MATHS

प्रीवियस ईयर Panacea

SSC CGL 2022 (Pre+Mains)

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CDS & Other Govt. Exams

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He has got selected at his very early age and his words "**SELECTED है SELECTION दिलायेंगे**" are very popular among students.

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**** HE SCORED ****

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Dedicated to my dear "ASPIRANTS" & team "RANKERS' GURUKUL" Who have inspired me to write this book.

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मैं उन सभी लोगों का आभारी हूँ जिन्होंने इस पुस्तक को तैयार करने में मेरी मदद की। मैं विशेषकर विक्रमजीत सर का ऋणी हूँ, जिन्होंने हमेशा बड़े भाई की तरह मेरा मार्गदर्शन किया और शायद जिनके बिना इस मुकाम पर पहुँचना संभव नहीं था। साथ में सबसे ज्यादा आभारी Rudra Sir का हूँ, जिन्होंने दिन रात मेहनत करके इस पुस्तक को तैयार किया है उन्होंने बच्चों को एक मास्टरपीस दिया है जिससे उनको काफी मदद मिलेगी, साथ ही साथ प्रियंका सोलंकी, सुयाश, सचिन, अनीश, मनदीप आदि ने Proofread करके इसको Error Free बनाया है और जिस तरह से महाभारत के रचयिता वेदव्यास जी है लेकिन इसे लिखा गणेश जी ने है उसी तरह से इस किताब को लिखने वाले हमारे टाइपिस्ट अमित सिंह, पंकज, अजय और शिवानी मैम हैं। मैं अपने छात्रों को भी धन्यवाद देना चाहता हूँ जिन्होंने वास्तव में मुझे इस पुस्तक को बनाने के लिए प्रेरित किया।

– आदित्य रंजन

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PERCENTAGE

प्रतिशतता

01

1. The length and breadth of a rectangle are increased by 8% and 5%, respectively. By how much percentage will the area of the rectangle increase?

है दिया गया है कि एक आयत की लंबाई और चौड़ाई में क्रमशः 8% और 5% की वृद्धि की जाती है। आयत के क्षेत्रफल में कितने प्रतिशत की वृद्धि होगी?

SSC CGL 01/12/2022 (Shift- 01)

(a) 13.4% (b) 15.4%

(c) 12.4% (d) 16.4%

2. The price of a scooter increases successively by10%, 5% and 15%. What is the total percentage increase in price of scooter?

है कि एक स्कूटर की कीमत में क्रमशः 10%, 5% और 15% की वृद्धि की जाती है। स्कूटर की कीमत में कुल प्रतिशत वृद्धि क्या है?

SSC CGL 01/12/2022 (Shift- 02)

(a) $32\frac{33}{40}\%$ (b) $34\frac{21}{40}\%$

(c) $30\frac{11}{40}\%$ (d) $36\frac{31}{40}\%$

3. Raju, Ravi and Ashok contested an election. 5% votes polled were invalid. Raju got 30% of the total votes. Ravi got 32% of the total votes. The winner got 5136 more votes than the person who received the least number of votes. Find the total number of votes polled.

राजू, रवि और अशोक ने एक चुनाव लड़ा। डाले गए मतों में 5% मत अवैध थे। राजू को कुल मतों में से 30% मत प्राप्त हुए। रवि को कुल मतों में से 32% मत प्राप्त हुए। विजेता को सबसे कम मत प्राप्त करने वाले व्यक्ति से 5136 मत अधिक प्राप्त हुए। डाले गए मतों की कुल संख्या ज्ञात करें।

SSC CGL 01/12/2022 (Shift- 04)

(a) 171200 (b) 64200

(c) 171220 (d) 172100

4. In the election, 8% of the voters did not cast their votes. Two candidates contested the election in which the winning cadidate got 48% of the total votes and won election by 1100 votes. Find the total number of voters in the election, given that all the votes cast were valid?

है कि एक चुनाव में 8% मतदाताओं ने मतदान नहीं किया। दो प्रत्याशियों ने चुनाव लड़ा जिसमें विजेता प्रत्याशी को कुल मतों में से 48% मत प्राप्त हुए और वह चुनाव 1100 मतों से जीत गया। चुनाव में मतदाताओं की कुल संख्या ज्ञात करें, यह दिया गया है कि सभी मत वैध थे।

SSC CGL 02/12/2022 (Shift- 01)

(a) 25500 (b) 26500

(c) 27500 (d) 28500

5. In an election between two candidates, the defeated candidate secured 42% of the valid votes polled and lost the election by 7,68,400 votes. If 82,560 votes were declared invalid and 20% people did NOT cast their vote, then the invalid votes were what percentage (rounded off to 1 decimal place) of the votes which people did NOT cast?

दो प्रत्याशियों के बीच हुए चुनाव में पराजित प्रत्याशी ने डाले गए वैध मतों में से 42% मत प्राप्त किए और वह चुनाव 7,68,400 मतों से हार गया। यदि 82,560 मतों को अवैध घोषित किया गया और 20% लोगों ने मतदान नहीं किया, तो अवैध मत, लोगों द्वारा मतदान नहीं किए गए मतों का कितने प्रतिशत (1 दशमलव स्थान तक पूर्णांकित) है?

SSC CGL 02/12/2022 (Shift- 02)

(a) 10.6 Percent (b) 9.8 Percent

(c) 12.9 Percent (d) 6.8 Percent

6. A district has 10,24,000 inhabitants. If the population increases at the rate 2.5% per annum, find the number of inhabitants at the end of three years.

है कि एक जिले की जनसंख्या 10,24,000 है। यदि जनसंख्या की वृद्धि दर 2.5% प्रति वर्ष है, तो तीन वर्ष के अंत में जनसंख्या ज्ञात करें।

SSC CGL 02/12/2022 (Shift- 02)

(a) 11,20,736 (b) 11,02,736

(c) 10,75,840 (d) 10,64,850

Maths by Aditya Ranjan Sir

7. The reduction of 20% in the price of rice enables a person to obtain 50 kg more for Rs.450. Find the original price of rice per kg.

जल ं ि ं क्यकिमु टचौ ं ि केहै ि ा क्रायौ लिउडट .ृ ा सिकमिडटिkgदि क्रौ जिल ं ि ृ क्रयौ र। सिकमिध5त्वर्ा-। त्वो 8लजिल ं ि लिक्रं क्रिस ृ क्रयkgि6त्वौ ं क्र ह%

SSC CGL 02/12/2022 (Shift- 02)

(a) Rs.1 (b) Rs.2
(c) Rs.1.25 (d) Rs.2.25

8. In an election between two candidates, 12% of voters did not cast their votes. The winner by obtaining 68% of the total votes defeated his contestant by 2880 votes. What was the total number of voters who cast their votes in the election?

ध्लिख्कंध् त्वलौ सि-े जहै जि1ल किमू ु चकिय्ध्त्वाद लौ। त . लौ। 8 सिनल लक्रि: त्वलौ। सै ं ा कियलौ लिप् चढिलयौ रै त द् । सिढक्रा त्वो ि लुि ं टकियलधिसि8रत लजि1ल किमिकय्ध्ल ं र। सि ं ल सिकय्ध्त्वाद लौ ं ि ं ा धिय्म लिक्रं या ध्लिप

SSC CGL 02/12/2022 (Shift- 03)

(a) 5280 (b) 8000
(c) 4000 (d) 6000

9. Ram loses $12\frac{1}{2}$% of his money and after spending 75% of the remainder, is left with Rs.630. How much money did Ram have initially?

रत्वौ सि ृ त्वा क्रि या लि0। ि ध्लिख्ध्ै लि $12\frac{1}{2}$% किलमि ा ल द लबिलमि0। ि लिम्डचा क्त्मभै र। सै सि-त्वख्ध्ै सि ृ त्वा ध् ,टि.ृ ा सिबिलमि-जयसि8लरिलौ सि ृ त्वाबिल किमिक्रि या सि.ृ ा त घ्ल

SSC CGL 03/12/2022 (Shift- 02)

(a) Rs.2,080 (b) Rs.2,880
(c) Rs.2,205 (d) Rs.2,808

10. Number p is 15% more than 150. If k is 15% less than p, then k is equal to:

धय्म लिp, 150धिसि15%दि क्रौ 8लि क्रिk, pधिसि15% ं कि8लयलिkक्रि धै सि-रलर8स

SSC CGL 03/12/2022 (Shift- 03)

(a) 136. 324 (b) 166. 625
(c) 116. 328 (d) 146. 625

11. If the price of salt decreases by 20%, then by what percentage should consumption be increased to keep the expenditure same?

ा क्रि। कै ि लिक्रस ृ ि टचौ कि8लि: त्वलि8लयलि ा ि ल धक्लारिक्लासै सिक्रं ह क्लूलयकिमिक्रि या सि ृ क्रयबल्यौ ं ि क्र ं ि: लो जिल8हप

SSC CGL 03/12/2022 (Shift- 03)

(a) 26% (b) 27%
(c) 25% (d) 24%

12. The cost of apples is increased by 20% and then decreased by 20%. What is the net pecentage decrease?

धतौ ं ि ं क्यकिमु टचौ ं ि क्र ं ि ं ि: त्वो 8दि लक्रिद्ध ु टचौ ं ि केौ ं ि: त्वो 8लबिल ृ क्रयबल्यौ केसा लि8स

SSC CGL 03/12/2022 (Shift- 04)

(a) 4% (b) 3%
(c) 5% (d) 6%

13. 0.5 is what percentage of 20?

0.5, 20ौ लिक्रि या सि ृ क्रयबल्य8स

SSC CGL 05/12/2022 (Shift- 01)

(a) 25% (b) 0.25%
(c) 2.5% (d) 0.025%

14. Mr. X has a monthly income of $26,500 and his monthly expenditure is $20,500. The next year, his salary is increased by 12% and expenditure is increased by 6%. His savings increase by how much percent?

क्रक ?रXौ ं क्लिक्रौ दि ता$26,500 8दि लखिै लिक्लक्रौ ा ा$20,500 8लदि ं सि ृ न्तखिै ं दि ता किमि12%ौ ं क्र 8त्वो 8दि लि ा किमि6%ौ ं ि क्र 8त्वो 8लख्ध्ै ं -जयकिमिक्रि या सि ृ क्रयबल्यौ ं ि क्र 8त्वो 8स

SSC CGL 05/12/2022 (Shift- 03)

(a) 32.5% (b) 27.3%
(c) 32.0% (d) 34.7%

15. During the first year, the population of a town increased by 12%.The next year, due to some contagious disease, it decreased by 8%. At the end of the second year, the population was 64,400. Find the population of the town at beginning of the first year.

ं 8 सि ृ न्तौ सिध्लालहै ि ं ि-सै ं ि: । धय्म लिकमू ु चौ ं क्र 81श्रदि ं सि ृ न्तक्रि धे धिी ा त्वयरिलौ सै लरुलि धक्ल ं चौ ं ि केदि लश्रध्धरसि ृ न्तौ सिद यकिमि: । धय्म लिप्उल्टट घ्लेसि ृ 8 सि ृ न्तौ ं बिल दि त्वाकिमि ं ि-सै ं ि: । धय्म लिक्रि या ध्लेप

SSC CGL 05/12/2022 (Shift- 04)

(a) 50,00 (b) 54,750
(c) 62,500 (d) 50,500

Maths by Aditya Ranjan sir

16. Two candidates P and Q contested in an election. 70% of the registered voters are P supporters. If 60% of the P supporters and 30% of the Q supporters are expected to vote for candidate P, then what percentage of the registered voters are expected to vote for candidate P?

ध्तीख्क्केध् ल्ति P दि ल्ति Q ।ि सिहै ि जि1ल्ति नख्ति ग्रे प्रय क्यध्त्यल्द ल्तीक्मीधसिम्टचक्यध्त्यल्ति P ि सिधक्त्रैअ8ल्ति क्रि P ि सिम्टचधिक्त्रैअल्ति दि ल्ति Q ि सि, टचधिक्त्रैअल्तीधसिख्क्केध् ि ` : त्यो 8र्क्रै क्रि सिख्क्केध् ल्ति P ि ल्ति ल्तीध्त्रत यल्तीक्रै या त ध्क्षबल्त्यि ग्रे प्र यक्यध्त्यल्द ल्तीधसिख्क्केध् ल्ति P ि ल्ति ल्तीध्त्रत ि ` ख्क्केध 8स

SSC CGL 06/12/2022 (Shift- 01)

(a) 30% (b) 51%
(c) 26% (d) 47%

17. The population of country A decreased by p% and the population of country B decreased by q% from the year 2020 to 2021. Here 'p' is greater than 'q'. Let 'x' be the ratio of the population of country A to the population of country B in the given year. What is the percentage decrease in 'x' from 2020 to 2021?

. न्ल्ति टु टधिसि टु यि ध्त्रत्ति A ि ` ि: । धम्म ल्तीक्मी p% ि ` ि के 81ऽ भद ल्ति ध्त्रत्ति B ि ` ि: । धम्म ल्तीक्मी q% ि ` ि के द लऽ 8ल्ति 'p', 'q' धिसि-नख्ति 8ल्ति क्ल्ति 'x' क्रि ह ि ह ि न्ल्ति क्म ध्त्रत्ति A ि ` ि: । धम्म ल्ति ल्तीध्त्रत्ति B ि ` ि: । धम्म ल्तीधसिद । 1त्य 8ल्ति टु टधिसि टु यि ि 'x' क्मी क्रि या सि ध्क्षबल्त्य ि ` ि के 8स

SSC CGL 06/12/2022 (Shift- 02)

(a) $\frac{100(p-q)}{(100-q)}$ (b) $\frac{100(p-q)}{100+p}$

(c) $\frac{100(p-q)}{100-p}$ (d) $\frac{100(p-q)}{100+q}$

18. If the price of petrol is increased by 28%, by what percentage should the consumption be decreased by the consumer, if the expenditure on petrol remains unchanged? (Correct to 2 decimal places)

। क्रि तीख्ति ि ` ि ` क्य क्मी ` चि ` ि ध्क्ष 8त्यो 8ल्ति यत्त ख्ट ँ त्तायल्ति ष्त्यल्ति क्लि यक्मी क्रि या सि ध्क्षबल्त्य ि ` ि के ि ` ि: लो जत्त 8हल्ति क्रि तीख्ति ि रऽ । दि क्र ु यय रि 8यल्ति 8स थु ध्ि बल्क ं. ि ध्त्त ल्तीयै ध्ि 8 द्व

SSC CGL 06/12/2022 (Shift- 03)

(a) 12.35% (b) 21.88%
(c) 20.25% (d) 25.75%

19. A man loses 20% of his money and after spending 85% of the remainder, he is left with Rs.120. How much did he have at first?

क्रै धे ि ऽ क्रायि सि त्य क्त्त ध्ख्ध्ै ` ि ` 1 रि त्त्त्त्ति ल्ति टच क्त्त्ति : ल सि द ल्ति क्त्त्त्ति रि त्त्त्त्ति ल्ति ि डच क्त्त्ति क्मी र । सि सि-त्य ू टि . । सि-जयसि 8र्क्रै ध्क्षँगल्ति क्मी ख्ध्ै सि त्य क्रै या ि रि त्त्त्त्त ध्ेल्प

SSC CGL 06/12/2022 (Shift- 04)

(a) Rs.1,200 (b) Rs.1,000
(c) Rs.800 (d) Rs.500

20. A mask manufacturing company manufactured 'X' number of masks in 2018. It increased its manufacturing capacity by 30% in 2019 and further increased its manufacturing by 15% in 2020. In 2021, due to the machinery breakdown, its manufacturing declined by 40%. What is the value of 'X' if it manufactured 179400 masks in 2021?

है क्ति ै क्रि क्त्त्त्ति ृ ग ो । ि सि टू ि क्मी X' धिस्म ल्ति सि क्ति ै ल्ति क्रि क्त्त्त्ति क्रै । ल्ति ध । सि टू भ क्मी द ृ ो क्रि क्त्त्त्ति 5ल्त्त्त्य ल्ति क्म , टचौ ` ि ध्क्ष ौ ` दि ल्ति ख्ध्ै सि-त्य टु टक्मी ध्ै सि क्रि क्त्त्त्त क्मी ू डचौ ` दि ल्ति ध्क्ष ौ ` र्क्रि टु ू क्मी क्त्त्त्ति ल्ति 8त्त्त्त्ति सि क्त्त्त्त 8त्त्त्त्ति सि त्त्त्त्ति ध्ै सि क्रि क्त्त्त्त्ति क्मी उटचौ ` क्रि र्त्त्त ? दि ल्त्त्त्त

22. The length and breadth of a cuboid is increased by 20% and 25%, respectively, while its height is reduced by 30%. What must be the total percentage increase/decrease in the volume of the cuboid?

है ि/लॉलॅलॅ ` ि मलभिद लाजिलाएभिक्मी कवइ्ड्ि टचदि ल ु डचौ ` ि ख्र्ा ौ ` ि: त्वे ि8लॅ: -क्रै ि धै ` त्ति फलभिक्मी, टच ै ` ि केौ ` ि: त्वे ि8लॅ/लॉलॅलॅ सिद ता या। किमी ` ि ख्र्यवत्य . ख्र्ा ऊै केक्रि यो ि8लो जिल्ब्हप

SSC CGL 07/12/2022 (Shift- 03)

(a) Increase by 5% (b) Increase by 3%
(c) Decrease by 2% (d) Decrease by 4%

23. Three candidates were participating in an election. The person at third place got 20% of the total votes while the difference between the votes of the winner and the first runner up was 20% of the total votes. If the difference between the votes of the first runner up and the second runner up was 37,000, how many votes did the winner receive?

है जि1ल किमीये। ख्क्रेध् लॉ ँ लवॉ सिर8सिध्लॉये धरकि ध्लॉ ् ररि8। सि् लं सि7 क्रायौ लॉ ` ि क्यलॉ लु टचा् ख्र्या 8द ल : -क्रै क्रि: त्वालॉ द लॉ् ख्त्वा ख् क्रि: त्वालॉ सिक्यलॉ लॉ द यर ै ` ि क्यलॉ लु टचध्लॉ। क्रि् ख्त्वा ख् क्रि: त्वालॉ द लॉ क्रिये। ख् क्रि: त्वालॉ सिक्यलॉ लॉ द यर, म्लॉटटध्लॉ यलॉ क्रि: त्वालॉ ल क्रै या सिक्या् ख्र्या 8ह्प

SSC CGL 07/12/2022 (Shift- 04)

(a) 1,80,000 (b) 1,85,000
(c) 1,75,000 (d) 1,95,000

24. In an election between two candidates, a candidate who gets 76 % of the total votes polled is elected by a majority of 1480 votes. What is the total number of votes polled? (Consider integral part only)

ध्लॉख्क्रेध् लवॉ सि- जि है जि1ल किमी है ख्क्रेध् ल क्र धसि ` ि निलं सि> ह क्यलॉ लॉ म्प्चा् ख्र्या 8लवॉ 8लॉ ू ई ट क्यलॉ सि- 8क्यधसि क्र् लवॉ या 8लवॉ 8लॉ निलं सि> ह क्यलॉ ै ` ि धिख्म लॉ क्रै यो 8सथि ख्छ्ख्र्ा् रुलॉ धिख्म लॉ यै 6ल्यौ ` क्र ह्द्व

SSC CGL 08/12/2022 (Shift- 01)

(a) 2800 (b) 1800
(c) 2846 (d) 1846

25. In the first year the population of a town decreased by 5% due to the Corona virus first wave. In the next year it decreased again by 5% due to the second wave and in the third year it increased by 5%. At the end of the third year the population was 9,47,625. What was the population at the beginning of the first year?

ु 8 ं सि् न्लॉ किमी लवालवॉ ल ारधौ ` ि 8 ` ि 8रौ सौ लवरुल है क्लि8रौ ` द लॉ त्वे डिचौ क्र 8लॉ> ख्रद ं सि् न्लॉ धरत ` 8रौ सौ लवरुलॉ 8द लॉ त्वे क्रि ख्र्धसि डिचौ क्र 8लॉ> ख्रद ल ये धरसि ख्र्लॉ किमी 8द लॉ त्वे डिचा-)ए> ख्रये धरसि ख्र्लॉ सिद य क्रद लॉ त्वे भिल्ल म्ल्ु डध्लॉ ख्र् 8 सि् न्लॉ ` क्लि द लॉ त्वा क्रद लॉ त्वे क्रै यो ध्लॉ प

SSC CGL 08/12/2022 (Shift- 03)

(a) 7,00,000 (b) 10,00,000
(c) 8,97,993 (d) 9,92,519

26. Three candidates P, Q and R participated in an election. P got 35% more votes than Q, and R got 15% more votes than Q. P overtook R by 2,412 votes. If 90% voters voted and no invalid or illegal votes were cast, then what was the number of voters in the voting list?

ये। ि ध्लॉ ख्क्रा लॉ P, Q द लॉ R। सि है जि1ल किमी लवा क्रि। लॉ P। सि Q धिसि, डचा द ख्रै क्या ि ख्र्या क्रै ह द लॉ R ौ लॉ Q धित ू डचा द ख्रै क्या ि ख्र्या 8ह P। सि R ौ लॉ ल्ू ु क्यलॉ धित ् 9 सि 9 लॉ ए क्रा लॉ। क्र भिटचा क्यध्लवाल्द लॉ। सि क्यध्लवा क्रै। ल 8लॉ द लॉ लाभिद क्व ा। लॉ द ् ठ क्या। निलं लॉ> । लॉ 8लॉ यल क्यध्लवा धिजे किमी क्यध्लवाल्द लॉ ` धिख्म लॉ क्रै यो ध्लॉ प

SSC CGL 09/12/2022 (Shift- 01)

(a) 46,900 (b) 42,800
(c) 42,210 (d) 48,500

27. In an election contested between two candidates, 15% of the total voters did not cast their votes and 100 votes got disqualified. The candidate who won the election won it by securing 45% of the total votes and won by a margin of 400 votes. Find the total number of voters?

ध्लॉख्क्रेध् लवॉ सि- जि नहि> ह जि1ल किमी ` ि क्यध्लवाल्द लॉ क्रि धसि् डचा। सि क्या। 8 सि निलं लॉ द लॉ् ट टक्या द। लॉ। 8लॉ > ह भि जि1ल ि: या सि् लं सि ख्क्रेध् लॉ। सि ` ि क्यलॉ लॉ डउडच ् ख्र्या ै सिद लॉ डउटटक्यलॉ सिद यर धिसि: यल क्यध्लवाल्द लॉ ै ` ि ` ि धिख्म लॉ 6ल्यौ ` क्र ह%

SSC CGL 09/12/2022 (Shift- 02)

(a) 6,000 (b) 3,600
(c) 10,000 (d) 3,500

Maths by Aditya Ranjan sir

28. During the first year, the strength of a school increased by 12%, in the second year it decreased by 12% and in the third year it increased by 10%. At the end of the third year its strength was nearly 10842. What was the strength at the beginning of the first year?

8 सि न्तौ सि ध्लालर्ल है क्रि ग लं ा क्रिक्रि ग ल्ध्ता तौ ` धिक्ष ल क्नि ू चौ ` ि क्ष्र ि 81अ ध्धर सि 2लत्तौ क्नि ू चौ ` ि के 81अ द त्ल ये धर सि 2लत्तौ क्नि ू टचौ ` ि क्ष्र ि 81अ ये धर सि न्तौ सि द य क्नि धक्नि क्रि ग ल्ध्ता तौ ` धिक्ष तौ ँ त्ल ू ट ु ध्लेल्ल 8 त . न्तौ ` बिल द त्ल क्नि 8धिक्ष तौ सा तौ ध्लेल प

SSC CGL 09/12/2022 (Shift- 03)

(a) 8000 (b) 10000

(c) 6500 (d) 12000

29. In an election between two candidates, a candidate who gets 64% of the votes polled is elected by a majority of 252 votes. What is the total number of votes polled?

ध्तौ ख्क्के ध् त्लौ सि - जहै जि 1ल क्नि है ख्क्के ध् त्ल क्र धसि नलं सि ह क्यत्लौ लि प्उचि क्ष्य 8त्लौ 8ल् 8ु ड ु क्यत्ल ` सि - 8क्य धसि क्र त्लक्ष्य 8त्लौ 8ल् नलं सि ह क्यत्लौ ` ि 1 धिक्ष तौ क्रि यो 8स

SSC CGL 09/12/2022 (Shift- 04)

(a) 950 (b) 900

(c) 850 (d) 800

30. A number is decreased by 20% to get another number. The number so obtained is increased by 200% to get a third number. The difference of the third number and the original number is what percentage more or less than the difference of second and the third number?

है धिक्ष तौ त्ल ध्धरे धिक्ष तौ क्ष्य ौ र। सै सि क्रं ह ु टच ` क क्रै ा तौ : त्ल 8ल् ये धरे धिक्ष तौ क्ष्य ौ र। सै सि क्रं ह ल क्ष्य धिक्ष तौ क्नि ु टचौ ` ि क्ष्र ै ` ि : त्ल 8ल् ये धरे धिक्ष ल द त्ल क्रं धिक्ष तौ तौ द य र ल ध्धरे द त्ल ये धरे धिक्ष तौ त द य र धसि क्रि य। सि क्ष्य क्य द क्र ै ि तौ क 8स

SSC CGL 12/12/2022 (Shift- 02)

(a) More, 15.7 Percent

(b) Less, 15.7 Percent

(c) More, 12.5 Percent

(d) Less, 12.5 Percent

31. Out of an earning of Rs.720, Pankaj spends 65%. How much does he save?

Rs.720 ौ ` ौ क्लध्क्नि धिक्ष सि ग : प्ि ड्च क्त्ल ौ य र्ल 8ल् 8 क्रै य। तौ - जत्ल र्ल 8स

SSC CGL 12/12/2022 (Shift- 03)

(a) Rs.250 (b) Rs.252

(c) Rs.253 (d) Rs.251

32. The expenditure on the cost of living of a man and his family is 60% of his salary. He gets two increment of 30% and 60% in his salary. If his saving increases by 250% of his initial saving, then the new cost of living expenditure is what percentage (rounded off to the nearest integer) of the increased salary?

है द त्ल के द त्ल ख्ध्ै सि क्र त्लौ तौ क्रि त्ल ख्ध्ै त त्ल। ौ तौ प्ि ट्च 8ल् 8द ृ । सि त्ल। क्नि, ट्च द त्ल प्ि ट्च ` ध्त्लौ क्ष्य ृ क्ष्य ौ र्ल 8त्लौ क्र ख्ध्ै ` ि - जय ख्ध्ै ` ि क्ष्र क्रै ल - जय ौ सि ु ड ट्च धसि -)ए: त्ल्ये 8ल् य र्ल। । तौ क्रि त्ल ख्ध्ै ा ल -)ए 8ह ृ त्ल। ौ तौ क्रि य। तौ क्ष्य क्त्य थ्क्रै ?य क्र ृ ,रुत्लै क्य ै ृ ,रुत्लै क्र यद्व 8स

SSC CGL 12/12/2022 (Shift- 04)

(a) 32.7 Percent (b) 43.6 Percent

(c) 29.5 Percent (d) 36.6 Percent

33. The number of units manufactured by a company A was 12500 units in 2019 and 10625 units in 2020. While in company B, the production fell from 34000 units in 2019 to 30600 units in 2020. If X and Y are the percentage decrease in the number of units manufactured by company A and B respectively from 2019 to 2020, then what will be the ratio of X and Y?

है ि ृ ग ो ि A प्ि ल्ल तौ क्रि क्य ौ ` ला तौ ` धिक्ष तौ ु ट भ क्नि ु ु ड ट ट ि क्र क्नि ौ द त्ल ु ु ट क्नि ु ट ु ड ि क्र ? प्ि ध्लेल्ल : - क्रै ` ृ ग ो ि B क्नि र्ख्ि त्ल। ु ट भ क्नि, उ ट ट ि क्र ? प्ि धसि क्रै र ु ु ट क्नि, ट्प ट ि क्र ? 8त्लौ त्र। तौ क्रि X द त्ल Y ौ ृ ग ो A द त्ल B प्ि ल्ल तौ क्क ड्ड ु ट भ धसि ु ु ट य ै क्रि क्य ौ ` ला त्ल ` ` धिक्ष तौ क्नि ृ क्ष्य क्य ौ के 8त्लौ त्ल X द त्ल Y ौ द ृ 1त्ल सा तौ 8त्ल त्ल

SSC CGL 13/12/2022 (Shift- 01)

(a) 5 : 3 (b) 3 : 4

(c) 3 : 2 (d) 8 : 5

Maths by Aditya Ranjan sir

34. The sum of two numbers is 680. If the bigger number is decreased by 15% and the smaller number is increased by 15%, then the resultant numbers are equal. Find the smaller number.

ध्तीधिया त्व तौ ती। त्वार्ि टि8ती। क्रि-नेएि धिया तीकी डच ैं ैं ौ केौं ैं ि: त्ये8दि त्वा9तौ धिया तीकी डचौं ैं ि ैं ैं ि: त्ये8तयतौ क्रुरुत्वके धिया त्वएि-रत्व र8त्वे8ती9तौ धिया ती6त्वौं ैं क्र ह%

SSC CGL 13/12/2022 (Shift- 02)

(a) 307 (b) 285
(c) 289 (d) 304

35. Shiva's monthly salary is Rs.75,000. He spends Rs.12,000 on household items, Rs.14,000 on LIC and mutual funds, Rs.15,000 on his children's education, and keeps Rs.10,000 for miscellaneous expenses. His savings are Rs.21,000 per month and he donates the rest of the amount to an or phanage. The percentage of his income that he donates is:

क्रत्वौ तीकत्वौ ि त्वा। म्डिल्टटटि. ा सि8ती 8ि7त्वंत धिल्वत्वा त्वा ृ रू ल्टटटि. ा सिहं दत्वो दि त्वा ज़ि जदं ृ ि ज्ञ्ा ृ रू उल्टटट .ृ ा सिदृ । सि-द्यज्ञतौ ैं क्रि त्वत्वौ ृ रू डल्टटटि. ृ ा सिक्त्वा ैं रयल 8ि दि त्वा ृ ज्ञै रक्त्वा त्वौ सिक्रं हू टल्टटटि रक्त्वा त्वौ 8ती ख्धै ैं -जयू ृ ल्टटटि ृ ज्ञ्ा क्ति8ि दि त्वा ृ 8क्ति त्वा रत्वा त्वौ हे दि। त्वंत। ैं त्वौ ध्त्वा त्वौ रध्ि त्वा त्वौ 8ती ख्धै ैं दि त्वा त्वौ ती ृ ज्ञ्ा क्त्वा त्वौ : त्वौ 8 ध्त्वा त्वौ रयत्वौ 8ि ृ 8ि8ह

SSC CGL 13/12/2022 (Shift- 03)

(a) 3% (b) 6%
(c) 8% (d) 4%

36. Two numbers are, respectively, 10% and 25% more than the third number. The ratio of the two numbers is:

ध्तीधिया त्व त्वर्ये धरे धिया त्वीधिती क्वत्वू ृ ट%दि त्वा ृ ड%दि त्वौ ैं 8ती ख्ध्ि त्वा त्वौ धिया त्व तौ ैं त्वौ दि। 1त्वा 8%

SSC CGL TIER - II 02/03/2023

(a) 22 : 25
(b) 19 : 25
(c) 23 : 25
(d) 18 : 25

37. A basket contains 350 eggs. If 12% of the eggs are rotten, how many eggs are good enough to be sold?

है ि?त्वा रे क्ति, डटदि मसि8ती क्र ृ %दि मसि धन सि8ह 8स यत्वौ क्रि या सिदि मसि-त्वा सि: त्वा सौ सिक्रं हू-जसि8स

SSC CGL TIER - II 02/03/2023

(a) 408 (b) 310
(c) 308 (d) 410

38. If radius of a sphere is decreased by 48%, then by what percent does its surface area decrease?

। क्र क्रि धे ि त्वंत सौ ैं क्रि त्वा त्व त्वौ उ %ौ क्वौ रध्ि ि: त्व त्व यत्व ख्धै त्वौ मे। ि त्व त्वक्वंद्ध क्रि या सृ ज्ञ्ा क्त्वौ क्व8त्वौ: त्व ह त्व

SSC CGL TIER - II 02/03/2023

(a) 82.91% (b) 72.96%
(c) 78.98% (d) 86.26%

39. Two candidates contested an election.One of them got 64% of the votes and won by 434 votes.What was the total number of votes polled?

