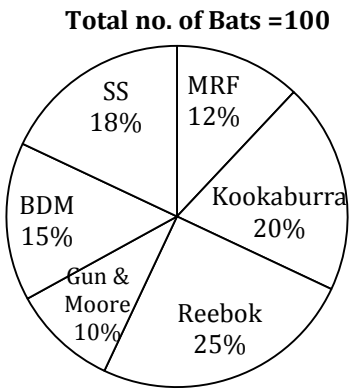


Note: The ratio of efficiency of A to B to do work 2 on different days is same as data given in the table for work 1.

1. A and B both started to complete work 1 on Tuesday but A left after working for 2 hours. Another person C whose efficiency is 60% of the efficiency of A (as of Tuesday) joins B. B leaves 2 hours before the completion of work then C alone finishes the remaining work. What is the total time in which work 1 is completed.
(a) $\frac{105}{2}$ hours (b) $\frac{107}{13}$ hours (c) $\frac{108}{19}$ hours (d) $\frac{110}{19}$ hours (e) $\frac{110}{13}$ hours
2. If a part of work 2 completed by 4 women in 5 hours equals to the part of work 2 done by B on Wednesday in 7 hours and ratio of efficiency of a women and a children to complete work 2 is 5 : 3 then in what time work 2 will be completed by 3 children.
(a) $\frac{100}{9}$ hours (b) $\frac{200}{9}$ hours (c) $\frac{100}{11}$ *hours* (d) $\frac{200}{11}$ hours (e) $\frac{150}{11}$ hours
3. x can complete a work in $(n - m)$ hours while y can complete the same work in $(n + m)$ hours where m is the time taken by A to complete work 2 on Tuesday and n is time taken by A to complete work 2 on Friday. Find the time in which x and y together can complete the work.
(a) $\frac{3}{2}$ hours (b) $\frac{7}{4}$ hours (c) $\frac{7}{5}$ hours (d) $\frac{8}{3}$ hours (e) $\frac{9}{5}$ hours
4. A and B started to complete work 1, alternatively starting from A on first hour on Monday then time taken by A and B in completing 80% of work 1, alternatively on Monday is what percent more or less than time taken by A and B together to complete work 2 together on Friday.
(a) 3% (b) 5% (c) 8% (d) 15% (e) 6%
5. If B with another person C works on work 2 on Friday for 2 hours than 80% of work 2 is completed then, time taken by C alone to finish work 2 is what percent to time taken by B to finish work 1 with efficiency of Friday —
(a) $\frac{500}{27}$% (b) $\frac{400}{13}$% (c) $\frac{300}{17}$% (d) $\frac{400}{21}$% (e) $\frac{500}{21}$%

Directions (6-10): The graph given below shows the number of bats & balls available in a store of different brands. Bar graph shows the number of ball and pie chart shows the number of bats
Note: There are balls of five brands and bats of six brands





NOTE- There are balls of five brands and bats of 6 brands

6. Rahul wants to buy a pair of bat and ball of same company. What is the probability that he buys a pair of his choice, if he has to pick up a pair from a bag which contains a bat and a ball of each company.
(a) $\frac{1}{6}$ (b) $\frac{2}{3}$ (c) $\frac{5}{6}$ (d) $\frac{1}{7}$ (e) $\frac{1}{5}$

7. Rvinder has to choose balls of three companies i.e. MRF, BDM and SS. If he has to choose 6 balls, then in how many ways can he choose 6 balls so that there are 4 balls of BDM company.
(a) 2430 (b) 1500 (c) 2530 (d) 2650 (e) 2470

8. The storekeeper puts all the bats in a bag. What is the probability of picking up two bats of Gun & Moore without replacement if a person wants to pick up 3 bats?
(a) $\frac{33}{1078}$ (b) $\frac{43}{1078}$ (c) $\frac{27}{1078}$ (d) $\frac{55}{1078}$ (e) $\frac{47}{1008}$

9. Among the balls of Reebok and SS there were 4 and 6 balls defective respectively. The storekeeper offers a boy 3 chances to pick up a ball of these two companies. What is the probability of boy picking up a defective ball ?
(a) $\frac{5}{32}$ (b) $\frac{5}{34}$ (c) $\frac{5}{36}$ (d) $\frac{5}{38}$ (e) none of these

10. Banti first chooses three balls of Kookaburra and 3 bats of SS and then arranges them in a row so that no two bats or balls are together. In how many ways can he do that?
(a) $36 \times {}^{12}C_3 \times {}^{18}C_3$ (b) $72 \times {}^{12}C_3 \times {}^{18}C_3$ (c) $42 \times {}^{12}C_3 \times {}^{18}C_3$ (d) $68 \times {}^{12}C_3 \times {}^{18}C_3$ (e) none of these

Directions (11-15): The following table shows different plans offered by a lender, type of interest and rates of interest applicable during first, second and third years.
(**Note:** Some values are missing, you need to calculate those values if required.)

Plans	Type of Interest	Rate of Interest		
		First Year	Second Year	Third Year
A	Simple Interest	-	$6\frac{2}{3}\%$	$3\frac{2}{3}\%$
B	Compound Interest	-	$6\frac{1}{4}\%$	-
C	Simple Interest	$8\frac{3}{4}\%$	$5\frac{1}{4}\%$	-
D	Compound Interest	$7\frac{1}{2}\%$	-	$4\frac{3}{4}\%$
E	Simple Interest	-	$5\frac{4}{5}\%$	$4\frac{3}{5}\%$

11. If two persons borrows an equal amount of Rs.12000 under plan B and plan E respectively and rate of interest for the first year under plan B and D is same, then what is the difference between second year's interests alone paid by each of them?
(a) Rs.105.25 (b) Rs.110.25 (c) Rs.115.25 (d) Rs.120.25 (e) Cannot be determined

12. A person borrows Rs.20480 under plan C. After completion of the loan tenure of three years under plan C, he extends the tenure for further two years under plan D on the amount payable at that time. He settles his loan by paying Rs.27778. What is the rate of interest for the second year under plan D if rate of interest for the third year under plan C and D is same?
(a) $5\frac{3}{4}\%$ (b) $5\frac{1}{4}\%$ (c) $6\frac{1}{4}\%$ (d) $4\frac{3}{4}\%$ (e) $6\frac{3}{4}\%$

13. If the amounts borrowed by a person under plan B and C are in the ratio 16 : 13 and rate of interest applicable during the first year under plan B and D is same, then what is ratio of interests payable under these plans at the end of second year.
(a) 5 : 6 (b) 3 : 5 (c) 3 : 4 (d) 5 : 4 (e) None of these

14. The lender decides to offer a fixed rate of interest at $6\frac{2}{3}\%$ per year under plan C. By how much percent the interest payable will increase from the interest payable previously under the old plan for the period of three years if rate of interest for the third year under old plan C and plan D is same?
(a) $6\frac{1}{3}\%$ (b) $6\frac{1}{4}\%$ (c) $6\frac{2}{3}\%$ (d) $6\frac{2}{5}\%$ (e) Cannot be determined

15. Rates of interest for the first year under plan A and E are $8\frac{2}{3}\%$ and $7\frac{3}{5}\%$ respectively. A person borrows a total of Rs.30000 partially under plan A and E and pays a total interest of Rs.5540 at the end of third year. How much amount does he borrow under plan A?
(a) Rs.14000 (b) Rs.18000 (c) Rs.16000 (d) Rs.12000 (e) Rs.20000

Directions (16-20): Given below is the table which shows the percentage of profit obtained on five different products sold by a shopkeeper in 5 different months.

Note:

Some values are missing from the table, you have to calculate these values if required.

Assume that the cost price of different products can be different and the cost price of same product in different months can also be different as well.

$Marked\ Price = Selling\ Price + Discount\ on\ Marked\ Price$

And, $Selling\ Price = Cost\ Price + Profit$

Month	% profit on A	% profit on B	% profit on C	% profit on D	% profit on E
Jan	15	20	30	25	—
Feb	22	—	30	8	—
March	10	—	—	24	20
April	—	25	13	10	25
May	25	30	15	20	10

16. If ratio of cost price of products D and E in January is 5 : 6 and sum of profit on D and E in January is 150% of profit on E in January, then what is the percentage profit of E in January? (If profit of E is calculated on selling price).
(a) $\frac{250}{19}\%$ (b) $\frac{500}{17}\%$ (c) $\frac{600}{19}\%$ (d) $\frac{700}{13}\%$ (e) None of these

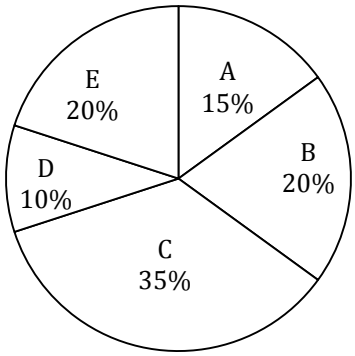
17. Average of profit obtained on products B, C, D and E in January is equal to average of profit obtained on products A, B, C and E in February. If total profits in January on all five products is Rs.4900 more than that in February and cost price of A in January and cost price of D in February is same, then what is the profit of A in January?
(a) Rs.10200 (b) Rs.7500 (c) Rs.8500 (d) Rs.9800 (e) Rs.10500

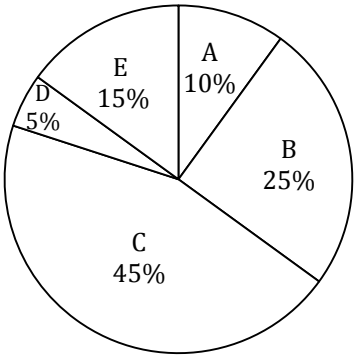
18. Cost price of A in January is equal to cost price of B in May and percentage discounts on marked price of A in January and B in May are $2n\%$ and $(25 + n)\%$ respectively. If ratio of marked price of A in January and marked price of B in May is 23 : 26, then find the value of n.
(a) 20 (b) 22 (c) 23 (d) 25 (e) 18

19. If out of 10 kg of product D bought by the shopkeeper in March, 2 kg got spoiled and has to be sold at half the selling price and remaining quantity is sold at the normal selling price, then what will be the overall profit or loss percentage?
(a) 11.6% (b) 10.8% (c) 15.4% (d) 13.5% (e) 8.5%

20. If cost price of product D in April and May is same and cost price of product E in April and May is same; and average of selling price of D and E in April and average of selling price of D and E in May are Rs.650 and Rs.630 respectively, then find the cost price of E in May.
(a) Rs.500 (b) Rs.600 (c) Rs.550 (d) Rs.400 (e) Rs.650

Directions (21-25): Given below are two pie charts. Pie chart I shows the percentage distribution of milk in five vessels out of the total milk in these five vessels. Pie chart II shows the percentage distribution of water in same five vessels out of total quantity of water in these five vessels.





Note: Ratio of total milk to total water in these five containers is 2 : 1.

21. A shopkeeper pours the mixture of vessel A and B into another vessel F. Vessel F contains water only which is equal to 25% of water of vessel B. If shopkeeper professes to sell the whole mixture at the cost price of pure milk and cost price for shopkeeper is due to milk only, then find the percentage profit of shopkeeper in selling whole mixture.
(a) $58\frac{13}{14}\%$ (b) $3\frac{13}{15}\%$ (c) $54\frac{13}{15}\%$ (d) $53\frac{13}{14}\%$ (e) $55\frac{20}{21}\%$

22. Mixture of vessel A and C are mixed into another vessel M. If 62 liters of the mixture M is taken out and replaced with 17 L of water, the ratio of milk to water in M becomes 6 : 5. Find the quantity of milk in vessel B.
(a) 60 L (b) 20 L (c) 40 L (d) 45 L (e) 50 L

23. All the contents of mixture from all vessels except C is poured into bigger vessel and from vessel C, only 115 liters of mixture is taken out and poured into bigger vessel, then ratio of milk and water in bigger vessel becomes 9 : 4. Find the total quantity of water in all five vessels.
(a) 550 L (b) 500 L (c) 600 L (d) 650 L (e) 700 L

24. Some quantity of mixture from vessel D and E are taken out and ratio of quantity taken out from vessel D and E is in ratio 3 : 2, then find the ratio of milk and water of the final mixture.
(a) $\frac{211}{47}$ (b) $\frac{202}{59}$ (c) $\frac{220}{89}$ (d) $\frac{112}{57}$ (e) $\frac{212}{63}$

25. If total quantity of milk and water in vessel C is 115 L, then the quantity of milk and water is vessel B is how much more or less than quantity of milk and water in vessel E?
(a) $15\frac{2}{11}\%$ (b) $14\frac{5}{7}\%$ (c) $15\frac{5}{6}\%$ (d) $18\frac{2}{11}\%$ (e) $17\frac{2}{11}\%$

Directions (26-30): In this table, number of leaps taken by the different animal in one minute and ratio of distance covered by the animal in one leap to the distance covered by Lion in one leap are given.

Animals	No. of leaps in one minutes	Ratio of distance covered by the animal in one leap to the distance covered by Lion in one leap
Cat	5	2 : 5
Monkey	6	3 : 4
Dog	7	4 : 7
Jackal	4	5 : 8
Rabbit	6	1 : 5

26. Dog sees a stationary cat and estimates that it will catch the cat in 1 min and starts moving towards it. At the same time cat also starts moves away from the dog. In how much time the dog will catch the cat?
(a) 1 min. (b) 2 min. (c) 4 min. (d) $1\frac{1}{2}$ min. (e) None of these

27. Jackal sees a Rabbit and finds that it is 2 minute away from him. Jackal starts to run towards Rabbit and at the same time rabbit also starts to run away from Jackal. In which minute Jackal will catch the Rabbit?
(a) Jackal could not catch the rat (b) In 4th min (c) In 5th min.
(d) In 6th min. (e) None of these

28. What is the ratio of the speed of Dog to Cheetah, if Cheetah covers 50% of more distance in one leap than lion and sum of leaps taken by Cat and Monkey in one minute is equal to the number of leaps taken by Cheetah in one minute?
(a) 2 : 5 (b) 5 : 8 (c) 11 : 13 (d) 8 : 33 (e) None of these

29. When a Cat climb up a tree its speed is reduced by 20% and when Monkey climb up a tree its speed is increased by 20%. Cat's speed on climbing up a tree is what percent of speed of Monkey when it climbs the tree. (Approximately)
(a) 30% (b) 40% (c) 50% (d) 10% (e) 15%

30. What is the sum of distance cover by all the 5 animals in 2 minutes if distance cover by Jackal in 1 minute is 10 meters?
(a) 80 m (b) 70.8 m (c) 68.3 m (d) 16 m (e) None of these

Directions (31-35): Study the following table carefully to answer the questions that are based on it.
A toymaker makes different types of toys by joining various solids as given in table below. Some values are missing, you have to calculate these values if required to answer the question.

Dimensions→ Type of solids ↓	Diameter (in cm)	Length (in cm)	Breadth (in cm)	Height (in cm)
Cylinder	–	–	–	12
Cube	–	–	–	–
Cuboid	–	24	–	10
Cone	14	–	–	–
Sphere	21	–	–	–
Hemisphere	–	–	–	–

31. The toymaker makes a toy in which the cone is mounted on the base of the hemisphere. If the total surface area of the toy is 858 cm^2, then find the volume of the toy? (bases of hemisphere and cone are equal)
(a) $1950\frac{2}{3}$ cm^3 (b) $1250\frac{2}{3}$ cm^3 (c) 1400 cm^3 (d) 1500 cm^3 (e) $1950\frac{1}{3}$ cm^3

32. Toymaker mounted the cube on the cylinder such that cylinder top is exactly in the middle of the face of the cube and all sides of bottom face of the cube touch the circumference of top face of the cylinder. Find the total surface of the toy formed, if the height of formed toy is twice the height of cylinder and curved surface area of cylinder is 66 times the height of cylinder
(a) 3125 cm^2 (b) 2794.5 cm^2 (c) 4112 cm^2 (d) 5123 cm^2 (e) 1656 cm^2

33. If given sphere is cut into two hemisphere and these hemispheres are mounted on both ends of the cylinder, then find out the ratio of volumes of toy formed by joining both hemispheres on cylinder, cylinder and sphere. (radius of sphere and cylinder is equal)
(a) 7 : 6 : 13 (b) 6 : 13 : 7 (c) 13 : 6 : 7 (d) 13 : 7 : 6 (e) 13 : 8 : 7

34. Volume of the cuboid is approximately what percent more or less than the volume of cone if slant height of cone is 25 cm and the breadth of the cuboid is 25% of the height of cone.
(a) 7% (b) 11% (c) 14% (d) 17% (e) 21%

35. Find the cost of painting a toy at the rate of Rs. 25 per cm^2, if the toy is formed by joining the cone and the hemisphere on two ends of cylinder. (Given that radius of all three bodies are equal and height of cone is 24 cm)
(a) Rs. 38650 (b) Rs. 34650 (c) Rs. 34560 (d) Rs. 36560 (e) Rs. 32550

Directions (36-40): Study the given graph carefully to answer the questions that follow:
Table below shows different items sold by shopkeeper, Quantity of items sold in k.g., discount offered on list price, percentage mark up price/kg and list price /kg.
Some value are missing. You need to calculate these values if required.

Items	Quantity	Discount offered %	Markup % per kg	List price per kg
Tea	12	–	$16\frac{2}{3}\%$	–
Coffee	–	20%	–	–
Wheat	70	–	–	42
Rice	80	–	$33\frac{1}{3}\%$	–
Honey	–	$26\frac{2}{3}\%$	–	1500

36. List price per kg of wheat is what percent less than the list price per kg of tea if selling price of 2.5 kg of tea is 900 Rs. and discount offered on list price is $\frac{400}{49}\%$.
(a) 80% (b) 83% (c) 93% (d) 90% (e) 85%

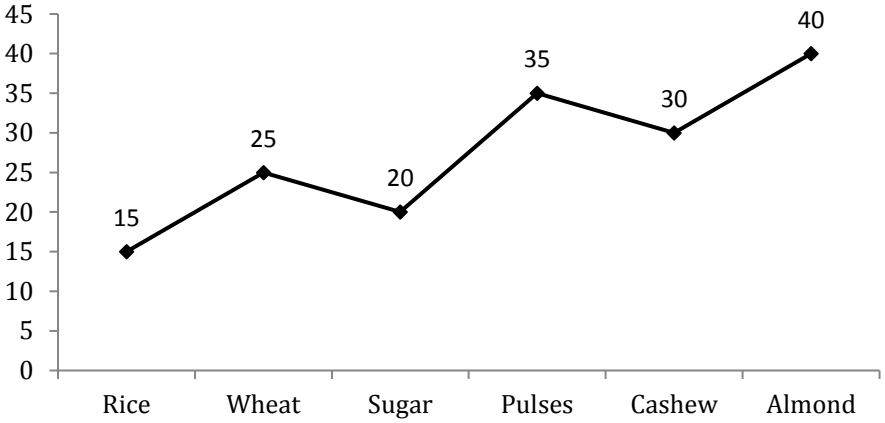
37. What is the ratio of percentage discount offered on wheat to the percentage discount offered on Rice if shopkeeper gains 1330 Rs. on selling whole quantity of wheat and % markup price of wheat is 110% and percentage of discount offered on rice is half the percentage discount offered on Honey.
(a) 15 : 28 (b) 18 : 23 (c) 24 : 29 (d) 23 : 21 (e) None of these

38. What is the average of all quantities (in kg) sold by the shopkeeper if total profit in selling Honey is Rs.1800 and ratio of difference between List price and selling price to the difference between selling price and cost price of Honey is 4 : 3 and quantity of coffee sold is $33\frac{1}{3}\%$ less than quantity of tea sold.
(a) 35.2 (b) 36.4 (c) 28.2 (d) 32.2 (e) 30.5

39. 8 kg of rice got spoiled then what is the total profit or loss made by the shopkeeper in selling remaining quantity of rice if a discount of $16\frac{2}{3}\%$ is given and list price per kg of rice is 60 Rs.
(a) 15% (b) 20% (c) 18% (d) No profit or No loss (e) None of these

40. What is the ratio of cost price per kg of Tea to the cost price per kg of coffee if profit of 12% is obtained on selling Coffee and List price per kg of both items is same.
(a) 6 : 5 (b) 4 : 5 (c) 3 : 2 (d) 2 : 3 (e) 7 : 4

Directions (41-45): Study the graph and table given below and answer the following questions. The line graph shows the listed price per kg of various items in a wholesale store.



The table given below shows the amount of items bought by a retailer from the wholesale store. The table also shows the discount % offered by the wholesaler on the list price and total cost incurred by the retailer.