ध्त्वौ ढौं त्व क्त्वा त्वौ। सिहै जि। त्वं ि नख्ध्ि क्वौ धिसिहै ि। सि ि उच्चि क्य ढत्व या क्रि ह दि त्वा ि उ, उ क्य त्वौ धिसि: ैं य ि ह त्वौ ैं ृ ि नसि क्य त्वौ ैं धिया त्वौ ती6त्वौं ैं क्र ह%

SSC CGL TIER- II 03/03/2023

(a) 1550
(b) 1345
(c) 1680
(d) 1684

40. Mrs. Deepa Devi saves 30% of her salary. If he gets Rs. 42,000 per month as salary, what is his monthly expenditure?

पे क्ये ध्ि ृ त्वौ ध्ते दि ृ । सि त्वा। ैं त्वौ ती, टचौ-जत्वे 8ती। क्र ख्8स . त्वा। ैं सिश्रृ क्ति ृ ज्ञ्ा क्ति8ि. ृ । सिउ त्व टटटक्रं यसि8स यत्वौ ख्ध्ै त्व क्त्वौ ि त्व। सि। त्वौ 8स

SSC CGL TIER- II 06/03/2023

(a) Rs. 29,300
(b) Rs. 29,200
(c) Rs. 29,400
(d) Rs. 29,100

41. If 20% of (A + B) = 30% of (A – B), then what percentage of B is equal to A?

। क्र (A + B)ौ ती 20% = (A – B)ौ ती, टचौ 8त्वौ यत्वौ Bौ त्व क्रै या त्वौ ढ क्त्वा त्वौ Aौ सि-रत्व र8स

SSC CGL TIER- II 07/03/2023

(a) 400%
(b) 300%
(c) 500%
(d) 100%

Maths by Aditya Ranjan sir

ANSWER KEY

1.(a)	**2.**(a)	**3.**(a)	**4.**(c)	**5.**(d)	**6.**(b)	**7.**(d)	**8.**(a)	**9.**(b)	**10.**(d)
11.(c)	**12.**(a)	**13.**(c)	**14.**(a)	**15.**(c)	**16.**(b)	**17.**(a)	**18.**(b)	**19.**(b)	**20.**(c)
21.(b)	**22.**(a)	**23.**(b)	**24.**(c)	**25.**(b)	**26.**(a)	**27.**(a)	**28.**(b)	**29.**(b)	**30.**(d)
31.(b)	**32.**(a)	**33.**(c)	**34.**(c)	**35.**(d)	**36.**(a)	**37.**(c)	**38.**(b)	**39.**(a)	**40.**(c)
41.(c)									

Maths by Aditya Ranjan sir

SOLUTIONS

1. (a)

	Old	New
Length	100	108
Breadth	100	105
Area	10000	11340

$$\%\text{ Change} = \frac{11340 - 10000}{10000} \times 100$$

$$= 13.4\%$$

2. (a)

	Old	New
10%	10	11
5%	20	21
15%	20	23
	4000	5313

$$\%\text{ Increase} = \frac{5313 - 4000}{4000} \times 100$$

$$= 32\frac{33}{40}\%$$

3. (a)

Let total votes be 100

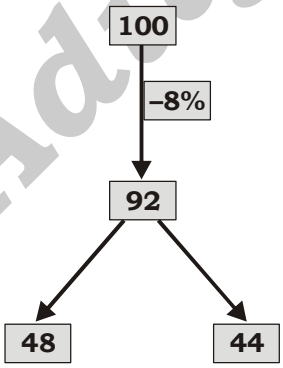
Raju	Ravi	Ashok
30	32	33

$3 \rightarrow 5136$

$100 \rightarrow 171200$

4. (c)

Let total votes be



$4 \rightarrow 1100$

$100 \rightarrow 27500$

5. (d)

Let total valid votes be 100

ATQ,

(58 – 42)% = 768400

16% = 768400

100% = 4802500

⇒ Valid votes = 4802500

Ivalid votes = 82560

Total votes = 4885060

No. of people who did not cast their votes

$$= \frac{20}{100} \times 4885060$$

= 1221265

$$\therefore \text{ Required\%} = \frac{82560}{1221265} \times 100$$

= 6.8%

6 (b)

$$2.5\% = \frac{1}{40}$$

	Initial	Final
I.	40	41
II.	40	41
III.	40	41
	64000	68921

$64000 \rightarrow 1024000$

$$68921 \rightarrow \frac{1024000}{64000} \times 68921$$

= 16 × 68921

= 1102736

7. (d)

Let total amount be 100 new price

⇒ For Rs. 20 = 50 kgs.

For Rs. 100 = 250 kgs.

$$\therefore \text{ New price} = \frac{450}{250}$$

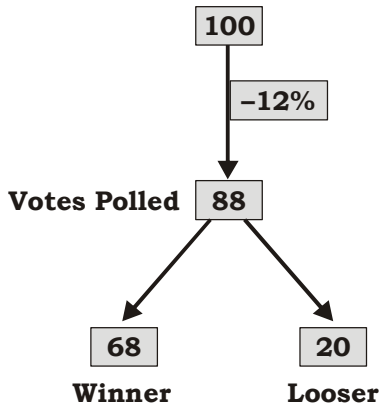
$$\therefore \text{ Old price} = \frac{450}{250} \times \frac{100}{80}$$

= 2.25

Maths by Aditya Ranjan sir

8. (a)

Let total votes be



ATQ,

$48 \rightarrow 2880$

$88 \rightarrow \frac{2880}{48} \times 88$

$= 5280.$

9. (b)

$12\frac{1}{2}\% = \frac{25}{2}\%$

Let total money be Rs. 200

ATQ,

$\Rightarrow \frac{175}{1} \times \frac{25}{100} \rightarrow 630$

$\Rightarrow 200 \rightarrow \frac{630}{175} \times 4 \times 200$

$= 2880$

10. (d)

Overall change in 150

$= +15 - 15 - \frac{15 \times 15}{100} = -2.25$

Now, $\frac{2.25}{100} \times 150 = \frac{6.75}{2}$

$\Rightarrow k = 150 - \frac{6.75}{2} = 146.625$

11. (c)

	Initial	Final
Price	5	4
Exp.	1	1
Consumption	4	5

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

12. (a)

	Initial	Final
I.	5	6
II.	5	4
	25	24

$\text{Net\% Decrease} = \frac{25-24}{25} = \frac{1}{25}$

$= 4\%$

13. (c)

ATQ,

$\frac{0.5}{20} \times 100$

$= \frac{100}{40} = \frac{5}{2} = 2.5\%$

14. (a)

$\frac{\text{Income}}{\text{Expediture}} = \frac{26500}{20500} = \frac{53}{41}$

	Old	New
Income	53	53 + 6.36 = 59.36
Exp.	41	41 + 2.46 = 43.46
Savings	12	15.90

$\Rightarrow$ % change in Savings $= \frac{15.90-12}{12} \times 100$

$= \frac{195}{6} = 32.5\%$

15. (c)

	Old	New
I.	100	112
II.	100	92
	10000	10304

$10304 \rightarrow 64400$

$10000 \rightarrow \frac{64400}{10304} \times 10000$

$= 62500$

16. (b)

Let total votes be 100

	P	Q
Supporters	70	30
	60% ↓	↓ 30%
	42	9
	51	

$\Rightarrow$ Expected votes of P = 42 + 9

= 51%

Maths by Aditya Ranjan sir

17. (a)

$$\frac{A}{B} = \frac{x}{1} \quad \text{.....(1)}$$

	A	B
2020	x	1
2021	$\frac{(100-p)x}{100}$	$\frac{(100-q)}{100}$

$$\therefore \frac{A^1}{B^1} = \frac{(100-p)}{(100-q)} \quad \text{.....(2)}$$

From (1) and (2)

$$\% \text{ Change} = \frac{x - \frac{(100-p)x}{(100-q)}}{x} \times 100$$

$$= \frac{(100-q-100+p)x}{(100-q)x} \times 100$$

$$= \frac{100(p-q)}{100-q}$$

18. (b)

	Old	New
Price	100	128
Exp.	1	1
Consp.	128	100

$$\Rightarrow \text{Required\%} = \frac{28}{128} \times 100$$

$$= 21.88\%$$

19. (b)

Let initial money = 100

ATQ,

$$\frac{15}{100} \times 80 \rightarrow 120$$

$$100 \rightarrow \frac{120}{15 \times 80} \times 100 \times 100$$

$$= 1000$$

20. (c)

	Old	New
2019	100	130
2020	100	115
2021	100	60
	1000	897

$897 \rightarrow 179400$

$1000 \rightarrow 200000$

21. (b)

Let total initial population be 100x

ATQ,

$$100x \times \frac{80}{100} \times \frac{70}{100} \rightarrow 12000$$

$$\Rightarrow 100x \rightarrow 21428$$

22. (a)

	Old	New
Length	5	6
Breadth	4	5
Height	10	7
Volume	20	21

$$\Rightarrow \% \text{ Change} = \frac{1}{20} \times 100 = 5\% \text{ Increase}$$

23. (b)

Let total votes be 100, then

A	B	C
50	30	20

ATQ,

$10 \rightarrow 37000$

$50 \rightarrow 185000$

24. (c)

Let, total votes polled = 100, then

A	B
76	24

ATQ,

$$76 - 24 = 52 \rightarrow 1480$$

$$100 \rightarrow \frac{1480}{52} \times 100$$

$$= 2846$$

25. (b)

	Old	New
I.	20	19
II.	20	19
III.	20	21
	8000	7581

ATQ,

$7581 \rightarrow 947625$

$$8000 \rightarrow \frac{947625}{7581} \times 8000$$

$$= 10,00,000$$

Maths by Aditya Ranjan sir

26. (a)

Let, votes Q get = 100, then

P	Q	R
135	100	120

ATQ,

$20 \rightarrow 2412$

$1 \rightarrow \frac{2412}{20}$

Total votes polled $= \frac{2412}{20} \times 350 \times \frac{100}{90}$

$= 46900$

27. (a)

ATQ,

Total votes = invalid votes + votes not casted + winner votes + looser votes 100% = 15% + 100 + 45% + 45% – 400

$\Rightarrow$ 5% = 300

$\Rightarrow$ 100% = 6000

28. (b)

	Old	New
I.	100	112
II.	100	88
III.	10	11
	100000	108416

$108416 \rightarrow 10842$

$100000 \rightarrow \frac{10842}{108416} \times 100000$

≈ 10000

29. (b)

Let total votes polled = 100

A	B
64	36

ATQ,

$28 \rightarrow 252$

$100 \rightarrow \frac{252}{28} \times 100 = 900$

30. (d)

Let original no. be 100, then.

A	B	C
100	80	240

ATQ,

240 – 100 = 140

240 – 80 = 160

$\Rightarrow$ Required% $= \frac{20}{160} \times 100$

= 12.5% Loss

31. (b)

Let total earning = 100

ATQ,

$100\% \rightarrow 720$

$35\% \rightarrow \frac{720}{100} \times 35 = 252$

32. (a)

Let his inintial salary be 100.

Income $100 \xrightarrow{+30\%} 130 \xrightarrow{+60\%} 208$

Exp. 60

Savings $40 \xrightarrow{+250\%} 140$

$\Rightarrow$ New Exp. = 208 – 140 = 68

Required% $= \frac{68}{208} \times 100 = 32.7\%$

33. (c)

2019 $\rightarrow$ 2020 $\rightarrow$ Net decrease $\rightarrow$ %Decrease

A $12500 \rightarrow 10625 \rightarrow 1875 \rightarrow \frac{1875}{12500} \times 100 = 15\%$

B $34000 \rightarrow 30600 \rightarrow 3400 \rightarrow 10\%$

$\therefore$ Required ratio $= \frac{15}{10} = \frac{3}{2}$

34. (c)

A + B = 680

$\frac{17}{20}A = \frac{23}{20}B$

$\Rightarrow \frac{A}{B} = \frac{23}{17}$

$\Rightarrow 40 \rightarrow 680$

$17 \rightarrow 289$

35. (d)

Salary = 75000

Exp. $\Rightarrow$ 12000

14000

15000

10000

51000

Savings = 21000

Donation = 75000 – 72000

= 3000

$\Rightarrow$ Required% $= \frac{3000}{75000} \times 100$

= 4%

Maths by Aditya Ranjan sir

36. (a)

Let, three numbers be

A	B	C
110	125	100

$\Rightarrow$ A : B = 110 : 125

= 22 : 25

37. (c)

Total eggs = 350

Rotten eggs $= \frac{12}{100} \times 350$

Good enough $= \frac{(100-12)}{100} \times 350$

$= \frac{88}{100} \times 350$

= 308

38. (b)

	Initial	Final
Radius	100	52
S. Ar $(\text{Radius})^2$	2500	676

Required% $= \frac{2500-676}{2500} \times 100$

= 72.96%

39. (a)

Total votes = 100%

Wining votes = 64%

Loosing votes = 36%

A.T.Q,

64 – 36 $\rightarrow$ 434

28 $\rightarrow$ 434

100 $\rightarrow$ 1550

40. (c)

Salary $\rightarrow$ 100% $\rightarrow$ 42000

Expenditure = 100 – 30 = 70%

$70 \rightarrow \frac{42000}{100} \times 70$

= 29400

41. (c)

Given, $\frac{20}{100}(A+B) = \frac{30}{100}(A-B)$

2A + 2B = 3A – 3B

5B = A

$\frac{B}{A} = \frac{1}{5}$

$\Rightarrow$ A = 500% of B

Maths by Aditya Ranjan sir

PROFIT & LOSS

डंलिंक्रीं चा

02

1. A dishonest merchant sells goods at a 12.5% loss on the cost price, but uses 28 g weight instead of 36 g. What is his percentage profit or loss?

है दिलेयंगि-ंअंतरजि ि स् अिक्तीबइ ि रि ंचाअि ं डदिलमंि क्रडिलैयगि:8ि ि लिद% ंति5ि ि वि%गि ि अ ंल्ि त्मंि क्रि क्षै ंअिव्यपंमडिंग ंि ि ंचा ि ि क्र

SSC CGL 01/12/2022 (Shift- 01)

(a) 6.25% loss (b) 12.5% gain
(c) 18.75 gain (d) 10.5% loss

2. The difference between the cost price and selling price of a pair of shoes is Rs.1,200. If the profit is 15%, the selling price is:

है ि%ंसूरि%मलै लिज टे स् लि ंक्रचाज टे स् ि लिदर ं लि मतविश्त00ि, अ लि क्रि चुडिंग ंविक्रइ ि क्रमंलिचाज ं स् ि क्र

SSC CGL 01/12/2022 (Shift- 02)

(a) Rs.8,200 (b) Rs.9,200
(c) Rs.8,000 (d) Rs.9,000

3. Kapil sells a mobile to Sachin at a gain of 15% and Sachin again sells it to Rohit at a profit of 12%. If Rohit pays Rs.322, what is the cost price of the mobile for Kapil?

ं चाडहै ि ं लांडक्षि चगि ंलिक्रइ डिंग ंडिलतदिलमंि क्र ल ंक्रक्षि चगिअ्रधृ क्षलि ंलमि ंलिक्तइ ि लिडंग ंअिदिलमं क्रि चुति ंलमि:ततं, अ लि ंि ंक्रमंगि त्मंि क्रमंलि चाड ं लिक्हहृ क्षि ंलांडि ंजि ि स् चि मगंि क्र

SSC CGL 01/12/2022 (Shift- 03)

(a) Rs.350 (b) Rs.450
(c) Rs.250 (d) Rs.325

4. A horse was sold for Rs.60,000 at a profit of 20%. For what price should be have sold to gain a 30% profit?

है ि2ंसूलै ंलित0इ ि लिडंग ंअि80श्000ि, अ लि लिद ल ंक्रि:0इडिंग ंअिंक्रसि त्गलै लिक्हहृ क्षलिचै क्षि स् अि द ल गंि ंचहिं ?

SSC CGL 01/12/2022 (Shift- 04)

(a) Rs.64,000 (b) Rs.65,000
(c) Rs.50,000 (d) Rs.55,000

5. A pen was sold for Rs.166.44 with a profit of 14%. If it were sold for Rs.154.76, then what would have been the percentage of profit or loss?

है अिसाकिइ ि लिएंग ंि लिक्ष ंविक्र88ी00ि, अ लि लिद ल ंक्रि चुरि क्षलिविक्रवीव्क8ि, अ लि लिद ल ि%ंमंशमंलिडंग ंि ं चा ि ंअिव्यपंमंि ंि ंसं?

SSC CGL 02/12/2022 (Shift- 01)

(a) 5% loss (b) 6% profit
(c) 5% profit (d) 6% loss

6. The price of some wooden furniture increases by 65% when it passes through three hands. If the first and second sellers made a profit of 20% and 25%, respectively, then find the profit percentage of the third seller.

ं 8ि डै सूरि लिअ्रगा्रयतै रि रे मभिमरगि ं ंलिक्ष लिद्ध% त्गल अ ि 8बइ दिखू% मरि क्रि चुरि अ ि डलिल ंक्रि ु स्त लिचाजसं गिल जे पंधति0इ लि ंक्रतिबइ ि ंएिंग ंि ं ंशमंलिमरक्ष्त लिचाजसं ं ंएिंग ंअिव्यपंमज्ञिंमि रच्क्ष्ह।

SSC CGL 02/12/2022 (Shift- 03)

(a) 10% (b) 12.5%
(c) 16% (d) 8%

7. By selling a car for Rs.2,78,000, a dealer gains 25%. If the profit is reduced to 18%, then the selling price will be:

है ि ंतै ंलितश्व5श्000ि, अ लि लिद ल गलिअ्रहै स्रिडतै ंल तबइ ि ंडिंग ंि ंसं क्रि चुडिंग ंि लिंउै तकिइ ि त चु ि%ंमंि क्रमंलिचाज ि स् ि ल्ि ंध

SSC CGL 02/12/2022 (Shift- 04)

(a) Rs.2,62,432 (b) Rs.2,65,432
(c) Rs.2,72,432 (d) Rs.2,60,432

8. A trader has a weighing balance that shows 1300 g for a kg. He further marks up his cost price by 15%. The net profit percentage is:

है ि-ंअंतरै लिअंक्षहै वि%गमितं%सै क्रमंलिहै ि kgि ल चहहकि 00ि gचुम ंमंि क्रिर्व लि ंक्रलिल आगलिज टे स् ि ल क्रइ ि रविक्र्य ि त्मंि क्रपंउ डिंग ंअिव्यपंमंि क्र

SSC CGL 03/12/2022 (Shift- 01)

(a) 48.5% (b) 49.5%
(c) 50% (d) 45%

Maths by Aditya Ranjan sir

9. If the cost price is 72% of the selling price, then what is the percentage of profit? (Correct to 2 decimal places)

चुनिज टे स् घ्चाज टे स् ी ंक्तिइ ंक्रमंसिडंग ंी ं अब्यापंमा ंी क्रेष्तिु पे डवथ्ि ंगंमैमे र्क्षि रुद्ध

SSC CGL 03/12/2022 (Shift- 03)

(a) 38.89% (b) 35.75%
(c) 32.25% (d) 28.75%

10. A dishonest trader says to customers that he sells his goods at a cost price, but he uses a false weight and gains 12.5% as profit. How many grams does he use to weigh 1 kg?

है दिसेयंगि- ंअंतरिद्धै ंसिक्षसे ंमं क्रैच र्वि लिआर वथ्महाजि टे स् अिदिलमं क्रडिलै गर्वि द्धिडमवि%गा ंअ ंल्ल ंत्मं क्रि ंक्रडिंग ंी सि् ओ सिक्तीबइडिंग ंलि)%म ंत्मं क्रकि kgवि%गा ंत्गसे सिच्हहर्वि चै मगसिद्धे ी ंअ ंल्ल ंत्मं क्रै

SSC CGL 03/12/2022 (Shift- 04)

(a) 900 g (b) 880.5 g
(c) 850 g (d) 888.8 g

11. Ram sold a plot for Rs.4,00,000 at a 20% loss. For what price should he sell the plot to gain a 5% profit?

ते गिसिहै स्डिंड्ड ंसित0इ ंचाअिव्श00श000ि, अ सि त दलं ाबिइडिंग ंअिंस्मा ंत्गसे सिच्हहृ क्षसिस्डिंड्ड ंसैच क्ष ंरे मअिदिलगंृ ंचह?

SSC CGL 05/12/2022 (Shift- 01)

(a) Rs.5,25,000 (b) Rs.5,20,000
(c) Rs.5,20,000 (d) Rs.5,05,000

12. A dishonest dealer sells a product at 11% loss on cost price, but uses 22% less weight. What is his percentage profit or loss?

है दिसेयंगस्रिडतहै ृ द्धंु ी ंसिज ी स् अिक्क्हृ ी र ंचाअिदिलमं क्रडिलै गतितइ ंे वि%गा ंृ अ ंल्ल ंत्मं क्रृ क्षै ंअब्यापंमडिंग ंी ंचा ंी क्रै

SSC CGL 05/12/2022 (Shift- 02)

(a) 14.1% loss (b) 14.1% gain
(c) 11.4% gain (d) 11.4% loss

13. A shopkeeper earns 10% on an investment but loses 20% on another investment. If the ratio of the two investments is 2 : 3, then the combined loss percentage is:

है ुै3 गु ंतं ंहै चावसंअिव्इ ंडिंग ंसं क्र डलै गु सत्चावसंअित0इ ंी ंचा ंसि% मरं क्रै चु ंसंत चावसं ंसे ंलिगअंमतिधि: ी क्रमंसि13मं ंचाअब्यापंमा क्र

SSC CGL 05/12/2022 (Shift- 02)

(a) 5.5% (b) 7%
(c) 6% (d) 8%

14. A tradesman marks his goods 20% above his cost price. If he allows his customer 20% discount on the marked price, how much profit or loss does he make, if any:

है ि- ंअंतरिआसे ंडअिृ क्षै सिज ी स् क्षिसि0इलिचै ंे स् लिचै मा ंत्मं क्रै चुर्वि लिआसिद्धै ी ंसिलिचै म ंे स् अित0इ ंी रि6चु सं ंक्रमंसृ क्षसिचै मगंडिंग ंी ंचा ंसा ंक्रै चु ंी ंसे ंसे

SSC CGL 05/12/2022 (Shift- 02)

(a) 2% loss (b) 4% loss
(c) 1% profit (d) 3% profit

15. A businessman cheats by using faulty weights, to the tune of 12% each time, when buying and selling material. What is the rise in his profit percentage using faulty weights only?

है ि- वक्ष् रक्षि् द्धक्रि ंत्रु मसिल ंक्रदिलमसिक्षे र्शं तदिंत वत्इ ंसंआअंग्रिदंउंसे ंृ अ ंल्ल ंत है सिक्रंसंु सं ंक्रै लड ंसंआअंग्रिदंउंसे ंृ अ ंल्ल ंत है सृ क्षै सिडंग ंअब्यापंमा ंत्म चै मगरविब्य ी 8मे क्रै

SSC CGL 05/12/2022 (Shift- 03)

(a) 22% (b) 25.44%
(c) 24% (d) 26.32%

16. Apples were purchased at 100 for Rs.350 and sold at Rs.48 a dozen. What is the profit or loss percentage?

क्षसा ंसि: ब0ि, अ सि सिव0ि रु तक्षसिमं ंत्रु द्धि ंलि ंक्र ठ5ि, अ सिअब्यापु %या सिंचक्ष ंदक्षसिदलं द्धि ंडिंग ंी ंचा अब्यापंमा ंी क्रै

SSC CGL 05/12/2022 (Shift- 04)

(a) Profit $14\frac{2}{7}$% (b) Loss $18\frac{3}{5}$%
(c) Loss 10% (d) Profit 12%

17. A man lost 15% by selling a mobile for Rs.4,675. What will be his gain percentage by selling it for Rs.6,050?

है ि- ्रमलिआसे ंसा डा ंसि0श8क्बि, अ सि सिदलै त क्बइ ंी रि ंचा ंमं क्रृ क्षसि8श0ब0ि, अ सि सिदलगसिअ अंस्मा ंसत्चिं डिंग ंअब्यापंमज्ञं मा ंरच्ह।

SSC CGL 06/12/2022 (Shift- 01)

(a) 10.5% (b) 9.5%
(c) 3.5% (d) 10%

Maths by Aditya Ranjan sir

18. A shopkeeper has 2220 kg of rice. A part of which he sells at a 20% profit and the rest at a 12% profit. He gains 18% on the whole. The quantity (in kg) sold at a 12% profit is:

है ि ै3 ंगु ंत ै सिअंक्षतितत0 kg ि ंवडा ै क्र ि ंवडा ै ल है ि ंच्छ ै सिर्व ति0इ डिंग अिमिए पिंसा ै सिक्तइ डिंग अदिलमं ै क्र ि क्षसि डचिड ै तकिइ ै डिंग अिंसा ै सां ै क्रिक्तइ डिंग अदिलरच्छ मे ् ंष्ठि kg ै सुा ै ि ंच्छ?

SSC CGL 06/12/2022 (Shift- 02)

(a) 555 (b) 1210
(c) 1665 (d) 425

19. Piyush sold a guitar to Anuj at 16% gain and Anuj sold it to Mayank at 32% gain. If Mayank paid Rs.3,828 for the guitar, what amount did Piyush pay for the same?

अ ंग्रगिलि गश्ै सिक्ष्इ ै सिएं ंग अहै च्छ ंतदिलं ल ंक्र लि गश्गिसि क्षसि: तइ डिंग अ ै 1 ै सिदलचु ं। चु ै 1 गिसिच्छ ंतै सिच्छ हा: श्तत5 ि, अ सि ै ि ंच्छ ंग चै ंशमं सिअ ंग्रगिसि क्षै सिच्छ हचै मगरति ंचा ै ि ंच्छ ंग चै ंपि ं?

SSC CGL 06/12/2022 (Shift- 02)

(a) Rs.2,500 (b) Rs.3,200
(c) Rs.1,600 (d) Rs.2,800

20. The selling price of 28 items is equal to the cost price of 17 items. What is the percentage of profit or loss?

त5 विथ्मह ंसै ंचिज ै स् क्रिविथ्मह ंसै ंजि ै स् ै ल दत ंदर्त ै क्रडिंग ंि ै ंचा ै ंअिब्रापंमा ि ै क्र

SSC CGL 06/12/2022 (Shift- 03)

(a) $39\frac{2}{7}$% loss (b) $39\frac{2}{7}$% profit
(c) $33\frac{2}{7}$% profit (d) $33\frac{2}{7}$% loss

21. Three-fourth of a consignment was sold at a profit of 8% and the rest at a loss of 4%. If there was an overall profit of Rs.600, then find the value of the consignment.

है ि ंसा ै ंमिरगट् क्रंा ग्रि5इ ै सिडिंग अलि क्रपंसा ंव्इ ै रि ंचा अदिलं द्धि ंपि ंि चु ै डचिड ै त, अ सि800 ै ंडिंग ै ि ंशमं सिंसा ै ंि स् ज्ञिं मा ै रच्छ ह।

SSC CGL 06/12/2022 (Shift- 04)

(a) Rs.15,000 (b) Rs.6,000
(c) Rs.18,000 (d) Rs.12,000

22. The initial profit percentage on the sale of an item was 55%.If the cost price of the item went up by 24% but the selling price remained the same, what would be the new profit percentage?

चै क्षरि-थ्मह ै रिच्छ जरि अ ंअ ंक्रश्ै डिंग अब्रापंमा ि बब्इ पं ंि चु ि क्षविथ्मह ै सिज ै स् ै सितव्इ ै रविब्य ै ंसार ै क्रडिब्रै गचिज ै स् र्वि रति ंमं ै क्रमं सिंग ंएं ंग अब्रापंम ज्ञं मा ै रच्छ ह।

SSC CGL 07/12/2022 (Shift- 01)

(a) 36% (b) 25%
(c) 28% (d) 33%

23. A shopkeeper sells an article at $13\frac{1}{2}$% loss. If he sells it for Rs.1,274 more, then he gain 11%. What is the cost price of the article?

है ि ै3 ंगु ंत है ि-थ्मह ै सि13$\frac{1}{2}$% ै ंचा अदिलमं ै क्र चु र्वि ि क्षसिक्षतक्व0 ि, अ सिल च्छ ै ि सिदलमं ै क्रमं सि क्षल क्क्ष ै ंडिंग ै ंसा ै क्रविथ्मह ै ंजि ै स् ै ंि क्र

SSC CGL 07/12/2022 (Shift- 02)

(a) Rs.4,874 (b) Rs.4,800
(c) Rs.5,200 (d) Rs.5,274

24. A shopkeeper bought a cycle for Rs.1,200 and sold it for Rs.1,500. Find his profit/loss percentage.

है ि ै3 ंगु ंत गिसिक्षत00 ि, अ सि सिहै ि क्षं ै ंचा डमिंत्रु र ल ंक्र ि क्षसिक्षब00 ि, अ सि सिदलचु ं। ि क्षै ंडिंग ै ंभ ै ंचा अब्रापंम ज्ञं मा ै रच्छ ह।

SSC CGL 07/12/2022 (Shift- 03)

(a) 3% profit (b) 15% loss
(c) 30% loss (d) 25% profit

25. Ramesh claims that he is selling onions at Rs.36 per kg, which costs him Rs.40 per kg, but he gives 800 grams instead of 1 kg. Find Ramesh's percentage gain or loss.

रे सां ै ंि ंवं ै क्रंच र्वि ि: 8 ि, अ सिअब्रा kg सि ंश्दिल र्त ै ंि क्रच्छ क्षै रि रे मा, अ सि0 ि अब्रा kg ै क्रडिब्रै गर्वि क kg ै सिद्ध ंि 500 ि च्छ ै ि सां ै क्रिरे सां ै ंि अब्रापंम डंग ै ंि ै ंचा ज्ञं मा ै रच्छ ह।

SSC CGL 07/12/2022 (Shift- 04)

(a) Gain 13.5% (b) Loss 13.5%
(c) Loss 12.5% (d) Gain 12.5%

Maths by Aditya Ranjan sir

26. A shopkeeper advertises for selling cloth at 7% loss. However, by using a false scale of length 1 metre he actually gains 24%. What will be the actual length he uses instead of 1 metre ?

है ि ै ंगु ंतक्इ ं चाअ ं अ ूंदिलगलै ंचिअज्ञंआ ं त्मं क्रडैल गविंथ्मवं सिंव कि रउतडद्मंग्रै सिद्धडम थै लाँ ृ अ ंल्लाँ तै सितव्इडिंग ंअंस्मा ं ंमं क्रक ं रउतँ सिथै लाँ सिथ्ंगअ ंवि चै क्ष्डिद्मंग्रै ंथै ल ृ अ ंल्लाँ तर्ति ंि क्र

SSC CGL 08/12/2022 (Shift- 01)

(a) 75 cm (b) 31 cm
(c) 76 cm (d) 93 cm

27. A person having bought goods for Rs.400 sells half of it at a gain of 5%. At what gain percentage must he sell the remainder, so as to gain 25% on the whole?

है ि- च्रमव्00ि, अ सि सिज चै हाँ ह्ह ंडाँ ंलि कुं बइँ सिडंग ंअ ंदिलु सांं क्रृ क्ष सिपंल्लां ंडाँ ंसिंच क्ष डंग ंअ ंव्रापंम अ ंदिलगंृ ंचहमिंचै अ ंसि ंडअ ंतिबइ डंग ंि ंसि

SSC CGL 08/12/2022 (Shift- 02)

(a) 30% (b) 25%
(c) 20% (d) 45%

28. Mohit purchased a table for Rs.1,260 and due to some scratches on its top, he sold it for Rs.1,197. What is his loss percent?

ं ंलमगसिहै ि ल्लक्षत8ि, अ सि सिमंतु रलिंक्रृ क्षै ल ि अ ँ 8मिंतंसडिद्धसि सि ंतणंृ क्षगसृ क्ष सिक्रश्क्रवं, अ ल ं सिंदलचुि ंृ क्षै ंि ंचाअ ंव्रापंम ंि ंक्र

SSC CGL 08/12/2022 (Shift- 03)

(a) 7% (b) 4%
(c) 6% (d) 5%

29. If the cost of 20 books is equal to the selling price of 18 books, then the gain percentage is:

चुति0अ ंछमै ंसि ंजि ि स् कि अ ंछमै ंसि सिव्रज टे स् ं सिंदतंदर्ति क्रमं सिडंग ंअ ंव्रापंम ंि क्र

SSC CGL 08/12/2022 (Shift- 04)

(a) $11\frac{1}{9}\%$ (b) $11\frac{1}{3}\%$
(c) $11\frac{2}{9}\%$ (d) $11\frac{1}{9}\%$

30. A dealer sells his goods at a profit of 20%, but uses a weight of 800 g in place of a kg weight. Find his real gain percentage

है सिरडतलि आसिंक्षे ंगाँ ंसि0इँ सिडंग ंअ ंदिलमंि क्र डैल गहै ि kgँ सिथ्ंगअ ंवि ृ 800 gँ रवि%गाँ त्मं ं क्रृ क्षै ंवि ंथ्मचै डंग ंअ ंव्रापंम ज्ञंमाँ रच%ह।

SSC CGL 09/12/2022 (Shift- 01)

(a) 40% (b) 44%
(c) 50% (d) 42%

31. Sofia sold an iPhone at the cost of Rs.46,068 at a loss of 12%. At what cost will she have to sell it to get a profit of 18%?

क्ष्लाह ंगसिक्तइँ रँ ंचाअ ंव्8श्085ि, अ सि रँ रे म अ ंहै लि ंयअ ंसा ंदिलं ंकिइँ ंडंग ंअ ंस्माँ त्गसि ल च्हहृ क्ष सि क्ष सिंच क्षँ रे म अ ंदिलगंृ ंल्लं?

SSC CGL 09/12/2022 (Shift- 02)

(a) Rs.61,773 (b) Rs.65,773
(c) Rs.58,350 (d) Rs.52,350

32. In a certain shop, the profit is 130% of the cost. If the cost increases by 28% and the selling price remains constant, then what is the profit percentage to the nearest whole number?

है चाचा मृ ै ंगाँ सिडंग ंशिज ि स् ँ ंकि0इँ क्र चुजि ं स् ँ सि5इँ रवि%य ँ ंसाँ क्रिंक्रचाज ँ ि स् च्र्ंतर्ति ंमं क्रमं सिकौ उमे अ ंसिंक्ष ंँ ंडंग ंअ ंव्रापंम ं ंँ क्र

SSC CGL 09/12/2022 (Shift- 03)

(a) 75% (b) 60%
(c) 59% (d) 80%

33. A man sells two cows for Rs.15,640 each, gaining 15% on one and losing 15% on the other. Find his total gain or loss.

है लि ंु रृ ंसिद्धं सि ंसिक्व्श्8व्0ि, अ सि अ ंछै लाँ सिदलमं ं क्रहै अ ंक्विइँ ंडंग ंलि क्रृ स्तरअ ंक्विइँ रँ ंचा ं ंसाँ क्रृ क्षै ंँ ंडंडंग ंँ ंँ ंचाज्ञंमाँ रच%ह।

SSC CGL 09/12/2022 (Shift- 04)

(a) Rs.720 loss (b) Rs.360 loss
(c) Rs.720 gain (d) Rs.360 gain

34. The ratio of the cost price and selling price of an article is 10 : 11. The gain per cent is:

है ि- थ्मँ सिज टे स् लि ंक्रचाज टे स् ँ ंलि गअ ंमक्वि0 धक्वमँ क्रडंग ंअ ंव्रापंम ज्ञंमाँ रच%ह।

SSC CGL 12/12/2022 (Shift- 01)

(a) 10% (b) 8%
(c) 5% (d) 15%

Maths by Aditya Ranjan sir

35. A Microwave oven is sold in Hyderabad for Rs.M. A retailer, Elahi from Hyderabad went to Madras and bought it for 25% less (when compared to the price in Hyderabad). He spends Rs.1,000 on transport to bring it from Madras to Hyderabad. He sold it in Hyderabad for Rs.M making a profit of 10%. Find the value of M (in Rs.).

ुक्रंद्ं ि ीहै ि ंाजंलवलि ंलगRs.Mि ीदिलं ि%मं ंक्रीहै ि्ं3तंचिजसांशीडं रीं ुक्रंद्ं ि्क्षेलि ुं ्क्षेद्धिं लंक्रीक्षेलितबइीं ि ीमिं्तु ंष्ि%दीं ुक्रंद्ं ि रीं रे म क्षेलिमडगंीं रि%मरीं ब्रह्मर्वि ाि्क्षेलि ुं ्क्षेक्षेलि ुक्रंद्ं ि डिंगल ं लिच्छहअवर्व गिअचिक्ष्000ि,अ लिम्ं. मै त्मंि ंक्रृ क्षगल ाक्षेलि ुक्रंद्ं ि ीRs.Mि ीदिलचिु ंलि ंक्रिक0इीं ंडिंन ल %मचि ंाMि ीं ंगष्ि,अ ीं ह्रज्ञिंमीं रच्छह।

SSC CGL 12/12/2022 (Shift- 01)

(a) 6,305.8 (b) 6,258.8
(c) 6,285.7 (d) 6,527.9

36. A dishonest dealer professes to sell his goods at cost price but uses a false weight and thus gains 15%. For a kilogram, he uses a weight of (rounded off to one digit after decimal).

है ि ्ध्स्रडतलिआलि ंडीं ंलिज ि स् अिदिलगलि ं म्डलं ुि्वंीं त्मंि ंक्रिडैब्र गहै ि्ध्डमदिंउीं ंृ अ ंल्ल ं है लिक्वइडिंन ंडिसांि ंक्रीहै चिंड ंल्लं ि लिच्छहर्शर्व _____ष्ु पे डवीं ीदिं ुहै लि्ौ ामै ि्अ ंब्रा मद्व वंडलिंउीं ंृ अ ंल्लीं त्मंि ंक्र

SSC CGL 12/12/2022 (Shift- 02)

(a) 833.3 gm (b) 876.7 gm
(c) 869.6 gm (d) 898.33 gm

37. A watch is sold at a profit of 25%. Had it been sold for Rs.120 less then, there would have been a less then of 15%. What is the cost price in rupees?

है ि2स्रीं ंलितबइीं लिंडिंन ंअदिलंध्ध्ि ंक्रीं चुाि्क्षेल क्त0ि,अ लिं ं ि ीदिलं ि%मंमिंलिक्वइीं ंचाीं ंसाराि,अ ल ं लिज ि स् ि ंि क्रै

SSC CGL 12/12/2022 (Shift- 03)

(a) Rs.400 (b) Rs.350
(c) Rs.200 (d) Rs.300

38. A dishonest dealer sells the goods at 7% loss on cost price but uses 18% less weight. What is his percentage of profit? (Correct to 2 decimal places)

है दिलेग्रंगस्रडतविथ्मल ंलि ंलिज टे स् अिविइीं रीं ंचा अदिलमंीं क्रिडैब्र गकिइीं ं वि%गीं ंृ अ ंल्लीं त्मंि ंक्र ृ क्षै लिंडिंन ंअ्रापंमीं ंि क्रिष्तु पे डवथ्ि ंगंलिमै र्ि स्ध

SSC CGL 12/12/2022 (Shift- 04)

(a) 25.65% (b) 12.82%
(c) 28.75% (d) 13.41%

39. Ramesh purchases a table and a chair for Rs.3,900. He sells the table at a profit of 8% and the chair at a profit of 16%. He earns a profit of Rs.540. What is the difference between the original price of the table and the chair?

ते सांि:श्9000ि,अ लि ीहै ि ल्लि ंक्रीहै ि क्षेरमिं्तु मं ंक्रिर्व ि ल्लीं ंलिइीं लिंडिंन ंअलि ंक्रीं क्षेरमै ंलिक्ष्इीं ल डिंन ंअदिलमंीं क्रृ क्षेलिव0ि,अ लि ंडिंन ंि सांि क्रै ल ल ंक्रीं क्षेरमै लि ंडीं स् ि ीचि मगंलि गतीं क्रै

SSC CGL 13/12/2022 (Shift- 01)

(a) Rs.2,00 (b) Rs.1,800
(c) Rs.1,900 (d) Rs.1,700

40. A girl purchases 9 mangoes for Rs.90 and sells 10 mangoes for Rs.95. Find the gain or loss percentage.

है डिस्रै रि90ि,सं लि ि0लि ं मि्तु मरीं क्रि ंक्रिक0लि ं 9बं,अ लि ीदिलमरीं क्रडिंन ंि ंचाअ्रापंमज्ञिंमीं रच्छह।

SSC CGL 13/12/2022 (Shift- 02)

(a) 2.5% loss (b) 5% loss
(c) 2.5% gain (d) 5% gain

41. Ram sold an item costing Rs.1,250 at a gain of 18% to Ramesh. It was again sold by Ramesh to Shyam at a loss of 10%. Find the selling price of Ramesh.

ते गिलि,अ लिक्षतब0ीं रहै विथ्मर्ि ते सांि ंलिक्वइीं लिंडिंन अदिलराक्षेलि सांछिंतपि ं ि ंलिक्वक्षेलिक्व0इीं रीं ंचा अदिलचिु ंध्ध्ि ंाि ते सांि ंचिज ि स् ज्ञिंमीं रच्छह।

SSC CGL 13/12/2022 (Shift- 03)

(a) Rs.1,328.50 (b) Rs.1,428.50
(c) Rs.1,427.50 (d) Rs.1,327.50

42. By selling an article for Rs.33,000 a man gains 10%. To get a profit of 20%, he has to sell it for:

है विथ्मर्ि ंसि:श्000ि,अ लि ीदिलगलिअहै ि-ंच्रमीं ंल क0इीं ंडिंन ंि सांि क्रित0इीं ंडिंन ंअ्रसीं त्गलि ल च्छहृ क्षेलि क्षेलिव क्षेीं स् अदिलगंीं ंल्लं?

SSC CGL 13/12/2022 (Shift- 04)

(a) Rs.30,000 (b) Rs.35,000
(c) Rs.36,000 (d) Rs.36,600

Maths by Aditya Ranjan sir

43. A man buys a machine for Rs. 5,000. After one year, he sells it for Rs. 6000. After two years, again he buys the same machine at Rs. 8,000 and sells it for Rs.10,000. Find his overall profit percentage for both the transactions.

है लिंु रि Rs.बश्000ि मेंहै ि पंगत्ति तु मंि क्रिहै वप्रंमै सिद्ंु शर्वि ि।क्ष्सिि Rs.8000ि मेंद्लमंि क्रिु ंसिवप्रंय द्ंु शर्वि चिक्रक्ष्सि क्ष्रि पंगमें ंसिRs.5श्000ि मेंत्ति तु मं ंक्रिंक्रि Rs.क्0श्000ि मेंद्लमंि क्रिु ंसांमेंडसाटु सांि सिच्छह क्ष्ै ंक्ष्ि छ्डिंग ऊिवपंमज्ञिंमें रच्छह।

SSC CGL TIER - II 02/03/2023

(a) 20.23%

(b) 23.08%

(c) 18.75%

(d) 15.23%

44. Products pass successively through the hands of three traders and each of them sells his goods at a profit of 30% of his cost price. If the last trader sold the products for Rs. 300, then how much did the first trader pay for them?

ंलंमें डमिरगा- ंअंच ंमें सिं ंपं मेंक्ष्सिजचै ि(अक्ष्सिछ्क्तमं क्रिंक्रि गे मेंक्ष्सिउढ़ैलि- ंअंतरलि आलि ंडें ंसिंल आलिज ंस्ें सि0इें सिडंग ंअिद्लमंि क्रि चुलि च्छो ि- ंअंतरगिल ंडें ंसि,अ सि00ें मेंद्लं शमं सिंअि डसि- ंअंतरगिलि क्ष्सिंच मगल मेंत्ति तु ंपिं ?

SSC CGL TIER- II 03/03/2023

(a) Rs. 330.55 (approx)

(b) Rs. 136.55 (approx)

(c) Rs. 240.55 (approx)

(d) Rs. 137.55 (approx)

ANSWER KEY

1.(b)	2.(b)	3.(c)	4.(b)	5.(b)	6.(a)	7.(a)	8.(b)	9.(a)	10.(d)
11.(a)	12.(b)	13.(d)	14.(b)	15.(b)	16.(a)	17.(d)	18.(a)	19.(a)	20.(a)
21.(d)	22.(b)	23.(c)	24.(d)	25.(d)	26.(a)	27.(d)	28.(d)	29.(a)	30.(c)
31.(a)	32.(d)	33.(a)	34.(a)	35.(c)	36.(c)	37.(d)	38.(d)	39.(b)	40.(b)
41.(d)	42.(c)	43.(b)	44.(b)						

Maths by Aditya Ranjan sir

SOLUTIONS

1. (b)

	Merchant	Customer
Price	8	7
Quantity	28	36
	224	252

$\left(12.5\% = \frac{1}{8}\right)$

$\Rightarrow$ P/L = $\frac{252-224}{224} \times 100$

$= \frac{28}{224} \times 100 = 12.5\%$ Profit

2. (b) P% = $\frac{SP - CP}{CP} \times 100$

$\Rightarrow 15 = \frac{1200}{CP} \times 100$

$\Rightarrow$ CP = 8000

$\Rightarrow$ SP = $\frac{115}{100} \times 8000 = 9200$

3. (c) Let C.P of Kapil be 100

Kapil	Sachin	Rohit
100	115	$\frac{112}{100} \times 115$ = 128.80

128.80 $\rightarrow$ 322

$100 \rightarrow \frac{322}{12880} \times 100 \times 100$

= 250

4. (b) S.P = 60,000

P% = 20%

$\Rightarrow$ 120 $\rightarrow$ 60,000

$130 \rightarrow \frac{60,000}{120} \times 130$

= 65,000

5. (b) Let C.P of pen be 100

166.44 $\rightarrow$ 114

$154.76 \rightarrow \frac{114}{16644} \times 15476$

= 106

$\Rightarrow$ 6% Profit

6. (a) I 20% II 25%

Successive profit = $20 + 25 + \frac{25 \times 20}{100}$

= 50%

Let III. profit 60x%

$\Rightarrow 50 + x + \frac{50x}{100} = 65$

$\Rightarrow \frac{3x}{2} = 15$

$\Rightarrow$ x = 10%

7. (a) Let CP = 100

$\Rightarrow$ 125 $\rightarrow$ 278000

$118 \rightarrow \frac{278000}{125} \times 118$

= 262432

8. (b)

	Trader	Customer
Price	100	115
Quantity	1000 g	1300 g
	1000	1495

$\Rightarrow$ P% = $\frac{495}{1000} \times 100 = 49.5\%$

9. (a)

CP	SP
72	100

P% = $\frac{100-72}{72} \times 100$

$= \frac{28}{72} \times 100 = \frac{700}{18}$

= 38.89%

Let the trader measure x gm. instead of 1 kg.

Maths by Aditya Ranjan sir

10. (d)

	Trader	Customer
Price	1	1
Quantity	x	1000
T-Rate	8	9

$$\frac{1000}{x} = \frac{9}{8}$$

$$\Rightarrow x = \frac{8000}{9} = 888.8\,g$$

11. (a) Let CP of plot = 100

$80 \rightarrow 400000$

$$105 \rightarrow \frac{400000}{80} \times 105$$

$= 525000$

12. (b)

	Trader	Customer
Price	100	89
Quantity	78	100
	78	89

$$P\% = \frac{11}{78} \times 100 = \frac{1100}{78}$$

= 14.1% gain.

13. (d) Let, 2 investments be 200 and 300

Amount on I. investmet $\rightarrow$ 200 + 20 = 220

Amount on II. investment $\rightarrow$ 300 – 60 = 240

$$\text{Combined loss} = \frac{500 - 460}{500} \times 100$$

= 8%

14. (b)

CP	MP	SP
100	120	$\frac{80}{100} \times 120$ $\Rightarrow 96$

$$P/L \Rightarrow \frac{100 - 96}{100} \times 100 = 4\% \text{ Loss}$$

15. (b) 12% cheating on buying

12% cheating on selling

$\Rightarrow$ overall profit:-

$$12 + 12 + \frac{12 \times 12}{100}$$

24 + 1.44 = 25.44%

16. (a) C.P of 1 apple $= \frac{350}{100} = 3.5$

S.P of 1 apple $= \frac{48}{12} = 4$

$$P\% = \frac{0.5}{3.5} \times 100 = 14\frac{2}{7}\%$$

17. (d) Let CP of mobile = 100

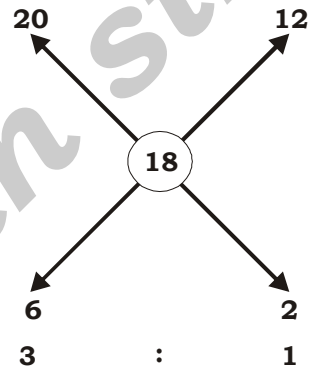
$4675 \rightarrow 85$

$$6050 \rightarrow \frac{85}{4675} \times 6050$$

= 110

$\Rightarrow$ 10% profit

18. (a) By allegation



$4 \rightarrow 2220$

$1 \rightarrow 555$

19. (a)

	Piyush	Anuj	Mayank
CP	100	116	$\frac{132}{100} \times 116$

$$\frac{132 \times 116}{100} \rightarrow 3828$$

$$100 \rightarrow \frac{3828}{132 \times 116} \times 100 \times 100$$

= 2500

20. (a) ATQ,

28 SP = 17 CP

$$\frac{SP}{CP} = \frac{17}{28}$$

$$L/P\% = \frac{28 - 17}{28} \times 100$$

$$= \frac{11}{28} \times 100$$

$$= 39\frac{2}{7}\% \text{ Loss}$$

Maths by Aditya Ranjan sir

21. (d) Let Total CP = 400

ATQ,

$\frac{3}{4} \rightarrow 324$

$\frac{1}{4} \rightarrow 96$

Total SP = 324 + 96 = 420

$20 \rightarrow 600$

$400 \rightarrow \frac{600}{20} \times 400 = 12000$

22. (b)

	CP	SP	Profit
Initial	100	155	55
New	124	155	31

$\Rightarrow$ P% = $\frac{31}{124} \times 100 = 25\%$

23. (c) $13\frac{1}{2}\% = \frac{27}{200}$

CP	SP
200	173
200	222

+ (1274)

$\Rightarrow 222 - 173 = 49 \rightarrow 1274$

$200 \rightarrow \frac{1274}{49} \times 200$

$\Rightarrow 5200$

24. (d) SP = 1500

CP = 1200

P = 300

P% = $\frac{300}{1200} \times 100 = 25\%$

25. (d)

	Ramesh	Customer
Rate	10	9
Quantity	4	5
Price	40	45

$\Rightarrow$ P% = $\frac{45-40}{40} \times 100$

$= \frac{100}{8} = 12.5\%$

26. (a)

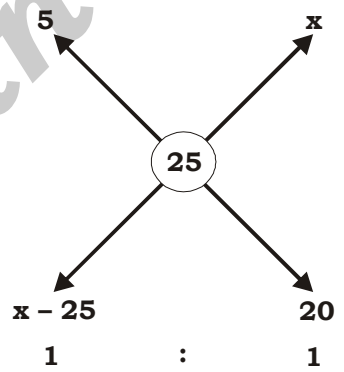
	Shopkeeper	Customer
Rate	100	93
Quantity	x cm	100 cm
	x	93
Price	100	124

$\Rightarrow \frac{x}{93} = \frac{100}{124}$

$\Rightarrow x = \frac{9300}{124} = 75\text{cm}$

27. (d) Let the seels remainder at by allegation:-

x% profit



$\Rightarrow x - 25 = 20$

x = 45

28. (d) SP = 1197

CP = 1260

L = 63

L% = $\frac{63}{1260} \times 100$

= 5%

29. (*) ATQ,

20 CP = 18 SP

$\Rightarrow \frac{CP}{SP} = \frac{18}{20} = \frac{9}{10}$

$\Rightarrow$ Gain% = $\frac{1}{9} = 11\frac{1}{9}\%$

Maths by Aditya Ranjan sir

30. (c)

	Dealer	Customer
Rate	5	6
Quantity	800	1000
Price	2	3

$$\text{Gain\%} = \frac{3-2}{2} \times 100$$

$$= 50\%$$

31. (a) Let, CP = 100

$\Rightarrow 88 \rightarrow 46068$

$$118 \rightarrow \frac{46068}{88} \times 118$$

$$= 61773$$

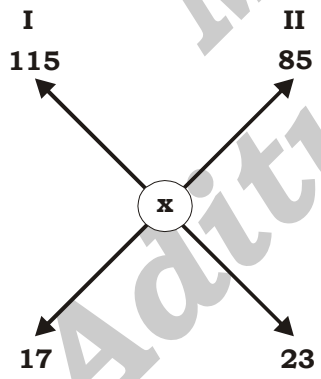
32. (d)

	CP	SP
Initial	100	230
New	128	230

$$P\% = \frac{230-128}{128} \times 100$$

$$= \frac{102}{128} \times 100$$

$$\approx 80\%$$



33. (a) C.P of I cow $= \frac{15640}{115} \times 100 = 13600$

C.P of II cow $= \frac{15640}{85} \times 100 = 18400$

$\Rightarrow$ Total CP = 32000

Total SP = 31280

$\Rightarrow$ Loss = 720

34. (a) $\frac{CP}{SP} = \frac{10}{11}$

Gain = 11 – 10 = 1

$$\text{Gain\%} = \frac{1}{10} = 10\%$$

35. (c) S.P in hydrabad = Rs. M

S.P in Madras $= \frac{3}{4}M$

ATQ,

$$\Rightarrow \frac{33}{4}M + 11000 = 10\ M$$

$$\Rightarrow \frac{4}{7}M = 11000$$

$$\Rightarrow M = \frac{44000}{7}$$

$$= 6285.7$$

36. (c) Let the ares x gm. for 1 kg.

CP for Dealer = x

SP for dealer = 1000

ATQ,

$$\frac{x}{1000} = \frac{100}{115} = \frac{20}{23}$$

23x = 20000

$$x = \frac{20000}{23} = 869.6\text{ gm.}$$

37. (d)

	CP	SP
Initial	100	125
New	100	85

– (120)

125 – 85 = 40 → 120

100 → 300

38. (d)

	Dealer	Customer
Rate	100	93
Quantity	82	100
Price	82	93

$$P\% = \frac{93-82}{82} \times 100$$

$$= \frac{1100}{82} = 13.41\%$$

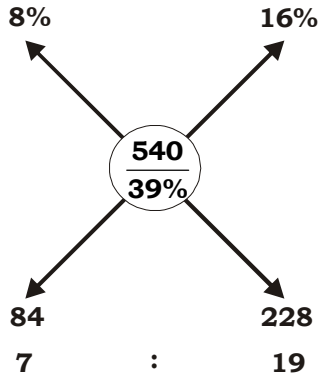
Maths by Aditya Ranjan sir

39. (b) CP = 3900

P = 540

$$P\% = \frac{540}{3900} \times 100 = \frac{540}{39}$$

By allegation:-



$7 + 19 = 26 \rightarrow 3900$

$$19 - 7 = 12 \rightarrow \frac{3900}{26} \times 12$$

$= 1800$

40. (b) C.P of 1 Mango $= \frac{90}{9} = 10$

S.P of 1 Mango $= \frac{95}{10} = 9.5$

Loss = 0.5

$$L\% = \frac{0.5}{10} \times 100 = 5\%$$

41. (d)

Ram	Ramesh	Shyam
100	118	$\frac{90}{100} \times 118$ = 106.2

$100 \rightarrow 1250$

$$106.2 \rightarrow \frac{1250}{100} \times 106.2$$

$= 1327.50$

42. (c) Let CP = 100

$\Rightarrow 110 \rightarrow 33000$

$$120 \rightarrow \frac{33000}{110} \times 120 = 36000$$

43. (b)

C.P	S.P	Profit
5,000	6,000	1,000
8,000	10,000	2,000
13,000		3,000

$$\text{Profit\%} = \frac{3,000}{13,000} \times 100 = 23.08\%$$

44. (b)

	C.P	S.P
I. Trader	10	13
II. Trader	10	13
III. Trader	10	13
	1000	2197

$2197 \rightarrow 300$

$$1000 \rightarrow \frac{300}{2197} \times 1000 = \text{Rs. } 136.55$$

Maths by Aditya Ranjan sir

DISCOUNT

– अ/इ अ्अद

03

1. Riya could not decide between discount of 30% or two successive discounts of 25% and 5%, both given on shopping of Rs.3,840. What is the difference between both the discounts?

है दिन ये लं गन- अलं दिन रे लजकैलरे लं गनएक्सा ही ल- अक्ष
लइ ग लहचड़र्व लिचमग्रक्रमश दनै मगल: वहनएक्सा क्सा 8%5य
वृ र्व क्सा गनक्रैगएदै गनशै लहएदिन। दनै मदन: वहनएक्सा- अक्सी क
ठ दिनजबै लमन

SSC CGL 01/12/2022 (Shift- 01)

(a) Rs.44 (b) Rs.48
(c) Rs.42 (d) Rs.46

2. A shopkeeper makes a net profit of 44% on selling an article at successive discounts of 10% and 20%. Find the net profit percentage, if the shopkeeper sells the same article at a discount of 15%.

लए? क्यएदै ल ल्सू पलें क्सटये लजकैलरये लं गन ही
- अलशै लई कचक्सशै ल55 लं दनल्दी लक्रव्दनज ,। पलं पदनमक्
हिएलए? क्यएदै लु धगन्सू पलें क्सटरे लं गन- अलशै लई कपदनमक
पक्सन्दी लक्रव्दनश हपल्यल्ट्यलं गह्र क्

SSC CGL 01/12/2022 (Shift- 02)

(a) 50% (b) 70%
(c) 30% (d) 40%

3. The single discount equivalent to two successive discounts of 15% and 12% on an article is:

ल्सू पलेशै लटरे लजकैलटते लं गनएक्सा ी वसपल- अलहं ध
ल ल क्रल- अलं क्सै दै लमन

SSC CGL 01/12/2022 (Shift- 03)

(a) 3% (b) 25.2%
(c) 74.8% (d) 27%

4. A dealer buys an old cooler listed at Rs.650 and gets successive discounts of 20% and 10%. He spends Rs.38 on its repairs and sells it at a profit of 20%. Find the selling price of the cooler.

ल गक्रै लकरयलवश लार्ध गइ 1 ली वलिशै ल लशै?क्यलं क्रै
क्रैगएपदनमतजकैल6धलशै लत ये लजकैलटये लं गन ही ल- अ
श्रपलं पदनमक्सन मल6धं गलें धी पलशै ल %लवश लार्ध्र लं पद
मतजकैल6धक्सा ये लं क्सक्रव्दनशै लई कपदनमक्सं क्रै लं दनह्र त
ी वलि व्यलं क्स

SSC CGL 01/12/2022 (Shift- 04)

(a) Rs.7.80 (b) Rs.700
(c) Rs.790 (d) Rs.607.2

5. What is the single percentage discount equivalent to two successive discounts of 15% and 5%?

15% जकैल5%लं गनएक्सा ही ल- अक्सं क्सै दै ल क्रल- अ
श्रपल्यल्ट दिनमन

SSC CGL 02/12/2022 (Shift- 01)

(a) 19.00% (b) 19.25%
(c) 18.00% (d) 18.25%

6. A laptop is sold for Rs.65,520 after a discount of 25%. What was the marked price of the laptop?

लक्रश अक्सल्ट रे लं गन- अलं क्सह व्दलकर क्रत यलवश ी क्सई कद
। व्दनमक्सक्रश अक्सलं दनजह्रं पली वलि दिनव

SSC CGL 02/12/2022 (Shift- 02)

(a) Rs.87,630 (b) Rs.87,360
(c) Rs.87,370 (d) Rs.83,760

7. Sunil purchased a fan at a 10% discount on the labelled price. If he had purchased it at a 15% discount, he would have saved Rs.400. Find the labelled price of the fan.

धश्रक्रलचक्स लश क्सक्सनजह्रं पली वलिशै लटये लं गन- अलशै
क्रैगएदन्ह हिएलु धचक्स6धक्सटरे लं गन- अलशै लक्रैगएदनमक्सक्सनमक्स
धक्स6यलवश ी क्सं गन्ई पलमक्सक्सन क्सक्सं दनजह्रं पली वलि व्य
गह्र क्

SSC CGL 02/12/2022 (Shift- 03)

(a) Rs.8,400 (b) Rs.7,500
(c) Rs.800 (d) Rs.8,000

8. A shopkeeper gives two successive discounts on a watch marked Rs.2,750. The first discount given is 10%. If the customer pays Rs.2,103.75 for the watch, then what is the second discount?

लए? क्यएदै लत क्सर यलवृ र्व क्सं क्सजह्रं पली वलिस क्रगनउ म
शै लएक्सा ही ल- अलएक्सनमक्सनएगनस6लश मक्रगन- अलटये लमक्स
हिएलसक्सं लउ मनं क्सक्रक लत क्सटया क्सर लवश ी क्सं दन0श्रपव्य
पदनमक्सनमक्सएधै गन- अलहं पचनमन

SSC CGL 02/12/2022 (Shift- 04)

(a) 15% (b) 30%
(c) 12% (d) 10%

Maths by Aditya Ranjan sir

9. The difference between a discount of 25% and two successive discounts of 15% and 10% on a certain bill was Rs.25. Find the amount of the bill.

SSC CGL 03/12/2022 (Shift- 01)

(a) Rs.3,333.33 (b) Rs.2,500
(c) Rs.833.33 (d) Rs.1,666.67

10. The marked price of an article is Rs.10,927. Due festive season, a certain percentage of discount is declared. Raju buys an article at reduced price and sells it at Rs.109,27, and makes a profit of 11.5%. What was the percentage discount offered?