Items	Quantity (in kgs)	Discount (in %)	Total (in Rs.)
Rice	20	10	-
Wheat	30	-	675
Sugar	15	-	240
Pulses	18	30	-
Cashew	40	-	900
Almond	25	15	-

41. Calculate the profit earned by retailer on selling 20 kgs of wheat purchased by him to a customer at a discount of 5% on the listed price ?
(a) Rs. 25 (b) Rs. 45 (c) Rs. 75 (d) Rs. 50 (e) None of these

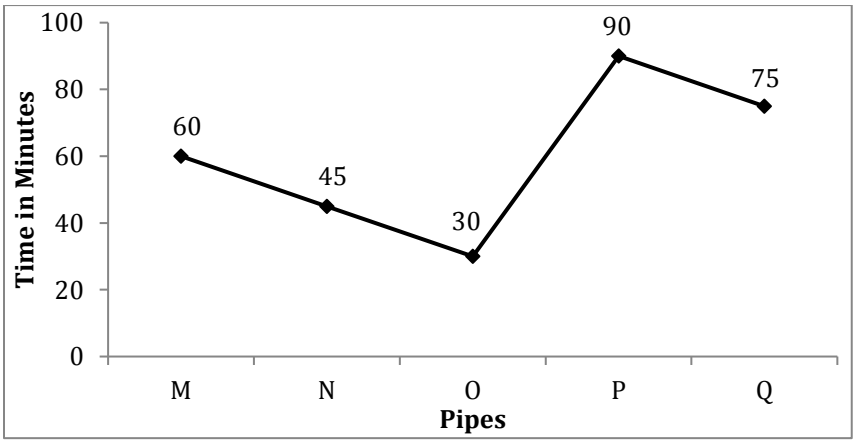
42. The retailer sold all the cashew bought by him to a customer at a price 25% more than the listed price. Calculate his overall profit percent.
(a) 33.33% (b) 66.66% (c) 55.55% (d) 42.64% (e) 77.77%

43. If 50% of the rice bought by the retailer got spoiled, then at what price/kg must he sell the remaining amount of rice to be at a situation of no loss-no gain ?
(a) Rs. 40 (b) Rs. 19 (c) Rs. 27 (d) Rs. 22 (e) None of these

44. The retailer sold all the pulses he bought at a price that is 30% more than the listed price and offered 2 kgs of Almond free with it. Find overall profit% of the retailer in this bargain ? (approximate)
(a) 50% (b) 40% (c) 35% (d) 61% (e) 45%

45. The retailer mixed 6 kgs. of impurity (free of cost) with all the sugar he had and sold the mixture at a discount which is 25% less than that discount (in percentage) offered by the wholesaler. Find the profit % on the sale of all of the amount of this mixture?
(a) 52.50% (b) 46.15% (c) 48.75% (d) 57.50% (e) None of these

Directions (46-50): Given below is the line graph which shows the time taken by five pipes M, N, O, P and Q to fill a tank individually in minutes. Table shows the pipes which remain open to fill the same tank on different days of week



Days	Pipe which remain on different days.
Mon	M, P
Tue	N, O, P
Wed	O, M
Thrus	N, O, P
Frid	M, Q

46. If on Monday pipe M works with a efficiency of 120 % and both pipe M and P on Monday remained open for 7 minutes but alternatively on each minute starting with M. Remaining part of the tank is filled on next day. What is the total time for which pipe P remained open on both days if next day all pipes filled the tank together?
(a) 12 min 15 sec (b) 16 min 18 sec (c) 18 min 15 sec (d) 17 min 12 sec (e) 20 min 10 sec

47. On Wednesday tank is filled by both pipes working simultaneously but on Thursday all pipes work alternatively on each minute starting from pipe N then O and then P. Find the difference in time taken to fill the tank on Wednesday and the time taken be fill tank on Thursday.
(a) 5 min (b) 18 min (c) 15 min (d) 20 min (e) 25 min

48. If on Friday 36 litre of water per minute is filled by both the pipes then, amount of water filled by pipe P on Monday is what percent of amount of water filled by pipe Q on Friday.
(a) 80% (b) 95% (c) 90% (d) 80% (e) 75%

49. On Friday M worked with 120% of its efficiency and Q with 75% of its efficiency and they together can fill 162 litre of water in 12 min. On Monday if both the pipes (M and P) are working with a different efficiency then both pipes working together can fill $\frac{7}{30}$ part of the tank in 8 min and if M is opened for 8 min and P is opened for 15 min then they can fill 157.5 litre of water. Find the ratio of time taken by M alone and time taken by P alone to fill tank according to new efficiency on Monday.
(a) 2 : 3 (b) 4 : 3 (c) 3 : 4 (d) 5 : 3 (e) 3 : 5

50. If rate of flow of pipe N is 18 litre/min, and cost incurred in filling 1 litre of water in the tank by pipe N, O and P is 12 Rs./L, 15 Rs./L and 10 Rs./L respectively, then find the total cost incurred in filling the tank on Tuesday if all the pipes filled the tank simultaneously.
(a) 10,665 Rs. (b) 11,552 Rs. (c) 12,666 Rs. (d) 9,848 Rs. (e) 8,440 Rs.

PRACTICE SET (LEVEL-II) SOLUTIONS

1. (c); Let A and B can do 3x and 2x unit of work 1 in one hour respectively.
So, total work 1 done by both = (3x + 2x)4 = 20x
A alone will complete work 1 $= \frac{20x}{3x} = \frac{20}{3}$ hours
B alone will complete work 1 $= \frac{20x}{2x} = 10$ hours
Ratio of efficiency of A and C = 5 : 3
Ratio of time taken by A and C = 3 : 5
C alone will complete work 1 $= \frac{20}{3\times3} \times 5$ hours
$= \frac{100}{9}$ hours
Let total time taken in completing work 1 is y
So,
$\frac{2}{\frac{20}{3}} + \frac{(y-2)}{10} + \frac{(y-2)}{\frac{100}{9}} = 1$
$\frac{(y-2)}{10} + \frac{9(y-2)}{100} = \frac{7}{10}$
$10y - 20 + 9y - 18 = 70$
$y = \frac{108}{19}$ hours

2. (b); Part of work 2 done by B on Wednesday in 7 hours $= \frac{1}{2}$
This part of work done by 4 women in 5 hours.
So whole work will be completed by 4 women in = 10 hours
One women will complete it in = 40 hours
3 children will complete it in $= \frac{40\times5}{3\times3} = \frac{200}{9}$ hours

3. (b); Ratio of efficiency A and B on Tuesday = 3 : 2
Let A and B does 3x and 2x work in one hour
And B completes work 2 in 9 hours
So, total work = 9 × 2x = 18x
A will complete work 2 in $\frac{18x}{3x}$ = 6 hours
So, m = 6
Similarly
$n = \frac{10\times4x}{5x} = 8$
Total x and y will complete the work in
$= \frac{(8-6)(8+6)}{(8-6)+(8+6)} = \frac{28}{16} = \frac{7}{4}$ hours

4. (b); Let A and B can do 3x and 2x work in one hour on Monday
Then 80% of total work 1 = $\frac{4}{5}(3x + 2x) \times 3 = 12x$
In 4 hours 10x work 1 is completed working alternatively and remaining 2x is complete by A on 5th hour
So total time = $\left(4 + \frac{2x}{3x}\right)$ hours= $\frac{14}{3}$ hours
Ratio of efficiency on Friday is 5 : 4
Ratio of time taken to complete work will be 4 : 5
But B completes work 2 in 10 hours on Friday
So, A will complete work 2 in 8 hours on Friday
∴ Together they will complete work 2 in $= \frac{8\times10}{18}$
$= \frac{40}{9}$ hours
Required percentage $= \frac{\left(\frac{14}{3}-\frac{40}{9}\right)}{\frac{40}{9}} \times 100$
$= \frac{\frac{42-40}{9}}{\frac{40}{9}} \times 100 = \frac{2}{40} \times 100 = 5\%$

5. (a); Let C complete work 2 in x hours
According to question.
$\frac{2}{10} + \frac{2}{x} = \frac{4}{5}$
$\frac{2}{x} = \frac{4}{5} - \frac{1}{5}$
$\frac{2}{x} = \frac{3}{5}$
$x = \frac{10}{3}$
Time taken by B to finish work 1 on Friday
$= \frac{(5+4)8}{4} = 18$ hours
Required percentage $= \frac{10}{3\times18} \times 100 = \frac{500}{27}\%$

6. (a); Since, there are bats of six companies & balls of five companies,
Hence, possible no. of pairs = 6 × 5 = 30
No. of favourable pairs = 5
Req. probability $= \frac{5}{30} = \frac{1}{6}$

7. (b); Possible ways are :

MRF	BDM	SS
1	4	1

Hence no. of ways $= 10c_1 \times 10c_1 \times 6c_4 = 1500$

8. (c); Possible ways :
(i) First two Gun & Moore, last one diff.
(ii) First & third G & M, second one diff.
(iii) First diff., Last two G & M
Req. probability $= 3 \times \frac{10\times9\times90}{100\times99\times98} = \frac{27}{1078}$

9. (b); Since out of 8 + 10 = 18 balls, 4 + 6 = 10 are defective.
Hence, req. probability $= \frac{^{10}C_3}{^{18}C_3} = \frac{120}{816} = \frac{5}{34}$

10. (b); No. of ways of choosing 3 balls of Kookabura and 3 bats of SS = $^{12}C_3 \times {}^{18}C_3$
No. of ways of arranging them = 2 × 3! × 3! = 72
Therefore, req. answer = 72 × $^{12}C_3 \times {}^{18}C_3$

11. (b); Difference between second year's interests
$= 12000\left(1 + 7\frac{1}{2}\%\right)\left(6\frac{1}{4}\%\right) - 12000\left(5\frac{4}{5}\%\right)$
$= 12000\left(\frac{43}{40}\right)\left(\frac{1}{16}\right) - 12000\left(\frac{29}{5}\%\right)$
= 806.25 – 696 = Rs.110.25

12. (c); Loan of Rs.20480 is settled by paying Rs.27778 after five years. Simple interest is applicable for first three years while compound interest is applicable for next two years.
$27778 = 20480\left(1 + \left(8\frac{3}{4}\% + 5\frac{1}{4}\% + 4\frac{3}{4}\%\right)\right)\left(1 + 7\frac{1}{2}\%\right)\left(1 + \frac{x}{100}\right)$
$27778 = 20480\left(1 + \left(18\frac{3}{4}\%\right)\right)\left(1 + 7\frac{1}{2}\%\right)\left(1 + \frac{x}{100}\right)$
$27778 = 20480\left(\frac{19}{16}\right)\left(\frac{43}{40}\right)\left(1 + \frac{x}{100}\right)$
$x = 6\frac{1}{4}\%$

13. (d); Let the amounts borrowed under plan B and C be 16x and 13x respectively.

∴ Ratio of interests

$= 16x \times \left(\left(1 + 7\frac{1}{2}\%\right)\left(1 + 6\frac{1}{4}\%\right) - 1\right) : 13x \times \left(8\frac{3}{4}\% + 5\frac{1}{4}\%\right)$

$= 16x \times \left(\left(\frac{43}{40}\right)\left(\frac{17}{16}\right) - 1\right) : 13x \times \left(\frac{14}{100}\right)$

$= 16x \times \frac{91}{640} : 13x \times \frac{14}{100} = 5 : 4$

14. (c); Effective rate of interests for three years:

For old plan C = $8\frac{3}{4}\% + 5\frac{1}{4}\% + 4\frac{3}{4}\% = 18\frac{3}{4}\%$

For new plan C = $3 \times 6\frac{2}{3}\% = 20\%$

% Increase in interest = % Increase in effective interest rate for three years

$= \frac{\left(20 - 18\frac{3}{4}\right)}{18\frac{3}{4}} \times 100 = 6\frac{2}{3}\%$

15. (a); Let the amount borrowed under plan A be Rs.x

Effective rate of interests for three years:

For plan A = $8\frac{2}{3}\% + 6\frac{2}{3}\% + 3\frac{2}{3}\% = 19\%$

For plan E = $7\frac{3}{5}\% + 5\frac{4}{5}\% + 4\frac{3}{5}\% = 18\%$

Total interest = 19% of x + 18% of (30000 – x)

$\Rightarrow$ 5540 = 18% of 30000 + 1% of x

$\Rightarrow$ x = Rs.14000

16. (b); Let cost price of product D and E in January be 500 and 600 respectively

Acc. to question,

$\frac{25}{100} \times 500$ + Profit of E = 150% of Profit of E

$\Rightarrow$ 50% of Profit of E = 125

$\Rightarrow$ Profit of E = 250

Required percentage profit $= \frac{250}{850} \times 100 = \frac{500}{17}\%$

17. (e); Let the cost price of A in January and D in February be Rs.x.

Let profit of all products in January be P_A, P_B, P_C, P_D and P_E

And, profit of all products in February be Q_A, Q_B, Q_C, Q_D and Q_E

According to question,

Average of P_B, P_C, P_D and P_E = Average of Q_A, Q_B, Q_C and Q_E

$\therefore P_B + P_C + P_D + P_E = Q_A + Q_B + Q_C + Q_E$

And,

Total profits in January − Total profits in February = 4900

$(P_A + P_B + P_C + P_D + P_E) - (Q_A + Q_B + Q_C + Q_D + Q_E) = 4900$

$\because P_B + P_C + P_D + P_E = Q_A + Q_B + Q_C + Q_E$

$\Rightarrow P_A - Q_D = 4900$

$\frac{15}{100}x - \frac{8}{100}x = 4900$

$\frac{7x}{100} = 4900$

x = 70,000

Profit of A in January = 15 × 700 = Rs.10500

18. (d); Let cost price of A in January and B in May be 100x

So, selling price of A in January = 115x

And, selling price of B in May = 130x

Marked price – Discount = selling price

$MP_1 - 2n\%$ of $MP_1 = 115x$

$MP_1 = \frac{115x}{(100-2n)\%}$

Similarly

$MP_2 = \frac{130x}{(100-25-n)\%}$

$\frac{MP_1}{MP_2} = \frac{\frac{115x}{(100-2n)\%}}{\frac{130x}{(100-25-n)\%}}$

Or

$\frac{\frac{115x}{(100-2n)\%}}{\frac{130x}{(75-n)\%}} = \frac{23}{26} \Rightarrow \frac{(75-n)\%}{(100-2n)\%} = \frac{1}{1}$

n = 25

19. (a); Let cost price per kg for shopkeeper is Rs.100

Total cost price = 10 × 100 = Rs.1000

Profit per kg on selling at 24% profit = Rs.24

Selling price per kg = Rs.124

Total selling price = 124 × 8 + 62 × 2 = Rs.1116

Overall profit % $= \frac{1116-1000}{1000} \times 100 = 11.6\%$

20. (b); Let cost price of D in April and May be 100x

And, cost price of E in April and May be 100y

According to question

$110x + 125y = 650 \times 2 = 1300$ ... (i)

$120x + 110y = 630 \times 2 = 1260$ ... (ii)

On solving equations

$x = 5 \Rightarrow y = 6$

So, cost price of E in May = 100y

= 100 × 6 = Rs.600

21. (a); Let total quantity of milk = 200x L

And total quantity of water = 100x L

Total milk in A and B = (20% + 15%) 200x

= 35 × 2x = 70x L

Total water in A and B = 35 × x

Total water in F $= 35x + \frac{25}{100} \times \frac{25}{100} \times 100x$

= 35x + 6.25x = 41.25x L

Let cost price of milk per liter be Rs.10

So, cost price of (70x + 41.25x) L of mixture

= 70x × 10 = Rs.700x

Selling price of (70x + 41.25x) L of mixture

= 111.25x × 10 = Rs.1112.5x

% profit $= \frac{1112.5x-700x}{700x} \times 100 = \frac{412.5}{7} = \frac{825}{14} = 58\frac{13}{14}\%$

Or we can say that profit in due the quantity of water in the mixture.

So we can directly write % profit $= \frac{41.25x}{70x} \times 100$

$= 58\frac{13}{14}\%$

22. (c); Milk in vessel A and C = $\frac{50}{100} \times 2x = x$

Water in vessel A and C = $\frac{55}{100} \times x = 0.55x$

Ratio of milk and water in M = x : 0.55x = 20 : 11

According to question,

$\Rightarrow \frac{x-\frac{20}{31}\times 62}{55x-\frac{11}{31}\times 62+17} = \frac{6}{5} \Rightarrow \frac{x-40}{55x-5} = \frac{6}{5}$

$\Rightarrow 5x - 200 = 3.30x - 30 \implies x = 100$

Quantity of milk in vessel B = $\frac{20}{100} \times 2 \times 100 = 40$ L

23. (b); Let total milk in all 5 vessel = 200x

And total water in all 5 vessel = 100x

So,

Total milk in all vessel except C = $\frac{65}{100} \times 200x = 130x$

Total water in all vessel except C = $\frac{55}{100} \times 100x = 55x$

And

Ratio of milk and water in vessel C = 35 × 2x : 45x

= 70x : 45x = 14 : 9

According to question,

$\frac{130x+\frac{14}{23}\times 115}{55x+\frac{9}{23}\times 115} = \frac{9}{4}$

$\frac{130x+70}{55x+45} = \frac{9}{4}$

520x + 280 = 495x + 405

$25x = 125 \implies x = 5$

Total quantity of water in all five vessel = 100x

= 500 L

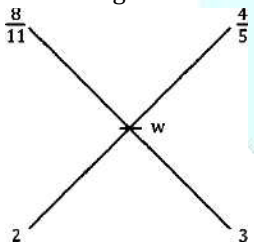
24. (e); Ratio of milk to water in vessel D

$= \frac{10}{100} \times 2x : \frac{5}{100} \times x = 4 : 1$

Ratio of milk to water in vessel E = $\frac{20}{100} \times 2x : \frac{15}{100} \times x$

= 8 : 3

From allegation



$\frac{2}{3} = \frac{\frac{4}{5}-w}{w-\frac{8}{11}}$

$2w - \frac{16}{11} = \frac{12}{5} - 3w$

$5w = \frac{12}{5} + \frac{16}{11}$

$5w = \frac{132+80}{5\times 11}$

$w = \frac{212}{275}$

Required ratio = $\frac{212}{63}$

25. (d); Quantity of milk and water in vessel C

$= \frac{35}{100} \times 2x + \frac{45}{100} \times x$

= 0.7x + 0.45x = 1.15x

$1.15x = 115 \Rightarrow x = 100$

Milk and water in B = $\frac{20}{100} \times 200 + \frac{25}{100} \times 100$

= 40 + 25 = 65

Milk and water in E = $\frac{20}{100} \times 200 + \frac{15}{100} \times 100$

= 40 + 15 = 55

Required % = $\frac{65-55}{55} \times 100 = \frac{10}{55} \times 100 = 18\frac{2}{11}\%$

26. (b); Ratio of distance covered by cat, lion and dog in one leap will be

Cat	:	Lion	:	Dog
2	:	5		
		7	:	4
14	:	35	:	20

Let they cover 14x, 35x and 20x distance in one leap

So, in one min dog covers = 20x × 7 = 140x distance

This distance is equal to distance between dog and cat

In one min cat covers = 14x × 5= 70x distance

Required time = $\frac{\text{Distance between cat and dog}}{\text{Relative speed between dog and cat}}$

$= \frac{140x}{140x-70x} = 2$ min.

Another method:

According to dog, cat was 1 minute away from him.

Now, cat complete 5 leaps in 1 minute

distance $\begin{cases} 5 \text{ leaps of cat} = 2 \text{ leaps of lion} \\ 10 \text{ leaps of cat} = 4 \text{leaps of lion} \end{cases}$

⇒ this takes 2 minute of cat.

Now, dog's 7 leap = 4 leaps of lion

7 leaps of dog = 10 leaps of cat

And, dog take 1 minute to cover 4 leaps of lion but in the same time cat moves away 2 leaps of lion. In 1 more min

Dog cover 4 leaps of lion and again cat moves away 2 leaps of lion. So finally dog will catch cat in 2 mins

Total time to catch the cat = 1 + 1 minute = 2 minute.

27. (b); According to Jackal

Jackal is 2 min away from Rat.

Distance ⇒ 2 min → 8 leaps of Jackal → 5 leaps of lion

4 leaps of Jackal ⇒ $\frac{5}{2}$ = 2.5 leaps of lion

In 1 min → 6 leaps of Rabbit ⇒ $\frac{1}{5}$ × 6 leaps of lion

→ $\frac{6}{5}$ leaps of lion = 1.2 leaps

Resultant velocity = 2.5 – 1.2 = 1.3 leaps of lion.

→ time = $\frac{5}{1.3}$ = 3.84 min

In 4th min.

28. (d); Speed of dog

Dog ⇒ 7 leap in 1 min.

7 leap distance of dog = 4 leap of lion.

Speed = Distance of 4 leap of lion/min

Cheetah.

No. of leaps in 1 min. = (no. of leaps of cat + no. of leap of monkey) in 1 min

= (5 + 6) → 11 leap in 1 min

Distance

2 leaps of Cheetah = 3 leaps of lion.