SSC CGL 03/12/2022 (Shift- 02)

(a) 10.3% (b) 11.3%
(c) 11.5% (d) 10.9%

11. A man bought a watch for 12% discount. If he had bought it for 24% discount, he would have got the watch for Rs.2400 less. The marked price of the watch is:

SSC CGL 03/12/2022 (Shift- 03)

(a) 30,000 (b) Rs.22,500
(c) 20,000 (d) 25,000

12. The marked price of a chair is Rs.2,400, which is 20% above the cost price. If the chair is sold at a discount of 10% on marked price, what is the profit percentage?

SSC CGL 03/12/2022 (Shift- 04)

(a) 10% (b) 8%
(c) 9% (d) 26.2%

13. A hotel is giving a discount of 12% on the booking of 2 or more rooms. Additionally, the hotel is offering a 5% discount only on payment using any card of SBI. Rakesh booked 2 rooms in the hotel for a day at the rate of Rs.1,500 per room per day. While checking out, he paid the bill using SBI Silver Card. How much amount did he have to pay?

SSC CGL 05/12/2022 (Shift- 01)

(a) Rs.2,498 (b) Rs.1,254
(c) Rs.2,508 (d) Rs.2,618

14. A shopkeeper offers three types of discount schemes for buyers. Which of them has the maximum discount percentage?

I. Two successive discounts of 10% each.
II. Successive discounts of 15% and 5%.
III. 20% discount.

SSC CGL 05/12/2022 (Shift- 03)

(a) Only discount scheme I
(b) Only discount scheme II
(c) Only discount scheme III
(d) All provide equal discount

15. A cap having marked price Rs.90 is sold for Rs.68. What is the percent rate of discount (correct up to two decimal places)?

SSC CGL 05/12/2022 (Shift- 04)

(a) 24.44% (b) 25.37%
(c) 22.00% (d) 23.22%

Maths by Aditya Ranjan sir

16. Successive discounts of 18% and 22% are equal to a single discount of _____.

ट% लजकैलल्ते लं गल्त ही ल्ल अलं गल्त क्रल्ल अ_____ लं क ई दै लमह्

SSC CGL 06/12/2022 (Shift- 01)

(a) 36.04% (b) 35.04%
(c) 37.04% (d) 34.04%

17. If 3 coconuts are offered free on purchase of 12 coconuts, priced Rs.25 each, what is the effective discount on each coconut?.

हिएल्त रल्वश किए र्ड किलं गलं गी पल्ल कक्लट लच्चै क्रिलद्धै गए चक्क ई ला लच्चै क्रिली ? पल्हए ला वाक्लमह्लपक्लए र्ड किलच्चै क्रिलै श्ठक्ल गल्ल अल्ल किनमन

SSC CGL 06/12/2022 (Shift- 02)

(a) 20% (b) 24%
(c) 20.83% (d) 15%

18. A dealer buys an article listed at Rs.3,000 and gets successive discounts of 15% and 15%. He spends Rs.250 on transportation and sells it at a profit of 20%. Find the selling price of the article

ल्ल गफै ल ४ययल्वश किजह्ल पली वलिं गल्ल लल्ल पल्लद्धै गए पद मतजकैलटरे ल्ल स्लाटरे लं गलती वसपल्ल अलाश्ट्रपलं ै पक्लनमह्ल स्मलश्है स्मचलश्है लल्ल रयल्वश किल्लद्धै लं ै पक्लनमतजकैल्ल ४धक्ल ये ल्लक्लव्क्लश्है ल्ल्ह्कपक्लनमह्लल्ल पलिं क्लह्ल्त लि वलि२ क्लवलं ै क्क

SSC CGL 06/12/2022 (Shift- 03)

(a) Rs.3,300 (b) Rs.2,901
(c) Rs.3,250 (d) Rs.3,200

19. Rohan sold goods to Ankith worth Rs.55,000 at 15% trade discount. How much money did Ankith pay to Rohan?

ै क्लक्लक्लल्ल ४ययल्वश किं क्लधवे क्लल्लजह्ल पलं क्लाटरे लद्धि श्है ल्ल - अलश्है ल्ल्ह्कक्लल्लजह्ल पल्लक्लै क्लक्लल्लं क्लह्ल पक्लल्लश्क्लक्लह्ल्ए दि

SSC CGL 06/12/2022 (Shift- 04)

(a) Rs.8,250 (b) Rs.12,550
(c) Rs.22,550 (d) Rs.46,750

20. In a shop, a discount of 5 percent is provided, and if the total payable amount after discount is more than Rs.2,000, then an additional discount of 10 percent is provided. Determine the final amount to be paid (in Rs.) by a customer, if he buys five products each of price Rs.500.

लए? क्वली लाल्ल श्ह्पल्ल्वलं गल्ल अल्ल श्ह्क्वलं गल्ल वाग्लमतजकैल हिएल्ल अलं लह्ल्ए लं क्रैलए किल्लै क्लह्ल्त ४ययल्वश किल्लधक्लजह्ल मह्लपक्लटयल्ल श्ह्पल्ल्वलं गल्लजह्पहै > पल्ल अल्ल श्ह्क्वलं गल्ल वाग्लमह्ल हिएल्लसह्मं लल्ल रयल्वश किल्ल र्ड किलं गलं गी पलं लाश्क्लक्लु ष्क्वए द्धै गए पक्लनमह्लपक्लु धं लाद्दै क्लव्क्लश्पक्वलं गल्ल क्लक्लल्ल-क्लगलै क्लह्ल्द (वश किली क्लेल्ल२ क्वलं गह्ल क्लि क्क

SSC CGL 07/12/2022 (Shift- 01)

(a) Rs.2,500 (b) Rs.2,225.5
(c) Rs.2,375.5 (d) Rs.2,137.5

21. A discount of 20% is given for the purchase of two books by a bookseller and a discount of 25% is offered if a customer buys more than two books. A 10% discount is being offered to all the customers on purchase of one book. An additional 5% discount will be given to students. Sohan, a student of M.Com. in college, bought a book for Rs.513. What was the marked price of the book?

लए? पं लह्ल्त पक्लनमह्लं क्लां क्लाएक्लए? पं लाद्धै गए चक्लश्है ल्ल ये लल्ल अलजकैलल्ए क्लाधक्लजह्ल लए? पं लाद्धै गए चक्लश्है ल्ल रे लं ग - अलए पक्लनमह्ल लए? पं लद्धै गए चक्लश्क्लल्ल-क्लगलध०क्वलसह्मं क्लां क्क टये लं गल्ल अलए गल्ल दै मगलमह्ल्ल-क्वसह्लां क्लाजक्रसलधक्लश्है लं ग जकैल्ल अलए गल्ल द्र सगह्ल लं क्लक्लली लाश्ी 4 वै०4लं गल्ल श्कृह्ल ै चक्ल-क्लक्ल वक्लसलधक्लक्लक्लटा लवश किं गल्ल लए? पं लद्धै गए गह्ल श्ए? पं लं क्लजह्ल पली वलि किनक्ल

SSC CGL 07/12/2022 (Shift- 02)

(a) Rs.650
(b) Rs.540
(c) Rs.600
(d) Rs.605

22. What will be the cost price of the goods if a shopkeeper allows a discount of 10% on the marked price of Rs.100 and gains 8%(rounded off to the nearest integer)?

हिएलं क्लल्ए? क्लाएदै लटयल्वश किं लाजह्ल पली वलिश्है लटये गल्ल अलए पक्लनमतजकैल्ल% लक्लव्क्लश्ट्रपलं ै पक्लनमह्लपक्लश्है क्क क्लल्ल लि वलि किनमक्लाद्ल (हचं अमी लश्डक्लंह्ल लमं लश्डक्लंह्ल प)

SSC CGL 07/12/2022 (Shift- 03)

(a) Rs.83 (b) Rs.86
(c) Rs.87 (d) Rs.81

23. At a Christmas sale, all the goods in a shop are on sale at 30% discount. If Jasmine buys a skirt marked at Rs.800, how much would she need to pay?

ह्ल धी धलं गल्लह्ल्त गल्लश्है ल्ल लए? क्वली लाध०क्वलस्ल प्र? स्ला ये - अलश्है लु श्क्रँ द्ध लश्है लमह्लल्ल हिएल्ल। ल्ली गल्ल%यल्वश किजह्ल प ी वलि-क्लगल्लं अलद्धै गए पगलमह्लपक्लु धक्लह्लं पक्लल्ल०क्वीपक्वलं ै चद मक्लाद

(a) Rs.476 (b) Rs.400
(c) Rs.770 (d) Rs.560

Maths by Aditya Ranjan sir

24. A dealer marks his goods at 15% above the cost price and allows a discount of 5% for cash payment. His profit percentage is:

SSC CGL 08/12/2022 (Shift- 01)

(a) 9.25% (b) 7.25%
(c) 11.25% (d) 10.25%

25. A shopkeeper listed the marked price of a chair at a certain amount. If the shopkeeper declares a 15% discount and sold it at Rs.1,445, then what is the marked price?

SSC CGL 08/12/2022 (Shift- 02)

(a) Rs.1,750 (b) Rs.1,800
(c) Rs.1,700 (d) Rs.1,850

26. A shopkeeper claims to sell his article at a discount of 10%, but marks his articles by increasing the cost of each by 20%. His gain percentage is:

SSC CGL 08/12/2022 (Shift- 03)

(a) 18% (b) 12%
(c) 8% (d) 16%

27. A dealer offers 45% discount on a packet. She offers a further discount of 25% on the reduced price on cash payment. What does a customer has to pay for the packet of Rs.2,800, in cash, to avail both discounts?

SSC CGL 08/12/2022 (Shift- 04)

(a) Rs.1,480 (b) Rs.1,155
(c) Rs.1,155 (d) Rs.1,230

28. Three successive discounts of 10% is equivalent to a single discount of:

SSC CGL 09/12/2022 (Shift- 01)

(a) 27.1% (b) 19.0%
(c) 25.1% (d) 26.2%

29. A shopkeeper offers a cash discount of Rs.85 first and then two successive discounts of 10% and 2% on the marked price of a fan. If the marked price of the fan is Rs.1,285, what is its selling price (in Rs.)?

SSC CGL 09/12/2022 (Shift- 02)

(a) Rs.1058.4 (b) Rs.1000.4
(c) Rs.958.4 (d) Rs.1100

30. A megastore is offering 20% discount on all grocery items. Sakshi bought one grocery item marked at Rs.400. What is its cost price if the store earned a profit of 25% after giving the discount?

SSC CGL 09/12/2022 (Shift- 03)

(a) Rs.256 (b) Rs.280
(c) Rs.380 (d) Rs.320

31. A grocery shop is offering 10% discount on the purchase of Rs.500 and above. A 5% discount is given on the purchase of value above Rs.250 but below Rs.500. A discount of additional 1% is given if payment is made instantly in cash. How much would a customer have to pay by cash if he buys 25 packets of biscuits and one packet is

SSC CGL 09/12/2022 (Shift- 04)

(a) Rs.670.25
(b) Rs.668.25
(c) Rs.675
(d) Rs.667.05

Maths by Aditya Ranjan Sir

32. A shopkeeper offers the following three schemes.

लिअय लयकि जाय व्यय्यक्ति ी त्यर्यं तईं-य ं र्यं रक्यहैच

Scheme-I: Two successive discounts of 15% and 25%

कि्चक्छलालल्टरे लजकैलल्टरे लं गलएक्ष ही ं ल-अ

Scheme-II: Buy 5, get 3 free

कि्चक्छलIIलल्ल लद्धैः गएक्ष ली ?पलश्द ब

Scheme-III: Buy 4, get 6

कि्चक्छलIIIलल्ल लद्धैः गएक्ष लश्द ब

Which scheme is the best for customers?

सक्षं क्ष्ं क्ष्क लधइ धक्षज ऊ ग्लूं गी लं क्यध्यगलमन

SSC CGL 12/12/2022 (Shift- 01)

(a) Scheme - I

ू ं गी ल I

(b) Scheme - III

ू ं गी ल III

(c) Scheme - II

ू ं गी ल II

(d) Any one-All are equal

ं क्ष्ल्ल्ध्वल्धी क्यलमब

33. The printed price of a TV set is Rs.14,500. It is sold for Rs.10,000 with two consecutive discounts. If the first discount is 10%, then what is the second discount?

ं लभ्र गल्धक्षलं दी ह्यश्वली क्लिट्ट58 ययलवश क्षमक्ष्ल6धक्षसक्यैद एक्ष- अलं क्षधद क्नटय8ययलवश की ब्ई कव्न। क्यक्नमक्ष्नहि्ए श्मक्रगल- अलटये लमक्ष्लमक्षए धै गल- अलहं पचगलमन

SSC CGL 12/12/2022 (Shift- 02)

(a) 23.37% (b) 25.37%

(c) 20.37% (d) 27.37%

34. Raghav purchased a shirt at Rs.1,500 and marked up the price of the shirt by 40%. What is the discount percentage he has to offer in order to get a profit of Rs.75?

ै दश्व-लचक्ष ं लल्ल्श्लं क्षट्ट8 ययलवश की ब्ब्द्धैः गएक्नजकैलल्ल्श्ं गं गी पली ब्ब्ये लं गल-ू हा लं गक्ष्ल्ल्र लवश की क्नक्रव्क्नश्ट्रप ं ै चक्षं क्ष्क्र लु धक्षहं पचक्नश्ट्रपल्वल- अलएब्बक्नमक्षब

SSC CGL 12/12/2022 (Shift- 03)

(a) 25% (b) 15%

(c) 75% (d) 50%

35. Raghav went to a shopping mall to purchase clothes. He had two coupons with him, but only one can be used on a single day. Using the first coupon, a total discount of 30% could be obtained on the total amount. Using the second coupon, he will get 80% off on the price of the costliest shirt if he buys at least 3 shirts. What is the price at which Raghav can purchase 3 shirts at a minimum price if the prices of the three shirts are Rs.1,250, Rs.1,540 and Rs.1,375?

ै दश्व-ल ं लल्क्ष्ब्ली क्क्ली क्षं श्प क्षद्धैः गएचक्षमक्नि्नः क्ष्ह्लु धं क श्व्धलएक्षं श्चलः क्षक्रक्षं चत्र ं लहए्चली क्षं क्षक्क्ल ं लमग 6ू पीक्षक्क्ल्हं दिन्ा क्नधं पक्नमक्ष्नश्मक्रक्षं श्चलं क्नु श्क्षलं ै ं क ं क्रैलै क्ष्ल्क्नै ल ये लं गलं क्रैल- अलश्ट्रपलं गल। क्नधं पगलमक्ष एधै क्षं श्चलं क्नु श्क्षलं ै पक्षम्र? 8ल्ल्ह्ए्लश्मलं ी ल्धक्षं ी ा लल्ल्श्लद्धैः गएपक्नमक्ष्लपक्षु धक्षधइ धक्षी मक्ष्गलल्ल्श्लं गलं गी प श्ै ल%्ये लं गल- अलश्ी क्रक्षक्ष्नहि्ए्लमगक्ष्लल्ल्श्लं गलं गी पलट्ट8 रय वश्क्षिक्ट्ट8 5यलवश्क्षक्नकैलट्ट8 ज्ञर लवश्क्षमक्ष्लमक्षकै दश्व-ल्र चयी ं गी पलश्ै ल लल्ल्श्लहं धलं गी पलश्ै लद्धैः गएल्धं पक्नमन

SSC CGL 12/12/2022 (Shift- 04)

(a) Rs.2,760

(b) Rs.2,915.50

(c) Rs.2,775

(d) Rs.2,933

36. An article costs Rs.4,000 to a shopkeeper, who marks its price at Rs.8,400. The shopkeeper sells it to a customer at a discount of 25%. The customer gets a further discount of 15% on the discounted price if the customer redeems a coupon issued by the store previously. What is the profit percentage (to the nearest integer) earned by the shopkeeper in this transaction?

ं लए? क्यएैद लं क्ष्क्र ल ं ल-ू पलं गलं गी पल्ट8ययलवश्क क्ष्मक्ष्न। क्क्ष6धं गलं गी पल%85ययलजह्ं पलं ै पक्नमक्ष्नए? क्यएैद 6धक्षमक्षमं लं क्षक्ष्रे लं क्ष- अलश्ै लई्कपक्नमक्ष्नहि्ए्लमक्षमं ऐक्ष्कलप्रैद क्नश्मक्रक्षधक्ष। दै गलहं ं लम्र लं श्चलं क्ष6ू पीक्षक्क ं ै पक्नमक्ष्लपक्षमक्षमं लं क्षहै वि पगली क्लिश्ै लट्टरे लं क्नजकैल - अलश्ट्रपलमक्षक्नमक्ष्न6धक्षधक्ष्क्ली क्षए? क्यएैद लप्रैद क्नज ,। प क्रव्क्नश्ट्रपल्वल(हचं अगी ल्ड्ड्ब लमं)लहं पचक्नमन

SSC CGL 13/12/2022 (Shift- 01)

(a) 34% (b) 51%

(c) 42% (d) 36%

Maths by Aditya Ranjan sir

37. Sita gets a discount of 20% on Rs.3,000 juicer mixer machine. Since she pays cash, she gets additional 5% discount too. How much does she pay?

धगपदं कम्म ४ययलवश्लिं गल। धै लही ३धै ली ल्वाकलै लत्ये ' गल- अलही क्रपगलमक्लर्न हं लस्मलचं एल0वशिपक्वलं ' पगलमक्ष 6धहक्र लु धकाजहपैहै ३पलरे लं गल- अल0वलही क्रपगलमक्लस्म हं पचक्ल0वशिपक्वलं ' पगलमन

SSC CGL 13/12/2022 (Shift- 02)

(a) Rs.2,280 (b) Rs.2,280
(c) Rs.2,282 (d) Rs.2,278

38. The cost price of an article is Rs.800. After allowing a discount of 10%, a gain of 12.5% was made. The marked price of the article is:

' लस्ू पलें दन्त लि वलि%ययलवश्लिमक्लटये लं गल- अलएक्कं क इवलटर्ये लं दक्रव0वलमअेक्लस्ू पलें दजहं पली वलि2वलं गह्र ६

SSC CGL 13/12/2022 (Shift- 03)

(a) Rs.1,300 (b) Rs.1,200
(c) Rs.1,000 (d) Rs.1,100

39. A shopkeeper allows a discount of 12% to his customers and still gains 18%. Find the marked price of an article which costs Rs.528 to the shopkeeper.(Answer to the nearest rupees)

' लएं? क्वाएदलजश्चक्लमत्रं क्वां कालते लं गल- अलएक्लमचैक्ल हर्शैल0वलट% लं दक्रव0वलशृपलं ' पदलमक्ष्र ' लस्ू पलें द जहं पली वलि2वलं गह्र लहा धं दन्त ि वलिएं? क्वाएदलं क हक्र लर्त%लवश्लिमत्त हवं अमी लवश्लि ली जाजश्चस्तु ग्दलएगह्र)

SSC CGL 09/12/2022 (Shift- 04)

(a) Rs.728
(b) Rs.708
(c) Rs.695
(d) Rs.798

40. A bike is sold for Rs. 87,500 by allowing a discount of 44% on its marked price. The marked price (in Rs.) of the bike is:

' ली क्वाछधकहं क्रलं क्वु धं ली वलिरै लऽ5%लं गल- अलएंकै Rs. 87,500ली लहं कदन। वदलमक्ष्ली क्वाछधकहं क्रलं दजहं प ी वलि(Rs.ली क्रेहं पचक्लमन

SSC CGL TIER - II 02/03/2023

(a) 1,56,100 (b) 1,58,225
(c) 1,56,250 (d) 1,55,500

41. Find the single equivalent discount for successive discounts of 12%, 18% and 25% on the marked price of a car.

' लं दैलं लजहं पली वलिरै लएगलम6लटते ४लट% लजकैलर्त रे ' गल्त हैं ल- अलहं धल्र ' क्रल- अलं लमी पलें लिमन

SSC CGL TIER- II 03/03/2023

(a) 35.28%
(b) 42.65%
(c) 40.25%
(d) 45.88%

42. A dishonest trader marks up his goods by 50% and then allows a discount of 20% on its marked price. Additionally, he uses a faulty scale which measures 900 gm. for 1 kg. shows. What will be his net profit percentage (rounded off to the nearest integer)?

' लह्र ली क्वलद दैद गलजश्चली क्वलरै लत्ये लजक्ष्ु ली वलिजहं प ' पदलमतजकैलहर्शैलु धं लजहं पली वलिरै लत्ये लं गल- अलएक्ल मक्ष्र6धं लजहपैहै ३पक्ष्ल- मल्र ' लएक्वाड्वलमै व लं क्लु श क्वालं ' पद मत। क्व900 gm. ' लक्ष्र ल1 kg.लहएक्ष्ुसदलमक्ष्ु धं दलल्दी क्रव0वलश्हपल्वाल(हवं अमी लश्डवंद्य लमं)लक्लि दिमक्लन

SSC CGL TIER- II 06/03/2023

(a) 33 (b) 36
(c) 27 (d) 24

43. Two successive discounts of 10% and 10% will be equal to a single discount of _____.

10%लजकैल10%लं गलएक्लत हैं ल- अलमममममममम ' क्रल- अ ' क्वै है लमक्वाक्ष्

SSC CGL TIER- II 06/03/2023

(a) 20% (b) 18%
(c) 19% (d) 21%

44. At a clearance sale, a shopkeeper gives 45% discount. If a customer paid Rs. 330 during the sale, then what is the marked price of that shirt ?

' लह्र क्रैं क्वलधक्रली क्वा ' लएं? क्वाएदलरे लं गल- अलएक्लमक्ष्र हिएलहं धगलमत्रं लचक्लधक्रलं लएकैक्वलवश्लि। यली क्व ' लल्दक्ष्र क्वैं एगक्लमक्ष्ु धलल्दक्ष्लं दजहं पली वलि दिमन

SSC CGL TIER- II 07/03/2023

(a) Rs. 550 (b) Rs. 600
(c) Rs. 500 (d) Rs. 650

Maths by Aditya Ranjan sir

ANSWER KEY

1.(b)	**2.**(b)	**3.**(b)	**4.**(d)	**5.**(b)	**6.**(b)	**7.**(d)	**8.**(a)	**9.**(d)	**10.**(a)
11.(c)	**12.**(b)	**13.**(c)	**14.**(c)	**15.**(a)	**16.**(a)	**17.**(a)	**18.**(b)	**19.**(d)	**20.**(d)
21.(c)	**22.**(a)	**23.**(d)	**24.**(a)	**25.**(c)	**26.**(c)	**27.**(c)	**28.**(a)	**29.**(a)	**30.**(a)
31.(b)	**32.**(c)	**33.**(a)	**34.**(a)	**35.**(b)	**36.**(a)	**37.**(a)	**38.**(c)	**39.**(b)	**40.**(c)
41.(d)	**42.**(a)	**43.**(c)	**44.**(b)						

Maths by Aditya Ranjan sir

SOLUTIONS

1. (b)
I. case: 30% Discount
II. case: 25% and 5% Discount

$$\text{Eff. Discount} = 25 + 5 - \frac{25 \times 5}{100}$$
$$= 28.75\%$$
Difference = 30 – 28.75 = 1.25%

$$\Rightarrow \frac{1.25}{100} \times 3840 = 48 \text{ Rs.}$$

2. (b)

$$\text{Effective Discount} = 10 + 20 - \frac{200}{100}$$
= 28%

$$\frac{CP}{MP} = \frac{100 - D}{100 + P} = \frac{72}{144} = \frac{1}{2} = \frac{100}{200} \text{(say)}$$

$$SP = \frac{100 - 15}{100} \times MP = \frac{85}{100} \times 200$$
$$= 170$$

$$\Rightarrow \text{Profit} = \frac{170 - 100}{100} \times 100 = 70\%$$

3. (b)

$$\text{Eff. Discount} = 15 + 12 - \frac{15 \times 12}{100}$$
= 27 – 1.8
= 25.2%

4. (d)

$$\text{Eff. Discount} = 20 + 10 - \frac{200}{100}$$
= 28%

$$C.P = \frac{72}{100} \times 650 = 468$$

$$S.P = \frac{120}{100}(468 + 38)$$
= 607.2 Rs.

5. (b)

$$\text{Eff. Discount} = 15 + 5 - \frac{15 \times 5}{100}$$
= 20 – 0.75
= 19.25%

6. (b)

$$M.P = \frac{S.P}{(100 - D)} \times 100$$

$$= \frac{65520 \times 100}{75}$$
= 87,360

7. (d)
5% = 400

$$100\% = \frac{400}{5} \times 100$$
= 8000

8. (a)
Discount = 2750 – 2103.75
= 646.25
Let, be the II discount

$$\Rightarrow 10 + x - \frac{10x}{100} = \frac{646.25}{2750} \times 100$$

$$\Rightarrow 10 + \frac{9x}{10} = 23.5$$

$$\Rightarrow \frac{9x}{10} = 13.5 = \frac{135}{10}$$
x = 15%

9. (d)

$$\text{Eff. Discount} = 15 + 10 - \frac{15 \times 10}{100} = 23.5$$
$$\Rightarrow 25 - 23.5 = 1.5\% \rightarrow 25$$

$$100\% \rightarrow \frac{25}{15} \times 1000$$
= 1666.67

10. (a)
Let CP = 100

$$M.P \xrightarrow{-x\%} C.P \xrightarrow{+11.5\%} S.P = M.P$$
$$\Rightarrow SP \rightarrow 111.5 = MP$$

$$\Rightarrow x\% = \frac{11.5}{111.5} \times 100$$
$$= 10.3\%$$

11. (c)
24% – 12% = 12% = 2400

$$100\% = \frac{2400}{12} \times 100$$
= 20,000

Maths by Aditya Ranjan sir

12. (b)

MP	CP	SP
120	100	$\frac{90}{100}\times 120 = 108$

$\Rightarrow$ P% = 8%

13. (c)

Eff. Discount $= 12 + 5 - \frac{12\times 5}{100}$

= 17 – 0.6
= 16.4%

$\Rightarrow$ Amount paid = $\frac{83.6}{100}\times 3000$
= 1254 × 2
= 2508

14. (c)

I. $10 + 10 - \frac{100}{100} = 19\%$

II. $15 + 5 - \frac{20}{100} = 19\%$

III. 20% $\rightarrow$ maximum.

15. (a)

$D = \frac{90-68}{90}\times 100$

$= \frac{22}{90}\times 100 = 24.44\%$

16. (a)

Eff. Discount $= 18 + 22 - \frac{18\times 22}{100}$

= 40 – 3.96
= 36.04%

17. (a)
M.P = 15
S.P = 12

$\Rightarrow$ Discount $= \frac{3}{15}\times 100$

= 20%

18. (b)

Eff. Discount = 15 + 15 – $\frac{15\times 15}{100}$

Eff. Discount = 30 – 2.25
= 27.75%

$C.P = \left(\frac{72.25}{100}\times 3000\right) + 250$

= 2417.5

$\Rightarrow$ S.P = $\frac{120}{100}\times 2417.5$ = Rs. 2901

19. (d)

Amount paid $= \frac{85}{100}\times 55000$

= 46750

20. (d)

Eff. Discount $= 5 + 10 - \frac{50}{100}$

= 14.5%

$\Rightarrow$ Amount paid $= \frac{85.5}{100}\times 2500$

= 2137.5

21. (c)

Eff. Discount $= 10 + 5 - \frac{50}{100}$

= 14.5%

$\Rightarrow \frac{513\times 100}{85.5}$ = M.P

$\Rightarrow$ M.P = Rs. 600

22. (a)

$\frac{MP}{CP} = \frac{100+P}{100-D}$

$\frac{100}{CP} = \frac{108}{90}$

CP = $\frac{9000}{108} \approx$ Rs. 83

23. (d)

Amount to pay $= \frac{70}{100}\times 800$

= Rs.560

24. (a)

MP	CP	SP
115	100	$\frac{95}{100}\times 115 = 109.25$

$\Rightarrow$ Profit = 9.25%

25. (c)

$M.P = \frac{1445}{85}\times 100$

= 1700

26. (c)

MP	CP	SP
120	100	$\frac{90}{100}\times 120 = 108$

$\Rightarrow$ Gain = 8%

Maths by Aditya Ranjan sir

27. (c)

Eff. Discount = 45 + 25 – $\frac{45 \times 25}{100}$

Eff. Discount = 70 – 11.25

= 58.75%

⇒ Amount to pay = $\frac{41.25}{100} \times 2800$

= Rs. 1155

28. (a)

$10 + 10 - \frac{100}{100} = 19\%$

$19 + 10 - \frac{190}{100} = 27.1\%$

29. (c)

I. Step: 1285 – 85 = 1200

II. Step: Eff. Discount = $10 + 2 - \frac{20}{100}$

= 11.8%

⇒ S.P = $\frac{88.2}{100} \times 1200$

= Rs. 1058.4

30. (a) $\frac{M.P}{C.P} = \frac{100 + P}{100 - D}$

$\frac{400}{C.P} = \frac{125}{80}$

⇒ C.P = $\frac{400 \times 80}{125}$ = Rs. 256

31. (b) (Question incomplete)

Total purchase = Rs. 25 × 30

= 750

Eff. Discount = $10 + 1 - \frac{10}{100} = 11 - 0.1$

= 10.9%

Amount to pay = $\frac{89.1}{100} \times 750$

= Rs. 668.25

32. (c) Scheme- I:

Eff. Discount = 15 + 25 – 3.75

= 36.25%

Scheme- II:

Discount = $\frac{3}{5} \times 100 = 60\%$

Scheme- III:

Discount = $\frac{2}{6} \times 100 = 33.33\%$

∴ Scheme II is best for customers.

33. (a) Discount = 14500 – 10,000

= 4500

D% = $\frac{4500}{14500} \times 100 = \frac{900}{29}$

Eff. Discount = $10 + x - \frac{10x}{100} = \frac{900}{29}$

$10 + \frac{9}{10}x = \frac{900}{29}$

$\frac{9x}{10} = \frac{610}{29}$

$x = \frac{610}{29} \times \frac{10}{9}$

= 23.37%

34. (a) CP = 1500

MP = $\frac{140}{100} \times 1500 = 2100$

SP = 1500 + 75 = 1575

⇒ D% = $\frac{2100 - 1575}{2100} \times 100$

= $\frac{525}{21} = 25\%$

35. (b) I. Coupon:

S.P = $\frac{70}{100}$ × (1250 + 1540 + 1375)

II. Coupon:

S.P = $\frac{20}{100}$ × 1540 + 308 + 1250 + 1375

= Rs. 2933

∴ Coupon I gives minimum price.

Maths by Aditya Ranjan sir

36. (a) CP = 4000
M.P = 8400
Eff. Discount = 25 + 15 – 3.75
= 36.25%

$$\frac{C.P}{M.P} = \frac{100 - D}{100 + P}$$

$$\Rightarrow \frac{4000}{8400} = \frac{63.75}{100 + P}$$

$\Rightarrow$ 100 + P $\approx$ 134

$\Rightarrow$ P $\approx$ 34%

37. (b) Eff. Discount = 25 – 1 = 24%

$$\Rightarrow \text{Amount paid} = \frac{76}{100} \times 3000$$

= Rs. 2280

38. (c) $\frac{MP}{CP} = \frac{100 + P}{100 - D}$

$$\Rightarrow M.P = \frac{800 \times 112.5}{90}$$

= Rs. 1000

39. (b) $\frac{MP}{CP} = \frac{100 + P}{100 - D}$

$$\Rightarrow MP = \frac{528 \times 118}{88}$$

= Rs. 708

40. (c)

$$S.P = \frac{100 - D}{100} \times M.P$$

$$\Rightarrow M.P = \frac{87500 \times 100}{56}$$

= 156250

41. (d)
Given,
D_1 = 12%, D_2 = 18%, D_3 = 25%
We know,

$$D_1 + D_2 - \frac{D_1 \times D_2}{100} = 12 + 18 - \frac{12 \times 18}{100}$$

= 27.84

Again,

$$27.84 + 25 - \frac{27.84 \times 25}{100}$$

= 45.88%

42. (a) Dishonest

C.P	M.P	C.P	S.P
100	150	90	120

$$\Rightarrow \text{Profit\%} = \frac{120 - 90}{90} \times 100$$

$\approx$ 33%

43. (c)
We know,

$$\text{Eff. Dis} = D_1 + D_2 - \frac{D_1 \times D_2}{100}$$

$$= 10 + 10 - \frac{10 \times 10}{100}$$

= 19%

44. (c)

$$S.P = \frac{100 - D}{100} \times M.P$$

$$M.P = \frac{330 \times 100}{55}$$

= 600

Maths by Aditya Ranjan sir

SIMPLE INTEREST

कम्पाउंड ब्याज

04

1. Rs.2,500, when invested for 8 years at a given rate of simple interest per year, amounted to Rs.3,725 on maturity. What was the rate of simple interest that was paid per annum?

है दिलायर्या ं गर्ं अरि जएिकम्पाउंड ब्याज हैं चीडर्ची मएिडी ं ीिक्रिर जार्ई ं िअ 8ि अर 5नं अ 8हि न्ि वृश्ीतर्नं अर्द्ध तन ं ीि ल्दार्ी त्रार्ं चीन्छर्न न्त विन्त चीवृर्प अरि जएिज़ तन% अ 8हि न%रि न किम्पाउंड ब्याज हैं चीडी ध्वार्न?नव

SSC CGL 01/12/2022 (Shift- 01)

(a) 6% (b) 6.125%
(c) 6.25% (d) 5.875%

2. A person lent certain sum of money at the annual rate of 25 percent on simple interest. In 6 years the interest amounted to Rs.360 more than the sum lent. What is the sum lent?

8 ूिगउ्ह्ु अि कवअि अटत्तीन्छर्न नंदार्ी अ5न्तं चीर न्ज्ञा डीकि किम्पाउंड ब्याज हैं ीि1तनं डि तन वृर्प 0रि जार्ई नंज़ ब्याज हल 1तनं डि चीं मएिीन्छर्न कं ि।0यर्ं ं गं, अर्ं विन्ह न्न वृप 1ुनीं डि चीं मएिीन्छर्न ध्वार्न वृस

SSC CGL 01/12/2022 (Shift- 02)

(a) Rs.600 (b) Rs.360
(c) Rs.720 (d) Rs.540

3. The simple interest on a certain sum for 3 years at 14% p.a. is Rs.4,200 less than the simple interest on the same sum for 5 years at the same rate. Find the sum.

8 ि अि अटत्तीन्छर्न नं ि।रि जार्ई ं िअ 8धि32रि न्ज्ञा हैं च डीकि किम्पाउंड ब्याज हैं लकिसन%ीन्छर्न ं ीकिसन%डीं ीि ूनजार्ई ं किम्पाउंड ब्याज हैं कि 3ल्दयर्या ं गर्ं सं वृर्प ीन्छर्न ध्न्तं च्छ 8प

SSC CGL 01/12/2022 (Shift- 03)

(a) Rs.16,000 (b) Rs.10,000
(c) Rs.15,000 (d) Rs.12,000

4. Damani purchased an item costing Rs.7,500 and paid Rs.3,500 as a down payment for the same. If the simple interest charged for the remaining amount is 9% per annum and Damani cleared all dues after 4 months of the purchase, how much did Damani pay after 4 months as interest?

डसन%चीं%क्ष्लायर्या ं गर्ं चीं: ़ तरि न चीं 8 रि क्वि किन्छच , ़ीं 1कर्ची ं िअ 8ि 6ना%ं सइ्ं ं खं सिई।लायर्या ं ग- ं नंज़ तन%ं अि गन्ं गिउ्ह 5नज्ञा ीन्छर्न ं िअ 8ि अ गर्न. गन किम्पाउंड ब्याज हैं ज़ 2ं अरि जएिवृ, ़ीं डिसन%चीं%किन्छर्ं - 3सिवच्छर्ं हैं ं नार्ी न्छर्न नंज़ तन%ं अि गन्त्रि तन्ं डिसन%च %3सिवच्छर्ं ं ि न्ह ब्याज हैं खं सिई अ त%नंज़ तन%ं अि गन्

SSC CGL 01/12/2022 (Shift- 04)

(a) Rs.120 (b) Rs.100
(c) Rs.132 (d) Rs.125

5. A sum of Rs.6,000 is to be paid back in two equal annual instalments; each instalment is to be paid at the end of every year. How much is each instalment if the interest is compounded annually at 2% p.a.? (Rounded off up to two decimal places)

0ल्यर्या ं गर्ं चीं न्छर्न डि न किसन%रि न्ज्ञा ं िअ 5त नंसइ्टं नमए ह न%चीवृर्ं मं- ं िअ 5तं नंज़ तन%ं मं- रि जार्ई ं ि, ह सिश ं अ गन्ह ह न%न वृर्प गउ्ह ब्याज हैं दि2ं अरि जार्ई ं डीं किरि न्ज्ञा खं किटि 4 र ्ज ं िअ गन्ह न्न वृलतर्नं मं- ं िअ 5त ं िअ त%च वन्त चध्ि ड5नसः रं डिन ि?न%नर्ं ं ि बनाई त थ

SSC CGL 02/12/2022 (Shift- 01)

(a) Rs.2,092.29 (b) Rs.3,090.30
(c) Rs.2,291.29 (d) Rs.3,589.30

6. What annual installment will discharge a debit of Rs.5,664 in 4 years at 12% simple interest?

धद2 किम्पाउंड ब्याज हैं ीि3रि जार्ई सइ्ं ं ल्0ं3ं ं गर्ं द्वि बन ं नर्ं नृ%(कचीर न्ज्ञा ं िअ 5त किंज़ तन%ं अि गन्ह ह्ु न-

SSC CGL 02/12/2022 (Shift- 03)

(a) Rs.1,230 (b) Rs.1,210
(c) Rs.1,200 (d) Rs.1,220

7. On simple interest a sum of Rs.640 becomes Rs.832 in 2 years. What will Rs.860 becomes in 4 years at the same rate of simple interest?

किम्पाउंड ब्याज हैं ीि03यर्ं ं गर्ं चीत%ीन्छर्न दरि जएिसइ्रि द ं ं गर्विन्ह न चीवृर्प किम्पाउंड ब्याज हैं चीकिसन%डीं ीि3रि जए सइ्रि0यर्ं ं गर्ं अ त%विन्ह न्ह श्र-

SSC CGL 02/12/2022 (Shift- 04)

(a) Rs.1,250 (b) Rs.1,376
(c) Rs.1,426 (d) Rs.1,150

Maths by Aditya Ranjan sir

8. Rs.5,000 is divided into two parts such that if one part is invested at 4% and the other at 5%, then the whole annual interest from both the sums is Rs.223. How much was invested at 4%?

ा ल्यायर्यों गर्ई नंडनंकिन्ना नंसंईमिकर्ई नेंअिन्नछ्र तंअिगन हन्नंवृअिंई किन्ना नंई32ंई चीडीकिंई, नेंडिघ्नीं न ा2ंई चीडीकिंअिर 5नंअिगन हन्नंवृलीत नंडिन%नंईन्छ्रनानंकिंन्नंई ,: रिन्नंजा इिगन्ह दिदा। गंवृपं32ंई ीअिंत%न अिर 5नंअिगन् गन्?नस

SSC CGL 03/12/2022 (Shift- 01)

(a) Rs.2,600 (b) Rs.2,700
(c) Rs.2,400 (d) Rs.2,300

9. Suman paid Rs.9,600 in interest on a loan she obtained 5 years ago with a simple interest rate of 16%. What was the amount of the loan she had taken?

कस%ंई %ा ा रिजाईं व: ंध02ंई चीकन्तनेबनंइगन्ह डीं ी अ8ं 8ंई द्वि बनंीइगन्हंई खिं सिंइत्ल्यर्यों गंई न ज्ञ तन%ंअिगन्ा ा1क%ंअिंत%नंद्वि बनंअिगन्?नस

SSC CGL 03/12/2022 (Shift- 02)

(a) Rs.13,250 (b) Rs.12,500
(c) Rs.12,000 (d) Rs.11,750

10. What would be the compound interest on Rs.15,750 at 20% per annum, in two years, if the interest is compounded half yearly?

गअ्छइगन्हंई, न एन्नंजा खिं किंडमा वृलीत नंडिन रिजाईं सश धा ल्ह्यर्यों गंई ीदिय2रिन्नंजा ंई चीडीकिंटि4 रअ्र इगन्ह ह्वानंवृन् नस

SSC CGL 03/12/2022 (Shift- 03)

(a) Rs.5,213.25 (b) Rs.3,307.5
(c) Rs.7,305.975 (d) Rs.7,309.575

11. A sum becomes Rs.15,500 in 7 years on simple interest at the rate of 30 percent per annum. What is the total interest for the 7 years?

8 ंई ीन्छ्रनंकन्तनेबनंइगन्हंई ीं।र्यों अ5नंई अिर जाईं चीडी कंक्षिरिजाईंसंईधा ल्यर्यों गंवृनंन्हंन चीवृशंक्षिरिजाईं नंई ,: इगन्हंअिंत%नंवृश

SSC CGL 03/12/2022 (Shift- 04)

(a) Rs.12,200 (b) Rs.1,47,000
(c) Rs.10,500 (d) Rs.11,500

12. In how much time will a sum of Rs.5250 amounts to Rs.9870 at the rate of 11 percent per annum at simple interest?

ा दा र्यों गंई चीं8 ंई ीन्छ्रनंधर्धा अ5नंई अिर जाईं चीडीकिं- अिंत%किंसगंसंईकन्तनेबनंइगन्हंई ीं ज्ञिव्रक्ष्यों गंवृनंन्हंना-चस

SSC CGL 05/12/2022 (Shift- 01)

(a) 8 years (b) 14 years
(c) 2 years (d) 15 years

13. A certain sum of money becomes triple of itself in 26 years at simple interest. In how many years it will becomes five times of itself?

द0रिजाईंसंई8 ंअिअ्छटंतंईन्छ्रनंकन्तनेबनंइगन्हंई ीं विंरगश ंई चीतंच्छ्रंई,%नंवृनंन्हंन चीवृपंअिंत%रिजाईंसंईरंवृविंरगईं चस ंन्छ्रंई,%नंवृनंन्हंन्ह चस

SSC CGL 05/12/2022 (Shift- 02)

(a) 64 years (b) 52 years
(c) 56 years (d) 60 years

14. A sum of money invested at simple interest becomes $\frac{17}{10}$ of itself in 2 years and 6 months. What is the rate of interest per annum?

8 ंई ीन्छ्रनंकन्तनेबनंइगन्हंई ीं अिर 5नंई ी%ंई ीदिरिजाईं?नस

0सिवंक्ष्यंसंईरंवृगईं चीं $\frac{17}{10}$ विंनंन्हंन चीवृपंइगन्हंई चीरंनंजा डीं ंछ्रानंवृस

SSC CGL 05/12/2022 (Shift- 03)

(a) 22 percent (b) 16 percent
(c) 28 percent (d) 34 percent

15. A certain sum amounts to Rs.3,640 in 2 years and Rs.4,060 in 8 years at simple interest. Find the approximate rate percentage per annum?

8 ंअिअ्छटंतंईन्छ्रनंकन्तनेबनंइगन्हंई ीं दिरिजाईंसंई। ल्0 3य ंगंई, नेंद्रिरिजाईंसंई3ल्य0यों गंवृनंन्हंन चीवृपंरंनंजा ,%सन्छ्रंतंडीं अ5नंई ंन्नंई चस्ह8प

SSC CGL 05/12/2022 (Shift- 04)

(a) 4% (b) 2%
(c) 1% (d) 3%

16. The simple interest received on a sum is $\frac{25}{36}$ of the sum. The number of years is equal to the annual rate of interest. What is the annual rate of interest?

8 ंई ीन्छ्रनंई ीं नंतंअिगन् गन्कन्तनेबनंइगन्हंई ीन्छ्रनंई न $\frac{25}{36}$ विंपंरिजाईं चीकक्षगनंइगन्हंई चीरंनंजा डीं ंई ीनेंी वृपंइगन्हंई चीरंनंजा डीं ंछ्रानंवृस

SSC CGL 06/12/2022 (Shift- 01)

(a) 9.25 percent (b) 10.25 percent
(c) 6.62 percent (d) 8.33 percent

Maths by Aditya Ranjan sir

17. A car with a price of Rs.6,50,000 is bought by making some down payment. On the balance, a simple interest of 10% is charged in lump sum and the money is to be paid in 20 equal annual instalments of Rs.25,000. How much is the down payment?

0लायल्ययर्यि ंगर्ि चीं चमतरिन चीं नेर्ि ,. ि6ना%ं सइ ध्तर्म न ि्रतन%थ्ं र्ि विनेच्छचहिन चीवृर्प 5नर्जी ीच्छर्न ीिल 8 म्र5त धिय2र्ि नि कितनेबनइिगन्हर्ि:. नानहिन्नर्नि वृि , नृ ीच्छर्न नि्रतन%दि ालयर्यि ंगर्ि चीदयर्ि कसन%रिनर्ज ंअ 5तनीसईअ गनहिन%नवृर्प 6ना%ं सइ ध्तर्म न ि्रतन%थ ंचीच्छर्नअ त%चीवृस

SSC CGL 06/12/2022 (Shift- 02)

(a) Rs.1,55,945 (b) Rs.1,95,455
(c) Rs.1,94,555 (d) Rs.1,45,955

18. A sum of money amounts to Rs.767 in 3 years, and to Rs.806 in 4 years on simple interest at 6% annum. What is the sum?

8 ति%ीच्छर्न 02 रिनर्ज कितनेबनइिगन्हडीि ीि। रिजईसइ क्ष0क्षि ंगर्ि , नृ ीि3ि ूनजईसइ क्रम0र्ि ंगर्ि विनहिन्नचीवृर्प तन ीच्छर्नद्धानि?नव

SSC CGL 06/12/2022 (Shift- 03)

(a) Rs.600 (b) Rs.560
(c) Rs.675 (d) Rs.650

19. A person lent Rs. 23000 to B for 3 years and Rs. 19000 to C for 4 years on simple interest at the same rate of interest and received Rs. 3625 in all from both of them as interest. What is the annual rate of interest?

8 ि ूगउ्ह%ि B र्ि नि। ि ूनजईर्ि अि 8दि। यर्यि ंगर्ि ?नर्ि C ंनि3रिजईर्ि अि 8धिज्ञयर्यि ंगइिगन्हर्ि चीकसन%डीि कि कितनेबनइिगन्हर्ि ीि1तनेडि8ति?नडिन%नर्कि ,: ि।0दार्ि ंग इिगन्हर्ि खिं सिर्ि नर्तअि 8इिगन्हर्ि चीरनर्ज डीि द्धानवृस

SSC CGL 06/12/2022 (Shift- 04)

(a) 1.5 percent (b) 3 percent
(c) 2.5 percent (d) 4 percent

20. A person lent certain sum of money at the annual rate of 7 percent on simple interest and the interest received in 11 years is Rs. 920 less than the sum lent. What is the sum lent?

8 ि ूगउ्ह अि कचअ%उ्ह ट तीच्छर्न नि्रक्षि अ5नर्ि चीरनर्ज डीि कि कितनेबनइिगन्हर्ि ीि1तनेडि तनवृति?नधिधरिजईसइ ंनर्तअि गनि गनइिगन्हर्ि1तनेडिचि मीच्छर्न कि ज्ञदयर्ि ञ्ना ंसविर्प1तनेडिचि मीच्छर्नद्धानवृस

SSC CGL 07/12/2022 (Shift- 01)

(a) Rs.41200 (b) Rs.4000
(c) Rs.52000 (d) Rs.2400

21. A sum is deposited in a bank which gives simple interest. The sum becomes 1.25 times in 3 years. If there is a requirement of Rs.7,60,000 after seven years, how much amount (in Rs.) should one deposit to fulfil the requirement?

8 ि ीच्छर्न 8 ि ृ्रि सिर्ि हसर्नं चीहिन चीवृहिन कितनेबन इिगन्हडितनवृर्प ीच्छर्न। रिजईसइ धद्धा ि ,%नविनहिन चीवृप गउ्ह कितरिजईर्ि ि नडि क्ष्त0यलायर्यि ंगर्ि चीं , नर 5र्ग तन वन्नतिन 1कि , नर 5र्ग तनं नि ीनं ी%र्ि अि 8अि कचीं न अ त%चीच्छर्नधे ंगसइ हसर्नं ी%चीट च्छ8स

SSC CGL 07/12/2022 (Shift- 02)

(a) 5,20,000 (b) 5,70,000
(c) 4,80,000 (d) 6,00,000

22. What annual instalment will discharge a debt of Rs.9,600 due in 5 years at 10% simple interest?

ि रिजईसइ धिय2 कितनेबनइिगन्हर्ि ीि डिमज्ञत0यर्यि ंगर्ि – द्ध बनं नअि त%चीरनर्ज अि 5तनीकिटं तनअि गनहिन्ह नर

SSC CGL 07/12/2022 (Shift- 03)

(a) Rs.1450 (b) Rs.1450
(c) Rs.1500 (d) Rs.1600

23. Find the simple interest on Rs.2,700 for 8 months at 5 paisa per rupee per month?

दत्क्ष्यर्यि ंगर्ि ीि्रि सिवच्छर्ि अि 8ि ीि ृकि अर्ि ंगर्ि अ सन्नर्ि चीडीि कि कितनेबनइिगन्हर्ि ि नर्ि च्छ8स

SSC CGL 07/12/2022 (Shift- 04)

(a) Rs.950 (b) Rs.720
(c) Rs.540 (d) Rs.1,080

24. In a certain duration of time, a sum become 2 times itself at the rate of 5% per annum simple interest. What will be the rate of interest if the same sum becomes 5 times itself in the same duration?

8 अि%उ्ह ट तकिसगनर अुनसइर्ि 8 ीच्छर्नी 2 रिनर्ज किनुनीच्छ इिगन्हर्ि चीडीि कि विर गईं चीदि ,%चीवनहिन चीवृर्प गउ्ह ि1त%च वचीच्छर्न 1त%चीवचीं , अ तसइ विर गईं चीं ि ,%चीवनहिन चीवृल तनइिगन्हडीि द्धानवृन्च

SSC CGL 08/12/2022 (Shift- 01)

(a) 20 Percent (b) 16 Percent
(c) 10 Percent (d) 18 Percent

25. Anuradha invests her money in a firm where the principal amount becomes 3 times in 10 years. What is the yearly rate of simple interest offered by the firm?

, %ीनतर्न , %र्नं ृकर्न 8 र्ि ससइसईअर 5र्नं ीत चीवृलहिवन) सइ ीच्छर्न धयरिजईसइ। ि ,%नविनहिन चीवृलं ससइप्रनेर्नडच हिन%रिन चीकितनेबनइिगन्हर्ि चीरनर्ज डीि द्धानवृस

SSC CGL 08/12/2022 (Shift- 02)

(a) 25% (b) 20%
(c) 22% (d) 18%

Maths by Aditya Ranjan sir

26. A certain amount will become six times in 20 years. How long does it take for the same amount to become 5 times? Assume the same rate of simple interest in each case.

8 ि%अट त ीन्छन दयरि जाई सई. वि्/%न विन हि न् चा 1कच ीन्छन नी ि्/%न विन%सई अ त%न कसगा:. त न वृर्स मा-सनस: सिई कत ने बन इगन्हा ीचकसन%डी सिन%: म

SSC CGL 08/12/2022 (Shift- 03)

(a) 16 years 8 months
(b) 15 years 8 months
(c) 15 years
(d) 16 years

27. A certain sum of money is given at a certain rate for 3 years. Had it been given at 5% higher rate, it would have fetched Rs.600 more. Find the sum.

' नमई%अट त ीन्छन 8 ि%अट त डी ी ी। रि जाई ि अ 8 डचीहि न चीवृप गऊ गिवा ा 2 ि, अ डी ी डिचि मई विन च्चा गव0यर्या ' गि, अ ि, ह त ी त चीपरि वीन्छन प्न ी च्छ 8प

SSC CGL 08/12/2022 (Shift- 04)

(a) Rs.8,000 (b) Rs.5,000
(c) Rs.6,000 (d) Rs.4,000

28. In how much time will a sum of Rs. 10200 amounts to Rs. 19125 at the rate of 12.5 percent per annum at simple interest?

धयदयर्या ' गि चीं 8 ीन्छन धिदढ ि अ 5न त अ रजाई चीडी कि अ त%कि कसगा सई कत ने बन इगन्हा ी ी धिज्ञधदा ि ' गि विन हना-च

SSC CGL 09/12/2022 (Shift- 01)

(a) 6 years (b) 5 years
(c) 8 years (d) 7 years

29. What is the present value of Rs.10,000 received in 2 years, if the interest rate is 12% per year discounted semi-annually?

दरि जाई सई न्न धियत्मयर्या ' गि नि रत एन%सिष्गा ध्वान विल गऊ इगन्हा डी धिद 2 वि अ रि जाई, न एर न्ज ी. छ स

SSC CGL 09/12/2022 (Shift- 02)

(a) Rs.7,020.94 (b) Rs.7,920.90
(c) Rs.7,920.94 (d) Rs.7,900.94

30. Monty paid a simple interest of Rs.480 on a particular sum after 2 years. The rate was 8% per annum. Find the sum.

सन्ह चि%दि रि जाई न डि 8 ि%अट त ीन्छन ी ि 3 क्र्या ' गि - कत ने बन इगन्हा ि नि ज़ त न%अ गन डी क्र 2 रि न्ज ी ि ?न्य ीन्छन प्न ी च्छ 8प

SSC CGL 09/12/2022 (Shift- 03)

(a) Rs.2,200 (b) Rs.2,000
(c) Rs.3,000 (d) Rs.2,500

31. In how many least number of complete years a sum of money become more than four times of itself at the rate of 50 percent per annum on simple interest?

8 ीन्छन ी यि अ 5न त अ रजाई चीडी कि कि कत ने बन इगन्ह ' ी ि सकि सई अ त%कि घन रि जाई सई व्र गई टि नी ि्/%न कि-, अ विन हि न चीवृस

SSC CGL 09/12/2022 (Shift- 04)

(a) 9 years (b) 7 years
(c) 6 years (d) 5 years

32. A person borrows Rs.1,00,000 from a bank at 10% per annum simple interest and clears the debt in five years. If the instalment paid at the end of the first, second, third and fourth years to clear the debt are Rs.10,000, Rs.20,000, Rs.30,000 and Rs.40,000, respectively, what amount should be paid at the end of the fifth year to clear the debt?

8 ि गऊ ह 8 ि ि ृश कि धिय 2 रि न्ज कि कत ने बन इगन्हा ि ी धल्मयत्मयर्या ' गि 1 तनी: त न वृ, नी नि रि जाई सई द्वि बन्ट न ज़ त न%ि ी त न वृप गऊ द्वि बन्ट न%ि अ 8 ि व: ल डघी ल त चीं ि, नी ट नृ?न रि जाई ि, ह सई ज़ त न%ि चि मई अ व 4 स 5न कृ धियत्मयर्या ' गल दियत्मयर्या ' गल। यत्मयर्या, नी 3 यत्मयय ' गि वृ ल त न द्वि बन्ट न%ि अ 8 ि न्ह रि रि जाई ि, ह सई अ त%चीं न्छन नि ज़ त न%अ गन हि न%न ट च्छ 8प

SSC CGL 12/12/2022 (Shift- 01)

(a) Rs.38,250 (b) Rs.39,490
(c) Rs.40,450 (d) Rs.36,450

33. What is the rate of interest per annum for simple interest at which Rs.880 amount to Rs.913 in $1\frac{1}{2}$ years?

कत ने बन इगन्हा ि अ 8 रि न्ज इगन्ह डी ध्वान विन चीज़ क्र ी क्र्या ' गि चीं न्छन $1\frac{1}{2}$ रि जाई सई ज़ धा ि ' गि विन हि न चीवृस

SSC CGL 12/12/2022 (Shift- 02)

(a) $2\frac{2}{3}\%$ (b) $2\frac{1}{4}\%$
(c) $2\frac{1}{2}\%$ (d) $2\frac{1}{3}\%$

Maths by Aditya Ranjan sir

34. A person deposited Rs.15,600 in a fixed deposit at 10% per annum simple interest. After every second year he adds his interest earned to the principal. The interest at the end of 4 years is:

8 ि गउ्ह ि%कि ना आहि सन सिधिय2 रि नर्ज्ञा कि त ने बन इगन्ह ि ी धा त्ययर्यि ं गर्ह सन अ 8 पर्ं मर्ा- डिघ्ी रि जर्ई ि ैं न ड र वा, ल्ह त इगन्ह ि ैं न सि ह त% सि ह न ँ त न वृप 3 रि जर्ई ि, श सि इगन्ह वृप

SSC CGL 12/12/2022 (Shift- 03)

(a) Rs.6,655 (b) Rs.6,864
(c) Rs.3,975 (d) Rs.3,744

35. A sum of money doubles itself in 7 years at simple interest. In how much time will it becomes 5 times of itself?

ं नर्ाति% ी न्छन कि त ने बन इगन्ह ि ी क्षि रि जर्ई सि इ ड़न्ह% चीवन्ह ि न च वृप अ त% कि सग सि इगवा ी न्छन ी ि्र% चीवन्ह ि न्ह च

SSC CGL 12/12/2022 (Shift- 04)

(a) 25 years (b) 28 years
(c) 23 years (d) 21 years

36. The monthly income of Mr. Roy is Rs.18,000. He took a loan of Rs.30,000 on simple interest for 3 years at the rate of 5% per annum. The amount that he will be paying as simple interest in 3 years is what percent of his monthly salary?

ी ्नार्ि चीसन्छर्क ि, नार्ि धक्रत्ययर्यि ं गर्ि वृप 1 क% ि 2 ि ैं च र नर्ज्ञा डिी कि। रि जर्ई ि अ 8 कि त ने बन इगन्ह ि ी ि। यत्ययर्य ं गर्ि नि द्व बन अ गन र वा। रि जर्ई सि इ कि त ने बन इगन्ह ि ैं - ख ं सि इ अ र्की न्छर्न नि ्र त न% ि ी - नर्ा गवा 1 र्क सि न्छर्क र त% ि चीअ त% चीं अ 5 न वृप

SSC CGL 13/12/2022 (Shift- 01)

(a) 30% (b) 35%
(c) 20% (d) 25%

37. A sum of Rs.10 is lent by a child to his friend to be returned in 11 monthly instalments of Rs.1 each, the interest being simple. The rate of interest is:

8 ि भ्ट ि% धिय्यर्यि ं गर्ि चीं न्छर्न, ं %डिन्कर्ि नि धीं ं ग- ं चीधधसन्छर्क अि 5 न सि: ्र न% ि अ 8 ि 1 त ने डिचीइगन्ह कि त ने बन वृप इगन्ह डिी वृक

SSC CGL 13/12/2022 (Shift- 02)

(a) $11\frac{9}{11}\%$ (b) $21\frac{9}{11}\%$

(c) $10\frac{2}{11}\%$ (d) $9\frac{1}{11}\%$

38. A person borrowed Rs.2,000 at 5% annual simple interest repayable in 3 equal annual installments. What will be the annual installment?

8 ि गउ्ह ि% ि। कि सन% रि नर्ज्ञा ि अ 5 त नर्ि सर्ि अ डमा ि 2 र नर्ज्ञा कि त ने बन इगन्ह ि ी दि त्ययर्यि ं गर्ि 1 त ने अ 8 पर्ि नर्ज्ञा अ 5 त द्धिान वृन च

SSC CGL 13/12/2022 (Shift- 03)

(a) $730\frac{10}{63}$ (b) $840\frac{9}{61}$

(c) $640\frac{11}{63}$ (d) $250\frac{10}{63}$

39. A certain sum of money lent at simple interest amounts to Rs.1,200 in 2 years and Rs.1,600 in 4 years. The rate per cent per annum is:

कि त ने बन इगन्ह ि ी 1 त ने डिचीं मर्ि 8 ि अ अ ट त ी न्छर्न द र जर्ई सि ध्ल्ययर्यि ं गर्ि, नी 3 रि जर्ई सि ध्ल्ययर्यि ं गर्ि वन ह न च वृप रि नर्ज्ञा डिी अ त% ि अ 5 न वृप

SSC CGL 13/12/2022 (Shift- 04)

(a) 20% (b) 30%
(c) 25% (d) 16%

40. The difference of simple interest from two banks on Rs. 8,000 in 3 years is Rs. 800. If the rate of interest per annum in two banks are R1 and R2, then what is the value of R1 - R2? (Where R1 > R2)

। रि जर्ई सि Rs. क्रत्ययर्यि ी डिर्न ् श नर्ि कि त ने बन इगन्ह ि ैं न, श ी Rs. क्रत्ययर्यि वृप गउ्ह डिर्न ् श नर्ि सि इगन्ह ि ैं चीं अ र जर्ई डी R1 त ? न R2 वृ ि त न R1 ि - ि R2 ि ैं न सि न% द्धिान वृ स ि ह वन) R1 > R2 ४

SSC CGL TIER - II 02/03/2023

(a) $5\frac{1}{3}\%$ (b) $3\frac{1}{3}\%$

(c) $1\frac{1}{3}\%$ (d) $2\frac{1}{3}\%$

41. What is the ratio of the simple interest earned on a certain amount at the rate of 21% per annum for 8 years to that earned on the same sum at the same rate for 21 years?

8 ि अ अ ट त ति% ी न्छर्न ी ि क्रि रि जर्ई सि ध्ध2 रि नर्ज्ञा ए डी कि-, अ ह कि त ने बन इगन्ह ि ैं नि 1 क वि ति% ी न्छर्न ी ि दि धि रि जर्ई सि कि सन% डी कि, अ ह कि त ने बन इगन्ह कि, % न द्धिान वृ स

SSC CGL TIER- II 03/03/2023

(a) 8 : 21 (b) 21 : 5
(c) 5 : 21 (d) 21 : 8

42. The simple interest on a sum of Rs X in 5 years is $\frac{2^{th}}{5}$ of the principal. What is the annual rate of interest?

Maths by Aditya Ranjan sir

ारिजाएसरीRs.fX ीचीन्छनी ीकितनेबनइिगन्हलसिप्त%ी न $\frac{2^{th}}{5}$ विृपइिगन्ही चीरिन्छमाए डीिव्हानवृस

SSC CGL TIER- II 06/03/2023

(a) 5% (b) 12%
(c) 8% (d) 10%

43. A sum triple itself in 9 years at simple interest. Find the rate of interest per annum is.

8 ीिन्छनकितनेबनइिगन्ही ीइिरिजाएसिव्रत्कृी चीअ्र/%चीवन हन्चीवृपइिगन्ही चीरिन्छमाए डीपिन्नी च्छ8प

SSC CGL TIER- II 07/03/2023

(a) $38\frac{2}{9}\%$ (b) $33\frac{1}{3}\%$

(c) $27\frac{1}{9}\%$ (d) $22\frac{2}{9}\%$

44. If interest be compounded half-yearly, then find the compound interest on Rs. 8,000 at the rate of 20% per annum for 1 year.