1 leaps of cheetah = 3/2 leaps of lion

In 11 leap of cheetah = 33/2 leaps of lion

Ratio

Speed of Dog : Speed of cheetah

$= 4 : \frac{33}{2}$

$= 8 : 33$

29. (a); Cat →

Cat takes 5 leaps – 1 minute

5 leaps of cat = 2 leaps of lion

Cat's speed = Distance covered in 2 leaps of Lion/min

Reduced speed when climbing

$= 2 \text{ leaps of lion/m} \times \frac{80}{100}$

$= \frac{8}{5}$ leaps of lion/m

Monkey →

Monkey take = 6 leaps – 1 min.

4 leaps of monkey = 3 leaps of lion

6 leaps of money = 4.5 leaps of lion

Speed → distance cover in 4.5 leaps of lion/min

Increased speed when climbing

$= \frac{4.5\times20}{500}$ leaps of lion/m

= 5.4 leaps of lion/m

Required % $= \frac{8\times100}{5\times5.4}\% = 29.629\% \approx 30\%$

30. (b); Jackal – 1 minute distance = 10 meter

Jackal 8 leaps = 10 meter

Lions 5 leaps = 10 meter

1 leap of lion = 2 meter

Jackal 2 min distance = 10 × 2 = 20 meter

Cat's 2 min distance = (5 × 2) = (3 × 2) of Lion's leap

= 6 × 2 = 12 meter

Monkey 2 min distance = 6 × 2 = 12 leaps

= leaps of lion = 18 meter

Dog's 2 min distance = 14 leaps = 8 leaps of lion = 16 meter.

Rabbit 2 min distance = 12 leaps = 2.4 leaps of lion = 4.8 meter

Sum = (20 + 12 + 18 + 16 + 4.8) m = 70.8 m

31. (a); Total surface area of the toy = C.S.A of cone + C.S.A of Hemisphere

Let, slant height of cone be l cm

$\therefore \pi r\ell + 2\pi r^2 = 858 \text{ cm}^2$

$\pi r(\ell + 2r) = 858 \text{ cm}^2$

ℓ =25 cm

height of cone $= \sqrt{l^2 - r^2} = \sqrt{25^2 - 7^2} = 24\text{cm}$

volume of the toy

$= \frac{1}{3}\pi r^2 h + \frac{2}{3}\pi r^3 = \frac{1}{3}\pi r^2(h + 2r) = 1950\frac{2}{3} \text{ cm}^3$

32. (e); Height of cylinder = 12 cm

Height of toy is double the height of cylinder = 24 cm

Edges of cube = 24 – 12 = 12 cm

C.S.A of cylinder = 2πrh = 66 × h

r = 10.5 cm

Total surface area of toy = $(6a^2 - \pi r^2) + 2\pi rh + \pi r^2$

($-\pi r^2$, area subtracted due to aligment)

$= 6 \times 12 \times 12 + 2 \times \frac{22}{7} \times 12 \times 10.5 = 1656 \text{ cm}^2$

33. (c); Sphere radius $= \frac{21}{2}$

So, cylinder radius$= \frac{21}{2}$

height of cylinder = 12

required ratio $= \frac{4}{3}\pi r^3 + \pi r^2 h : \pi r^2 h : \frac{4}{3}\pi r^3$

$\frac{4}{3}r + h : h : \frac{4}{3}r$

13 : 6 : 7

34. (d); Height of cone $= \sqrt{25^2 - 7^2} = 24$ cm

Volume of cone $= \frac{1}{3}\pi r^2 h$

$= \frac{1}{3} \times \frac{22}{7} \times 7 \times 7 \times 24 = 1232 \text{ cm}^3$

Volume of cuboid = 24 × 10 × 25% of 24 = 1440 cm^3

Difference = 1440 – 1232 = 208 cm^3

Required % $= \frac{208}{1232} \times 100 = 16.88\% \approx 17\%$

35. (b); Slant height of cone $= \sqrt{h^2 + r^2} = \sqrt{24^2 + 7^2} = 25\text{cm}$

$\therefore$ Total surface area of toy $= 2\pi r^2 + 2\pi rh + \pi rl$

$= \frac{22}{7} \times 7(2 \times 7 + 2 \times 12 + 25) = 1386 \text{ cm}^2$

So, required cost of painting = 1386 × 25

= Rs. 34650

36. (d); Selling price per kg of Tea $= \frac{900}{2.5}$ = 360 Rs.

Let cost price per kg of Tea is x

Selling price of Tea per kg $= \left(1 - \frac{4}{49}\right) \times \frac{7}{6}x = 360$

$x = 336$

List price of Tea $= \frac{7}{6}x = \frac{7}{6} \times 336 = 392$

Required % $= \frac{392-42}{392} \times 100 = \frac{350}{392} \times 100 \approx 90\%$

37. (a); Profit per kg on wheat $= \frac{1330}{70} = 19$ Rs.

Cost price of Wheat $= \frac{42\times100}{210} = 20$ Rs. per kg

% discount offered on Wheat $= \frac{3}{42} \times 100 = \frac{50}{7}\%$

% discount offered on Rice $= \frac{80}{6}\%$

Required ratio $= \frac{50}{7} \times \frac{6}{80} = 15 : 28$

38. (a); List price of Honey = 1500

Selling price of Honey $= \left(100 - \frac{80}{3}\right)\%$ 1500

=Rs. 1100 per kg

Given

(List price – selling) : (selling price – cost price)

$\frac{(1500-1100)}{(1100-x)} = \frac{4}{3}$

$1200 = 4400 - 4x$

$4x = 3200$

$x = 800$ (cost price)

So profit per kg = 300

Total quantity $= \frac{1800}{300} = 6$ kg

Quantity of coffee = 8 kg

Required average $= \frac{12+8+70+80+6}{5} = \frac{176}{5} = 35.2$ kg

39. (d); Selling price of 1 kg of rice $= \left(100\% - \frac{100}{6}\%\right) 60$

$= \frac{5}{6} \times 60 = 50$ Rs.

Cost price of 1 kg of rice $= \frac{(3\times60)}{4} = 45$ Rs.

Loss = 8 × 45 = 360 Rs.

Profit = 72 × 5 = 360

So overall no profit no loss

40. (a); Let cost price per kg of tea = CP_1
And cost price per kg of coffee = CP_2
And List price of both = x
So, $\frac{7}{6}CP_1 = x$ ... (i)
And
$\frac{112}{100}CP_2 = \frac{80}{100}x$
$7CP_2 = \frac{80}{100}x$
$7CP_2 = \frac{80}{100}x$
$x = \frac{7CP_2}{5}$ ... (ii)
From (i) and (ii)
$\frac{7}{6}CP_1 = \frac{7CP_2}{5}$
Required ratio $\frac{CP_1}{CP_2} = \frac{6}{5}$

41. (a); Cost price of 20 kg of wheat for retailer
$= 20 \times 25 \times \frac{90}{100} =$ Rs. 450
Price at which he sold this amount of wheat to customer $= 20 \times 25 \times \frac{95}{100} =$ Rs. 475
Profit = 475 – 450 = 25

42. (b); Cost price of cashew for retailer = Rs. 900
Price at which he sold all the cashew $= 40 \times 30 \times \frac{125}{100}$
= Rs. 1500
Profit % $= \frac{1500-900}{900} \times 100 = 66.66\%$

43. (c); Cost price of Rice for Retailer $= 20 \times 15 \times \frac{90}{100}$
= Rs. 270
To be in a situation of no loss –no gain, he must sell remaining 50% at Rs. 270.
Price per kg $= \frac{270}{10} =$ Rs. 27

44. (d); Cost price of pulses for the retailer $= 18 \times 35 \times \frac{70}{100}$
= Rs. 441
Cost price of 2 kgs of Almond $= 2 \times 40 \times \frac{85}{100} =$ Rs. 68
Total CP = 441 + 68 = Rs. 509
Total SP $= 18 \times 35 \times \frac{130}{100} =$ Rs. 819
Profit % $= \frac{819-509}{509} \times 100 = \frac{310}{509} \times 100 \approx 61\%$

45. (c); Cost price per kg of sugar $= \frac{240}{15} = 16$
Discount offered by wholesaler $= \frac{4}{20} \times 100 = 20\%$
Discount offered by retailer to customer
$= \frac{75}{100} \times 20\% = 15\%$
Selling price of mixture $= (6 + 15) \times 20 \times \frac{85}{100} = 357$
Profit %= $\frac{357-240}{240} \times 100 = \frac{117}{240} \times 100 = 48.75\%$

46. (b); With 120% efficiency pipe M alone will fill the tank in $= \frac{60}{6} \times 5 = 50$ min.
Part of tank filled in 7 minutes working alternatively
$= \frac{4}{50} + \frac{3}{90} = \frac{4}{50} + \frac{1}{30} = \frac{12+5}{150} = \frac{17}{150}$
Part of tank filled in 1 min on Tuesday $= \frac{1}{45} + \frac{1}{30} + \frac{1}{90}$
$= \frac{2+3+1}{90} = \frac{1}{15}$
So, remaining part of tank will be filled in
$= 15 \times \left(1 - \frac{17}{150}\right) = 15 \times \frac{133}{150} = \frac{133}{10}$ min
= 13 min 18 sec
Required time = (3 + 13) min 18 sec = 16 min 18 sec

47. (e); Time taken be fill tank on Wednesday $= \frac{30\times60}{90}$
$= 20$ min
Part of tank filled in 3 min on Thursday
$= \frac{1}{45} + \frac{1}{30} + \frac{1}{90} = \frac{2+3+1}{90} = \frac{1}{15}$ min
Total time to fill tank on Wednesday = 15 × 3 = 45 min.
Required difference = 45 – 20 = 25 min.

48. (c); Total time taken on Friday to fill the tank $= \frac{60\times75}{135}$
$= \frac{100}{3}$ min.
Total capacity of tank $= \frac{100}{3} \times 36 = 1200$ litre
Ratio of efficiency of pipe M and Q = 5 : 4
Amount of water filled on Friday by Q
$= \frac{4}{9} \times 1200 = \frac{4800}{9}$ Litre
Ratio of efficiency of pipe M to P = 3 : 2
Amount of water filled on Monday by pipe P
$= \frac{2}{5} \times 1200 = 480$ litre
Required percentage $= \frac{480}{\frac{4800}{9}} \times 100 = 90\%$

49. (b); Time taken to fill the tank by M alone with increased efficiency = 50 min.
Time taken to fill the tank by Q alone with decreased efficiency = 100 min.
Now,Together they can fill the tank in $= \frac{100\times50}{150}$
$= \frac{100}{3}$ min.
Capacity of tank $= \frac{162}{12} \times \frac{100}{3} = 450$ litre
Let M and P can fill tank alone with different efficiency in x min and y min respectively
So, $\frac{8}{x} + \frac{8}{y} = \frac{7}{30}$ ... (i)
and $\frac{8}{x} + \frac{15}{y} = \frac{7}{20}$ ... (ii)
Solving (i) and (ii)
$\frac{7}{y} = \frac{7}{20} - \frac{7}{30}$
$\frac{7}{y} = \frac{21-14}{60} \Rightarrow y = 60$ min
So, x = 80 min.
Required ratio = 4 : 3

50. (a); Rate of flow of pipe N = 18 ℓ/min.
Capacity of tank = 18 × 45 = 810 litre
Rate of flow of pipe O $= \frac{810}{30} = 27$ ℓ/min.
Rate of flow of pipe P $= \frac{810}{90} = 9$ ℓ/min.
Part of tank filled in one min $= \frac{1}{45} + \frac{1}{30} + \frac{1}{90} = \frac{1}{15}$
Time taken to fill tank by all = 15 min
Total cost incurred in filling tank
= 15×18×12 + 15×27×15 + 15×9×10
= 15 (216 + 405 + 90) = 10665 Rs.

Chapter 8

Caselet

Caselets are the most suitable way to represent raw information. In caselets, the information is not organized properly and is given in the form of paragraphs or multiple sentences which provide the details of facts and figures including their inter-relationships. It tests the understanding and analytical skills of a student to interpret the raw information and his/her ability to convert the information provided into a useful data representation format. The information can be converted into other formats like table or Venn-Diagram to solve the questions.

This chapter contains:

- Solved Examples
- Previous Year Questions
- Practice Set Level I
- Practice Set Level II

SOLVED EXAMPLES

Directions (1-5): The following information is about the production of bikes by 3 different companies from Monday to Friday in a specific week. Read the information carefully and answer the following question.

The total production by 3 companies on Monday was 540 out of which $33\frac{1}{3}\%$ bikes were produced by Hero. The number of bikes produced by Bajaj on Monday are less than the bikes produced by Hero on Monday by the same extent as the number of bikes produced by Honda on Monday is more than the bikes produced by Hero on Monday. The difference between bikes produced by Bajaj and Honda on Monday is 40.

150 bikes are produced by Hero on Tuesday, which is 100 less than the bikes produced by the same company on Wednesday. A total of 910 bikes were produced by Hero from Monday to Friday. The ratio between bikes produced by Hero on Thursday to bikes produced by the same company on Friday is 5 : 6.

220 bikes were produced by Bajaj on Tuesday, which is 80 less than the bikes produced by Honda on Wednesday. A total of 570 bikes were produced on Tuesday, which is 76% of the total bikes produced on Wednesday. The number of bikes produced by Honda on Thursday is $66\frac{2}{3}\%$ more than bikes produced by Hero on the same day. Total 580 bikes were produced on Thursday. The number of bikes produced by Honda on Friday is same as that on Monday. 140 bikes were produced by Bajaj on Friday.

1. Find the ratio between total bikes produced on Monday to that on Wednesday.
(a) 18 : 29 (b) 18 : 25 (c) 18 : 31 (d) 3 : 5 (e) None of these

2. Find the total number of bikes produced by Bajaj from Monday to Friday.
(a) 900 (b) 980 (c) 950 (d) 960 (e) None of these

3. Find the average number of bikes produced per day by Honda from Monday to Friday.
(a) 250 (b) 220 (c) 270 (d) 240 (e) 230

4. On which pair of days out of the following, the number of bikes produced by Hero is the same ?
(a) Tuesday and Wednesday (b) Wednesday and Thursday (c) Tuesday and Thursday
(d) Monday and Wednesday (e) Monday and Tuesday

5. On which day the total number of bikes produced was the maximum ?
(a) Monday (b) Tuesday (c) Wednesday (d) Thursday (e) Friday

Solution (1-5): Bike produce in Monday → 540

$Hero\ bikes \rightarrow 540 \times \frac{1}{3} = 180$

Let Honda produce x bike and Bajaj y, (on Monday)

ATQ,

$x + y = 360 \Rightarrow x - y = 40$ solving

$x = 200,\ y = 160$

On Tuesday Hero produced = 150 bikes

On Wednesday hero produced = 250 bikes

Bike produced by Hero from Monday to Friday = 910

Bike produce by Hero on Thursday.

$\frac{910 - 250 - 150 - 180}{11} \times 5 = 150$

Bike produced on Friday by Hero = 180

On Tuesday Bajaj Produced = 220

On Tuesday Total Bike produced = 570

Honda on Tuesday = 570 – 220 – 150 = 200

$On\ Wednesday\ total\ Production = \frac{570}{76} \times 100 = 750$

$On\ Thursday\ Honda\ produced = 150 \times \frac{5}{3} = 250$

On Thursday Bajaj produced = 580 – 250 – 150 = 180

On Wednesday Honda produced = 300

On Wednesday Bajaj produced = 200

	Monday	Tuesday	Wednesday	Thursday	Friday
Hero	180	150	250	150	180
Bajaj	160	220	200	180	140
Honda	200	200	300	250	200
	540	570	750	580	520

1. (b); $\frac{540}{750} = 18 : 25$

2. (a); Total number of bikes produced by Bajaj from Monday to Friday = 900

3. (e); Required average $= \frac{1150}{5} = 230$

4. (c); No. of bikes produced on Tuesday and Thursday is same i.e. 150

5. (c); Maximum number of bikes produced = 750, on wednesday.

Directions (6-10): Given below is the information regarding to the result of 3 students Animesh, Sushant, Kundan in internal exams of class 10th. Read it carefully and answer the following questions: –

There are total 5 subjects i.e. Subject A, Subject B, Subject C, Subject D, and Subject E. Subject A and Subject B both carries equal maximum marks i.e. 35. Subject C carries maximum marks which is '5 Marks' more than Subject A and '10 Marks' more than Subject D. Total of maximum marks of the 5 subjects is 160. Kundan scored 60% in Subject A, while Sushant scored $48\frac{4}{7}$%in the same subject. Animesh scored only 13.5 marks in Subject A. Animesh scored 24 marks in Subject B which is 60% more than the marks scored by Sushant in the same subject. The total of the marks of 3 students in Subject B is 58, Kundan scored 15.5 marks in Subject C, while Sushant scored 35% in the same subject and Animesh scored highest in Subject C with 29 marks. Animesh scored 40% in Subject D which is $33\frac{1}{3}$% less than the marks of Sushant in the same subject. Score of Kundan in Subject D is 14 marks. The sum of marks of Animesh and Sushant in Subject E is 32 while the ratio of the same is 9 : 7. Kundan scored 77.5% marks in Subject E.

6. What is the average marks scored by the 3 students in Subject D? (round off to nearest integer)
(a) 11 (b) 14 (c) 18 (d) 15 (e) 16

7. Find the difference between total marks scored by Animesh in all subjects and the total marks scored by Sushant in all subjects together.
(a) 12 (b) 18.5 (c) 17 (d) 21 (e) 21.5

8. Calculate the percentage of marks obtained by Kundan in the sessional exams.
(a) 50.5% (b) 52.25% (c) 53.125% (d) 53.75% (e) 53.25%

9. Marks of all the 3 students in Subject E is what percent more or less than theMarks of Sushant in Subject D and Subject C together? (round off to 2 decimal places).
(a) 48.44% (b) 48.33% (c) 46.67% (d) 46.45% (e) 49.67%

10. If the passing marks in each sessional are 40%, then total number of compartment of all students together?
(a) 1 (b) 2 (c) 3 (d) 4 (e) 5

Solution (6-10); Maximum marks in subject C = 35 + 5 = 40
Maximum marks in subject D = 40 – 10 = 30
Maximum marks in Subject E = 160 – 40 – 30 – 35 – 35 = 20
Marks of Kunal in Subject A $= \frac{60}{100} \times 35 = 21$
Marks of Sushant in subject A $= \frac{340}{700} \times 35 = 17$
Marks of Sushant in subject B $= \frac{24}{160} \times 100 = 15$
Marks of Kunal in subject B = 58 – 24 – 15 = 19
Marks of Sushant in subject C $= 40 \times \frac{35}{100} = 14$
Marks of Animesh in Subject D $= \frac{40}{100} \times 30 = 12$
Marks of Sushant in Subject D $= 12 \times \frac{3}{2} = 18$
Marks of Animesh in Subject E $= 32 \times \frac{9}{16} = 18$
Marks of Sushant in Subject E $= 32 \times \frac{7}{16} = 14$
Marks of Kundan in Subject E $= \frac{77.5}{100} \times 20 = 15.5$

	Subject A (35)	Subject B (35)	Subject C (40)	Subject D (30)	Subject E (20)	Total (160)
Animesh	13.5	24	29	12	18	96.5
Sushant	17	15	14	18	14	78
Kundan	21	19	15.5	14	15.5	85

6. (d); Required average$= \frac{12+18+14}{3} = 14.67$ *Rounded off to next integer i.e* 15

7. (b); Required difference $= 96.5 - 78 = 18.5$

8. (c); Required percentage $= \frac{85}{160} \times 100 = 53.125\%$

9. (a); Required percentage $= \frac{47.5 - 32}{32} \times 100 = \frac{15.5}{32} \times 100 = 48.4375\% = 48.44\%$

10. **(c);** Total compartment = 3
Animesh in Subject A, Sushant&Kundan in Subject C

Directions (11-15): Read the following information carefully and answer the questions given below it.
Five sports hockey, Cricket, Tennis, Badminton and Baseball are included in a sports Competition. The total number of players in this sports competition is 800. The ratio between the woman and man players is 1 : 3.
25% players are in cricket of total players, 110 players play Badminton, 10% players in tennis of total players. Hockey players are two times of Badminton players, while remaining players play Baseball. 30% of cricket players are woman.
Half woman cricketers are equal to woman badminton players. 10% players of Hockey players are equal to woman tennis players. Hockey and Baseball have equal woman players.