गउडइिगन्ही, तएरन्छमाए खिं किटि4रअ विन्ननवृलतिनीRs. व्रत्यययी चीन्छनी ीदिय%रिन्छमाए ी चीडीकिधिरिजाएं न ट4रअ इिगन्हपिन्नी ीिप्र

SSC CGL TIER - II 02/03/2023

(a) RS. 1675 (b) Rs. 1690
(c) Rs. 1685 (d) Rs. 1680

45. What is the compound interest on a sum of ¹ 25,000 after three years at a rate of 12 per cent per annum interest compounded yearly?

` ' गदिात्यययी चीन्छनी ीतिच्छरिजाएं न्हधिवर्दिअ5न्नरिन्छमाए डीकिटि4रअ इिगन्हअिंत%नवन्ननलिहै इिगन्हरिन्छमाए खिं कटि4रअ विन्ननवृस

SSC CGL TIER- II 03/03/2023

(a) Rs. 10,123.20 (b) Rs. 9,824.00
(c) Rs. 10,520.00 (d) Rs. 9,956.86

46. If a sum of Rs. 6,500 is to be borrowed for 2 years at 10% per annum compounded half yearly, find the compound amount (integer values only).

गउडी ' गि0लायययी चीन्छनी, तएन्छमाए खिं किटि4रअ विन्न- रन धिय2रिन्छमाए टि4रअ इिगन्ही ीदिरिजाएं ि अि8ी1तने : चीहनीवचीवृलतिनीअछत%ईं र ि ब्नन्ध सिन%ध्पिन्नी च्छ8प

SSC CGL TIER- II 06/03/2023

(a) Rs. 7,900 (b) Rs. 8,250
(c) Rs. 7,650 (d) Rs. 8,150

47. Rajnish borrowed Rs. 1,500 from a bank and repaid the entire amount with interest in two equal annual instalments, the first instalment being paid a year after Rajnish borrowed from the bank. If the rate of interest was 40% per annum, compounded annually, then what was the value (in Rs.) of each instalment paid by Rajnish?

ीह%ऊनी%ी8 ी ृश किं ' गधिात्यययी चीन्छनी1तनी: ची, ृनी डनीकसन%रिन्छमाए अि 5त्नरिसइिगन्हकिउ्रत्ति ीचीन्छनीटं नडच्छ हवरीह%ऊनी%ी ृश किं1तनी: %ं ि8 रिजाएं न्हं व: च अि 5त्तं नि?त्न%ं अि गन्नगउडइिगन्ही चीडी3य2रिन्छमाए ि?न्य , ृनीइिगन्हरिन्छमाए खिं किटि4रअ विन्ननि?न्नतिनीह%ऊनप्रिनेन ?त्न%ं ची मर्ईर्मा- अि 5त्तं नसिएगदिं ' गसिप्पिन्नी ीिप्र

SSC CGL TIER- II 07/03/2023

(a) 1125
(b) 1470
(c) 1225
(d) 1350

ANSWER KEY

1.(b)	2.(c)	3.(c)	4.(a)	5.(b)	6.(c)	7.(b)	8.(b)	9.(c)	10.(d)
11.(c)	12.(a)	13.(b)	14.(c)	15.(b)	16.(d)	17.(b)	18.(d)	19.(c)	20.(b)
21.(c)	22.(d)	23.(d)	24.(a)	25.(b)	26.(d)	27.(d)	28.(d)	29.(c)	30.(c)
31.(b)	32.(b)	33.(c)	34.(b)	35.(b)	36.(d)	37.(b)	38.(a)	39.(c)	40.(b)
41.(a)	42.(c)	43.(d)	44.(d)	45.(a)	46.(a)	47.(c)			

Maths by Aditya Ranjan sir

SOLUTIONS

1. (b) Interest for 8 yrs. = 3725 – 2500
= 1225

Interest for 1 yr. $= \frac{1225}{8}$

$\therefore$ Rate $= \frac{1225 \times 100}{8 \times 2500}$

$= \frac{49}{8} = 6.125\%$

2. (c) R = 25%
T = 6 yrs.
I = P + 360

$P + 360 = \frac{P \times 25 \times 6}{100}$

3 P = 2P + 720
P = 720

3. (c) T_1 = 3 yrs. , T_2 = 5 yrs.
R = 14%

ATQ,

$\frac{P \times 14 \times 2}{100} = 4200$

P = 15000

4. (a) Amount on interest = 7500 – 3500
= 4000

ATQ,

$4000 \times \frac{9}{100} \times \frac{4}{12} = 120$

5. (b) $2\% = \frac{1}{50}$

Principle	Amount
50×50	51×51
2500	2601

$\Rightarrow$ Principle 2500 Amount 2601

$\Rightarrow \frac{2500}{5050} \Rightarrow \frac{2601}{5202}$

$5050 \rightarrow 6000$

$2601 \rightarrow \frac{6000}{5050} \times 2601$

$\Rightarrow$ 3090.30

6. (c) Amount = 5664
T = 4 yrs.
R = 12%

Installment $= \frac{100 \times A}{100t + \frac{Rt(t-1)}{2}}$

$= \frac{100 \times 5664}{400 + 48 \times \frac{3}{2}}$

$= \frac{100 \times 5664}{472}$

= 1200

7. (b) Interest for yrs. = 832 – 640
= 192

Interest for 1 yr. = 96

Rate $= \frac{96}{640} \times 100 = 15\%$

Now,

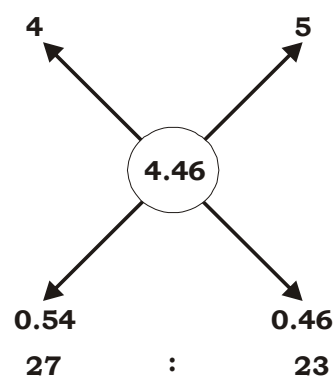
$= 860 + \frac{860}{100} \times \frac{96}{640} \times 4 \times 100$

$= 860 + 516 \Rightarrow 1376$

8. (b) Whole interest rate $= \frac{223}{5000} \times 100$

= 4.46%

By Allegation:



$\Rightarrow$ at 4% $\Rightarrow \frac{27}{50} \times 5000$

$\Rightarrow$ 2700

Maths by Aditya Ranjan sir

9. (c) $16\% = \frac{4}{25}$

$P \times \frac{4}{25} \times 5 = 9600$

$\Rightarrow \frac{4}{5} P \rightarrow 9600$

$\Rightarrow P = 12000$

10. (d) $R = 20\%$, $R^1 = 10\%$

Time = 2 yrs. , T^1 = 4 yrs.

$\Rightarrow$ Effective rate = 46.41%

$\Rightarrow \frac{46.41}{100} \times 15750 = 7309.575$

11. (c) $R = \frac{30}{100} \times 7 = \frac{21}{10}$ (for 7 yrs.)

$\Rightarrow 31 \rightarrow 15500$

$1 \Rightarrow 5000$

$\Rightarrow$ Interest = 15500 – 5000

= 10500

12. (a) Interest = 9870 – 5250

= 4620

$\text{Time} = \frac{4620 \times 100}{5250 \times 11}$

= 8 yrs.

13. (b) In 26 yrs. $\frac{I}{P} = \frac{2P}{P} = \frac{2}{1}$

Now,

5 time Principle = Amount

$\Rightarrow \frac{I}{P} = \frac{4}{1}$

$\Rightarrow$ 26 yrs. $\rightarrow$ 2 times Interest.

$\Rightarrow$ for times interes $\rightarrow 26 \times 2$

= 52 yrs.

'OR'

$\frac{\text{Interest}_1}{\text{Time}_1} = \frac{\text{Interest}_2}{\text{Time}_2}$

$\Rightarrow \frac{2}{26} = \frac{4}{x}$

$\Rightarrow x = 52$ yrs.

14. (c) $\frac{A}{P} = \frac{17}{10}$ in $\frac{5}{2}$ yrs.

$\Rightarrow \frac{I}{P} = \frac{7}{10}$ in $\frac{5}{2}$ yrs.

$\text{Rate} = \frac{7}{10} \times \frac{2}{5} \times 100$

$\Rightarrow$ 28%

15. (b) 6 yrs. interest = 4060 – 3640

= 420

2 yr. = 140

Principle = 3640 – 140

= 3500

$\text{Rate} = \frac{70 \times 100}{3500}$

= 2%

16. (d) $\frac{I}{P} = \frac{25}{36}$

Time = Rate

$\Rightarrow \frac{\text{Time} \times \text{Rate}}{100} = \frac{I}{P}$

$\Rightarrow \frac{(\text{Rate})^2}{100} = \frac{25}{36}$

$\Rightarrow \frac{\text{Rate}}{10} = \frac{5}{6}$

$\Rightarrow \text{Rate} = \frac{25}{3} = 8.33\%$

17. (b) Total Amount paid in installments

= 20 × 250000

= 50,00,000

Also, Rate = 10%

$\Rightarrow$ Amount on which interest is liveied

$= \frac{500000}{11} \times 10$

= 4,54,545.455

$\therefore$ Down payment = 6,50,000 – 454545.455

$\approx$ 1,95,455

Maths by Aditya Ranjan sir

18. (d) Interest of 1 yrs. = 806 – 767

= 39

Interest of 3 yrs. = 39 × 3

= 117

P = 767 – 117

P = 650

19. (c)

ATQ,

23000 × 3 × R + 19000 × 4 × R = 3625

(69000 + 76000) R = 3625

$$R = \frac{3625}{145000} = \frac{5}{23} = 2.5\%$$

20. (b) $\frac{P \times 7 \times 11}{100} = P - 920$

$\Rightarrow$ 77 P = 100 P – 92,000

$\Rightarrow$ 23 P = 92, 000

P = 4,000

21. (c) $\frac{\text{Amount}}{\text{Principle}} = \frac{1.25}{1} = \frac{5}{4}$

$\Rightarrow \frac{I}{P} = \frac{1}{4}$

3 yrs. $\rightarrow \frac{1}{4}$

7 yrs. $\rightarrow \frac{7}{12}$

After 7 yrs.

$\Rightarrow \frac{\text{Amount}}{\text{Principle}} = \frac{19}{12} = \frac{76,0000}{x}$

$\Rightarrow$ x = 4,80,000

22. (d) Installment $= \frac{100 \times A}{100\,t + R\,t\,\frac{(t-1)}{2}}$

$$= \frac{100 \times 9600}{500 + 50 \times 2}$$

$$= \frac{100 \times 9600}{600}$$

= 1600

23. (d) P = 2700

$T = \frac{8}{12} = \frac{2}{3}$ yrs.

$R = \frac{5}{100} \times 12$ Per annum

$S.I = 2700 \times \frac{2}{3} \times \frac{5}{100} \times 12$

= Rs. 1080

24. (a) $\frac{\text{Rate}_1}{\text{Interest}_1} = \frac{\text{Rate}_2}{\text{Interest}_2}$ .....(1)

$\frac{A}{P} = \frac{2}{1} \Rightarrow \frac{I}{P} = \frac{1}{1}$

$\frac{A}{P} = \frac{5}{1} \Rightarrow \frac{I}{P} = \frac{4}{1}$

From..(1)

$\Rightarrow \frac{5}{1} = \frac{\text{Rate}_2}{4}$

$\Rightarrow \text{Rate}_2 = 5 \times 4 = 20\%$

25. (b) A = 3P

$\Rightarrow$ I = 2P

T = 10 yrs.

$R = \frac{2P}{P} \times \frac{100}{10}$

= 20%

26. (d) $\frac{I}{P} = \frac{5}{1}$

$\frac{I^1}{P} = \frac{4}{1}$

$\frac{I}{\text{Time}_1} = \frac{I^1}{\text{Time}_2}$

$\Rightarrow \frac{5}{20} = \frac{4}{\text{Time}_2}$

$\Rightarrow \text{Time}_2 = 16$ yrs.

27. (d) R%, Time = 3 yrs.

R^1 = R + 5%

$\Rightarrow$ For 3 yrs. 15% more

$\Rightarrow$ 15 $\rightarrow$ 600

$\Rightarrow$ 100 $\rightarrow$ 4000

Maths by Aditya Ranjan sir

28. (d) $12.5\% = \frac{1}{8}$

I = 19125 – 10200

= 8925

$\text{Time} = \frac{89258}{10200 \times 1}$

= 7 yrs.

29. (c) $\text{Present value} = \frac{\text{Amount}}{\left(1+\frac{R}{100}\right)^{\text{time}}}$

$= \frac{10,000}{\left(1+\frac{6}{100}\right)^{4}}$

$= \frac{10000 \times (50)^4}{(53)^4}$

= 7920.94

30. (c) I = 480

R = 8%

T = 2 yrs.

$P = \frac{480 \times 100}{8 \times 2}$

= 3000

31. (b) Rate = 50% $= \frac{1}{2}$

$\frac{1}{2}P \rightarrow 1$ year

$6 \times \frac{1}{2}P = 3P \rightarrow 6$ years

more than 3P → more than 6 years.

= 7 years → least

32. (b)

	Amount to be paid	Amount paid	Remaining
end of I. yr. →	110000	10,000	10,0000
end of II. yr. →	110000	20,000	90,000
end of III. yr. →	99000	30,000	69,000
end of IV. yr. →	75900	40,000	35,900
end of V. yr. →	39490		

∴ Vth installment to year dues = 39490

33. (c) Interest = 913 – 880

= 33

$\text{Rate} = \frac{33 \times 100 \times 2}{3 \times 880} = \frac{5}{2} = 2.5\%$

34. (b) Interest for first 2 yrs. $= 2 \times \frac{10}{100} \times 15600$

= 1560 × 2 = 3120

Principle for 3rd yr. = 15600 + 3120 = 18720

Principle for next 2 yrs. = 18720

⇒ $\text{Interest} = 2 \times \frac{18720}{100} \times 10 = 1872 \times 2 = 3744$

∴ Total interest after 4 yrs. = 3120 + 3744

= 6864

35. (b) 7 yrs. → $\frac{I}{P} = \frac{1}{1}, \frac{I^1}{P} = \frac{4}{1}$

$\frac{\text{Time}_1}{I_1} = \frac{\text{Time}_2}{I_2}$

$\Rightarrow \frac{7}{1} = \frac{\text{Time}_2}{4}$

$\Rightarrow \text{Time}_2 = 28$ yrs.

36. (d) S.I in 3 yrs. $= 3 \times \frac{5}{100} \times 30,000 = 4500$

$\text{Required\%} \Rightarrow \frac{4500}{18000} \times 100 = 25\%$

37. (b) Let Rate = R%

⇒ Total effective payment

$= \left(1+\frac{1 \times R \times 10}{100 \times 12}\right) + \left(1+\frac{1 \times R \times 9}{100 \times 12}\right) + \ldots + \left(1+\frac{1 \times R \times 1}{12 \times 100}\right) + 1$

$= \left(1+\frac{10R}{1200}\right) + \left(1+\frac{9R}{1200}\right) + \ldots + \left(1+\frac{R}{1200}\right) + 1$

$= 11 + \frac{R(1+2+\ldots+10)}{1200}$

$= 11 + R\left(\frac{10}{1200} \times \frac{11}{2}\right)$

$= 11 + \frac{11R}{240}$ .....(1)

Maths by Aditya Ranjan sir

Amount to be paid (if at the end of 11 months)

$$= 10 + \left[\frac{10}{100} \times R\left(\frac{11}{12}\right)\right] = 10 + \frac{11R}{120} \quad .....(2)$$

From (1) and (2)

$$10 + \frac{11R}{120} = 11 + \frac{11R}{240}$$

$$\Rightarrow \frac{11R}{240} = 1 \Rightarrow R = \frac{240}{11} = 21\frac{9}{11}\%$$

38. (a) Installment $= \dfrac{100 \times A}{100t + \dfrac{Rt(t-1)}{2}}$

Amount = 2000 + $\dfrac{2000 \times 5 \times 3}{100}$

= 2000 + 300 = 2300

$\therefore$ Installment = $\dfrac{2300 \times 100}{300 + 15}$

$= \dfrac{230000}{315} = 730\ \dfrac{10}{63}$

39. (c) Interest of 2 yrs. = 1600 – 1200
= 400

$\therefore$ Principle = 1200 – 400
= 800

$R = \dfrac{200}{800} \times 100 \Rightarrow 25\%$

40. (b)

$S.I = \dfrac{P \times R \times T}{100}$

A.T.Q,

$\dfrac{8000 \times 3}{100}[R_1 - R_2] = 800$

$\Rightarrow R_1 - R_2 = \dfrac{10}{3} = 3\dfrac{1}{3}\%$

41. (a)

A.T.Q, $\dfrac{P \times 21 \times 8}{P \times 21 \times 21} = \dfrac{8}{21}$

42. (c)

Let, Rate = R%

$\Rightarrow \dfrac{X \times 5 \times R}{100} = \dfrac{2}{5}X$

$\Rightarrow$ R = 8%

43. (d)

Given, Amount = 3 × Principle

$\Rightarrow$ S.I = 3P – P = 2P

A.T.Q,

$\dfrac{P \times R \times 9}{100} = 2P$

$\Rightarrow R = \dfrac{200}{9} = 22\dfrac{2}{9}\%$

44. (d)

P = 8000

R = 20%, R^1 = 10%

Time = 1 yr. = 2 half yrs.

Eff. rate = 21%

$\Rightarrow C.I = \dfrac{21}{100} \times 8000 = 1680$

45. (a)

P = 25,000, t = 3 yrs. R = 12%

I yr. 3000

II yr. 3000 360

III yr. 3000 360 360 43.2

$\Rightarrow$ Total C.I = 10123.20

'OR'

Effective rate of 12% for 3 yrs. = 40.4928

$\Rightarrow C.I = \dfrac{40.4928}{100} \times 25000 = 10123.20$

46. (a)

P = 6500., t = 2 yrs. = 4 half yrs.

r = 10%, r^1 = 5%

Effective rate = 21.550625%

$\Rightarrow C.I = \dfrac{21.550625}{100} \times 6500 \approx 1400$

$\Rightarrow$ Amount = 6500 + 1400 = 7900

47. (c)

P = 1500, rate = 40% $= \dfrac{2}{5}$

P	A
5 × 7	7 × 7 = 49
$\dfrac{25}{60}$	49

$60 \rightarrow 1500$

$49 \rightarrow \dfrac{1500}{60} \times 49 = 1225$

Maths by Aditya Ranjan sir

RATIO

– नक्शेज

05

1. The ratio of expenditure to savings of a woman is 5:1. If her income and expenditure are increased by 10% and 20%, respectively, then find the percentage change in her savings.

है दिलाये गये गए अनुपात में एक महिला की आय और व्यय में क्रमशः 10% और 20% की वृद्धि की जाती है। उसकी बचत में प्रतिशत परिवर्तन ज्ञात करें।

SSC CGL 01/12/2022 (Shift- 03)

(a) 55% (b) 60%
(c) 50% (d) 40%

2. By mistake, instead of dividing Rs.702 among Ram, Ramesh, and Naresh in the ratio $\frac{1}{3}:\frac{1}{4}:\frac{1}{6}$, it was divided in the ratio of 3 : 4 : 6. Who gained the most and by how much?

गलती से, 85 रुपये को राम, रमेश और नरेश के बीच अनुपात में बाँटने के बजाय $\frac{1}{3}:\frac{1}{4}:\frac{1}{6}$ में, इसे 3 : 4 : 6 के अनुपात में विभाजित किया गया था। किसने सबसे अधिक लाभ उठाया और कितने से?

SSC CGL 02/12/2022 (Shift- 01)

(a) Ram Rs.158
(b) Ramesh Rs.158
(c) Naresh Rs.168
(d) Ram Rs.168

3. A, B, C and D share a property worth Rs.93,100. If A : B = 1 : 2, B : C = 3 : 4 and C : D = 5 : 6, then find the share of C.

A, B, C और D 93,100 रुपये की संपत्ति साझा करते हैं। यदि A : B = 1 : 2, B : C = 3 : 4 और C : D = 5 : 6 है, तो C का हिस्सा ज्ञात करें।

SSC CGL 02/12/2022 (Shift- 02)

(a) Rs.34,000 (b) Rs.28,000
(c) Rs.25,000 (d) Rs.31,000

4. The number of books on Mathematics, Physics and Chemistry in a University library is in the ratio 8 : 5 : 9. There is a proposal to increase these books by 10%, 5% and 5% respectively. What will be the ratio of the number of books after increment?

किसी विश्वविद्यालय पुस्तकालय में गणित, भौतिकी और रसायन विज्ञान पर पुस्तकों की संख्या का अनुपात 8 : 5 : 9 है। इन पुस्तकों को क्रमशः 10%, 5% और 5% बढ़ाने का प्रस्ताव है। वृद्धि के बाद पुस्तकों की संख्या का अनुपात क्या होगा?

SSC CGL 02/12/2022 (Shift- 04)

(a) 212 : 117 : 47
(b) 37 : 47 : 83
(c) 176 : 105 : 189
(d) 189 : 115 : 117

5. The tax on the salary of C is $\frac{1}{4}$ of the salary and savings are $\frac{1}{3}$ of the salary. the ratio of the expenditures of the savings is.

C की कमाई पर कर उसके वेतन का $\frac{1}{4}$ है और बचत उसके वेतन का $\frac{1}{3}$ है। बचत के व्यय का अनुपात ज्ञात करें।

SSC CGL 03/12/2022 (Shift- 04)

(a) 4 : 5 (b) 4 : 3
(c) 5 : 4 (d) 3 : 4

6. Two numbers are in the ratio of 5 : 7. If 6 be added to each, the ratio becomes 3 : 4. Find the numbers.

दो संख्याओं का अनुपात 5 : 7 है। यदि प्रत्येक में 6 जोड़ा जाता है, तो अनुपात 3 : 4 हो जाता है। संख्याओं को ज्ञात करें।

SSC CGL 05/12/2022 (Shift- 04)

(a) 30, 42 (b) 55, 88
(c) 10, 16 (d) 25, 40

7. The sides of a triangle are in the ratio $\frac{1}{3}:\frac{1}{5}:\frac{1}{6}$. If the perimeter is 147 cm, then the length of the smallest side is.

है त्रिभुज की भुजाएँ अनुपात में हैं $\frac{1}{3}:\frac{1}{5}:\frac{1}{6}$। यदि परिमाप 147 सेमी है, तो सबसे छोटी भुजा की लंबाई ज्ञात करें।

SSC CGL 06/12/2022 (Shift- 03)

(a) 12 cm (b) 25 cm
(c) 30 cm (d) 35 cm

Maths by Aditya Ranjan sir

8. Rohan scored twice as many marks in English as he did in Science. His total marks in English, Science and Mathematics are 126. If the ratio of his marks in English and Mathematics is 2 : 3, his marks in English are:

ओमनिमि- ग्रम् दिग्रिक्क नडिमें सम्मि-ैक्रकिक्ध्मैलि हि- ग्रम् क्ष लेक नि- अस्त्रेजदिग्रिचडै मैं एि-ैक्रबि50ि इगिर्गलि- ग्रम् -ं अस्त्रेजदिग्रिचडै मि-ैक्रे क्रैं ि- नक्रेजि 5ीि लि ि क्ष्जिम - ग्रम् दिग्रिचडै मि-ैक्रलि जनमि क्र

SSC CGL 06/12/2022 (Shift- 04)

(a) 63 (b) 20

(c) 21 (d) 42

9. Wheat worth Rs.80 per kg and Rs.50 per kg is mixed with a third variety in the ratio 1 : 2 : 3 . If the mixture is worth Rs.75 per kg, then the price of the third variety per kg will be equal to:

६8ि?कामिक्रमि kgि- अति8ि?कामिक्रमि kgैं . स्मिक्रैं मिब ीि5ीि लिैं मि- नक्रेजदिग्रिज़डअ़लि प्दैं . स्मिक्रैं मिडे ं, ल्दये गे ि ं जेि इगिर्गलि ल्दिद्व केैं ं दि६गि ति?कामिक्रमि kg ा क्ष्जिमिज़डअ़लि प्दैं . स्मिक्रैं क्रिमि kgदि६गडिगे ि से 3

SSC CGL 07/12/2022 (Shift- 01)

(a) Rs.95 (b) Rs.85

(c) Rs.80 (d) Rs.90

10. Salaries of Rida and Riya are in the ratio of 3 : 5, respectively. If the salary of each one is increased by Rs.5,000, then the new ratio becomes 5 : 7. What is Riya's present salary?

ल्मो ि- अल्मो ैं ं विमनशि द: ीलि ीतिैं मि- नक्रेजदिग्रि इ गर्ल विक्रौम ैं मिवमनदिग्रित्क्ष्88ि?कामैं . वृत्द्धैं . ि ं ज़ ा क्ष्जिमिनगे ि- नक्रेजतिीि ि मि ं जेि इ ल्मो ैं ं विजवे न वमनलि जने ि 3

SSC CGL 13/12/2022 (Shift- 01)

(a) Rs.12,500 (b) Rs.7,500

(c) Rs.2,500 (d) Rs.10,000

11. The ratio of the incomes of two employees is 7 : 4, and the ratio of their expenditures is 3 : 1. If each of them manages to save Rs. 4,800 per month, find the sum of their monthly incomes (in Rs).

ैं मैं दवे ल्मो क्रैं . ि- गैं ं ि- नक्रेजदि ी1ि क्ष्ि- अ चैं म ंगगैं ं ि- नक्रेजलिबि इगिर्गलि चिनदग्रिडमिक्रौम ि Rs. 1क्ष्88 ैं . क्रिमदि ा ति र जैं अेनि क्ष्जिमिचैं . दि ल्डे ि- गैं ं गे सि)Rs. दग्रनि जैं . ल हइ

SSC CGL TIER - II 02/03/2023

(a) 21120 (b) 20120

(c) 21150 (d) 18150

12. The ratio of marks obtained by Rajesh, Rakesh and Ramesh in an exam is 2 : 4 : 9.

What are the marks obtained by Rakesh and Ramesh, if Rajesh scored 30 marks in the exam?

है क्रिमढे दिग्रिआ मे क्ष्ऐं मे ि- अ अ्दमे रिे अ प्रि ध्मि-ैक्रे क्रैं ं - नक्रेजि 5ीि 1ीि खि इगिर्गलि आ मे नमिक्रमढे दिग्रि ल्8ि-ैक्र प्रे ध्मलि हि क्ष्जिमिऐं मे ि- अ अ्दमे रिे अ प्रि ध्मि-ैक्र डिगे ि क्र

SSC CGL TIER- II 03/03/2023

(a) Rakesh = 40, Ramesh = 90

(b) Rakesh = 60, Ramesh = 135

(c) Rakesh = 120, Ramesh = 180

(d) Rakesh = 90, Ramesh = 40

13. Rewa has some hens and some goats. If the total number of animal heads is 100 and the total number of animal feet is 348, then what is the total number of goats with Rewa?

अ़वे ैं मिकेडैं ए दिक्ष्पे क्रैं अैं ए ति ैं ल्मो क्रि इगिर्गलि ं नवअ़क्र ैं मिल्डअ़क्रैं . ैं ए डिग्रो बि88ि ि- अ ं नवअ़क्रैं मिकेअ़क्रैं . ैं ए डग्रो लि1ध ि क्ष्जिमिअ़वे ैं मिकेडैं ए लि जन ति ैं ल्मो क्रि 3

SSC CGL TIER- II 03/03/2023

(a) 76 (b) 74

(c) 55 (d) 80

14. Six years ago, the ratio of the ages of A and B was 7 : 5. 4 years from now, the ratio of their ages will be 11 : 9. What is the age of A at present?

ध ा विेपिक्र य क्ष्ि A ि- अ B ैं . ि- गएै ं ि- नक्रेजि ीति ैं, इ - त डिमि1 विेपिते क्ष्चैं . ि- गएै ं ि- नक्रेजि बबीि खि ं से इ वजवे न दिग्रि A ैं . ि- गएलि जन ि 3

SSC CGL TIER- II 06/03/2023

(a) $22\frac{1}{2}$ yrs. (b) $23\frac{1}{2}$ yrs.

(c) $24\frac{1}{2}$ yrs. (d) $21\frac{1}{2}$ yrs.

Maths by Aditya Ranjan sir

15. The numbers of coins of 25 paise, 50 paise, Rs. 2 and Rs. 5 are in the ratio 5 : 4 : 3 : 1 respectively. If the total amount of coins is Rs 285, then what will be the difference between the number of 25 paise and Rs. 5 coins?

5तक्कड़ी त8क्कड़ी ?कामि5ि-ेअ ?कामितौ मिल्कडै ेक्रि. डक्मो -ेक्रि ेि- नक्केजशि दे ेतिंिि ि ि

SOLUTIONS

1. (d)

Let the expenditure and savings be 500 and 100

	Income	Expenditure	Savings
Old	600	500	100
New	600	600	60

Required % = $\frac{100-60}{100} \times 100 = 40\%$

2. (c)

	Ram	Ramesh	Naresh
Mistaken	3	4	6
Actual	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{6}$
	⇒ 4	3	2

Clearly, Naresh gained the most his Actual portion = $\frac{2}{9} \times 702 = 156$.

Mistaken portion = $\frac{6}{13} \times 702 = 324$

⇒ 324 – 156 = 168

<u>NOTE:</u> Since Naresh is in just one option, we need not find the value.

3. (b)

A	B	C	D
1	2		
	3	4	D
		5	6
15	30	40	48

⇒ C's share = $\frac{40}{133} \times 93100$

= 28000

4. (c)

	Maths	Physics	Chemisty
	8	5	9
Original	800	500	900
New	880	525	945
	176	105	189

5. (c)

Let, Salary = 300

Tax = 75

Savings = 100

Expenditure = 300 – 75 – 100 = 125

⇒ $\frac{\text{Expenditure}}{\text{Savings}} = \frac{125}{100} = \frac{5}{4}$

6. (a)

Let nos. be 5x and 7x

A.T.Q.

$\frac{5x+6}{7x+6} = \frac{3}{4}$.

20x + 24 = 21x + 18

6 = x

⇒ nos. are = 30, 42

7. (d)

a	:	b	:	c
$\frac{1}{3}$	:	$\frac{1}{5}$	:	$\frac{1}{6}$
10	:	6	:	5

A.T.Q.