11. What is the ratio between the woman hockey players and man badminton players?
(a) 20 : 13 (b) 11 : 20 (c) 13 : 20 (d) 11 : 23 (e) 20 : 11

12. What is the total number of man players in hockey, cricket and baseball?
(a) 464 (b) 454 (c) 462 (d) 432 (e) 423

13. What is the percentage of woman baseball players comparison to man hockey players?
(a) 25% (b) 34% (c) 24% (d) 15% (e) 52%

14. What is the difference between the man baseball players and woman tennis players?
(a) 134 (b) 136 (c) 122 (d) 126 (e) 124

15. In which sports, women are maximum and men are minimum?
(a) Cricket and badminton (b) Cricket and hockey (c) Baseball and cricket
(d) Cricket and Tennis (e) Tennis and Hockey

Solutions (11-15): Total number of players = 800
Number of woman players $= \frac{1}{4} \times 800 = 200$
Number of man players $= \frac{3}{4} \times 800 = 600$
Number of cricket players = 25% of 800 = 200
Number of badminton players = 110
Number of tennis players = 10% of 800 = 80
Number of hockey players = 220
Number of baseball players = 800 – (200 + 110 + 80 + 220) = 800 – 610 = 190
Number of woman cricket players = 30% of 200 = 60
∴ Number of man cricket players = 200 – 60 = 140
Number of woman badminton players $= \frac{1}{2} \times 60 = 30$
∴ Number of man badminton players = 110 – 30 = 80
Number of woman tennis players = 10% of 220 = 22
∴ Number of man tennis players = 80 – 22 = 58
Number of woman hockey players = Number of woman baseball players
$= \frac{1}{2}\left[200 - (60 + 30 + 22) = \frac{1}{2}[200 - 112] = \frac{88}{2}\right] = 44$
∴ Number of man hockey players = 220 –44 = 176
And number of man baseball players = 190 – 44= 146
Tabular form of above information is as follows

Games	Number of Man players	Number of woman players
Cricket	140	60
Badminton	80	30
Tennis	58	22
Hockey	176	44
Baseball	146	44
Total	**600**	**200**

11. **(b);** From the table, number of woman hockey players = 44
Number of man badminton players = 80
∴ Required ratio = 44 : 80 = 11 : 20

12. **(c);** From the table, it is clear that the total number of man players in hockey, cricket and baseball
= 176 + 140 + 146 = 462

13. (a); Number of woman baseball players = 44
Number of man hockey players = 176
∴ Required percentage $= \frac{44}{176} \times 100\% = 25\%$

14. (e); Number of man baseball players = 146
Number of woman tennis players = 22
∴ Required difference = 146 – 22 = 124

15. (d); From the table, it is clear that women are maximum in cricket and men are minimum in tennis.

Directions (16-20): Study the information carefully and answer the questions.
A school consists of 2800 students. The ratio of boys to girls is 5 : 9. All the enrolled students have at least one favourite place — Darjeeling, Singapore and Paris. 12% of the boys like only Singapore. 16% of the girls like only Darjeeling. The number of students who like only Paris is 925. One-fourth of the boys like all the three places. The number of girls who like only Singapore is 250% of the boys who like only the same city. The remaining girls like only all the three places. 23% of enrolled boys like only Darjeeling and the remaining like only Paris. No student likes any combination of only two cities.

16. What is the ratio of the number of boys who like only Darjeeling to the number of girls who like only the same place?
(a) 144 : 115 (b) 115 : 144 (c) 110 : 113 (d) 110 : 113 (e) 113 : 110

17. What is the number of girls who like all three places?
(a) 1212 (b) 812 (c) 1012 (d) 1112 (e) 687

18. The number of boys who like only Paris is what per cent of the no. of girls who like only the same city? (Approx.)
(a) 76 (b) 73 (c) 78 (d) 82 (e) 75

19. How many students like Singapore?
(a) 670 (b) 1120 (c) 1882 (d) 1656 (e) 1357

20. How many boys like Darjeeling?
(a) 400 (b) 420 (c) 440 (d) 480 (e) 230

Solution (16-20): Number of boys $= \frac{5}{14} \times 2800 = 1000$
Number of girls $= \frac{9}{14} \times 2800 = 1800$
Number of boys who like only Singapore $= \frac{12}{100} \times 1000 = 120$
Number of girls who like only Singapore $= \frac{250}{100} \times 120 = 300$
Number of girls who like only Darjeeling $= 1800 \times \frac{16}{100} = 288$
Number of boys who like only Darjeeling $= 1000 \times \frac{23}{100} = 230$
Number of students who like only Paris = 925
No. of boys who like only all three cities $= 1000 \times \frac{1}{4} = 250$
No. of boys who like only Paris = 1000 – (120 + 230 + 250) = 400
No. of girls who like only Paris = 925 – 400 = 525
No. of girls who like only all three cities $= 1800 - (300 + 288 + 525) = 687$

16. (b); Req. ratio = 230 : 288 = 115 : 144
17. (e); 687
18. (a); Req. % $= \frac{400}{525} \times 100 \approx 76\%$
19. (e); Number of students who like Singapore = 120 + 300 + 250 + 687 = 1357
20. (d); Number of boys who liked Darjeeing = 230 + 250 = 480

Directions (21 – 25): Study the following information carefully to answer the questions.
In a comparative study of population of six states. A, B, C, D, E and F the following were observed.
Female population of state A is 120% of the male population of state C and 90% of the female population of state D.
Male population of state B is 125% of the male population of state D and $1\frac{11}{14}$ times of the male population of state E. Male and female populations of state D are in the ratio of 13 : 12 respectively.
Male population of state A is $\frac{5}{11}$ th of the total population of that state which is 1980.
Female population of state C is 110% of the female population of state A and 75% of the male population of state F.
Male and female populations of state E are in the ratio of 7 : 8 respectively.
Female population of state B is 150% of the male population of state A.
Female population of state F is equal to the male population of state D.

21. Female population of state C is approximately what per cent of its total population?
(a) 46 (b) 52 (c) 53 (d) 48 (e) 57

22. What is the average male population of states B, C and D together?
(a) 1275 (b) 1262 (c) 1146 (d) 1228 (e) 1335

23. What is the total population of state F?
(a) 2682 (b) 2486 (c) 2828 (d) 2884 (e) 2768

24. What is the respective ratio between male and female population of state B?
(a) 33 : 28 (b) 11 : 9 (c) 66 : 53 (d) 65 : 54 (e) 13 : 11

25. If 85% of the female population of state E is literate, how many females in the state are illiterate?
(a) 156 (b) 164 (c) 186 (d) 152 (e) 148

Solution (21-25); Total population of city A = 1980

$Male\ population\ of\ city\ A = \frac{5}{11} \times 1980 = 900$

$Female\ population\ of\ city\ A = \frac{6}{11} \times 1980 = 1080$

$Female\ population\ of\ city\ C = 1080 \times \frac{11}{10} = 1188$

$Male\ population\ of\ city\ F = 1188 \times \frac{100}{75} = 1584$

$Female\ population\ of\ city\ B = \frac{150}{100} \times 900 = 1350$

$Male\ population\ of\ city\ C = \frac{1080}{120} \times 100 = 900$

$Female\ population\ of\ city\ D = \frac{1080}{90} \times 100 = 1200$

$Male\ population\ of\ city\ D = 1200 \times \frac{13}{12} = 1300$

$Male\ population\ of\ city\ B = 1300 \times \frac{125}{100} = 1625$

$Male\ population\ of\ state\ E = 1625 \times \frac{14}{25} = 910$

$Female\ population\ of\ state\ E = \frac{910}{7} \times 8 = 1040$

Female population of state F = 1300

City→	A	B	C	D	E	F
Male	900	1625	900	1300	910	1584
Female	1080	1350	1188	1200	1040	1300

21. (e); Required % $= \frac{1188 \times 100}{900 + 1188} = \frac{1188 \times 100}{2088}$
$= 56.89\%$
$\approx 57\%$

22. (a); Required Average $= \frac{1625 + 900 + 1300}{3}$
$= 1275$

23. (d); Total population of state F $= 1584 + 1300$
$= 2884$

24. (d); Respective Ratio $= \frac{1625}{1350}$
$= 65 : 54$

25. (a); No. of illiterate female$= \frac{1040 \times 15}{100} = 156$

Directions (26-30): Study the information carefully to answer the questions that follow:
A school consisting of a total of 1560 students has boys and girls in the ratio of 7 : 5 respectively. All the students are enrolled in different types of hobby classes, viz: Singing, Dancing and Painting. One-fifth of the boys are enrolled in only Dancing classes. Twenty percent of the girls are enrolled in only Painting classes. Ten percent of the boys are enrolled in only Singing classes. Twenty four percent of the girls are enrolled in both Singing and Dancing classes together. The number of girls enrolled in only Singing classes is two hundred percent of the boys enrolled in the same. One-thirteenth of the boys are enrolled in all the three classes together. The respective ratio of boys enrolled in Dancing and Painting classes together to the girls enrolled in the same is 2 : 1 respectively. Ten percent of the girls are enrolled in only Dancing classes whereas eight percent of the girls are enrolled in both Dancing and Painting classes together. The remaining girls are enrolled in all the three classes together. The number of boys enrolled in singing and dancing classes together is fifty percent of the number of girls enrolled in the same. The remaining boys are enrolled in only Painting classes.

26. Find the difference between number of boys who are enrolled in Singing classes and that of girls who are enrolled in Dancing classes.
(a) 92 (b) 89 (c) 99 (d) 94 (e) 26

27. Girls enrolled in Dancing and Singing classes together is approximately what percent of boys enrolled in Painting and Dancing classes together?
(a) 130% (b) 127% (c) 132% (d) 128% (e) 125%

28. Find the ratio of number of boys enrolled in Painting only to that of girls enrolled in Singing only.
(a) 55 : 27 (b) 18 : 25 (c) 55 : 26 (d) 17 : 23 (e) 35 : 13

29. What percent of girls are enrolled in Painting classes?
(a) 38% (b) 35% (c) 37% (d) 36% (e) 40%

30. Boys and girls enrolled in all the three classes together go for a picnic. Cost of ticket for boy is Rs.15 each and for girl it is Rs.18 each. Find the total amount spend on tickets.
(a) Rs. 2450 (b) Rs. 2220 (c) Rs. 1252 (d) Rs. 2540 (e) Rs. 2340

Solution (26-30); $Total\ number\ of\ boys = \frac{7}{12} \times 1560 = 910$

$Total\ number\ of\ girls = \frac{5}{12} \times 1560 = 650$

$Boys\ enrolled\ in\ only\ Dancing = \frac{910}{5} = 182$

$Girls\ enrolled\ in\ only\ Painting = \frac{20}{100} \times 650 = 130$

$Boys\ enrolled\ in\ only\ Singing = \frac{10}{100} \times 910 = 91$

Girls enrolled in both Singing & Dancing classes together $= \frac{24}{100} \times 650 = 156$

Girls enrolled in only Singing = 2 × 91 = 182

Boys enrolled in all the three classes together $= \frac{1}{13} \times 910 = 70$

$Girls\ enrolled\ in\ only\ Dancing = \frac{650}{10} = 65$

Girls enrolled in Dancing and Painting together $= \frac{8}{100} \times 650 = 52$

Boys enrolled in Dancing & Painting together = 52 × 2 = 104

Boys enrolled in Singing and Dancing together $= \frac{1}{2} \times 156 = 78$

Boys enrolled in only Painting = 910 – (182 + 91 + 78 + 70 + 104) = 385

Girls enrolled in all the three classes together = 650 – (65 + 130 + 182 + 156 + 52) = 65

Classes	Boys (910)	Girls (650)
Singing	91	182
Dancing	182	65
Painting	385	130
Singing + Dancing	78	156
Dancing + Painting	104	52
Singing + Painting	0	0
Singing + Dancing + Painting	70	65

26. **(c);** Boys in Singing = 91 + 78 + 70 = 239
Girls in Dancing = 65 + 156 + 52 + 65 = 338
∴ Required difference = 99

27. **(b);** Girls in Dancing and Singingtogether = 156 + 65 = 221
Boys in Painting and Dancingtogether = 104 + 70 = 174
∴ Required percentage = $\frac{221}{174} \times 100 \approx 127\%$

28. **(c);** Required ratio = $\frac{385}{182} = \frac{55}{26}$

29. **(a);** Girls in Painting = 130 + 52 + 65 = 247
∴ Required percentage = $\frac{247}{650} \times 100 = 38\%$

30. **(b);** Required amount = $15 \times 70 + 18 \times 65 = 1050 + 1170 = Rs.2220$

PREVIOUS YEAR QUESTIONS

Directions (1-5): Study the following information carefully and answer the questions that follow:
(**Note:** total earning = salary + incentives)
Gaurav and Vivek are currently working in an M.N.C. as software developers. Both of them have different monthly salary. Salary of Gaurav is 62500 Rs. per month, which is $16\frac{2}{3}\%$ less than monthly salary of Vivek. Both of them also earns a certain amount of incentive. Amount of incentives of Gaurav is 15% of the monthly salary of Vivek and is 12.5% more than the monthly incentive of Vivek.
Monthly expenditure of Gaurav for food is Rs.7550, while the same of Vivek is 8850. Both of them are sharing the same flat which cost them a rent of Rs. 16000 (each of them is paying 50% of rent). Gaurav spends 30%of his total earning (salary +incentive) on shopping, while Vivek is also spending the same amount on shoppingas Gaurav. Gaurav makes a saving of Rs. 26500 and the remaining is spent as 'other expenditures' The "other expenditures" of vivek are $\frac{7}{5}$ of the "other expenditures" of Gaurav. The remaining money is saved by Vivek.

1. Find the difference in savings of Vivek and savings of Gaurav.
(a) 6250 Rs. (b) 6120 Rs. (c) 6520 Rs. (d) 7200 Rs. (e) None of these
2. If Vivek would have earned only half of the incentive, then his expenditure on 'rent' would be what percent of his total earnings ?
(a) 10% (b) 20% (c) 15% (d) 12.5% (e) 8%
3. Neeraj, who is the team leader of Vivek and Gaurav have a total earning equal to 80% of the sum of total earning of Vivek and Gaurav and saving is 870 Rs. less than the savings of Vivek. What percent of income Neeraj is saving ?
(a) 20% (b) 22.5% (c) 25% (d) 30% (e) None of these
4. What is the ratio of money spent by Gaurav on rent to the incentive of Vivek ?
(a) 4 : 3 (b) 5 : 7 (c) 7 : 5 (d) 5 : 6 (e) 4 : 5
5. Find the sum of the money spent by Vivek and Gaurav on 'other expenditures'.
(a) Rs. 21780 (b) Rs. 21750 (c) Rs. 22980 (d) Rs. 23950 (e) None of these

Directions (6-10): Study the following information carefully to answer the questions that follow.
An online trading company, make its business by selling 5 types of products i.e. mobiles, wrist watches, shoes, laptops and LCDs. It recorded its sales value in 2013, 2014 and 2015.
In 2013, sells of mobiles, wrist watches, shoes and LCDs amount for Rs. 6250, Rs. 2200, Rs. 1880 and Rs. 940 respectively. Laptops accounts for 30% of total sales during that year.
In 2014, the total sale showed a 10% increase over the previous year. While mobiles and wrist watches registered 8% and 10% increase over their corresponding figures in 2013, shoes sales dropped by Rs. 130, while laptop sales amount toRs. 5360.
In 2015, though the total sales remained the same as in 2014, mobile sales fell by Rs. 220, wrist watches by Rs. 320, shoes by Rs. 100, and LCDs by Rs. 120.

6. What is the ratio of sales value of mobiles in 2013 to that of shoes in 2014?
(a) 5 : 7 (b) 25 : 7 (c) 21 : 8 (d) 25 : 9 (e) 30 : 7
7. What is the total value of sales of laptops in 2015?
(a) 6102 (b) 6210 (c) 6120 (d) 6201 (e) 6012
8. Find total amount earned by selling shoes over three years together.
(a) 5802 (b) 5820 (c) 5208 (d) 5280 (e) 8205
9. Find the percentage decrease in value of sales of wrist watches from year 2013 to 2015. (Round off to 1 decimal place)
(a) 6.4% (b) 4.6% (c) 5.8% (d) 7% (e) 8.5%
10. What is the value (in lakhs) of sales of Laptop in year 2013?
(a) 4830 (b) 4803 (c) 3860 (d) 5360 (e) 6120

Directions (11-15); Study the given information carefully to answer the questions that follow:
An organization consists of 2400 employees working in different departments, viz HR, Marketing, IT, Production and Accounts. The ratio of male to female employees in the organization is 5 : 3. Twelve percent of the males work in the HR department. Twenty four per cent of the females work in the Account departments. The ratio of males to females working in the HR department is 6 : 11. One-ninth of the females work in the IT department. Forty two per cent of the males work in the production department. The number of females working in the production department is ten per cent of the males working in the same. The remaining females work in the Marketing department. The total number of employees working in the IT department is 285. Twenty two percent of the males work in the Marketing department and the remaining work in the Accounts department.
11. Find the difference in the sum of total males in HR, IT and Accounts together and total females in Production and Marketing together.
(a) 268 (b) 278 (c) 286 (d) 282 (e) 182

12. Total employees in Marketing are what percent of total employees in H.R. and I.T. together ?(approx.)
(a) 62.8% (b) 65.5% (c) 70.2% (d) 78% (e) 58.5%
13. Females in Production department are what percent less than that in I.T. department ?
(a) 34% (b) 36% (c) 35% (d) 37% (e) 27%
14. Find the ratio of males in Marketing and females in H.R.
(a) 2 : 3 (b) 1 : 3 (c) 3 : 5 (d) 1 : 2 (e) 1 : 1
15. Which department has minimum number of female employees ?
(a) IT (b) Production (c) HR (d) Marketing (e) Accounts

Directions (Q16-20): Given below is the data about students appeared in two exams i.e., A and B in six different years i.e., 2011 to 2016. Total students appeared in both exam in 2016 is 8000 while in 2013 it is 5800. Average number of students appeared in exam B in 2011 and 2013 is 3100 and is in the ratio 18 : 13. Students appeared in exam A in year 2015 is $33\frac{1}{3}\%$ more than students appeared in exam B in same year. Total students appeared in 2016 is 25% more than total students appeared in 2011. Students appeared in exam A in 2016 is $62\frac{26}{27}\%$ more than students appeared in exam B is 2015. Ratio of total students appeared in 2016 & 2014 is 16 : 13. Total number of students appeared in exam A in all six years is 21,100. Students appeared in exam B in 2011 is same as student appeared in exam A in 2015.Students appeared in exam A in 2012 is 700 more than that of students appeared in same exam in 2014. Students appeared in exam B in 2014 is 1200 less than that of in same exam in 2012.

16. In which year total students appeared in both exam is 3rd highest?
(a)2012 (b)2014 (c)2016 (d)2011 (e)Other than the given options
17. What is the respective ratio between students appeared in exam A in year 2011, 2012 and 2014 together to the students appeared in exam B in year 2013, 2014 and 2016 together?
(a) 95 : 97 (b) 99 : 97 (c) 98 : 97 (d) 99 : 95 (e) 95:99
18. Find the difference between average number of students appeared in exam A and average of students appeared in exam B in starting four years?
(a)250 (b)225 (c)215 (d)200 (e)None of these
19. Students appeared in exam A in 2013 is how much less than students appeared in exam B in 2012?
(a)1400 (b) 1000 (c) 1100 (d) 1200 (e) 1300
20. Total number of students appeared in both exam in 2012 is what percent more than total number of students appeared in both exam in 2011?
(a) 25.25% (b) 28.25% (c) 31.25% (d) 34.25% (e) 37.25%

Directions (21-25): The following information is about the number of posts of officers and clerks available in a bank in 6 different cities. Study it carefully and answer the following questions.
The ratio of total number of officer posts to clerk posts is 73 : 105. The total number of clerk posts is 320 more than the total number of officer posts. 110 officer posts are available in Bangalore which is 85 less than the number of clerk posts in Mumbai. Total 320 posts are available in Delhi, where clerk posts available are 20 more than officer posts. Number of officer posts in Hyderabad is $23\frac{1}{3}\%$ of the officer posts in Delhi. Also, the officer posts in Hyderabad are $17\frac{1}{2}\%$ of the clerk posts in the same city. 149 officer posts are available in Kolkata which is 4 less than the clerk posts available in Lucknow. A total of 321 posts are available in Kolkata which is 52 more than the total post in Lucknow.