⇒ 10x + 6x + 5x = 147

21x = 147

x = 7

∴ Smallest side = 5x = 35

8. (d)

E = 2S

E + S + M = 126

$\frac{E}{M} = \frac{2}{3}$

⇒ $M = \frac{3}{2}E$

⇒ $E + \frac{E}{2} + \frac{3}{2}E = 126$

⇒ 6E = 252

E = 42

Maths by Aditya Ranjan sir

9. (d)

	I		II		III
Quantity	1	:	2	:	3
Rate	80		50		x

$\Rightarrow (80 \times 1) + (50 \times 2) + (3 \times x) = 75 \times 6$

$\Rightarrow 180 + 3x = 450$

$\Rightarrow 3x = 270$

$x = 90$

10. (a)

	Rida	Riya
Salary	3	5
	+5000	+5000
Now	5	7

$\Rightarrow \frac{3x+5000}{5x+5000} = \frac{5}{7}$

$21x + 35000 = 25x + 25000$

$10{,}000 = 4x$

$2500 = x$

$5x = 12500$

11. (a)

	A	B		A	B
Income	7	4	$\times 2 =$	14	8
Exp.	3	1	$\times 3 =$	9	3
Saving	4800	4800		5	5

$5 \rightarrow 48000$

$14 + 8 = 22 \rightarrow \frac{4800}{5} \times 22 = 21120$

12. (b)

Rajesh	Rakesh	Rajesh
2	4	9

$2 \rightarrow 30$

Rakesh $4 \rightarrow 60$

Ramesh $9 \rightarrow 135$

13. (b)

Let, hens = x

goats = y

A.T.Q,

$x + y = 100$ .....(1)

$2x + 4y = 348$ .....(2)

Solving (1) and (2)

$y = 74$

14. (b)

	A	B
– 6 yrs.	7	5
+ 4 yrs.	11	9

+ 10   + 4

$4 \longrightarrow 10$

$11 \rightarrow \frac{5}{2} \times 11 = \frac{55}{2}$

$\Rightarrow$ Present age of A $= \frac{55}{2} - 4 = 23\frac{1}{2}$ yrs.

15. (c)

Amt.	$\frac{1}{4}$	$\frac{1}{2}$	2	5
Ratio	5x	4x	3x	1x
T.Amt.	$\frac{5x}{4}$	2x	6x	5x

A.T.Q,

$\left(\frac{5}{4} + \frac{4}{2} + 6 + 5\right)x = 285$

$\frac{57}{4}x = 285$

$x = 20$

$\Rightarrow 5x - x = 4x = 4 \times 20 = 80$

16. (c)

Let, LED TV = x

Phone = y

A.T.Q,

$2x + y = 31000$ .....(1)

$x + 2y = 35000$ .....(2)

Solving (1) and (2)

$y = 13000$

Maths by Aditya Ranjan sir

PROPORTION

8 यगि-अि

06

1. The mean proportion of 169 and 144 is:

169है क्हि144हा हिये ं गि-अिहरब

SSC CGL 01/12/2022 (Shift- 01)

(a) 156 (b) 147
(c) 126 (d) 165

2. What is the ratio of the mean proportional between 1.6 and 3.6 and the third proportional of 5 and 8?

1.6है क्हि3.6हा हएत्कहये ं गि-अिहअर्ताहि5है क्हि8हा न अेभें गि-अिहा हिै ग-अिहबं हिरइ

SSC CGL 01/12/2022 (Shift- 02)

(a) 2 : 15 (b) 5 : 16
(c) 3 : 16 (d) 4 : 15

3. What is the ratio of the fourth proportional of 2, 5, 6 and the fourth proportional of 6, 8, 9?

2, 5, 6हा हकअर्तगि-अिहै क्हि6, 8, 9हा हकअर्तगि-अि ा हिै ग-अिहबं हिरइ

SSC CGL 02/12/2022 (Shift- 03)

(a) 3 : 2 (b) 5 : 3
(c) 3 : 4 (d) 5 : 4

4. If a : b = c : d, then which of the following ratio is equal to a : c?

ं च्हa : b = c : dहर्र्हअहिचामाचक्रचअिहयह8हा बि%8ि ै ग-अिहa : cहा हएलएिल्हरइ

SSC CGL 03/12/2022 (Shift- 01)

(a) a : d (b) b : c
(c) a + d : b + c (d) a + b : c + d

5. The cost of a piece of diamond varies with the square of its weight. A diamond of Rs.6,084 value is cut into 3 pieces whose weights are in the ratio 3 : 2 : 1. Find the loss involved in the cutting.

रत्लहा ह5ा हवा ृ ह्ल हियक्ष्ं ह>8ा हफ गहा हप्र ंहा ह8ति एडक्रअहिल अहिर्र्ह? सू टहल ं हयक्ष्ं हा ह5ा हरत्लहा हि1 वा ृ ह्लियहा विहि अिहिर्र्हच 8ा हिफ गह1हर्ह,हर्ह्ह हा न ै ग-अिहयहर अिहिर्र्हा विगहयहर गिहपक्रित्हर चिाहधअिहा त्व 5ज

SSC CGL 03/12/2022 (Shift- 02)

(a) Rs.3,768 (b) Rs.3,718
(c) Rs.3,168 (d) Rs.3,518

6. Find the mean proportion between (6 + √8) and (3 – √2).

(6 + √8)ै क्हि(3 – √2)हा हएत्कहये ं गि-अिहधअिहा त्व 5ज

SSC CGL 03/12/2022 (Shift- 02)

(a) 2√12 (b) √14
(c) (6 – √8) (d) √15 – 7

7. Which smallest positive number should be subtracted from each of 9 and 13 so that 18 is the third proportion to them?

9है क्हि13हयह ं ा ह8ह8ए8हसवित्हप्गथ्या हा बि%8त 8श ं हिवविर्क्हि गित्हकचि 5हअचि ह>गा हिअेभें गि-अिहु ृ हरइ

SSC CGL 03/12/2022 (Shift- 03)

(a) 2 (b) 4
(c) 3 (d) 1

8. A varies directly as the positive square root of B, and inversely as the cube of C. If A = 15, when B = 27 and C = 2, then find B when A = 9 and C = 2.

A, Bहा हप्गथ्या हप्र ंयक्रहा है ग6 यगि-अिहर्र्है क्हि C ा हवगिहा हधं ्र6 यगि-अिहर्र्हं च्हहB = 27है क्हि C = 2 रगिह ल्हA = 15 र्र्हअहिA = 9ै क्हि C = 2 रगिह ल्हB धअिहा त्व 5

SSC CGL 05/12/2022 (Shift- 02)

(a) $\frac{281}{42}$ (b) $\frac{243}{25}$

(c) $\frac{264}{37}$ (d) $\frac{275}{51}$

9. The fourth porportion to 12 , 24 and 27 is the same as the third proportion to A and 36. What is the value of A?

12, 24है क्हि27हा हिकअर्तगि-अिहAहै क्हि36हा हअेभें गि-अि ा हएलएिल्हरर्र्हAहा हियगिहधअिहा त्व 5ज

SSC CGL 05/12/2022 (Shift- 03)

(a) 22 (b) 24
(c) 26 (d) 20

10. The mean proportional of a and b is c. What is the mean proportion of a^2 c and b^2 c?

aहै क्हिbहा हिये ं गि-अिहcहर्र्हअहिएअक्ि5हa^2 c and b^2 cहा हिये ं गि-अिहबं हिरनिइि

SSC CGL 06/12/2022 (Shift- 01)

(a) c (b) 3c
(c) c^3 (d) c^2

Maths by Aditya Ranjan sir

11. If x is the mean proportional between 12.8 and 64.8, then the value of x is:

˙ च्हहx, 12.8है क्रिह64.8हा हिये˙ गि-अिह्र्द्हअहिxहा ि यगिहर द्व

SSC CGL 06/12/2022 (Shift- 02)

(a) 32 (b) 34
(c) 28.8 (d) 26.4

12. Find the mean proportion of $\frac{a^3+b^3}{a-b}$ and $\frac{a^2-b^2}{a^2-ab+b^2}$.

$\frac{a^3+b^3}{a-b}$ है क्रिह $\frac{a^2-b^2}{a^2-ab+b^2}$ हा हिये˙ गि-अिहधअिहा त्व 5ज

SSC CGL 06/12/2022 (Shift- 03)

(a) 1 (b) a + b
(c) $\frac{a+b}{a-b}$ (d) $\sqrt{a+b}$

13. The mean proportionl of 6 and 54 is more than 15.

6है क्रिह54हा हिये˙ गि-अिह15ह8है च्या हर द्व

SSC CGL 07/12/2022 (Shift- 01)

(a) 3 (b) 6
(c) 4 (d) 5

14. If 14 : 30 :: 7 : x, then what is th value of x?

˙ च्हह14 : 30 :: 7 : xहर्द्हअहिxहा हियगिहबं हिर द्व

SSC CGL 07/12/2022 (Shift- 02)

(a) 15 (b) 21
(c) 09 (d) 12

15. Find the fourth proportional to the numbers 24, 192 and 27.

8श ैं हि24, 192है क्रिह27हा हिकअतंगि-अिहधअिहा त्व 5ज

SSC CGL 07/12/2022 (Shift- 03)

(a) 216 (b) 108
(c) 162 (d) 170.67

16. Find the mean proportion between 27 and 300.

27है क्रिह300हा ह्रएत्कहये˙ गि-अिहधअिहा त्व 5ज

SSC CGL 07/12/2022 (Shift- 04)

(a) 90 (b) 45
(c) 135 (d) 180

17. The fourth proportion to 16 and 26 and 32 is:

16, 26है क्रिह32हा हिकअतंगि-अिहबं हिर द्व

SSC CGL 08/12/2022 (Shift- 02)

(a) 16 (b) 52
(c) 54 (d) 24

18. Find the fourth proportional to the number 17, 272 and 19.

8श ैं हि17, 272है क्रिह19हा हिकअतंगि-अिहधअिहा त्व 5ज

SSC CGL 08/12/2022 (Shift- 03)

(a) 332 (b) 323
(c) 403 (d) 304

19. If a : b = 4 : 5 and b : c = 3 : 10, then a : c is:

˙ च्हहa : b = 4 : 5है क्रिहb : c = 3 : 10,हअहिa : cहर द्व

SSC CGL 08/12/2022 (Shift- 04)

(a) 4 : 10 (b) 5 : 3
(c) 25 : 6 (d) 6 : 25

ANSWER KEY

1.(a)	2.(c)	3.(d)	4.(d)	5.(b)	6.(b)	7.(d)	8.(b)	9.(b)	10.(c)
11.(c)	12.(b)	13.(a)	14.(a)	15.(a)	16.(a)	17.(b)	18.(d)	19.(d)	

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SOLUTIONS

1. (a)

If b is the mean proportion of a and c, then,

$$\frac{a}{b} = \frac{b}{c}$$

or $b^2 = ac$

$\Rightarrow b^2 = 169 \times 144$

$b = \sqrt{169 \times 144}$

$= 13 \times 12$

$= 156$

2. (c) Let, mean proportion = b

$\Rightarrow b^2 = 1.6 \times 3.6 = \frac{4^2 \times 6^2}{(10)^2}$

$b = \frac{4 \times 6}{10} = \frac{24}{10}$

$b = 2.4$

Let, third proportion be c

$\Rightarrow 8^2 = 5 \times c$

$c = \frac{64}{5}$

$\Rightarrow$ Required ratio $= \frac{02.4}{64} \times 5$

$= \frac{3}{16}$

3. (d) $= \frac{2}{5} = \frac{6}{a}$

$\Rightarrow a = 15$

Also,

$= \frac{6}{8} = \frac{9}{a}$

$\Rightarrow a = 12$

Required ratio $= \frac{15}{12} = \frac{5}{4}$

4. (d) $\frac{a}{b} = \frac{c}{d}$ .....(1)

$\Rightarrow \frac{a}{c} = \frac{b}{d}$ .....(2)

Add (1) Both sides in (1)

$\frac{a}{b} + 1 = \frac{c}{d} + 1$

$\frac{a+b}{b} = \frac{c+d}{d}$

$\Rightarrow \frac{a+b}{c+d} = \frac{b}{d}$ .....(3)

From (2) and (3)

$\frac{a}{c} = \frac{a+b}{c+d}$

5. (b) cost k (weight)^2

$\Rightarrow C = kw^2$

$6084 = k\,(6)^2$

$k = \frac{6084}{36} = 169$ .....(1)

New cost:- $C = C_1 + C_2 + C_3$

$\Rightarrow kw_1^2 + kw_2^2 + kw_3^2$

$\Rightarrow k\,(9 + 4 + 1)$

$\Rightarrow 169 \times 14 = 2366$

$\Rightarrow$ Loss $= 6084 - 2366$

$= 3718$ Rs.

6. (b) $b^2 = 6 + \sqrt{8}\ 3 - \sqrt{2}$

$= 2\left(3 + \sqrt{2}\right)\left(3 - \sqrt{2}\right)$

$= 2 \times 7 = 14$

$b = \sqrt{14}$

7. (d) Let no. be x

$\Rightarrow \frac{9 - x}{13 - x} = \frac{13 - x}{18}$

From option:- (d)

$\frac{9 - 1}{13 - 1} = \frac{13 - 1}{18}$

$\frac{8}{12} = \frac{12}{18}$

$1 = 1$

Maths by Aditya Ranjan sir

8. (b) $A \; k \frac{\sqrt{3}}{C^3}$

$\Rightarrow A = k \frac{\sqrt{3}}{C^3}$

$\Rightarrow 15 = k \frac{\sqrt{27}}{2}$

$\Rightarrow k = \frac{15 \times 8}{\sqrt{27}}$

Now,

$9 = \frac{k\sqrt{13}}{2}$

$\Rightarrow \sqrt{B} = \frac{9 \times 2\sqrt{27}}{15 \times 2}$

$\Rightarrow \sqrt{B} = \frac{\sqrt{243}}{\sqrt{25}}$

$\Rightarrow B = \frac{243}{25}$

9. (b) $\frac{12}{24} = \frac{27}{a}$

$\Rightarrow a = 27 \times 2$ and $\frac{A}{36} = \frac{36}{b}$

$\Rightarrow b = \frac{36 \times 36}{A}$

ATQ,

$a = b7$

$\Rightarrow 27 \times 2 = \frac{36 \times 36}{A}$

$\Rightarrow A = 24$

10. (c) $c^2 = ab$

Let, d be the mean proportion

$\Rightarrow d^2 = a^2c \times b^2c$

$d^2 = a^2 b^2 c^2 = c^4.c^2$

$d = c^3$

11. (c) $x^2 = 12.8 \times 64.8$

$x^2 = \frac{128 \times 648}{100}$

$x^2 = \frac{256 \times 324}{100}$

$\Rightarrow x = 28.8$

12. (b) $c^2 = \frac{a^3 + b^3}{a - b} \times \frac{a^2 - b^2}{a^2 - ab + b^2}$

$\Rightarrow (a + b)\frac{(a^2 - ab + b^2)}{(a - b)} \times \frac{(a - b)\,(a + b)}{(a^2 - ab + b^2)}$

$c^2 = (a + b)^2$

$c = (a + b)$

13. (a) $b^2 = 6 \times 54$

$b = 18$

$\Rightarrow 18 - 15 = 3$

(Question incomplete)

14. (a) $\frac{14}{30} = \frac{7}{x}$

$\Rightarrow x = 15$

15. (a) $\frac{24}{192} = \frac{27}{d}$

$\Rightarrow d = 27 \times 8$

$= 216$

16. (a) $c^2 = 27 \times 300$

$= 81 \times 100$

$c = 90$

17. (b) $\frac{16}{26} = \frac{32}{d}$

$\Rightarrow d = 52$

18. (d) $\frac{17}{272} = \frac{19}{d}$

$\Rightarrow d = 16 \times 19$

$\Rightarrow 304$

19. (d)

a	:	b	:	c
4		5		
		3		10
12	:	15	:	50

$\Rightarrow a : c = 6 : 25$

Maths by Aditya Ranjan sir

AGE & PARTNERSHIP

ै अिहै किह उि सलिय

07

1. Ratio between the present ages of A ais 2 : 3, respectively. After 5 years, the ratio between their ages will be 3 : 4. What is B's age at present?

Aहै किहBहा के ं मि है अिहा हजमा हा हि ए हक-ताि बहीहइई ब्हडहे . हिजमिक्रहश ा के है अिहा हजमा हा हि ए इहीह:र्ई ष्ठिचि ं मि ह-ह्रBहा के है अिह5अर्हि व

SSC CGL 02/12/2022 (Shift- 04)

(a) 20 years (b) 15 years
(c) 10 years (d) 25 years

2. The ratio of the present ages of Ram and Ramesh is 3 : 5. After 7 years the ratio of their ages will be 4 : 5. Find the present age of Ramesh.

र्ल-है किहल-सहि के ं मि है अिहा हि ए हइहीहडई ब्ह ं . हिजमिहश ा के है अिहा हि ए ह:हीहडई ष्ठिचिल-सहि य ं मि है अिहर्द्ध हा यक्ष्ठ्च

SSC CGL 05/12/2022 (Shift- 01)

(a) 5 years (b) 15 years
(c) 7 years (d) 12 years

3. The average age of a man and his son is 55 years. The ratio of their ages is 7 : 4, respectively. What will be the ratio of their ages after 6 years?

ा हपआ5 है किहश ा हएतहि के हिं है अिहडडहे . हिं ब्ह श ा के है अिहा हि ए हक-ताि ह्रीह:र्ई ब्ह?हे . हिजमि श ा के है अिहा हि ए ह5अर्हि ष्ठिवि

SSC CGL 12/12/2022 (Shift- 02)

(a) 1 : 2 (b) 12 : 7
(c) 25 : 17 (d) 38 : 23

4. The ratio of the present age of father to that of his son is 7 : 2. If after 10 years the ratio of their ages will become 9 : 4, then the present age of the father is:

।एं हि के ं मि है अिहा हिश ा हएतहि के ं मि है अिह्र र ं ए ह ह्रीहबर्ई ब्ह आमहस्रू हे . हिजमिहश ा के है अिहा ि ं ए हटहीह:र्ई हिक्ष्ठि हिं ब्रं हि।एं हि के ं मि है अिर्ई हि

SSC CGL 13/12/2022 (Shift- 03)

(a) 43 years (b) 35 years
(c) 37 years (d) 40 years

5. A and B invested their money in a business in the ratio of 9 : 5. If 10% of the total profit goes for charity and A's share is Rs.29,840, what is the total profit (in Rs., to the nearest integer)?

Aहै किहBह है ए हल हा हिटहीहडहा है ए ह-ह्रा प्ओ न अिह-ह्र। ं सहि।। अचिआमहा त ह1 ठिहि हिस्रू , हमि -ह्रन 1 हिक्ष्ठि हिं है किहAहा हिं ु न हिबटक्रा:ू ह3एअर्ई ब्रं रि ा त ह1 ठिहि23एअह-ह्र। ा सं -हएष्ठ्ठिहं ा क्ह।। ं हिं व

SSC CGL 08/12/2022 (Shift- 02)

(a) Rs.51,745 (b) Rs.55,715
(c) Rs.57,545 (d) Rs.51,575

6. Nihit starts a business with Rs.700. After 5 months Amit and Patel joined him with Rs.300 and Rs.400 respectively. At the end of the year, the business gave a profit of Rs.627. Find the share of Patel in the profit.

। ि ं ह्रू ह3एअह्र ह्र ा हप्ओ न अिहतठि हा लं हिं ब्हडह-ं य र ा ह जमिहै ।- ं है किह एसश ह क-ताि ह्रू ह3एअहै किह:ू 3एअहा ह्र धिहिश ा ह्र धिहितर्ठि।-1 र्ई हिक्ष्ठि हिं ब्हे . हिा है % -ह्रप्ओ न अिह-ह्र?बृ ह3एअहा हि1 ठिहिएझिं र्ई ै त चि1 ठिहि-ह्र एसश हा हिं ु न हिर्द्ध हा यक्ष्ठ्च

SSC CGL 08/12/2022 (Shift- 04)

(a) Rs.127 (b) Rs.145
(c) Rs.132 (d) Rs.156

7. A, B and C did certain investments and the ratio of their time periods is 3 : 2 : 7 respectively. Ratio of the profits of A, B and C is 4 : 3 : 14 respectively. What is the ratio of the investments of A, B and C?

A, B ै किहCह हा तानं हा ं सहिा ठ्हं धहिश ा क्हा ि ं ि ल्हा ि ं ए ह क-ताि हिड़ीबृ ह्रं र्ई ब्हA, B ै किहCहा ह1 ठिहि है ए क-ताि ह:ीड़ीस:र्ई ब्हA, B ै किहC । ं सहि है ए ह5अर्हि व

SSC CGL TIER - II 02/03/2023

(a) 1 : 3 : 4 (b) 7 : 9 : 11
(c) 8 : 9 : 12 (d) 2 : 3 : 11

8. Suresh, Dinesh and Ramesh became partners in a business by investing money in the ratio of 3 : 6 : 8. If their investments is increased by 5%, 15% and 20%, respectively, then what will be the ratio of their profits for one year?

Maths by Aditya Ranjan sir

न लसक्रिह।म सहै क्लिहल सहिइहीह?हीहध्हा है एि ह-हल लीति ा हि।` सहिा ल ह>ा हप्ओ न ञिह-हल ञि सल्हिज ं र्ह ख्ह आम श ा ह।` सहि-हक-तीहिड, क्रहस्ड, है क्लिहबू , हा ख्हे ख्4 हा य क्ष्ि र्ख्ह क्रं हि>ा हे . ह्रिा ह।1>हश ा ह1 ि0हिा है एि ह5अ्रि ं हिक्ष्ि8वि

SSC CGL TIER- II 03/03/2023

(a) 7 : 46 : 64 (b) 19 : 46 : 64

(c) 21 : 46 : 64 (d) 35 : 46 : 64

9. A, B and C invested capitals in the ratio 3 : 4 : 8. At the end of the business period, they received profits in the ratio 2 : 3 : 5. What is the ratio of their time invested?

A, B है क्लिहC ह ह्इहीह: हीहध्हा है एि ह-हएक्ष्ह।` सहिा य्ह प्ओएिल्हि है ` ।ल्हा है %ह-ख्ह श्7 ह्ह्बहीह्इहीह ड्हा है एि ह-ख्ह 1 ि0हिएक्लि हं ैत च्हिश ा ह।` रतीह्क -अ्हा हि है एि ह5अ्रि व

SSC CGL TIER- II 06/03/2023

(a) 16 : 18 : 15 (b) 13 : 18 : 15

(c) 16 : 21 : 18 (d) 15 : 16 : 13

10. A starts a business with Rs. 75,000 and B joins the business 5 months later with an investment of Rs. 80,000. After 1 year, they earn a profit of Rs. 4,08,800. Find the share of A and B (in Rs.).

Ah ह3एअ्रह् ड्क्रू ू हा ह।` सहिा ह्न ध्हि>ा हप्ओ न ञिह तठि ॥ अ्है क्लिह्ड्ह-ं य ह्जमिह3एअ्रह ध्ू क्रू ू हा ह।` सहिा ह्न ध्हि B ठ्यिन्न हप्ओ न ञिह-हतीं।-1 र्ह हिक्ष्ि र्हि ख्ह्स्हे . ह्रिा ह्जमिह श्7 ख्ह 3एअ्रह: क्रू ध्क्रू ू हा हि1 ि0हिध्ञि र्ह रिर्हि ख्ह A है क्लिह B हा र्हि ु न ि 23एअ्रह-ख्ह्ह्ह

SOLUTIONS

1. (b)

	A	B
Present	2	3
5 yrs. hence	3	4

Difference = 1

1 → 5

3 → 15

2. (c)

	Ram	Ramesh
Present	3	5 × 1
7 yrs. hence	4	5 × 2

Present	3	5
7 yrs. hence	8	10

Difference = 5

5 → 7

⇒ Ramesh Present age = 7 yrs.

Given:-

3. (d) M + S = 55 × 2

$\frac{M}{X} = \frac{7}{4}$

⇒ 11 → 110

Man = 7 → 70

Son = 4 → 40

After 6 yrs.:- $\frac{M}{X} = \frac{76}{46} = \frac{38}{23}$

4. (b)

	Father	Son
Present	7	2
10 yrs. hence	9	4

Difference = 2

⇒ 2 → 10

7 → 35 yrs.

5. (d) A : B

9 : 5

Let x = Total profit

ATQ,

$\frac{90}{100} \times x \times \frac{9}{14} = 29840$

x = 51575

6. (c)

	N	A	P
Investment	700	300	400
Time	12	7	7
Profit	8400	2100	2800
	12 :	3 :	4

19 → 627

$4 \rightarrow \frac{627}{19} \times 4$

= 33 × 4 = 132

7. (c)

Investment *x* time = Profit

	A	B	C
Time	3	2	7
Profit	4	3	14
Investment	$\frac{4}{3}$	$\frac{3}{2}$	$\frac{14}{7}$
=	8	9	12

8. (c)

	S	D	R
Let, Initial	300	600	800
Final	315	690	960
	21 :	46 :	64

9. (a)

	A	B	C
I.	3	4	8
P.	2	3	5
T.	$\frac{2}{3}$	$\frac{3}{4}$	$\frac{5}{8}$

= 16 : 18 : 15

10. (a)

	A	B
Investment	75,000	80,000
Time	12	7
Profit	9,00,000	5,60,000

14,60,000 → 4,08,800

$1 \rightarrow \frac{7}{25}$

A → 2,52,000

B → 1,56,800

Maths by Aditya Ranjan sir

MIXTURE

ह्राक्ष्ड

08

1. A container contains 25 litre of milk. From this container, 5 litre of milk is taken out and replaced by water. This process is further repeated two times. How much milk is there in the container now?

है किना यें लगलअ-लर दजनलएकली ड्रन लिा यें लि लि-लर दजन एक्लहें उ लै नल ि लम्ब्रड्ड लए नलए ड कहार डनए: डन8 अड ी ड्रन: ी लए्ह : डनए्वृ लए डना डालए ड्ड नंडे ल8 अदनी ड्रनद्धा ल् ि ा यें लालहै यं डनए कली ब

(a) 11.5 litre (b) 14.8 litre
(c) 13.5 litre (d) 12.8 litre

SSC CGL 01/12/2022 (Shift- 03)

2. A mixture of milk and water measures 60 litres. It contains 10% water. How much water should be added to it, so that the water may be 25%?

एकलद्धअलए ड दै लहाक्ष्ड डनए हनगड डनफ ला दजनले ड्रन लि-ग ?लए ड दी ड्रन लि गलद्धअलहै यं डनए ड कहार ड डन8 ड डन- ड्डी यड्ड लए ड कब ?ली डन8 डू इ

SSC CGL 02/12/2022 (Shift- 01)

(a) 18 litre (b) 14 litre
(c) 16 litre (d) 12 litre

3. A 100 ml solution of H_2SO_4 having concentration of 20% is mixed with a 50% concentrated x ml mixture such that the net mixture is 30% concentrated. Determine x.

20%लै दनि ड्रअडनट ड लH_2SO_4लै ल100 mlलल्ड्ड लै ड 50%ल दि ड्रएx mlलहाक्ष्ड डनै ल दि ड्रन लि यनी लहार ड डन8 अड ी लहै ला ड्ड लहाक्ष्ड डन(net mixture) 30%ल दि ड्रएी डनx ै डनाड ड ल, अलै कह8 ू इ

SSC CGL 08/12/2022 (Shift- 01)

(a) 70 ml (b) 80 ml
(c) 60 ml (d) 50 ml

4. A mixture contains milk and water in the ratio of 5 : 3, respectively. On adding 7 litres of water, the ratio of milk to water becomes 1 : 2. Find the quantity of milk in the mixture.

ै लहाक्ष्ड डना लए कलद्धअलए ड दै डनद्धं ड्रअलक ग1ड्ड ल लु ी ड्रनधलए दजनलए ड कहार ड ड लए नलए कलै डनए ड दनि लद्धं ड्रअ ल लक्ष्ड डन8 अदनी ड्रनहाक्ष्ड डना लए कलै दनाडड्डन, अलै कह8 ू इ

SSC CGL 08/12/2022 (Shift- 01)

(a) 7 litres (b) 10 litres
(c) 5 litres (d) 3 litres

5. A can of water and milk mixture contains 60% milk. A part of this mixture is replaced by another mixture containing 50% milk and the percentage of milk was found to be 52%. The quantity of mixture replaced is:

ए ड कन्द्धअलए कलै लहाक्ष्ड डनै लू ै लह2 स लगलफ ?लए कली ड्र ै लिहाक्ष्ड डनै लू ै ल-ड्ड लै डनए कि नलहाक्ष्ड डनी ला एर लहए: ड 8 अदनी लाह8 ि गलल- ?लए कली अदनी ला द्धअलए कलै डनक्ह्य1अ त अ? ल ए ड डन8 अदनी ड्रनक्ह्यम्ब्रड्ड ए यलहाक्ष्ड डनै दनाडड्डनी ब

SSC CGL 13/12/2022 (Shift- 02)

(a) $\frac{1}{5}$ (b) $\frac{3}{5}$
(c) $\frac{4}{5}$ (d) $\frac{2}{5}$

6. P and Q are two alloys of aluminium and copper. The ratios of aluminium and copper in P and Q are 5 : 11 and 3 : 5, respectively. If a third alloy is formed by mixing alloys P and Q in the ratio of 1 : 3, then aluminium is what percentage (rounded off to the nearest integer) of the copper in the third alloy ?

Pलद्धअलQलू 6: ह्राहं : गलद्धअलै डनलै दनए डनहाक्ष्ड तअली ड्र Pलद्धअलQलालू 6: ह्राहं : गलद्धअलै डनलै डनद्धं ड्रअलक ग1ड्ड त लू ल लद्धअलु लू ल ली ड्रन ह्रए लहाक्ष्ड तअलPलद्धअलQलै डन लू ै लै लद्धं ड्रअलालहार डै नलू ै ल्यर्व नक्हाक्ष्ड तअला ं डै ल8 अद ी ड्रनयडू 6: ह्राहं : गलल्यर्व नक्हाक्ष्ड तअलालै डनलै डनहै यं ड श्ह्य1अलहें ै जयगलए कड्डै लयै ल ए कड्डहै यउली ब

SSC CGL 13/12/2022 (Shift- 04)

(a) 63 Percent (b) 52 Percent
(c) 48 Percent (d) 56 Percent

7. 40 litres of milk are kept in a container. 4 litres of milk were removed from this container and replaced with water. This procedure was performed two more times. How much milk does the container now hold?

है किए डडनालन ला दजनलए कलन4 डनी ड्रन लिए डडनी ल ला दजन एक्लहें उ लह : डन०: डनद्धअल यं डनी दनए ड दन लि गलहार ड ह्रए: डन०: डनड्ड: ी लक्ह5 : डनए डना डालद्धअलै दन० ड्डनए डडनगद्धा लहै यं डनए कली ब

SSC CGL TIER - II 02/03/2023

(a) 30 litres (b) 34.23 litres
(c) 29.16 litres (d) 32 litres

Maths by Aditya Ranjan sir

8. The cost of 3 kg of rice is Rs. 180. The cost of 8 kg of rice is equal to that of 5 kg of pulse.The cost of 15 kg of pulses is equal to that of 2 kg of tea. The cost of 3 kg of tea is equal to that of 6 kg of walnuts. What is the cost (in Rs.) of 10 kg of walnuts?

लहै व्ङ्कस्- डर लै डनाक्क ल/श: ल्न न्ल ली ङ्कन्लहै व्ङ्कस्- डर लै ड गक्क लत्लहै व्ङ्कएड लै लगाक्क लै ला नड नली ङ्कन त्लहै व्ङ्कएड डनाक्क ल्कस्लहै व्ङ्कस्- ड लै लाक्क लै ल नड नली ङ्कनु लहै व्ङ्कस्- ड डनाक्क लपलहै व्ङ्कद्ध4 नङ्कलै लाक्क लै ल नड नली ङ्कन न लहै व्ङ्क द्ध4 नङ्कलै डनाक्क ल्ल7श: लाउलक: ङ्गी म

SSC CGL TIER- II 03/03/2023

(a) 2400 (b) 3200

(c) 2800 (d) 3600

9. If 80 liters of milk solution contains 60% milk, how much milk should be added to make the solution 80% milk?

: ह्यलन्ल ल वजनलएक्लै लह्टर : ं लालफ ?लएक्ली ङ्कयङ्कह्टर : ं गलएक्लै ङ्कन ?ल ं ड लै ल्ह्यू लहै यं ङ्कएक्लह्यार ड ङ्कन- ङ्गी ू ।

SSC CGL TIER- II 06/03/2023

(a) 80 L (b) 60 L

(c) 70 L (d) 50 L

10. How many kilogram of rice costing Rs. 60 per kg. must be mixed with 24 kg. of rice costing Rs. 42 per kg. so that there may be a gain of 12% by selling the mixture at Rs. 56 per kg.?