21. What is the total number of posts available in Mumbai?
(a) 355 (b) 365 (c) 375 (d) 395 (e) 345
22. Total number of posts available in Hyderabad is what percent less than total number of posts available in Bangalore?
(a) $12\frac{26}{27}\%$ (b) $13\frac{26}{27}\%$ (c) $14\frac{26}{27}\%$ (d) $15\frac{26}{27}\%$ (e) $15\frac{26}{27}\%$
23. Number of officer posts in Bangalore is 55% of the number of clerk posts of which city?
(a) Bangalore (b) Mumbai (c) Delhi (d) Hyderabad (e) None of these
24. What is the total number of clerks post available in Delhi, Lucknow and Bangalore together?
(a) 485 (b) 483 (c) 490 (d) 493 (e) 438
25. Number of clerk posts in Hyderabad is what percent more than the number of officer posts in Delhi?
(a) $25\frac{1}{3}\%$ (b) $40\frac{1}{3}\%$ (c) $50\frac{1}{3}\%$ (d) $60\frac{1}{3}\%$ (e) $33\frac{1}{3}\%$

Directions (26-30): Study the information carefully to answer the following questions.
There are 8400 students in an engineering college. The ratio of boys to girls is 7 : 5, respectively. All the students are enrolled in six different specialization viz., B.Tech. (electronics), B.Tech (computer science), B.Tech. (mechanical), B.Tech (IT), B.Tech (industrial), B.Tech. (civil). 22% of the total students are in B.Tech. (industrial). 16% of the girls are in B.Tech. (computer science). 18% of boys are in B.Tech. (mechanical). Girls in B. Tech. (civil) are 30% of the girls in B.Tech. (computer science).

15% of boys are in B.Tech. (electronics). Boys in B.Tech. (computer science) are 50% of the girls in the same. 15% of girls are in B.Tech. (IT). The ratio of boys to girls in B.Tech (civil) is 3 : 1 respectively. 24% of the total numbers of students are in B.Tech. (electronics). The ratio of boys to girls in B.Tech. (IT) is 12 : 5, respectively.

26. Find the number of girls enrolled in B. Tech. (mechanical)?
(a) 357 (b) 530 (c) 584 (d) 328 (e) 500

27. Number of girls enrolled in B.Tech. (electronics) is what per cent of total number of students in the college?
(a) 17% (b) 15.75% (c) 15.25% (d) 12.75% (e) 14.5%

28. Find the number of girls enrolled in B.Tech. (industrial) ?
(a) 644 (b) 306 (c) 665 (d) 480 (e) 609

29. Number of boys enrolled in B.Tech. (IT) is what per cent of the number of girls enrolled in B.Tech.(computer science)?
(a) 187.5% (b) 200% (c) 212.5% (d) 225% (e) 232.5%

30. Find the number of boys enrolled in B.Tech. (civil)?
(a) 540 (b) 504 (c) 630 (d) 756 (e) 810

Directions (31-35): Study the following data carefully and answer the questions given below :
Out of 6500 students from the Arts wing of a college, 21% of the total number of students have majored only in Psychology. 12% of the total number of students have majored only in English Literature, and 15% of the total number of students have majored only in Politics. 7% of the total number of students have majored only in Philosophy, and 10% of the total number of students have majored only in History. 8% of the total number of students have majored in both Psychology and Philosophy. 4% of the total number of students have majored in History as well as Politics, and 11% of the total number of students have majored in English Literature as well as Politics 9% of the total number of students have majored in Psychology and English Literature, and 3% of the total number of students have majored in History and Philosophy. No student majored in more than 2 subjects and no student majored in other two subjects except the information given above.

31. The average number of students who majored in politics is what percent more or less than the average number of students who majored in philosophy?
(a) $66\frac{1}{3}\%$ (b) $66\frac{4}{5}\%$ (c) $66\frac{2}{3}\%$ (d) $65\frac{2}{3}\%$ (e) 76%

32. What is the difference between total number of students who majored only in English, only History and only Psychology together and those who majored in two subjects together?
(a) 525 (b) 520 (c) 530 (d) 630 (e) 250

33. Students who majored in psychology and either English or philosophy are what percent of total students?
(a) 38% (b) 35% (c) 72% (d) 48% (e) 42%

34. What is the ratio of number of students who majored in both English and Psychology and only philosophy?
(a) 7 : 9 (b) 9 : 11 (c) 8 : 7 (d) 9 : 7 (e) 7 : 8

35. What is the total number of students who majored in only one subject?
(a) 4225 (b) 4235 (c) 4525 (d) 4220 (e) 4215

Directions (36-40): Study the following information carefully and answer the question given below it.
Out of the 15,000 candidates eligible for an Officer's post in a Public-Sector Bank, 450 candidates have prior experience of working in Public Sector Banks in rural areas only. 25% of the total number of candidates have prior experience of working in Public Sector Banks in urban areas only. 12% of the total number of candidates have prior experience of working in Private Sector Banks in urban areas only. 2% of the total number of candidates have prior Experience of working in Private Sector banks in rural areas only. 3,600 candidates have worked in both Public and Private Sector Banks in urban areas only. 600 candidates have worked in both Public and private Sector Banks in rural areas only. The remaining candidates have no prior experience of working in the Banking industry.

.36. Candidates having prior experience of working in rural areas is what percent of candidates having experience of working in urban areas? (round off to 2 decimal places)
(a) 13.75% (b) 13.25% (c) 14.25% (d) 15.75% (e) 14.75%

37. What percent of total number of candidates have prior experience of working in Public Sector Banks ?
(a) 83% (b) 56% (c) 67% (d) 71% (e) 65%

38. What is ratio of the candidates who have a prior experience of working in Public Sector Banks in rural areas only to the candidates who have a prior experience of working in Private Sector Banks in rural areas only?
(a) 4 : 3 (b) 3 : 2 (c) 2 : 3 (d) 3 : 4 (e) 5 : 3

39. Candidates who have worked in Private Sector Banks in urban areas is what percent less than the number of candidates who have worked in public sector banks in urban areas?
(a) 28.53% (b) 28.73% (c) 24.43% (d) 26.73% (e) 26.53%

40. If 37% of inexperienced candidates are post graduate then find the ratio between total number of experienced candidates to the number of inexperienced candidates who are not postgraduate?
(a) 27:100 (b) 100:27 (c) 100:63 (d) 63:100 (e) 50 : 21

PREVIOUS YEAR SOLUTIONS

Solution (1-5); Salary of Gaurav per month = Rs. 62500
∴ Salary of Vivek per month
$= \frac{62500\times6}{5} = Rs.75000$
Incentives of Gaurav per month
$= 75000 \times \frac{15}{100} = Rs.11250$
Incentives of Vivek per month
$= 11250 \times \frac{8}{9} = Rs.10000$
Monthly expenditure of Gaurav for food = Rs. 7550
And For Vivek = Rs. 8850
Rent of flat for Gaurav = Rent of flat for Vivek = Rs. 8000
Gaurav spends on shopping
$= \frac{30}{100} \times 73750 = Rs.22125$
= Vivek spends on shopping
Gaurav's other expenditure
= 73750 – (7550 + 8000 + 22125 + 26500)
= Rs. 9575
Other expenditure of Vivek
$= \frac{7}{5} \times 9575 = 13405$
Saving of Vivek = 85000 – (8850 + 8000 + 22125 + 13405)
= 32620

Earnings

	Gaurav	Vivek
Salary	62500	75000
Incentive	11250	10000

Expenditure

	Gaurav	Vivek
Food	7550	8850
Rent	8000	8000
Shopping	22125	22125
Other expenditure	9575	13405
Savings	26500	32620

1. **(b);** Required difference = 32620 − 26500 = Rs. 6120
2. **(a);** Total earning = $75000 + \frac{1}{2}(10000) = 80000$
   Required percentage = $\frac{8000}{80000} \times 100 = 10\%$
3. **(c);** Total earning of Neeraj= $\frac{80}{100} \times (73750 + 85000)$
   = 127000 Rs.
   Saving of Neeraj= 32620 − 870
   = 31750
   Required percentage = $\frac{31750}{127000} \times 100 = 25\%$
4. **(e);** Required ratio = $\frac{8000}{10000} = 4:5$
5. **(c);** 9575 + 13405 = Rs. 22980

Solutions (6-10); Total sales amount in 2013 except laptops
= 6250 + 2200 + 1880 + 940 = 11270
Total sales amount in 2013
$= \frac{11270}{70} \times 100 = 16100$
Laptop sales amount in 2013
$= \frac{30}{100} \times 16100 = 4830$
Total sales amount in 2014
$= \frac{110}{100} \times 16100 = 17710$
Mobile sales amount in 2014
$= 6250 \times \frac{108}{100} = 6750$
Wrist watches sales amount in 2014
$= \frac{11}{10} \times 2200 = 2420$
Shoes sales amount in 2014 = 1880 – 130 = 1750
LCDs sales amount in 2014
= 17710 – 6750 – 2420 – 1750 – 5360 = 1430
Mobile sales amount in 2015 = 6750 – 220 = 6530
Wrist watch sales amount in 2015 = 2420 – 320 = 2100
Shoes sales amount in 2015 = 1750 – 100 = 1650
LCDs sales amount in 2015 = 1430 – 120 = 1310
Laptops sales amount in 2015
= 17710 – 6530 – 2100 – 1650 – 1310 = 6120
Sales figure

	2013	2014	2015
Mobiles	6250	6750	6530
Wrist watches	2200	2420	2100
Shoes	1880	1750	1650
Laptops	4830	5360	6120
LCDs	940	1430	1310
Total	16,100	17,710	17,710

6. **(b);** Required ratio = $\frac{6250}{1750} = \frac{25}{7}$
7. **(c);** Total value of Laptops in 2015 = Rs. 6120
8. **(d);** Total amount = 1880 + 1750 + 1650 = 5280
9. **(b);** Required percentage = $\frac{2200-2100}{2200} \times 100 \approx 4.6\%$
10. **(a);** Value of laptops in 2013 = Rs. 4830

Solution (11-15); Total employees → 2400
Total male employees → 1500
Total Female employees → 900
Male in HR dept. → $\frac{1500\times12}{100} = 180$
Female in Account dept. → $\frac{900\times24}{100} = 216$
Female in HR dept.→ $\frac{180\times11}{100} = 330$
Female In IT department → $\frac{900}{9} = 100$
Male in Production dept. → $\frac{1500\times42}{100} = 630$
Female in Production dept. → $\frac{630\times10}{100} = 63$
Female in marketing → 900 – 216 – 330- 100 – 63
= 191
Male in IT dept. → 285 – 100 = 185
Male in Marketing → $\frac{1500\times22}{100} = 330$
Male in Accounting → 1500 – 330 – 180 – 630 – 185
= 175

Department	Male (1500)	Female (900)
H.R.	180	330
I.T.	185	100
Production	630	63
Marketing	330	191
Account	175	216

11. **(c);** Total males = 180 + 185 + 175 = 540
    Total females = 63 + 191 = 254
    ∴ Required difference = 540 – 254 = 286
12. **(b);** Required percentage = $\frac{521}{510+285} \times 100 \approx 65.5\%$

13. (d); Required percentage = $\frac{100-63}{100} \times 100 = 37\%$

14. (e); Required ratio = $\frac{330}{330} = \frac{1}{1}$

15. (b); From table it is clear that Production dept. has minimum number of females.

Solution (16-20); Total students appeared in 2016 = 8000
Total students appeared in 2013 = 5800
Total students appeared in exam B is 2011 & 2013 = 6200
Total students appeared in exam B in 2011
$= \frac{6200}{31} \times 18 = 3600$
Total students appeared in exam B in 2013
$= \frac{6200}{31} \times 13 = 2600$
Total students appeared in exam A in 2013
= 5800 – 2600 = 3200
Total students appeared 2011 = $\frac{8000}{125} \times 100 = 6400$
Total students appeared in exam A in 2011
= 6400 – 3600 = 2800
Total students appeared in 2014 = $\frac{8000}{16} \times 13 = 6500$
Students appeared in exam B in 2011
= Students appeared in exam A in 2015 = 3600
Students appeared in exam B in 2015
$= \frac{3600}{4} \times 3 = 2700$
Students appear in exam A in 2016
$= \left[1 + \frac{1700}{2700}\right] \times 2700 = 4400$
Students appear in exam B in 2016 = 8000 – 4400 = 3600
Let, student appeared in exam A in 2014 = x
student appeared in exam A in 2012 = x + 700
⇒ x + x + 700 + 2800 + 3200 + 3600 + 4400 = 21,100
2x = 6400
x = 3200
Students appeared in exam A in 2014 = 3200
Students appeared in exam A in 2012 = 3200 + 700 = 3900
Students appeared in exam B in 2014 = 6500 – 3200 = 3300
Students appeared in exam B in 2012 = 3300 + 1200 = 4500

	A	B	Total
2011	2800	3600	6400
2012	3900	4500	8400
2013	3200	2600	5800
2014	3200	3300	6500
2015	3600	2700	6300
2016	4400	3600	8000
Total	21,100	20,300	

16. (b); According to table its in 2014.

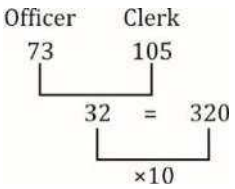
17. (d); $Required\ ratio = \frac{2800+3200+3900}{2600+3300+3600}$
$= \frac{9900}{9500} = \frac{99}{95}$

18. (b); Average students appeared in exam A in starting four years
$= \frac{2800+3900+3200+3200}{4}$
$= 3275$
Average students appeared in exam B in starting four years
$= \frac{3600+4500+2600+3300}{4} = 3500$
Required difference = 225.

19. (e); Required difference = 4500 – 3200 = 1300

20. (c); $Required\ \% = \frac{8400-6400}{6400} \times 100$
$= \frac{2000}{6400} \times 100 = 31.25\%$

Solution (21 – 25);



⇒ Total officer posts = 73 × 10 = 730
Total clerk posts = 1050
Officer post in Bangalore = 110
Clerk post in Mumbai = 110 + 85 = 195
Total post in Delhi = 320
Clerk post in Delhi = 20 + Officer post in Delhi
⇒ Clerk post in Delhi = 170
Officer post in Delhi = 150
Officer post in Hyderabad $= \frac{70}{300} \times 150 = 35$
Officer post in Hyderabad= $\frac{35}{200}$ × clerk post in Hyderabad
$\Rightarrow Clerk\ post\ in\ Hyderabad = \frac{200}{35} \times 35 = 200$
Officer post in Kolkata = 149
Clerk post in Lucknow = 153
Clerk post in Kolkata = 321 – 149 = 172
Total post in Lucknow = 321 – 52 = 269
Officer post in Lucknow = 269 – 153 = 116
Officer post in Mumbai
= 730 – [110 + 150 + 35 + 149 + 116]= 170
Clerk Post in Bangalore
= 1050 – (195 + 170 + 200 + 172 + 153) = 160

City	Officers (730)	Clerks (1050)
Bangalore	110	160
Mumbai	170	195
Delhi	150	170
Hyderabad	35	200
Kolkata	149	172
Lucknow	116	153

21. (b); Total number of posts available in Mumbai = 365

22. (a); Required percentage = $\frac{35}{270} \times 100 = 12\frac{26}{27}\%$

23. (d); Number of clerk post= $\frac{110}{55} \times 100 = 200$ which is in Hyderabad

24. (b); 170 + 153 + 160 = 483

25. (e); Required percentage = $\frac{50}{150} \times 100 = 33\frac{1}{3}\%$

Solution (26-30)
$Total\ number\ of\ boys = \frac{7}{12} \times 8400 = 4900$
$Total\ number\ of\ girls = \frac{5}{12} \times 8400 = 3500$
Total students in B. Tech (Industrial)
$= \frac{22}{100} \times 8400 = 1848$
Number of girls in B. Tech (Computer Science)
$= \frac{16}{100} \times 3500 = 560$
Number of boys in B. Tech (Mechanical)
$= \frac{18}{100} \times 4900 = 882$

Number of girls in B. Tech (Civil)
$= \frac{30}{100} \times 560 = 168$
Number of boys in B. Tech (electronics)
$= \frac{15}{100} \times 4900 = 735$
Number of boys in B. Tech (Computer Science)
$= \frac{560}{2} = 280$
No. of girls in B. Tech (I.T.)
$= \frac{15}{100} \times 3500 = 525$
No. of boys in B. Tech (Civil)
$= 3 \times 168 = 504$
Total no. of students in B. Tech (electronics)
$= \frac{24}{100} \times 8400 = 2016$
No. of boys in B. Tech (IT)
$= \frac{12}{5} \times 525 = 1260$
No. of girls in B. Tech (Electronics) = 2016 – 735 = 1281
No. of boys in B. Tech (Industrial)
= 4900 – (735 + 280 + 882 + 1260 + 504) = 1239
No. of girls in B. Tech (Industrial) = 1848 – 1239 = 609
No. of girls in B. Tech (Mechanical)
= 3500 – (1281 + 560 + 525 + 609 + 168) = 357

Subject	No. of boys	No. of girls
CS	280	560
Mechanical	882	357
Civil	504	168
Electronics	735	1281
IT	1260	525
Industrial	1239	609
Total	4900	3500

26. (a); Required no. of girls = 357
27. (c); Required %= $\frac{1281}{8400} \times 100 = 15.25\%$
28. (e); Required No. of girls = 609
29. (d); Required %= $\frac{1260}{560} \times 100 = 225\%$
30. (b); Required No. of boys = 504

Solution (31-35); Total students in Art wing = 6500
Psychology only → $\frac{21}{100} \times 6500 = 1365$
English literature only → $\frac{12}{100} \times 6500 = 780$
Politics only → $\frac{15}{100} \times 6500 = 975$
Philosophy → $\frac{7}{100} \times 6500 = 455$
History only = 650
Both politics and History = $\frac{4}{100} \times 6500 = 260$
Both in psychology and philosophy → 520
Both in English and Politics → $\frac{11}{100} \times 6500 = 715$
Psychology and English → $\frac{9}{100} \times 6500 = 585$
History and Philosophy → $\frac{3}{100} \times 6500 = 195$

Subject	Students
Psychology only	1365
English only	780
Politics only	975
Philosophy only	455
History only	650
Psychology + English	585
English + Politics	715
Politics + History	260
History + Philosophy	195
Philosophy + Psychology	520

31. (c); Average students in politics
$= \frac{1}{3}(975 + 715 + 260) = 650$
Average students in philosophy
$= \frac{1}{3}(455 + 520 + 195) = 390$
$\therefore$ Required percentage $= \frac{260}{390} \times 100 = 66\frac{2}{3}\%$
32. (b); Required difference $= |(780 + 650 + 1365) - (585 + 715 + 260 + 195 + 520)| = 520$
33. (a); Required percentage $= \frac{1365+585+520}{6500} \times 100 = 38\%$
34. (d); Required ratio $= \frac{585}{455} = \frac{9}{7}$
35. (a); Number of students who majored in only one subject
$= 780 + 975 + 650 + 455 + 1365$
$= 4225$

Solution (36-40); Total Candidates = 15000
No. of candidates having experience in
Public sector bank (rural) = 450
Public sector bank (urban) $= \frac{25}{100} \times 15000 = 3750$
Private sector bank (urban) $= \frac{12}{100} \times 15000 = 1800$
Private sector bank (rural) $= \frac{2}{100} \times 15000 = 300$
Public and Private sector bank (urban) = 3600
Public and Private sector bank (rural) = 600
Candidates having no experience = 15000 − (450 + 3750 + 1800 + 300 + 3600 + 600) = 4500
36. (e); Candidates having experience in rural areas = 450 + 300 + 600 = 1350
Candidates having experience in urban areas = 3600 + 3750 + 1800 = 9150
Desired Value = $\frac{1350}{9150} \times 100 = 14.75\ \%$
37. (b); Required percentage $= \frac{(450+3750+3600+600)}{15000} \times 100 = 56\%$
38. (b); Required Ratio $= \frac{450}{300} = 3 : 2$
39. (e); Candidates with experience in Private sector (urban) = 1800 + 3600 = 5400
Public sector (urban) = 3600 + 3750 = 7350
Required percentage $= \frac{7350-5400}{7350} \times 100 = 26.53\%$
40. (b); Candidates having no prior experience = 4500
Inexperienced candidates who are not post graduate
$= \frac{(100-37)}{100} \times 4500 = 2835$
Total experienced candidates = 10500
Ratio $= \frac{10500}{2835} = 100 : 27$

PRACTICE SET (LEVEL–I)

Directions (Q1-5): Study the following information carefully to answer the questions that follow:
In a school there are 800 students who have visited five different cities viz. Delhi, Ajmer, Varanasi, Mumbai and Jodhpur. Fifty-four per cent of the total students are boys. One fourth of the total number of girls visited Mumbai. Twenty-five per cent of the total number of girls visited Delhi. Number of girls who visited Jodhpur is half the number of girls who visited Delhi. Five-sixth of the remaining girls visited Ajmer. Total number of students who visited Mumbai is 192. One-fourth of the total number of boys visited Varanasi. 101 boys have visited Ajmer. Two-third of the remaining number of boys have visited Delhi.

1. What is the sum of number of students who visited Ajmer, girls who visited Mumbai and Jodhpur together and boys who visited Delhi?
   (a) 760 (b) 408 (c) 436 (d) 560 (e) 526
2. What is the percentage of girls who visited Varanasi?
   (a) 5.5% (b) 6.25% (c) 6.8% (d) 5.3% (e) 6.5%
3. Find the ratio of total students who visited Ajmer to that of who visited Mumbai.
   (a) 8 : 11 (b) 7 : 8 (c) 9 : 10 (d) 9 : 8 (e) 8 : 13
4. By approximately what percent the number of students who visited Varanasi are less than that who visited Delhi? (Rounded off up to 1 decimal place)
   (a) 24.7% (b) 25.2% (c) 28.5% (d) 23.7% (e) 24.7%
5. Find the difference between average number of boys who visited different cities except Delhi and the average number of girls who visited different cities except Varanasi.
   (a) $3\frac{1}{3}$ (b) $2\frac{1}{4}$ (c) $1\frac{2}{4}$ (d) $1\frac{1}{4}$ (e) $1\frac{3}{4}$

Directions(6 - 10) : Study the information carefully and answer the following questions.
A total of 1800 employees are working in a company in different organizational departments. The ratio of male employees to female employees in the organizations is 87:93. There are total 5 departments in the organization i.e. Production, Sales, R&D, Finance and HR. Total 200 male works in 'Production department'. 18% employees work in Sales department, in which male to female ratio is 5 : 4. In Finance department, 70 males are working and the number of females in this department is 5/7 of the number of males. The number of males in Sales department is equal to number of females in Production department. The number of males of Finance department is half the number of males in HR department. Male to female ratio in R&D department is 14 : 19.

6. No. of females in Finance department are approximately what percent less than the no. of females in Production department?
   (a)70% (b)75% (c)72% (d)78% (e)80%
7. Females in R&D department is what percent of total no. of females in the organization? (Round off upto 2 decimal places)
   (a) 40.86% (b) 42.76% (c) 41.86% (d) 39.52% (e) 32.8%
8. If one fourth of Males in R&D department left the organization while No. of employees in production increased by 50% such that males are now becomes double to females. What is the ratio of increment in number of males to increment in number of females in the organization?
   (a)1 : 11 (b)11 : 1 (c)11 : 2 (d)10 : 11 (e)3 : 7
9. What is the difference between the department having highest employees and the department having lowest employees?
   (a)520 (b)540 (c)640 (d)630 (e)530
10. No. of females in production department is what percent of no. of males in same department?
    (a)82% (b)85% (c)90% (d)92% (e) 80%

Directions (11-15): Study the following information carefully and answer the questions given below.
Neeraj scored 68% marks in chemistry where as score of gourav in the same subject is 42 which is $\frac{14}{17}$ of neeraj in chemistry. Neeraj scored 60% marks in English which is 15 less than the marks of gourav in the same subject. The maximum marks in English are 150.
The ratio between the marks of gourav and neeraj in Biology is 10:9, where as the difference in their marks in Biology is 4. The maximum marks of biology are half of the maximum marks of maths. Neeraj scored 60 marks in physics which is 5 more than marks of gourav in same subject . The maximum marks of physics is equal to the maximum marks of chemistry. Maximum marks of maths are 100, and sum of gourav and neeraj scores in maths is 181 and the difference of the same is 11(gourav scored more in maths as compared to neeraj)

11. What is the ratio of score of gourav in physics to the score of neeraj in physics and English together?
    (a) 11:27 (b) 11:30 (c) 11:35 (d) 11:31 (e) 30:11
12. Score of gourav in English is what percent more than the score of gourav in biology?
    (a) 62.5% (b) 112.5% (c) 162.5% (d) 262.5% (e) 167.5%
13. Find the overall percentage of gourav, taking marks of all subjects together.
    (a) $75\frac{1}{9}\%$ (b) $75\frac{2}{9}\%$ (c) $75\frac{3}{9}\%$ (d) $75\frac{4}{9}\%$ (e) $75\frac{5}{9}\%$
14. Marks of neeraj in biology is how much more or less than the marks of gourav in chemistry?
    (a) 6 marks less (b) 6 marks more (c) 4 marks more (d) 4 marks less (e) None of these

15. What is the average score of neeraj in all subjects?
(a) 64.6 (b) 64.4 (c) 64.2 (d) 64 (e) 64.8

Direction (16-20): Four traders sold four types of stationary items i.e., Pen, Pencil, Rubber and Disks. Satish sold 162 Pencils which is 12.5% more than pencils sold by Inder. Average of Pen, Pencil and disks sold by Inder is 162. Pen sold by Sanjeev and Inder is in the ratio 9 : 10. Rubber sold by Inder is 60% more than rubber sold by Rawat. Pencil sold by Rawat is same as Disks sold by Satish. Rawat sold $52\frac{4}{13}\%$ more pen then rubber. Total number of stationary items sold by Satish is same as pencils sold by all the four traders which is equal to 650. Average number of disk sold by Satish, Sanjeev and inder is 192. Satish sold 192 rubbers which is 28% more than pen sold by Inder or 50% more than pen sold by Satish. Total number of stationary items sold by Sanjeev is 653 and Disks sold by Rawat is 50% more than rubber sold by Sanjeev. Total number of stationary items sold by Inder is 694.

16. Who among the following sold maximum number of stationary items?
(a) Satish (b) Inder (c) Sanjeev (d) Rawat (e) both (a) and (c)
17. Disks sold by Inder is what percent more then pencil sold by Inder?
(a) $66\frac{2}{3}\%$ (b) $33\frac{1}{3}\%$ (c) $38\frac{1}{3}\%$ (d) 50% (e) $57\frac{1}{3}\%$
18. What is the ratio of Pencil sold by Rawat to disk sold by Sanjeev?
(a) 5 : 9 (b) 7 : 11 (c) 4 : 9 (d) 5 : 8 (e) 7 : 9
19. Total number of disks sold by all the four traders is how much more then total number of rubber sold by all the four traders?
(a) 99 (b) 107 (c) 109 (d) 117 (e) 97
20. Rubber sold by Sanjeev is what percent of the disks sold by Satish?
(a) 37.5% (b) 50% (c) 62.5% (d) 75% (e) 87.5%

Directions (Q. 21-25): Study the following information carefully to answer the questions given below it.
In a school of 2500 students, all the students have enrolled for different games viz. hockey, table-tennis, badminton, football, cricket, chess and carom. The respective ratio of girls to boys in the school is 3 : 2. 20% of the boys play only cricket. 25% of the girls play table-tennis, badminton and carom only. 26.8% of the boys play only football. The number of girls playing only cricket is 175% of the boys playing the same. The respective ratio of girls and boys playing only chess is 12 : 11. 25.7% of the boys play hockey, table-tennis and carom only. One-fourth of the girls play only badminton. The remaining girls play football and hockey only. The remaining boys play only chess.

21. How many students play more than one game?
(a) 850 (b) 862 (c) 732 (d) 670 (e) 723
22. The total number of students playing hockey is what per cent of the total number of students in the school?
(a) $25\frac{7}{25}\%$ (b) $10\frac{7}{25}\%$ (c) $14\frac{7}{25}\%$ (d) $21\frac{7}{25}\%$ (e) $16\frac{7}{25}\%$
23. What is the respective ratio of total number of boys playing chess to the total number of girls playing badminton?
(a) 11 : 30 (b) 13 : 32 (c) 9 : 29 (d) 13 : 29 (e) 30:11
24. What is the total number of students playing any 1 or more than 1 of the games out of football, cricket and table-tennis?
(a) 1300 (b) 1550 (c) 1450 (d) 1650 (e) 1505
25. How many students play carrom?
(a) 475 (b) 600 (c) 538 (d) 482 (e) 632

Directions (26-30): After defeating Roshuka, Goku and his family won a lot of valuable assets in the war. It consists of horses, chariot and some land of roshuka's kingdom. The cost of each horse and chariot was Rs. 20,000 and Rs 8,000 respectively while the cost of 1 acre land was Rs. 5000. All the property was shared among the four persons in such a way that goku and yoki got together the same wealth as gohan and noki got together. Goku got more than yoki and Gohan got more than Noki. Goku got $\frac{1}{3}rd$ horses and 20% chariots while Gohan received 50% chariots as the 50% of his total wealth. The no. of horses that goku and yoki got together was 50% more than that of gohan and noki together had. Yoki got 8 horses and noki got 7 horses but goku and yoki got equal no. of chariots and noki got 20 chariots less than that of gohan. Noki got twice the land than that of Yoki but 20% less than Gohan.

26. What is the difference between the wealth of Goku and wealth of Noki?
(a) 1.2 lakh (b) 1 lakh (c) 1.4 lakh (d) 1.6 lakh (e) none of these
27. If Gohan wanted to exchange all his chariots with the horses, then who can exchange his/her horses in terms of wealth?
(a) Goku (b) Yoki (c) Noki
(d) can't be determined (e) none of these
28. The wealth of Noki is what percent less than that of Gohan?
(a) 42% (b) 45% (c) 35% (d) 48% (e) 50%
29. The wealth due to land and chariot together is how much greater, in percent, than the wealth due to horses?
(a) 25% (b) 20% (c) 33.33% (d) 66.66% (e) 30%

30. What is the ratio of wealth of Goku due to Horses to that of wealth of Noki due to Chariots?
(a) 1 : 5 (b) 5 : 1 (c) 2 : 3 (d) 4 : 1 (e) 3 : 1

Directions (31-35): Study the following information carefully and answer the questions.

Mr. Hurly Purly is facing a decision problem. He has excellent training products but is not sure about the demand for his products. He wants to setup a training centre to provide training programmes of Sr executive, Jr. executive and non-executive level.

His Finanical advisor Mr. Balmas told him that, if he wants to setup a non-executive level training centre, the total cost would be on two counts. The first would be a fixed cost which is Rs. 2 lakh per annum. Besides, it would also entail a variable cost of training per candidate. This would be Rs. 1000 per candidate trained.

He further estimated that, if a training centre is setup for conducting Jr executive and non-executive level training programmes, the total fixed cost would be Rs. 3.2 lakh per annum and the cost of training per candidate will be Rs. 750. Mr. Balmas motivates Mr. Hurly Purly to setup a combined training centre for Sr executive, Jr executive and non-executive, the fixed cost of which is Rs. 5 lakh per annum and the cost of providing training per candidate is Rs. 500.

31. What would be the volume that Mr. Hurly Purly should train, where he would be indifferent between setting up a non-executive level and non-executive and Jr executive level training centre?
(a) 495 (b) 490 (c) 480 (d) 475 (e) None of these

32. What would be the volume that Mr. Hurly should train where he would be indifferent between setting up a training centre for Jr and non-executive level and Sr, Jr and non-executive level ?
(a) 710 (b) 720 (c) 730 (d) 740 (e) None of these

33. What would be the volume that Mr. Hurly should train, where he could be indifferent between setting up a training centre for non-executive and for all three categories ?
(a) 450 (b) 500 (c) 550 (d) 600 (e) None of these

34. Assume that Mr. Hurly shares the same vision that Mr. Balmas has and setup a training centre for all three categories. In the first year, he manages to train 1200 candidates at Rs. 1250 per candidate. What would be his profit ?
(a) Rs. 3.2 lakh (b) Rs. 3.6 lakh (c) Rs. 4 lakh (d) Rs. 4.4 lakh (e) None of these

35. If Mr. Hurly start the training center for Jr. executive and non-executive and 675 candidates join the centre. What could be fee per candidate to earn a profit of 25%.
(a) 1437.5 (b) 1444 (c) 1400 (d) 1435.5 (e) None of these

Directions (36-40): There are 1000 students in a college. Out of 1000 students some appeared in exams 'X', 'Y' and 'Z' while some not. Number of student not appeared in any exam is equal to number of students appeared in exam 'Z' only. Number of students appeared in exam 'Y' is 360. Ratio of number of students appeared in exam 'X' and 'Y' only to number of students appeared in exam 'Y' and 'Z' only is 2 : 3. Number of student appeared in exam 'X' and 'Z' both is half of number of students appeared in only exam 'Z'. Number of students appeared in exam 'X' only is 50% more than number of students appeared in 'Y' only. Number of students appeared in all the three exam is 4% of the total number of students in the college. Number of students appeared in 'Y' exam only is same as number of students appeared in 'Y' and 'Z' only.

36. How many students appeared in at least two exams?
(a) 240 (b) 260 (c) 300 (d) 360 (e) 500

37. How many students appeared in two exams only?
(a) 280 (b) 220 (c) 340 (d) 300 (e) 260

38. How many students appeared in at most two exams?
(a) 240 (b) 260 (c) 300 (d) 500 (e) 960

39. How many students not appeared in exam Y?
(a) 440 (b) 360 (c) 540 (d) 640 (e) 560

40. How many students appeared in exam X or in exam Z?
(a) 240 (b) 360 (c) 500 (d) 680 (e) 760

PRACTICE SET (LEVEL–I) SOLUTIONS

Solution (1 – 5)

Total number of boys $= \frac{54}{100} \times 800 = 432$

Total number of girls = 800 – 432 = 368

Number of girls visited Delhi $= \frac{25}{100} \times 368 = 92$

Number of girls visited Mumbai $= \frac{1}{4} \times 368 = 92$

Number of girls visited Jodhpur $= \frac{92}{2} = 46$

Number of girls visited Ajmer $= \frac{5}{6} \times$ (368 – 92 – 92 – 46) $= 115$

Number of girls visited Varanasi $= \frac{1}{6} \times$ (368 – 92 – 92 – 46) $= 23$

Number of boys visited Mumbai = 192 – 92 = 100

Number of boys visited Varanasi $= \frac{1}{4} \times 432 = 108$

Number of boys visited Ajmer = 101

Number of boys visited Delhi $= \frac{2}{3} \times$ (432 – 101 – 108 – 100)=82

Number of boys visited in Jodhpur $= \frac{1}{3} \times$ (432 – 101 – 108 – 100)=41

	Boys 432	Girls 368
Delhi	82	92
Ajmer	101	115
Varanasi	108	23
Mumbai	100	92
Jodhpur	41	46

1. (c); Students who visited Ajmer = 101 + 115 = 216

Girls who visited Mumbai & Jodhpur = 92 + 46 = 138

Boys who visited Delhi = 82

∴ Required Sum = 216 + 138 + 82 = 436

2. (b); Required percentage $= \frac{23}{368} \times 100 = 6.25\%$

3. (d); Required ratio $= \frac{101+115}{100+92} = \frac{216}{192} = \frac{9}{8}$

4. (a); Required Percentage $= \frac{174-131}{174} \times 100 \approx 24.7\%$

5. (d); Required average number of boys $= \frac{1}{4}(432 - 82) = \frac{350}{4}$

Required average number of boys $= \frac{1}{4}(368 - 23) = \frac{345}{4}$

∴ Required difference $= \frac{5}{4} = 1\frac{1}{4}$

Directions (6 – 10):

Males in company $= \frac{87}{180} \times 1800 = 870$

Females in company = 930

Males in production department = 200

Employees in Sales $= 18 \times \frac{1800}{100} = 324$

∴ Male in sales $= 324 \times \frac{5}{9} = 180 =$ No. of females in Production & Female in Sales $= 144$

Males in finance = 70

∴ Females in Finance $= \frac{5}{7} \times 70 = 50$

No. of males in HR = 70 × 2 = 140

∴ Males in R & D = 870 – [200 + 180 + 70 + 140] = 280

∴ Female in R & D $= \frac{280 \times 19}{14} = 380$

∴ Female in HR = 930 – [144 + 50 + 180 + 380] = 176

	Production	Sales	R & D	Finance	HR
M	200	180	280	70	140
F	180	144	380	50	176

6. (c); Desired % $= \frac{180-50}{180} \times 100 \approx 72\%$

7. (a); Desired % $= \frac{380}{930} \times 100 = 40.86\%$

8. (b); Men left the organization From R & D = $280 \times \frac{1}{4} = 70$

Employees in productionafter increment = $380 \times \frac{3}{2} = 570$

ATQ, No. of males in production will be 380 now while

No. of females will be 190.

∴ Men increased in Production = 380 – 200 = 180

Female increased in Production = 190 – 180 = 10

∴ Required ratio $= \frac{180-70}{10} = \frac{110}{10} = 11:1$

9. (b); Highest employees in R & D department = 280 + 380 = 660

Finance Department having lowest employees = 70 + 50 = 120

Difference = 660 – 120 = 540

10. (c); Desired % $= \frac{180}{200} \times 100 = 90\%$

Solution (11-15)

Neeraj scored in Chemistry → 68%

Gaurav scored in Chemistry → 42

ATQ,

Neeraj score in chemistry → $\frac{42}{14} \times 17 = 51$

Maximum marks in Chemistry $= \frac{51}{68} \times 100 = 75$

Maximum marks in English = 150

Neeraj marks in English $= \frac{60 \times 150}{100} = 90$

Gaurav marks in English = 90 + 15 = 105

Marks in Biology of Neeraj and Gaurav is 9 × 4 = 36 and 10 × 4 = 40 respectively.

Marks in Physics Neeraj and Gaurav is 60 and 55 respectively.

Max. marks in Physics = 75

Max. marks in Maths = 100

Max. marks in Biology = 50

Marks of Gaurav and Neeraj in Maths = 96 and 85 respectively.

Subject with maximum marks	Score of gourav	Score of neeraj
Chemistry (75)	42	51
English (150)	105	90
Biology (50)	40	36
Physics (75)	55	60
Maths (100)	96	85

11. (b); required ratio $= \frac{55}{150} = 11:30$

12. (c); required percentage $= \frac{(105-40)}{40} \times 100 = 162.5\%$

13. (a); required percentage $= \frac{338}{450} \times 100 = 75\frac{1}{9}\%$

14. (a); required difference = 42−36 = 6 marks less

15. (b); required average = $\frac{51+90+36+60+85}{5}$ = 64.4

Solution (16-20):

Pencils sold by Satish = 162

Pencil sold by Inder= $\frac{162}{1125} \times 100 \times 10 = 144$

Pen, Pencil and disks sold by Inder = 162 × 3 = 486

Pen and disks sold by Inder = 486 – 144 = 342

Total pencil sold = 650

Total stationary item sold by Satish = 650

Disks sold by Satish, Sanjeev and Inder = 192 × 3 = 576

Rubber sold by Satish = 192

Pen sold by Inder= $\frac{192}{128} \times 100 = 150$

Pen sold by Sanjeev = $\frac{150}{10} \times 9 = 135$

Pen sold by Satish = $\frac{192}{150} \times 100 = 128$

Stationary items sold by Sanjeev = 653

Disks sold by Satish = 650 – 128 – 162 – 192 = 168

Disks sold by Inder = 486 – 150 – 144 = 192

Pencil sold by Rawat = 168

Pencil sold by Sanjeev = 650 – 162 – 144 – 168 = 176

Disks sold by Sanjeev = 192 × 3 – 168 – 192 = 216

Rubber sold by Sanjeev = 653 – 135 – 176 – 216 = 126

Disks sold by Rawat = $\frac{126}{100} \times 150 = 189$

Rubber sold by Inder = 694 −150 – 144 – 192 = 208

Rubber sold by Rawat = $\frac{208}{160} \times 100 = 130$

Pen sold by Rawat = $\left(1 + \frac{680}{1300}\right) \times 130 = 198$

	Pen	Pencil	Rubber	Disk	Total
Satish	128	162	192	168	**650**
Inder	150	144	208	192	**694**
Rawat	198	168	130	189	**685**
Sanjeev	135	176	126	216	**653**
Total	**611**	**650**	**656**	**765**	

16. (b); According to table it's Inder.

17. (b); Rawat % = $\frac{192-144}{144} \times 100 = 33\frac{1}{3}\%$

18. (e); Required ratio = $\frac{168}{216} = \frac{7}{9}$

19. (c); Required difference = 765 – 656 = 109

20. (d); Required % = $\frac{126}{168} \times 100 = 75\%$

Directions (21-25)

It can be tabulated as follows

⇒ Total students = 2500

⇒ Games → Hockey, Table Tannis, Badminton, Football, Cricket, Chess and Carrom

⇒ Ratio of girls to boys → 3 : 2

Total Girls → 1500, Total boys = 1000

⇒ 20% boys plays only Cricket

$= \frac{20\times1000}{100} = 200$

⇒ 26.8% boys play only football

$= \frac{268\times1000}{100} = 268$

⇒ Girls play only cricket is 175% of boys play only Cricket

$= \frac{200\times175}{100} = 350$

⇒ ¼ th of the girls play only badminton ⇒ ¼ × 1500 = 375

⇒ Girls playing → Table tennis, badminton and Carrom only

$= \frac{25\times1500}{100} = 375$

⇒ Boys playing Hockey, Table-tennis and Carrom only

$= \frac{25.7\times1000}{100} = 257$

⇒ Girls and boys in chess = 12 : 11

⇒ Remaining boys play only chess → 1000 – 200 – 268 – 257 = 275

Girls play chess = $\frac{275}{11} \times 12 = 300$

⇒ Remaining girls play Football and Hockey only

= 1500 – 300 – 375 – 375 – 350 = 100

Games	Number of boys	Number of girls
Cricket	200	350
Football	268	-
Chess	275	300
Badminton	-	375
Football + Hockey	-	100
Table tennis, badminton, carrom	-	375
Hockey, table-tenis, carrom	257	-
Total	**1000**	**1500**

21. (c); From the above table, number of students playing more than one game = 100 + 375 + 257 = 732

22. (c); Total number of students playing hockey = 100 + 257 = 357

Therefore, required percentage = $\frac{357}{2500} \times 100\% = 14\frac{7}{25}\%$

23. (a); Total number of boys playing chess = 275

Total number of girls playing badminton = 375 + 375 = 750

∴ Required ratio = 275 : 750 = 11 : 30

24. (b); Total number of students playing football, cricket and table-tennis

= 200 + 350 + 268 + 100 + 375 + 257 = 1550

25. (e); Number of students playing carrom = 375 + 257 = 632

Solution(26-30)

	Horses	Chariots	Land (in acres)
Goku	y	2x	
Gohan	2y − 15	5x	5z
Yoki	8	2x	2z
Noki	7	x	4z

Let, total no. of chariots be '10x' and total number of horses be '3y'

Now,

ATQ,

5x − x = 20

or, x = 5

Hence, total no. of chariots = 5x = 50

Also,

$y + 8 = \frac{3}{2}(2y - 15 + 7)$
or, $2(y + 8) = 3(2y - 8)$
or, $y = 10$
Hence, total no. of horses = $3y = 30$
Gohan's total wealth = $2 \times 25 \times 8000 = 400000$
Gohan's wealth on account of land = 400000 – (200000 + 5 × 20000) = 100000
or, $5z = 100000$
Hence, $2z = 40000$
And $4z = 80000$
Total wealth of Goku and Yoki = Total wealth of Gohan and Noki
Wealth of Goku + (8 × 20000 + 10 × 8000 + 40000) = 400000 + (7 × 20000 + 5 × 8000 + 80000)
So, wealth of Goku = 400000 + 260000 – 280000 = 380000
Wealth of Goku on account of land = 380000 – (10 × 20000 + 10 × 8000)
= 380000 – 280000 = 1,00,000

26. (a); Difference = 380000 – 260000 = 1, 20,000 = 1.2 lakh

27. (a); Value of Gohan's Chariots = 25 × 8000 = 200000 = 2 lakh
Value of Goku's horses = 10 × 20000 = 200000 = 2 lakh
So, Gohan can exchange his chariots with horses of Goku.

28. (c); Req.% = $\frac{(400000-260000)}{400000} \times 100$
$= \frac{140000}{400000} \times 100 = 35\%$

29. (b); Wealth due to land and Chariot = 320000 + 400000 = 720000
Wealth due to horses = 30 × 20000 = 600000
Req.% = $\frac{(720000-600000)}{600000} \times 100$
$= \frac{12}{60} \times 100 = 20\%$

30. (b); Required ratio = $\frac{10 \times 20000}{5 \times 8000} = 5 : 1$

31. (c); Let x be the volume. So, the cost of training x candidates in both of these should be the same for indifference between the two options
i.e., 2 lakh + 1000x = 3.2 lakh + 750x
$\Rightarrow 250x = 1.2\text{lakh}$
$\Rightarrow x = \frac{120000}{250} = 480$

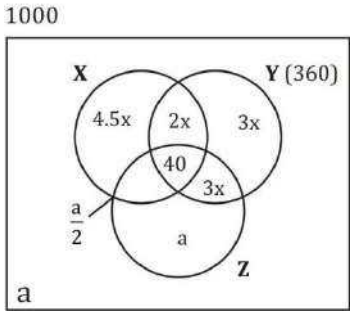
32. (b); Let x be the volume. Then,
3.2 lakh + 750x = 5 lakh + 500x
$\Rightarrow 250x = 1.8\text{lakh}$
$\Rightarrow x = 720$

33. (d); Let x be the volume. Then,
2 Lakh + 1000x = 5 lakh + 500x
$\Rightarrow x = 600$

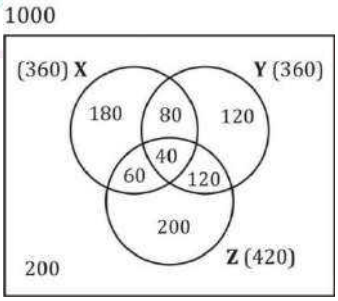
34. (c); Total sales = 1200 × 1250 = 15 lakh
Total cost (for all 3 levels)
= 5 lakh + 500 × 1200 = Rs. 11 lakh
Thus, profit = Total sales – Total cost = Rs. (15 – 11) = Rs. 4 lakh

35. (a); Cost → 3.2 lakh + 750 × 800 = 9,20,000
at 25% → $\frac{920000}{100} \times 125 = 1150000$
Fee per candidate = $\frac{1150000}{600} = 1437.5$

Solutions (36-40):
Total students = 1000
Let, students appear in exam Z only = a
Total students appeared in exam Y = 360
Ratio of number of students appeared in exam X and Y only to students appeared in exam Y and Z only = 2 : 3
Students appeared in exam X and Z both = a/2
Number of students appeared in all three exams
$= \frac{4}{100} \times 1000 = 40$
Number of students appeared in Y exam only
= No. of students appeared in Y and Z only = 3x
Number of students appeared in exam X and Y only
$= \frac{2}{3} \times 3x = 2x$



Now, 2x + 3x + 3x + 40 = 360
$\Rightarrow$ x = 40
and, $12.5x + a + \frac{a}{2} + a = 1000$
$\frac{5a}{2} = 500 \Rightarrow a = 200$



36. (c); Students appeared in atleast two exams = 80 + 60 + 40 + 120 = 300

37. (e); Students appeared in two exams only = 80 + 60 + 120 = 260

38. (e); Students appeared in atmost two exams = 180 + 120 + 200 + 60 + 80 + 120 + 200= 960

39. (d); Student not appeared in exam Y = 1000 – 360 = 640

40. (d); Students appeared in exam X or in exam Z
= 180 + 60 + 40 + 80 + 200 + 120 = 680

PRACTICE SET (LEVEL–II)

Directions (1-5): Study the following data carefully and answer the questions given below:
A survey conducted on 1800 villages shows that 25% of the total villages have only adequate water supply. 15% of the total number of villages have proper supply of electricity only. 7% of the total number of villages have only proper education facilities. 12% of the total number of villages have telecommunication services only. 16% of the total number of villages have proper healthcare services only. 6% of the total number of villages have adequate water as well as supply of electricity. 8% of the total number of villages have adequate supply of water, supply of electricity as well as healthcare services. 5% of the total number of villages have proper supply of electricity, telecommunication services as well as healthcare services and 6% of the total number of villages have all the facilities.

1. How many villages in all have adequate water supply?
(a) 702 (b) 450 (c) 594 (d) 810 (e) 820
2. How many villages in all have adequate supply of water as well as electricity?
(a) 360 (b) 108 (c) 720 (d) 972 (e) 216
3. How many villages in all do not have proper supply of electricity?
(a) 720 (b) 850 (c) 920 (d) 1080 (e) 710
4. How many villages have only proper education facilities?
(a) 108 (b) 126 (c) 234 (d) 216 (e) 121
5. How many villages have all the facilities?
(a) 90 (b) 126 (c) 144 (d) 106 (e) 108

Directions (6-10): Study the following information carefully and answer the following questions:
In an inter school sports tournament a total of 2350 students participated either in 1 or 2 or all of 3 games. The 3 games are cricket, volleyball and basketball.
The total number of boys who participated is 650 more than the total number of girls who participated.
Out of the total boys, $\frac{1}{6}$th of the boys participated in cricket only, while the number of boys who participated in basketball only is 40% more than the number of boys who participated in cricket only. The number of boys who participated in volleyball only is $28\frac{4}{7}$% less than the number of boys who participated in basketball only. 15% of the total boys participated in basketball and volleyball only, which is 50% more than the number of boys who participated in cricket and volleyball only. $\frac{1}{15}$ of the boys participated in cricket and basketball only. Remaining boys participated in all the 3 games.
$23\frac{9}{17}$% of the girls participated in basketball only, which is $11\frac{1}{9}$% less than the number of girls who participated in volleyball only. The ratio of number of girls who participated in cricket only to those who participated in volleyball only is 7 : 9. The number of girls who participated in cricket and basketball only is equal to number of girls who participated in basketball and volleyball only and is $\frac{3}{34}$ of the total number of girls. 50 girls participated in cricket and volleyball only. Remaining girls participated in all of the 3 games.

6. How many students have participated in all 3 games ?
(a) 175 (b) 75 (c) 50 (d) 225 (e) 250
7. What is the total number of boys who are participating in at least 2 games ?
(a) 550 (b) 650 (c) 750 (d) 800 (e) 700
8. No. of girls participating in volleyball only is what percent of total girls who are participating in the games ?
(a) $47\frac{3}{17}$% (b) $47\frac{5}{17}$% (c) $47\frac{1}{17}$% (d) $49\frac{4}{15}$% (e) $26\frac{8}{17}$%
9. What is the percentage of the total number of students who participated in basketball but not in volleyball ? (round off to 2 decimal places)
(a) $32\frac{40}{47}$% (b) $29\frac{40}{47}$% (c) $26\frac{40}{47}$% (d) $30\frac{40}{47}$% (e) $31\frac{40}{47}$%
10. Find the difference between the total number of boys playing basketball in all and the total number of girls playing volleyball in all.
(a) 350 (b) 375 (c) 400 (d) 425 (e) 450

Directions (11-15): Study the following information carefully and answer the questions given below it.
In a sports event there are three categories of race (100 m, 200 m, 400 m). Total 200 athletes participated in that event. The number of athletes who participated only in 100m race is 30% of total number of athletes, and among them 1/3rd are females. Number of athletes who participated in 200m race only is 15% of total number of athletes and among them 40% are females. Number of athletes who participated only in 400m race is 1/4 of total number of athletes and among them half are females. Number of athletes who participated in 100m and 200m race but not in 400m race is 1/10 of total number of athletes and among them 1/4 are females. Number of athletes who participated in 100m and 400 m race but not in 200 m is 7.5% of total number of athletes and among them 8/15 are females. Number of athletes who participated in all three categories is 1/20 of total number of athletes and among them 1/5 are females. Number of female atheletes who participate 200m and 400 m race but not in 100m race is 8/15 of rest.

11. What is the number of female athletes who participated in exactly two categories of race?
(a) 20 (b) 21 (c) 23 (d) 24 (e) 25
12. What is the difference between the total number of male athletes and the number of female athletes who participated in exactly one category?
(a) 61 (b) 63 (c) 65 (d) 67 (e) 69
13. What is the ratio of the total number of athletes who participated in 200m and 400m race but not in 100m race to the male athletes among them?
(a) 15 : 11 (b) 15 : 8 (c) 15 : 7 (d) 15 : 13 (e) 8 : 7
14. What is the number of male athletes who participated in at most two categories of race?
(a) 104 (b) 106 (c) 108 (d) 110 (e) 112
15. The number of male athletes who participated in all three categories of race is what percentage of total number of female athletes?
(a) 10% (b) 20% (c) 30% (d) 40% (e) None of these

Directions (16-20): Study the following information carefully and answer the questions that follow:
In an organization there are a total of 1400 technical and non-technical staff members. Each of the staff members of the organization prefer tea or coffee or milk. $39\frac{2}{7}$% of the total number of staff members are non- technical. Out of the technical staff, the number of male members to the number of female members is in the ratio of 11 : 6.
Out of the males in the technical staff, 14% prefer only tea, 32% prefer only coffee, 28% prefer only milk, 8% prefer only tea and coffee, 8% prefer only milk and coffee, 6% prefer only tea and milk and the remaining staff prefers all the three.
Out of the females in the technical staff, 24% prefer only tea, 12% prefer only coffee, 38% prefer only milk, 6% prefer only tea and milk, 4% prefer only tea and coffee, 10% prefer only coffee and milk and the remaining staff members prefer all the three.
Out of the non-technical staff, the ratio of the number of males to the number of female is 7 : 4. Out of the males in the non-technical staff members 32% prefer tea only, 16% prefer only coffee, 24% prefer only milk, 10% prefer only tea and milk, 6% prefer only tea and coffee, 4% prefer only coffee and milk and the remaining staff member prefer all the three.
Out of the females in the non-technical staff 12% prefer only tea, 36% prefer only coffee, 34% prefer only milk, 4% prefer only tea and milk, 8% prefer only tea and coffee, 4% prefer only coffee and milk and the remaining staff member prefer all the three.
16. How many males in the technical staff prefer either tea or coffee.
(a) 396 (b) 253 (c) 392 (d) 297 (e) 143
17. What is the ratio of the number of male members who prefer tea to the number of female member who prefer coffee?
(a) 37 : 94 (b) 93 : 49 (c) 95 : 57 (d) 23 : 19 (e) 79 : 43
18. What is the difference between the number of males in the technical staff who prefer milk and the number of females in the non-technical staff who prefer milk?
(a) 253 (b) 88 (c) 160 (d) 156 (e) 165
19. The number of females in non-technical staff members who prefer coffee is what percent of the number of females in the technical staff who prefer milk?
(a) 45.33% (b) 33.33% (c) 66.66% (d) 55.55% (e) 77.77%
20. What is the ratio of the number of males in the non-technical staff who prefer only one of the three drinks to the number of females in the technical staff who prefer only one of the three drinks?
(a) 53 : 97 (b) 43 : 19 (c) 42 : 37 (d) 72 : 35 (e) None of these

Directions (21 – 25): This data is regarding total number of employees working in Administration (admin), Operations (Ops.) and other departments of corporate divisions of Companies A and B.
The total number of employees working in both the companies together is 4800. The respective ratio of number of employees in Companies A and B is 5 : 7. Each employee works in only one of the 3 Departments
i.e. "Ops" , "Admin" and "others".
In company A, 70% of the total employees are males. 60% of the total male employees work in 'Ops'. Out of the remaining male employees, $\frac{1}{8}$th work in 'Admin'. Out of the total female employees, 24% work in 'Admin' and $\frac{5}{8}$th of the remaining female employees work in 'Ops'.
In company B, 80% of the total employees are males. 65% of the total male employees work in 'Ops'. Number of male employees who work in other departments in Company B is 20% more than the male employees who work in 'Other Departments' in company A. Number of female employees who work in Ops in Company B are less than the number of male employees who work for 'Ops' in the same company by 75%. Out of the remaining female employees, $\frac{1}{4}$ work in 'Admin'.
21. What per cent of the total number of male employees in company A work in 'other' departments?
(a) 45 (b) 25 (c) 30 (d) 35 (e) 40
22. What percent of the total number of female employees in company B work in administration department?
(a) 18.5 (b) 8.75 (c) 14 (d) 16 (e) 19

23. What is the total number of female employees who work in Ops in Company A and B together?
(a) 681 (b) 781 (c) 689 (d) 649 (e) 788

24. What is the difference between the average number of males working in 'Admin' in both the companies together and average number of females working 'Other Departments' in both the companies together?
(a) 26 (b) 36 (c) 16 (d) 24 (e) 14

25. In company B, what is the respective ratio between the total number of employees (both male and female) who work in 'Admin' and the total number of employees (both male and female) who work in 'Other Department' in the same company?
(a) 2 : 3 (b) 1 : 3 (c) 1 : 4 (d) 3 : 5 (e) 1 : 5

Directions (26-30): Study the following data carefully to answer the questions that follow:
Gaurav, a sweet seller, bought some quantity of three types of sweets Rasgulla, Rasmalai and Kalakand in ratio of 6 : 10 : 9. Kalakand costed him a total of Rs. 18,900 at rate of 420 per kg. By selling Kalakand at a discount of 5% he earned a profit of $13\frac{2}{21}$%.On Rasmalai (which was marked Rs. 500 per kg) he earned Rs. 5 less profit per kg as compared to that on Kalakand by selling Rasmalai at 10% discount. Gaurav spent a total of Rs. 46,400 on buying these sweets, while he earned a total profit of Rs. 5875 on selling all bought sweets. Rasgullas were marked 40% above cost price per kg.

26. Find the average cost price of three sweets together ?
(a) Rs. 365.8 (b) Rs. 371.2 (c) Rs.420.5 (d) Rs.325.2 (e) Rs.375.2

27. If Gaurav gave an extra discount of 20% on Kalakand, then his gain% or loss% was :
(a) $9\frac{11}{21}\% \ profit$ (b) $8\frac{11}{21}\%$ loss (c) $10\frac{11}{23}\%$ loss (d) $9\frac{11}{21}\%$ loss (e) 9% loss

28. Find the total quantity of sweets bought by Gaurav ?
(a) 135 kg (b) 126 kg (c) 125 kg (d) 120 kg (e) 130 kg

29. If 10kg of Rasmalai was wasted away due to some reason. Find profit% or loss% by selling the remaining Rasmalai as per given condition.
(a) 10% loss (b) 10% gain (c) 12% loss (d) 15% loss (e) 8%loss

30. Cost price per kg of Kalakand was what percent less than marked price per kg of Kalakand ?
(a) 18% (b) 16% (c) 15% (d) 12% (e) 20%

Directions (31-35): The following information is about performance of Akhilesh in SBI PO mains exam. Read the information carefully and answer the following question.
The exam consists of 200 marks, with 5 sections i.e. Reasoning, quant, English, G.A., Computers. Akhilesh attempted 22 questions in Reasoning with an accuracy of $77\frac{3}{11}$%. Each question of reasoning consists of 2 marks with a negative marking of 25%. (if right question is of 2 mark, then 0.5 mark will be deducted for each wrong answer).
Each section of the exam have the 25% of negative marking for each wrong question. The total number of questions in reasoning is 30. Each question of computer consists of $\frac{1}{2}$ marks and maximum marks in computer are 10. Total 16 questions are attempted by Akhilesh in computer with the ratio of right questions to wrong questions 3 : 1.
The number of questions in English is equal to maximum marks of English. Akhilesh attempted 26 questions with 50% accuracy. The number of questions attempted in English is 65% of the total number of questions in English.
GA section consists of 40 questions with each question 0.75 marks. Akhilesh attempted 23 questions out of which 8 are wrong.
Quant section contains 40 questions out of which Akhilesh attempted 35 questions and got 52.5 marks.Mark of each question in Quant section is same.

31. Another student arunoday attempted 70% questions in the same exam, then find the number of questions left by arunoday.
(a) 119 (b) 68 (c) 51 (d) 65 (e) 121

32. Find the marks obtained by Akhilesh in GA.
(a) 8.75 (b) 9.25 (c) 9.75 (d) 10.75 (e) 10.25

33. The number of correct questions in reasoning is how much more than the number of incorrect questions in the same subject?
(a) 12 (b) 7 (c) 18 (d) 9 (e) 15

34. Find the total marks obtained by Akhilesh in the exam.
(a) 101 (b) 105 (c) 109 (d) 102 (e) 111

35. Find the total number of incorrect questions attempted by Akhilesh in the exam.
(a) 27 (b) 15 (c) 28 (d) 18 (e) 30

Directions (Q.36-40): Study the following data carefully to answer the questions that follow.
Gaurav, Abhishek, Arunoday, Shailesh, Aman, Alok and Mohit are seven friends living along a straight road in same manner as given starting with Gaurav.
Shailesh lives 150 km away from Gaurav, and takes 1 hr 40 min to reach to Alok. It takes Gaurav 5 hours to reach to Alok who lives 250 km away from him. When Arunoday and Mohit move toward each other at 70 k/hr and 50 km/hr respectively, they meet after 1 hr 35 min. Arunoday takes only $34\frac{2}{7}$ min to reach to Shailesh. Abhishek being 240 km away from Mohit crosses Aman after 5 hr 40 min and meet Mohit after 8 hours from start. Aman and Alok meet after 24 minutes if they start moving simultaneously towards each other with speed in 3 : 2 ratio.
Note: Speed of all remains constant.

36. On a weekend, all friends decided to meet at Gaurav's house at 9 : 00 pm sharp. At what time should Aman leave his house to get at Location in time if he spends 10 minutes waiting for Abhishek at Abhishek's house?
(a) 2 : 10 pm (b) 2 : 45 pm (c) 1 : 10 pm (d) 1 : 30 pm (e) 1 : 20 pm

37. Abhishek and his girlfriend together left their office at 6 : 30 pm and move towards their home with same speed as Abhishek. Office is 120km away from Aman's house in opposite direction of Abhishek's house. Find the distance of house of Abhishek's girlfriend from his house if he dropped her home at 7 : 05 pm.
(a) 280 km (b) 265.5 km (c) 252 km (d) 272.5 km (e) 275 km

38. Find the ratio of distance between residence of Gaurav and Mohit and that of Arunoday and Aman.
(a) 2 : 5 (b) 5 : 2 (c) 3 : 1 (d) 7 : 3 (e) 3 : 7

39. All friends decided to meet at Shailesh's house, with a condition that they have to move towards Shailesh house with the speed of the next friend they meet in the way starting with Gaurav and Mohit. Find the difference in the time in which the two groups reach at destination. (Rounded off up to 2 decimal points)
(a) 0.52 hr (b) 2.31 hr (c) 1.23 hr (d) 2.51 hr (e) 1.82 hr

40. By what percent speed of Arunoday is more or less than that of Mohit?
(a) 35% (b) 45% (c) 30% (d) 40% (e) 50%

PRACTICE SET (LEVEL-II) SOLUTIONS

Directions (1-5); Total village -1800

Village with only adequate water supply → $\frac{25}{100} \times 1800$
$= 450$

Village have proper supply of electricity only → $\frac{15}{100} \times 1800$
$= 270$

Village having only proper education facilities → $\frac{7}{100} \times 1800$
$= 126$

Village having tele communication service only → $\frac{12}{100} \times 1800$
$= 216$

Villages having proper health care service only → $\frac{16}{100} \times 1800$
$= 288$

Villages have adequate water as well as supply of electricity → $\frac{6}{100} \times 108$

Villages have adaqnate water supply + supply of electricity + health care service ⇒ $\frac{8}{100} \times 1800 = 144$

Village have proper supply of electricity + telecommunication services+ healthcare service → $\frac{5}{100} \times 1800 = 90$

Village have all facilities → $\frac{6}{100} \times 1800 = 108$

Water	450
Electricity	270
Education	126
Telecom	216
Healthcare	288
Water + Elec.	108
Water + Elec. + Health.	144
Elec. + Tel. + Health.	90
All	108

1. **(d);** No. of villages with water supply = 810
2. **(a);** Required number = 108 + 144 + 108 = 360
3. **(d);** Required number of villages = 450 + 126 + 216 + 288 = 1080
4. **(b);** Village with only education facility = 126
5. **(e);** Village with all facilities = 108

Solutions (6-10); Total girls who participated $= \frac{2350-650}{2}$
= 850

Total boys who participated in the games = 850 + 650
= 1500

No. of boys who participated in cricket only
$= \frac{1}{6} \times 1500 = 250$

No. of boys who participated in basketball only
$= \frac{140}{100} \times 250$
= 350

No. of boys who participated in Volleyball only
$= 350 \times \left(1 - \frac{2}{7}\right) = 250$

No. of boys who participated in basketball and volleyball only $= \frac{15}{100} \times 1500 = 225$

No. of boys who participated in cricket and volleyball only
$= \frac{100}{150} \times 225 = 150$

No. of boys who participated in cricket and basketball only
$= \frac{1}{15} \times 1500 = 100$

No. of boys who participated in all the three games
= 1500 – (250 + 350 + 250 + 225 + 150 + 100)
= 175

No. of girls who participated in basketball only
$= 850 \times \frac{4}{17} = 200$

No. of girls who participated in Volleyball only $= 200 \times \frac{9}{8}$
= 225

No. of girls who participated in cricket only
$= 225 \times \frac{7}{9} = 175$

No. of girls who participated in cricket and basketball only
$= \frac{3}{34} \times 850$
= 75 = Total no. of girls who participated in basketball and volleyball only

No. of girls who participated in cricket and Volleyball only = 50

No. of girls who participated in all the three games
= 850 – (200 + 225 + 175 + 75 + 50 + 75) = 50

6. **(d);** No. of students who participated in all the three games
= 175 + 50 = 225
7. **(b);** Required no. of boys = 225 + 150 + 100 + 175
= 650
8. **(e);** Required percentage
$= \frac{225}{850} \times 100 = 26\frac{8}{17}\%$
9. **(d);** Total no. of students who participated in basketball but not in Volley Ball
= 350 + 100 + 200 + 75 = 725
∴ Required percentage $= \frac{725}{2350} \times 100 = 30\frac{40}{47}\%$
10. **(e);** Required difference
= (350 + 225 + 100 + 175) – (225 + 75 + 50 + 50)
= 850 – 400 = 450

Solution (11-15); Number of athletes participated only in 100 m
$= \frac{30}{100} \times 200 = 60$

Female athletes participated only in 100 m
$= \frac{1}{3} \times 60 = 20$

Male athletes participated only in 100 m
$= \frac{2}{3} \times 60 = 40$

No. of athletes participated only in 200 m
$= \frac{15}{100} \times 200 = 30$

Female athletes participated only in 200 m
$= \frac{40}{100} \times 30 = 12$

Male athletes participated only in 200 m = 30 – 12 = 18

Number of athletes participated only in 400 m
$= \frac{1}{4} \times 200 = 50$

Male athletes participated only in 400 m
$\frac{50}{2} = 25$ = Female athletes participated only in 400 m

No. of athletes participated in 100 m and 200 m race but not in 400 m race
$= \frac{1}{10} \times 200 = 20$
Female athletes participated in 100 m and 200 m race but not in 400 m race
$= \frac{1}{4} \times 20 = 5$
Males athletes participated in 100 m and 200 m race but not in 400 m race
$= \frac{3}{4} \times 20 = 15$
No. of athletes participated in 100 m and 400 m race but not in 200 m race
$= \frac{7.5}{100} \times 200 = 15$
Females athletes participated in 100 m and 400 m race but not in 200 m race
$= \frac{8}{15} \times 15 = 8$
Males athletes participated in 100 m and 400 m race but not in 200 m race
$= \frac{7}{15} \times 15 = 7$
Number of athletes participated in all three categories
$= \frac{1}{20} \times 200 = 10$
Female athletes participated in all three categories
$= \frac{1}{5} \times 10 = 2$
Male athletes participated in all three categories
$= \frac{4}{5} \times 10 = 8$
Number of female athletes participated in 200m and 400m race but not in 100 m race
$= \frac{8}{15} \times (200 - 60 - 30 - 50 - 20 - 15 - 10)$
$= \frac{8}{15} \times (15) = 8$
Number of male athletes participated in 200m and 400m race but not in 100 m race
$= \frac{7}{15} \times 15 = 7$

Race→	100m	200m	400m	100m + 200m	100m + 400m	200m + 400m	100m + 200m + 400m	Total
Male	40	18	25	15	7	7	8	120
Female	20	12	25	5	8	8	2	80

11. (b); 5+8+8=21
12. (b); Females = 20+12+25 = 57
Total males = 120
Difference = $120 - 57 = 63$
13. (c); Total = 15
Males = 7
Ratio = 15 : 7
14. (e); $120 - 8 = 112$
15. (a); Total females = 80
Male (all 3 categories) = 8
Req. % = $\frac{8}{80} \times 100 = 10\%$

Solution (16-20)
Non-technical staff in the organization
$= \frac{275}{700} \times 1400 = 550$
Technical staff in the organization = 1400 – 550 = 850
Male members in technical staff
$= \frac{11}{17} \times 850 = 550$
Female members in technical staff = 850 – 550 = 300
Male in technical staff who prefer only tea
$= \frac{14}{100} \times 550 = 77$
Male in technical staff who prefer only coffee
$= \frac{32}{100} \times 550 = 176$
Male in technical staff who prefer only Milk
$= \frac{28}{100} \times 550 = 154$
Male in technical staff who prefer only tea and coffee
$= \frac{8}{100} \times 550 = 44$
Male in technical staff who prefer only milk and coffee
$= \frac{8}{100} \times 550 = 44$
Male in technical staff who prefer only tea & milk
$= \frac{6}{100} \times 550 = 33$
Male in technical staff who prefer all three
$= 550 - [77 + 176 + 154 + 44 + 33 + 44] = 22$
Females in technical staff who prefer only tea
$= \frac{24}{100} \times 300 = 72$
Females in technical staff who prefer only coffee
$= \frac{12}{100} \times 300 = 36$
Females in technical staff who prefer only milk
$= \frac{38}{100} \times 300 = 114$
Females in technical staff who prefer only tea & milk
$= \frac{6}{100} \times 300 = 18$
Females in technical staff who prefer only tea & coffee
$= \frac{4}{100} \times 300 = 12$
Females in technical staff who prefer only coffee & milk
$= \frac{10}{100} \times 300 = 30$
Females in technical staff who prefer all the three
$= 300 - (72 + 36 + 114 + 12 + 18 + 30) = 18$
Males in Non-technical staff $= \frac{7}{11} \times 550 = 350$
Females in Non-technical staff $= \frac{4}{11} \times 550 = 200$
Males in non-technical staff who prefer only tea
$= \frac{32}{100} \times 350 = 112$
Males in non-technical staff who prefer only coffee
$= \frac{16}{100} \times 350 = 56$
Males in non-technical staff who prefer only milk
$= \frac{24}{100} \times 350 = 84$
Males in non-technical staff who prefer only tea & milk
$= \frac{10}{100} \times 350 = 35$
Males in non-technical staff who prefer only tea & coffee
$= \frac{6}{100} \times 350 = 21$
Males in non-technical staff who prefer only coffee & milk
$= \frac{4}{100} \times 350 = 14$
Males in non-technical staff who prefer all the three

= 350 – (112 + 56 + 84 + 21 + 35 + 14) = 28
Female in non-technical staff who prefer only tea
$= \frac{12}{100} \times 200 = 24$
Female in non-technical staff who prefer only coffee
$= \frac{36}{100} \times 200 = 72$
Female in non-technical staff who prefer only milk
$= \frac{34}{100} \times 200 = 68$
Female in non-technical staff who prefer only milk and tea
$= \frac{4}{100} \times 200 = 8$
Female in non-technical staff who prefer only tea & coffee
$= \frac{8}{100} \times 200 = 16$
Female in non-technical staff who prefer only milk & coffee
$= \frac{4}{100} \times 200 = 8$
Female in non-technical staff who prefer all the three
= 200 – (24 + 72 + 68 + 16 + 8 + 8) = 4

Preference	Technical staff (850)		Non-Technical staff (550)	
	Male (550)	Female (300)	Male (550)	Female (300)
Only tea	77	72	112	24
Only coffee	176	36	56	72
Only milk	154	114	84	68
Only tea & coffee	44	12	21	16
Only tea & milk	33	18	35	8
Only milk and coffee	44	30	14	8
All the three	22	18	28	4

16. (a); = 77 + 176 + 44 + 44 + 33 + 22
= 396

17. (b); Number of male members who prefer tea
= 77 + 44 + 33 + 22 + 112 + 21 + 35 + 28
= 372
Number of female members who prefer coffee
= 36 + 12 + 30 + 18 + 72 + 16 + 8 + 4
= 196
The required ratio = 372 : 196 = 93 : 49

18. (e); Number of male in technical who prefer milk = 154 + 44 + 33 + 22 = 253
Number of female in non-technical who prefer milk = 68 + 8 + 8 + 4 = 88
Difference = 253 − 88 = 165

19. (d); Number of female in non-technical who prefer coffee = 72 + 16 + 8 + 4 = 100
Number of female in the technical staff who prefer milk = 114 + 30 + 18 + 18
= 180
Required percent $= \frac{100}{180} \times 100 = 55.55\%$

20. (c); Required ratio $= \frac{112+56+84}{72+36+114} = \frac{252}{222} = \frac{42}{37}$

Solutions (21 – 25); Number of employees in company A
$= \frac{5}{12} \times 4800 = 2000$
Number of employees in company B
$= \frac{7}{12} \times 4800 = 2800$
Male employees in company A $= \frac{70}{100} \times 2000 = 1400$
Female employees in company A = 2000 – 1400 = 600
Male employees working in 'Ops' in company A
$= \frac{60}{100} \times 1400 = 840$
Male employees working in Admin in company A
$= \frac{1}{8}(1400 - 840) = 70$
Male employees working in others in company A
$= \frac{7}{8}(1400 - 840) = 490$
Female employees working in Admin in company A
$= \frac{24}{100} \times 600 = 144$
Female employees working in 'Ops' in company A
$= \frac{5}{8}(600 - 144) = 285$
Female employees working in Others in company A
= 600 – 144 – 285 = 171
Male employees in company B
$= \frac{80}{100} \times 2800 = 2240$
Female employees in company B = 2800 – 2240 = 560
Male employees working in 'Ops' in company B
$= \frac{65}{100} \times 2240 = 1456$
Male employee working in 'other' in company B
$= \frac{12}{10} \times 490 = 588$
Male employees working in 'Admin' in company B
= 2240 – 1456 – 588 = 196
Female employees working in 'Ops' in company B
$= 1456 \times \frac{25}{100} = 364$
Female employees working in Admin in company B
$= \frac{1}{4}(560 - 364) = 49$
Female employees working in Others in company B
$= \frac{3}{4}(560 - 364) = 147$
For company A, Total = 2000

	Male (1400)	Female (600)
Ops	840	285
Admin	70	144
Other	490	171

For Company B –, Total = 2800

	Male (2240)	Female (560)
Ops	1456	364
Admin	196	49
Other	588	147

21 (d); Required % $= \frac{490}{1400} \times 100 = 35\%$

22. (b); Required % $= \frac{49}{560} \times 100 = 8.75\%$

23. (d); Required no. of female = 285 + 364 = 649

24. (a); Required difference $= \frac{171+147}{2} - \frac{70+196}{2}$
$= 159 - 133 = 26$

25. (b); Required Ratio = (196 + 49): (588 + 147)
= 245 : 735 = 1 : 3

Solution (26-30)
Let the quantity of Rasgulla, Rasmalai and Kalakand be 6x, 10x and 9x respectively.

$Total\ quantity\ of\ Kalakand = \frac{18900}{420} = 45\ kg$

$\therefore\ Total\ quantity\ of\ Rasgula = 45 \times \frac{6}{9} = 30\ kg$

$Total\ quantity\ of\ Rasmalai = 45 \times \frac{10}{9} = 50\ kg$

Now, S.P. of Kalakand $= \frac{100+\frac{275}{21}}{100} \times 420 = Rs.475/kg$

$\therefore M.P.of\ Kalakand = 475 \times \frac{100}{95}$
$= Rs.500/kg$
$S.P.of\ Rasmalia = \frac{90}{100} \times 500$
$= Rs.450/kg$
$C.P.of\ Rasgulla = \frac{[46400 - (50\times400) - (45\times420)]}{30}$
$= Rs.250/kg$
Profit per kg of Rasgulla
$= \frac{5875 - (50\times50) - (45\times55)}{30}$ = Rs. 30
∴ S.P. per kg of Rasgulla = 250 + 30 = Rs. 280
And M.P. per kg of Rasgulla $= \frac{140}{100} \times 250 = Rs.350$

Sweets	Quantity (Kg)	C.P. (in Rs/kg)	M.P. (Rs./kg)	S.P. (Rs./kg)	Profit (Rs./kg)
Rasgulla	30	250	350	280	30
Rasmalai	50	400	500	450	50
Kalakand	45	420	500	475	55

26. (b); Required average C.P. per kg $= \frac{46400}{125} = Rs.371.2$

27. (d); New S.P. = $\frac{80}{100}\times$ 475 = Rs. 380/kg
$\therefore$ Loss% = $\frac{40}{420} \times 100 = 9\frac{11}{21}\%$

28. (c); Total sweets bought = 30 + 50 + 45 = 125 kg

29. (a); Total. C.P. = 50 × 400 = Rs. 20,000
Total S.P. = 40 × 450 = Rs. 18,000
$\therefore\ Required\ loss\% = \frac{2000}{20000} \times 100 = 10\%$

30. (b); $Required\ percentage = \frac{80}{500} \times 100$
$= 16\%$

Solution (31-35); Maximum Marks in Reasoning = 30×2 = 60
Correct question done by Akhilesh in Reasoning = $22 \times \frac{850}{1100} = 17$
Wrong question done by Akhilesh in Reasoning = 22 – 17 = 5
Marks scored by Akhilesh in Reasoning = 17 × 2 – 5 × 0.5 = 31.5
Number of questions in Computer = 2 × 10 = 20
Correct question done in computer $= 16 \times \frac{3}{4} = 12$
Wrong question done in computer $= 16 \times \frac{1}{4} = 4$
Marks scored in Computer $= 12 \times \frac{1}{2} - 4 \times \frac{1}{2} \times \frac{1}{4} = 5.5$
Number of question in English = Maximum marks of English
⇒ Marks for each question in English = 1
Correction question done in English $= 26 \times \frac{1}{2} = 13$
Wrong question done in English $= 26 \times \frac{1}{2} = 13$
Total number of questions in English $= \frac{26}{65} \times 100 = 40$
Marks scored in English $= 13 \times 1 - 13 \times \frac{1}{4} = 9.75$
Marks scored in GA = $(23 - 8) \times 0.75 - 8 \times 0.75 \times \frac{1}{4}$
= 11.25 – 1.5 = 9.75
Total marks of Quant section = 200 – 30 × 2 – 10 – 40 – 40 × 0.75 = 60
{30×2 for reasoning; 10 for computer; 40 for English; 40×0.75 for GA}
Mark of each question in Quant Section = $\frac{60}{40}$ = 1.5
Let, x = Correct question done in Quant
y = Wrong question done in Quant
ATQ,
x + y = 35 ... (i)
$1.5x - 1.5y \times \frac{1}{4} = 52.5$ ... (ii)
On solving (i) & (ii)
x = 35, y = 0

	Total questions	Maximum marks	Attempt	Right question	Wrong question	Marks obtained
Reasoning	30	60	22	17	5	31.5
Computer	20	10	16	12	4	5.5
English	40	40	26	13	13	9.75
GA	40	30	23	15	8	9.75
Quant	40	60	35	35	0	52.5

31. (c); Total number of question = 170, no of questions left= $170 \times \frac{30}{100} = 51$

32. (c); Marks in GA = 9.75

33. (a); 17 – 5 = 12

34. (c); $Total\ marks\ obtained$
$= 31.5 + 5.5 + 9.75 + 9.75 + 52.5 = 109$

35. (e); Total number of incorrect questions
$= 5 + 4 + 13 + 8 = 30$

Solutions (36-40):
Distance of Alok from Gaurav = 250 km
$Speed\ of\ Gaurav = \frac{250}{5} = 50\ km/hr$
Distance of Shailesh from Gaurav = 150 km
Distance between Alok and Shailesh = 250 – 150 = 100 km
$Speed\ of\ Shailesh = \frac{100}{5} \times 3 = 60\ km/hr$
Speed of Arunoday = 70 km/hr
Speed of Mohit = 50 km/hr
Distance between Arunoday and Mohit
$= 120 \times \frac{19}{12} = 190\ km$
Distance between Arunoday and Shailesh
$= 70 \times \frac{240}{7} \times \frac{1}{60} = 40\ km$
Distance of Arunoday from Gaurav = 150 – 40 = 110 km
Distance of Mohit from Gaurav = 110 + 190 = 300 km
Distance of Abhishek from Gaurav = 300 – 240 = 60 km
$Speed\ of\ Abhishek = \frac{300-60}{8} = 30\ km/hr$
Distance between Abhishek and Aman
$= 30 \times 5\frac{2}{3} = 30 \times \frac{17}{3} = 170\ km$
Distance of Aman from Gaurav = 60 + 170 = 230 km
Let speed of Aman and Alok is 3x and 2x respectively.
ATQ,
$5x = \frac{20}{24} \times 60 = 50 \Rightarrow$ x = 10
Speed of Aman = 30
Speed of Alok = 20
From the data,

Friends	speed (km/hr)	Distance (km) with reference to Gaurav
Gaurav	50	0
Abhishek	30	60
Arunoday	70	110
Shailesh	60	150
Aman	30	230
Alok	20	250
Mohit	50	300

36. (c); Time taken by Aman = $\frac{230}{30}$ = 7 hr 40 min

∴ Total time taken = 7 hr 50 min

i.e. he must left his house at 1 : 10 pm

37. (d); Distance of office from Abhishek house = 170 + 120 = 290 km

Distance travelled by them in 35 minutes

= $30 \times \frac{35}{60} = 17.5$ km

∴ Distance of his girlfriend's house from his house = 290 – 17.5 = 272.5 km

38. (b); Required ratio = $\frac{300}{230-110} = \frac{300}{120} = 5 : 2$

39. (c); Group I (Gaurav, Abhishek and Arunoday)

Total time taken = $\frac{60}{50} + \frac{50}{30} + \frac{40}{70} = \frac{361}{105}$ hr

Group II (Aman, Alok, Mohit)

Total time taken = $\frac{50}{50} + \frac{20}{20} + \frac{80}{30} = \frac{14}{3}$ hr

∴ Required time = $\frac{14}{3} - \frac{361}{105} = \frac{490-361}{105} = \frac{129}{105}$ hr.

≈ 1.23 hr

40. (d); Required percent = $\frac{70-50}{50} \times 100 = \frac{20}{50} \times 100 = 40\%$