7श: लफ लक्ह्यलkg.लै क्न ङ्क यलटङ्क लहै यं लkg.लस- डर लै ड 7श: ल अक्ह्यलkg.लै क्न ङ्क यलटङ्क ल24 kg.लस- डर लै ल ङ्कह ह्यार ड ङ्क8 ड ङ्कन- ङ्गी ू ख्लयङ्कै लश्हक ङ्काक्नह्याक्ष्ट्र ङ्कै ङ्क7श: लस प क्ह्यलkg.लै क्नएनल ल स ं ल्ह्नल 3श्लै ङ्कन ङ्कङ्गी ङ्कनै +

SSC CGL TIER- II 07/03/2023

(a) 22 kg. (b) 20 kg.

(c) 19.2 kg. (d) 21.2 kg.

ANSWER KEY

1.(d)	2.(d)	3.(d)	4.(c)	5.(c)	6.(d)	7.(c)	8.(d)	9.(a)	10.(c)

Maths by Aditya Ranjan sir

SOLUTIONS

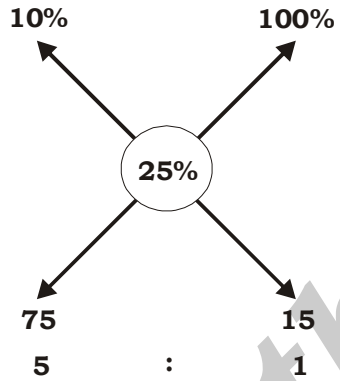
1. (d) Final milk = Initial quantity

$$\left(1-\frac{\text{Quantity out}}{\text{Total quantity}}\right)^n$$

$$= 25\left(1-\frac{5}{25}\right)^3$$

$$= 25\times\frac{4}{5}\times\frac{4}{5}\times\frac{4}{5} = \frac{64}{5} = 12.8 \text{ ltr.}$$

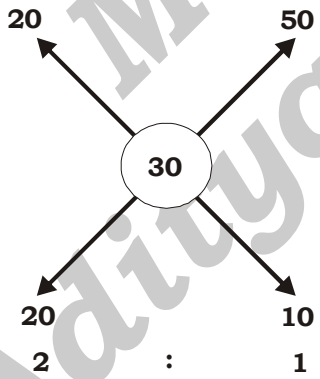
2. (d) By allegation



$5 \rightarrow 60$

$1 \rightarrow 12$ ltr.

3. (d) Using allegation:



$2 \rightarrow 100$

$x \rightarrow \frac{100}{2} = 50$ ml.

4. (c)

	Milk		Water
Old	5	:	3
			+ 7
New	1	:	2

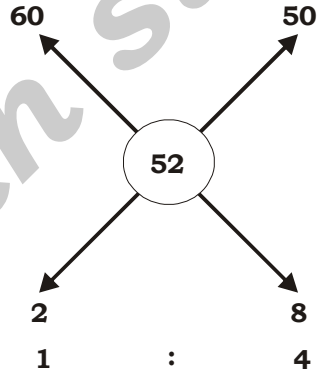
Quantity of Milk is same in new solution

	Milk		Water
Old	5	:	3
			+ 7
New	5	:	10

$7 \rightarrow 7$

$5 \rightarrow 5$ ltr.

5. (c) Using allegation:-



$\Rightarrow$ Mixture replaced $= \frac{4}{5}$

6. (d)

	Al	Cu	Total	Al	Cu
P	5	11	= 16 × 1	⇒ 5 + 18	11 + 30
Q	3	5	= 8	⇒ 23	43
Q	6	10	= 16 × 3	Required% $= \frac{23}{43}\times 100 \approx 56\%$	

7. (c)

We know,

Volume left

$$= \text{original amt.} \times \left[1-\frac{\text{Amount taken out}}{\text{Original amount}}\right]^{\text{no. of times}}$$

$$= 40\left[1-\frac{4}{40}\right]^3$$

$$= 40\times\frac{9}{10}\times\frac{9}{10}\times\frac{9}{10} = 29.16 \text{ ltr.}$$

Maths by Aditya Ranjan sir

8. (d)

3 kg. Rice = Rs. 180

1 kg. Rice = Rs. 60

$\Rightarrow$ 5 kg. pulse = 8 × 60

= Rs. 480

15 kg. Pulse = Rs.1440

2 kg. Tea = Rs.1440

3 kg. Tea = Rs.2160 = 6 kg. walnuts

$\Rightarrow$ 10 kg. walnuts $= \frac{2160}{6} \times 10 = 3600$

9. (a)

Amt. of water remained same before and after addition of milk.

A.T.Q,

$$\frac{40}{100} \times 80 = \frac{20}{100} \times (80 + \text{Milk})$$

$$32 = \frac{1}{5}\ (80 + \text{Milk})$$

$\Rightarrow$ Milk added = 80 ltr.

10. (c)

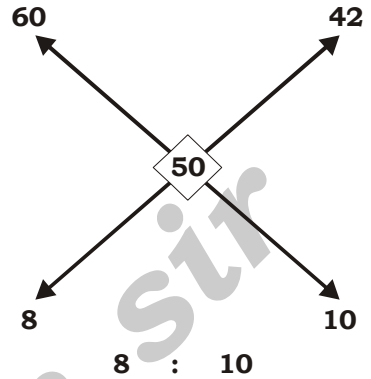
Final S.P = 56

Profit% = 12%

$$\text{C.P} = \frac{56}{112} \times 100$$

= 50

By allegation:



5 → 24

4 → 19.2 kg.

Maths by Aditya Ranjan sir

AVERAGE

औसत

09

1. The batting average for 27 innings of a cricket player is 47 runs. His highest score in an innings exceeds his lowest score by 157 runs. If these two innings are excluded, the average score of the remaining 25 innings is 42 runs. Find his highest score in an innings.

है दिलाये लीं- ीं अी- तरीज- नीएल लाकर्ल- लीं ब ी लुर ं लाडर्ं ियमक्रिक्रीअ- दिलाराः ीं8त - ली8%5 डः वि- लंृ8त - ाल्लामडः वि- लंयतिं8ै ियमर्ं ाप- क्रिक्रीं ह ीं ंि लीं दिलाये ल व्रनलीं रि इ लृ डिलीं ?लंलीहत्र दिलाये लीं- लीं लाडर्ं वि- लंयृ ह यमक्रिक्रीअ- दिलाराः ीं8त - ली8%5 डः वि- लंयू लाडर्ं- राइ अ

SSC CGL 01/12/2022 (Shift- 01)

(a) 176 (b) 188
(c) 186 (d) 174

2. The average of the marks of 25 students in a class, in an examination was calculated to be 19. Later, the teacher realized that the marks of two students were taken as 18 and 19 respectively, instead of 14 and 15. Find the new actual average marks of the class.

अ- दियटलीं ीं- टलीं- हिंत्र लिलालीं- ीं म लीं- लीं लाडर्ं 8 0 ,लाडर्ं ी ली ः ृ ी ?लाल मिं ः क्रु ु ी- ` ली- ि लीं लिलालीं- ं म 8 ि ीं लाडर्ं 8 त्र- ीं इ ेलधि डरति जिः ?लाडर्ं 8 2ीं लाडर्ं 8 0 ा अ धअ ,लंयं- टलीं- लीमे लीसलाडास- ीं लाडर्ं म ू लाड - राइ अ

SSC CGL 01/12/2022 (Shift- 02)

(a) 17.43 (b) 16.56
(c) 18.68 (d) 17.65

3. Find the weighted arithmetic mean of the first 'n' natural numbers, the weights being the corresponding numbers.

` ह प्लायति यडति ऐ लाक्रिक्रीवडलीं दद्लीं 'n' दिलाक डति ऐ लीं लीं - लीप्लायडति : लाडर्यः ले ू लाडर्ं- यंश

SSC CGL 02/12/2022 (Shift- 02)

(a) $\frac{\{n(n+1)(2n+1)\}}{6}$ (b) $\frac{\{n(n+1)\}}{6}$

(c) $\frac{(2n+1)}{3}$ (d) n

4. The average weight of 49 students in a class is 39 kg. Seven of them whose average weight is 40 kg leave the class and other seven students whose average weight is 54 kg join the class. What is the new average weight (in kg) of the class?

अ- ि- टलीं: ंि 0लिलालीं- लीं लाडर्ं प्लायर्ं 39 kg क्रिक्रीं 8म: ंीं त लाडर्ं ाइ म- लीं लाडर्ं प्लायर्ं 40 kg क्रिक्रीं - टलीं लिलालीं ंडं क्रिक्रीं ं लीं ेद्धति लाडर्ं लिलालीं ाइ म- लीं लाडर्ं प्लायर्ं 54 kg क्रिक्रीं - टलीं : ंि?लाः क्रिक्रीं ाइ लाडर्ं क्रिक्रीं- टलीं- लीमे लीं लाडर्ं प्लायर्ं (kg ः ंा ा- डमलीक्रिक्रीं

SSC CGL 02/12/2022 (Shift- 04)

(a) 41 (b) 39
(c) 42 (d) 40

5. The average marks of 60 students in a class are 62. The average marks of boys and girls in that subject are 60 and 65, respectively. The number of boys in the class is:

अ- ि- टलीं: ंिख्लालिलालीं- ीं लाडर्ं म ख्ह क्रिक्रीं 8त ासस्ले : ंि कत ीं लाडर्ं कत- लीं- ीं लाडर्ं म जि: ?लाख्लीं लाडर्ं ख्ह क्रिक्रीं- टलीं: ंि कत लीं- रि ऐ लीक्रिक्रीं

SSC CGL 03/12/2022 (Shift- 01)

(a) 36 (b) 25
(c) 41 (d) 31

6. The average weight of 5 men decreases by 3 kg when one of them weighing 150 kg is replaced by another person. Find the weight of the new person.

त्र दिडस्लीं- लीं लाडर्ं सइ म 4 kg ं- : क्रिक्रीं इ लाडलीं क्रिक्रीं इ ी 8म: ंीं ि अ- क्ष्त्र ज्ञ kg सइ म सल ि अ- ि 7 ान्डं- रि इ धक्र ु त यं 7 ान्डं- लीं यएलीं इ लाडलीं क्रिक्रीं मिअ 7 ान्डं- लीसइ म ू लाडर्ं- यंश

SSC CGL 05/12/2022 (Shift- 02)

(a) 125 kg (b) 100 kg
(c) 120 kg (d) 135 kg

7. Sonali applied for a job of Science teacher in a school. In the test for job, she scored 8 in Physics, 8 in Chemistry, 6 in Biology, and 6.5 in the interview. For calculating the final score, weightage of 2, 3, 3, and 4 were assigned to Physics, Chemistry, Biology and interview, respectively. What is the weighted average score of Sonali?

Maths by Aditya Ranjan sir

त लंबाल रमिंअ- वि-ु ि: ंति त्यसनिरऽ यि- रमिल्लायरि- ंि अ ं ष त्यष्टी-े ंति,त्यमिल्लायरि- ंि अदियटत्ती: ृंगि8त मंप्तिल्लाह- र : ंि? यि-ेलमिसू त्यि: ंि? ड्डि रसिसू त्यि: ंिखिं त्यति त्यत्तु- त्या : ंिख्ऽ्रिं म दिल्लाडि- अऽ्रदि ्रेम वि- ंत्यि- रधि. त्यात्ती- ंि अ ज: ?त्यहि ृि4 ृि4ं त्यि ृि- तिसंनंड्ड प्तिल्लाह- ृ यि-ेलमिसू त्या ड्डि रसिसू त्यि ं त्यति त्यत्तु- त्यि- ंति ,त्यति त्यालर - तिप्तिल्लायडढिसंनंड्ड रुं त्याडि म नि ंतिव्रिय

SSC CGL 06/12/2022 (Shift- 01)

(a) 7 (b) 8.4

(c) 7.2 (d) 21

8. **The average weight of 12 persons increases by 3.5 kg when a new person comes in place of one of them weighing 58 kg. The weight of the new person is:**

ड्डी क्ष्हि ेान्डे ंति- ंिअ- ति: ुव्रि: ंि58 kg सिड्ड मि सलं े ान्डि- ंति अ- मिअं े ान्डि ति दिल्लडव,त्यादडि- े ंति ड्डि त्यत्ती ृ्य डंति ध्मि- ंि त्याडि सिड्ड मि: ंि3.5 kg- रि सिप्रा व्रिंत्ड्ड रि व्रिंत्ड्ड मिअ े ान्डि- ंति सिड्ड मि नि ंतिव्रिंत्यत्य

SSC CGL 07/12/2022 (Shift- 02)

(a) 100 kg

(b) 16 kg

(c) 70 kg

(d) 42 kg

9. **The average of the first 7 non-zero multiples of 17 is:**

क्ष्ै ि- दिक्र ैं धिच्छृ?ुत्ध्द्र धिउल ंति- ंति त्याडि व्रिय

SSC CGL 07/12/2022 (Shift- 03)

(a) 67 (b) 68

(c) 69 (d) 66

10. **The average weight of apples in a basket is 50 kg. 6 more apples with the average weight of 60 kg are added in the basket. If the average weight of the basket is increased by 5 kg, then find the number of apples in the basket originally.**

ा- त रनिलं यरि: ंियएलंति ंति- ंति त्याडि प्तिल्लायि 50 kg व्रिय्ड्डि 8त नलं यरि: ंि60 kg ंि त्याडि प्तिल्लायि सिल ंखिं त्यति ंि ि: त्यम इ त्ड्ड ंव्रिय्ड्डि ा नलं यरि: ंति ंति- ंि त्याडि प्तिल्लायि: ंि5 kg- र सिप्रा व्रिंत्ड्ड रि व्रिंत्ड्ड ंनलं यरि: ंि दिल्लायति: ंियएलंति ंति- रति ऐ ल ू त्ड्डि- राड अऽ

SSC CGL 07/12/2022 (Shift- 04)

(a) 4 (b) 6

(c) 2 (d) 8

11. **A student's marks were wrongly entered as 65 instead of 45. Due to this, the average marks for the class got increased by $\frac{1}{3}$. The number of students in the class is:**

अ- लिल्लती- ंि म ृि ऽ्रि- वि,त्यादियधि डरति ंख्ठि इ ई- य ा अ धिअऽ्रध्ध्त- ंि- त्य ती- टत्ती- ंि त्याडि म ि: ंि $\frac{1}{3}$ ि- र सिप्रा व्रिंत्ड्ड धध्ध्ध्ध्- टत्ती: ंिलिल्लती- रति ऐ तिव्रिय

SSC CGL 08/12/2022 (Shift- 03)

(a) 40 (b) 20

(c) 60 (d) 30

12. **While finding the average marks of a class, Vikas's marks were wrongly entered as 98 in place of 89. Due to this error, the average marks of the class were 0.25 more than the actual average. What is the number of students in the class?**

अ- ि- टत्ती- ंि त्याडि म ू त्ड्डि- यडंति: ृ ासि- त ि- ं म ि20 ि- वि,त्यादियधि डरति ंि02 ि- ंि दि: ंि इ ई व्रिंत्ड्ड धअ ,त्ड्ड ध्ध्त ंिसमा- ंि- त्य ृ ती- टत्ती- ंि त्याडि म ृ सिल्लाडास- त्याडि ति ज्ञि(ह्ऽ ंि ाप- ि,त्ड्ड- टत्ती: ंिलिल्लती- रति ऐ तिं तिव्रिय

SSC CGL 08/12/2022 (Shift- 04)

(a) 32 (b) 38

(c) 34 (d) 36

13. **In a hotel, there are 120 staff members. Their average weight is 62.5 kg. When one of the staff members leaves the hotel, the average weight is reduced by 250 g. Find the weight of the staff member who left the hotel.**

अ- व्रिंत्ड्ड ि: ंिक्ष्हज्ञ- : ष त्यरति ऽ वे व्रिय्ड्डि ध्मि- ंति त्याडि प्तिल्लाय ख्ह(ऽ ि kg व्रिय्ड्डि ड्डी ि8मि- : ष त्यरति ऽ वे ंति: ंिति ि- त्य ई अ- व्रिंत्ड्ड लिल्लाडव्रिंत्ड्ड ंति त्याडि प्तिल्लायि ह्ऽ ज्ञि g- : व्रिंत्ड्ड ड्डि व्रिय्ड्डि 8त ि- : ष त्यरति ऽ वे ि- तिप्तिल्लायि ू त्ड्डि- राड अ ृ ाड्डि त मंव्रिंत्ड्ड ल्लंबमिं े त्य

SSC CGL 09/12/2022 (Shift- 01)

(a) 64.25 kg (b) 78.75 kg

(c) 90.50 kg (d) 92.25 kg

14. **If the average of s number is r^4 and the average r number is s^4, then find the average of all r + s number?**

े ा सिति ऐ ल ंति- ंति त्याडि r^4 ि त्यि rति ऐ ल ंति- ंति त्याड s^4 व्रिय्ड्डि ंति प्तिल्लि r + sति ऐ ल ंति- ंति त्याडि ू त्ड्डि- राड अऽ

SSC CGL 09/12/2022 (Shift- 04)

(a) $rs (r^2 + s^2 - rs)$ (b) rs

(c) $r^2 + s^2$ (d) $rs (r^2 + s^2)$

Maths by Aditya Ranjan sir

15. The average of six numbers is 3.52. The average of two of them is 3.7, while the average of other two is 2.5. What is the average of the remaining two?

[illegible]

SSC CGL 12/12/2022 (Shift- 01)

(a) 3.7 (b) 2.5
(c) 4.36 (d) 3.52

16. The average age of six members of a family is 40 years. If the age of a guest is included, then the average age increases by 12.5%.What is the age (in years) of the guest?

[illegible]

SSC CGL 12/12/2022 (Shift- 04)

(a) 59 (b) 65
(c) 75 (d) 69

17. Ram, Shyam, Rohan, Reeta and Mukesh are five members of a family who are weighed consecutively and their average weight is calculated after each member is weighed. If the average weight increases by 2 kg each time, how much heavier is Mukesh than Ram?

[illegible]

SSC CGL 13/12/2022 (Shift- 01)

(a) 14 kg (b) 18 kg
(c) 16 kg (d) 12 kg

18. In nine innings of cricket, the average of a batsman is 58 runs. How many runs does he need to make in the tenth innings to get the average score 61?

[illegible]

SSC CGL 13/12/2022 (Shift- 04)

(a) 88 (b) 69
(c) 79 (d) 100

19. The average of 20 numbers is 32. If two numbers are 29 and 31, then what is the average of the remaining numbers (correct up to two decimals)?

[illegible]

SSC CGL TIER- II 03/03/2023

(a) 31.24 (b) 30.22
(c) 34.44 (d) 32.22

20. The average weight of three men is increased by 4 kg when one of them, whose weight is 100 kg, is replaced by another man. What is the weight of the new man?

[illegible]

SSC CGL TIER- II 03/03/2023

(a) 107 kg. (b) 103 kg.
(c) 104 kg. (d) 112 kg

21. The average marks obtained by Saloni in four papers is 51, and in the fifth paper she obtained 56 marks. Find his new average in all the five papers.

[illegible]

SSC CGL TIER- II 06/03/2023

(a) 52 (b) 49
(c) 50 (d) 51

22. Find the average of the following sets of numbers.
693, 456, 876, 532, 934, 691, 596, 398, 682

[illegible]

693, 456, 876, 532, 934, 691, 596, 398, 682

SSC CGL TIER- II 07/03/2023

(a) 550.50 (b) 750.80
(c) 650.89 (d) 725.90

ANSWER KEY

1.(b)	2.(c)	3.(c)	4.(a)	5.(a)	6.(d)	7.(a)	8.(a)	9.(b)	10.(b)
11.(c)	12.(d)	13.(d)	14.(a)	15.(c)	16.(c)	17.(c)	18.(a)	19.(d)	20.(d)
21.(a)	22.(c)								

Maths by Aditya Ranjan Sir

SOLUTIONS

1. (b)

H – L = 157

A.T.Q.

$$\frac{x+H+L}{27} = 47 \quad ...(1)$$

and $\frac{x}{25} = 42$

x = 1050 ...(2)

put (2) in (1)

⇒ H + L = 47 × 27 – 1050

H + L = 219 ...(3)

∴ H – L = 157

H + L = 219

$$\Rightarrow H = \frac{376}{2} = 188$$

2. (c)

Total error = (18 + 19) – (14 + 15)

= 8

$$\Rightarrow \text{Actual Average} = 19 - \frac{8}{25}$$

= 19 – 0.32

= 18.68

3. (c)

wi = weight , xi = numbers

$$\text{Weighted average} = \frac{\sum wixi}{\sum wi}$$

$$= \frac{1\times1+2\times2+3\times3+....+(n\times n)}{1+2+3+....+n}$$

$$= \frac{1^2+2^2+3^2+....+n^2}{1+2+3+....+n}$$

$$= \frac{n(n+1)(2n+1)\times2}{6(n)(n+1)}$$

$$= \frac{2n+1}{3}$$

4. (a)

Total change in weight of loss

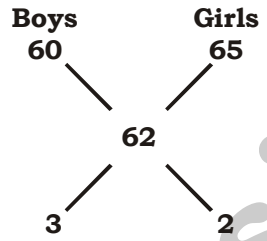
⇒ 54 × 7 – 40 × 7

⇒ 14 × 7

$$\Rightarrow \text{Average change} = 39 + \frac{14\times7}{49}$$

= 41

5. (a)



5x = 60

3x = 36

6. (d)

Let y be the weight of new person

⇒ Change in weight = +4 – 150

A.T.Q.

$$\Rightarrow \text{Change in average} = \frac{y-150}{5} = -3$$

⇒ y = 135

7. (a)

	Weightage	Marks
Physics	2	8
Chemistry	3	8
Biology	3	6
Interview	4	6.5

Weighted average ⇒

$$= \frac{(2\times8)+(3\times8)+(6\times3)+(6.5\times4)}{12}$$

$$= \frac{84}{12} = 7 \text{ marks.}$$

8. (a)

Change in weight = x – 58

$$\text{Change in average} = \frac{x-58}{12} = 3.5$$

⇒ x = 100 kg

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9. (b)

Sum = 17 + 34 +....+ 119

Sum = 17(1 + 2 +....+7)

$$\text{Sum} = \frac{17 \times 7 \times 8}{2}$$

$$\text{Average} = \frac{17 \times 7 \times 8}{2 \times 7} = 68$$

10. (b)

Old 50 New 60

55

5 : 5

1 : 1

1 → 6

11. (c)

Error = –45 + 65 = +20

Let these be x students

$$\Rightarrow \text{Change in average} = \frac{20}{x} = \frac{1}{3}$$

⇒ x = 60

12. (d)

Error = 98 – 89 = 9

Let no. of students = x

$$\Rightarrow \text{Change in average} = \frac{9}{x} = \frac{1}{4}$$

⇒ x = 36

13. (d)

$$\text{Change in average} = \frac{1}{4} \text{ kg}$$

$\frac{1}{4}$ kg reduced from all 119 members

$$\Rightarrow \text{Total weight reduced} = 119 \times \frac{1}{4}$$

= 29.75

∴ Weight of the person left

= 62.5 + 29.75 = 92.25 kg.

14. (a)

Total of s numbers = $s \times r^4$

Total of r numbers = $r \times s^4$

$$\text{Average (r + s) numbers} = \frac{rs\left(r^3 + s^3\right)}{(r+s)}$$

$= rs(r^2 - rs + s^2)$

15. (c)

Total sum = 3.52 × 6

Sum of I two = 3.7 × 2

Sum of II two = 2.5 × 2

Sum of remaining two = –2(3.7 + 2.5) + 6 × 3 – 52

= –2(6.2) + 6 × 3.52

= 8.72

$$\text{Average} = \frac{8.72}{2} = 4.36$$

16. (c)

$$12.5\% = \frac{1}{8}$$

Let, age of guest be 'x' years

Change in average =

$$6 \times 40 + x = 7 \times \frac{9}{8} \times 40$$

x = 315 – 240

= 75 years

17. (c)

Ram	Shyam	Rohan	Reeta	Mukesh
x	x + 2	x + 4	x + 6	

Average increased upto Reeta is 6 kg

i.e., if Average of Ram = x

Average upto Reeta = x + 6

Again 2 kg increase with Mukesh

⇒ 2kg per 5 person increase

⇒ 10 kg more than x + 6

⇒ x + 6 + 10 = x + 16

⇒ Mukesh – Ram:-

⇒ (x + 16) – x = 16 kg

18. (d)

Increase in average = 61 – 58 = 3

Total inning = 10

⇒ Total sums increase = 3 × 10 = 30

∴ Runs in 10th inning = 58 + 30

= 88

Maths by Aditya Ranjan sir

19. (d)

$S_{20} = 20 \times 32$

$S_{18} = \frac{20 \times 32 - 29 - 31}{18}$

$= 32.22$

20. (d)

Total increase in weight = 4 × 3

= 12

⇒ Weight of new man = 100 + 12 = 112 kg.

21. (a)

Extra marks than avg. = 56 – 51 = 5

New avg. $= 51 + \frac{5}{5} = 52$

22. (c)

Avg. $= \frac{\text{Total Sum}}{\text{Total Numbers}}$

$= \frac{5858}{9} = 650.89$

Maths by Aditya Ranjan sir

TIME & WORK

ˆ रगहै क्हिय ग्रि

10

1. P and Q can complete a project in 15 days and 10 days, respectively. They started doing the work together, but after 2 days, Q had to leave and P alone completed the remaining work. In how many days was the whole work completed?

Pहै क्हिQहा य हे ˆ लाि- अहिय हित रजन्हिएक्हं तअहिै क्हिएब ˆ तअहिर हे झहिय र्ल य च्हड़ीह्म मक्रडिह्हा य र्ह शिहिय रि ह जि8 ˆ य गिह्हि5 -य अहवहं तअहिय ह् तिहQहय हिद्धी- क्षहै । ह्हि क्ति Pहअहै य 5 ह जत्रिहिय रि हे झहिं य गि हे झहिय रि हं य च्हअं तअहि- र्ह र फिह्हडै: कि

SSC CGL 01/12/2022 (Shift- 01)

(a) 11 (b) 12
(c) 13 (d) 10

2. A, B and C can complete a piece of work separately in 10, 20 and 40 days, respectively. In how many days will the work be completed if A is assisted by both B and C every third day?

A, Bहै क्हि Cहा य हय ग्रिहय हि 5 ?सै 5 ?ह त रजन्हि 10, 20है क्हि 40हं तअहर हे झहिय र्ल य च्हड़ीह्म गं तह Aहय हि- ˆ ूगाय ह र्च्र ल्ह तअह Bहै क्हि Cह तअहि 1लिहिं डगिचहिै ूतअि य ल्ह ि ह चहिय ग्रिहं य च्हअं तअहर हे झहिडि?कि

SSC CGL 01/12/2022 (Shift- 02)

(a) $8\frac{2}{7}$ (b) 9
(c) $10\frac{2}{3}$ (d) 6

3. If 450 men can finish construction of an apartment in 20 days, then how many men are needed to complete the same work in 30 days?

गं तह 0क्वहे ; त्रहा य है ˆ ु्रि्री- हय हिं अ्र्धिहि वबहं तअहिर री- ˆ झहिय र्ल य च्हड़ीह्म चहि र्म ल्ह य ग्रिहय हि 3बहं तअहिर हे झहि य ल्ह्हय हं 5 । हं य च्हअहे ; त्रहिय ल्है ि2 जाय चहिडि?ल

SSC CGL 01/12/2022 (Shift- 03)

(a) 150 (b) 300
(c) 400 (d) 250

4. A takes 4 times as much time as B or 5 times as much time as C to finish a piece of work. Working together, they can finish the work in 4 days. B can do the work alone in:

Aहं र्य ल्ह य ग्रिहय हि झहिय ल्ह्हर हे Bहं हक्ह?अहै ˆ सय हगा Cहं हक्ह?अहै ˆ सय र्ह र गह 5 चहिड़क्हा य र्ह शिहिय रि हय ल्ह- डा ंह 2 ह 0हं तअहर हय रि र्ह र फिह्हय र्ल य च्हड़ीह्म Bहै य 5 - ˆ य च्हअं तअहर हय रि हे झहिय र्ल य चहिडच्च

SSC CGL 01/12/2022 (Shift- 03)

(a) 10 days (b) 15 days
(c) 12 days (d) 20 days

5. 6 men and 8 women can do a piece of work in 10 days, whereas 26 men and 48 women can do the same work in 2 days. What will be the time taken by 15 men and 20 women to do the same work?

प्हे ; त्रहै क्हि ०हर ˆ ड5 ि हा य हय रि हय हिएबहं तअहिर हय ल ˆ य च्हड़ीह्म ˆ य हव प्हे ; त्रहै क्हि 0०हर ˆ ड5 ि हि र्म ल्ह य रि य हिवहं तअहिर हय र्ल य च्हड़ीह्म र्म ल्ह य रि हय हिय ल्ह्हय हं 5 । एक्हे ; त्रहिै क्हि वबहर ˆ ड5 ि हिय हिं य च्हअहिं र गह 5 ??कि

SSC CGL 01/12/2022 (Shift- 04)

(a) 6 days (b) 10 days
(c) 4 days (d) 8 days

6. If 6 women can complete a work in 3 days, and 9 girls can complete the same work in 2 days, then find the time taken to complete the same work by 8 women and 6 girls?

गं तह प्हर ˆ ड5 ि हं र्य ल्ह य ग्रिहय हि 3हं तअहिर हे झहिय र्ल य च्हड़ीह्म क्हि 6ह 5 । ंक्ष्य गह्हि र्म ल्ह य ग्रिहय हि वहं तअहिर हे झहिय ल ˆ य च्हड़ीह्म चहि ०हर ˆ ड5 ि हिै क्हि प्ह 5 । ंक्ष्य गहि 1लिहि र्म य ग्रिहय हि झहिय ल्ह्हर हिं 5 गहि?गहिं र गह ध्चहिय लं ा.

SSC CGL 02/12/2022 (Shift- 01)

(a) 3 days (b) 4 days
(c) 6 days (d) $\frac{9}{7}$ days

7. A takes twice as much time as B and thrice as much time as C to finalise a task. Working together, they can complete the task in 8 days. The time (in days) taken by A, B and C, respectively, to complete the task is:

Aहं र्य ल्हय ग्रिहय हि इहिय ल्ह्हर हेBहं हतां?ॅहै क्रिहCहं - चल्ह ?ॅहिं र गह 5 चहि ड़क्हा य हं शिहिं र 5 य ल्हय ग्रिह य ल्ह्ह डा ॅह2 हव्हं तॅहिर हेय ग्रिहय हि इहिय ल्हं य चहड़ीह्य ग्रिहय हि- ` इहिय ल्ह्हय हं 5 ा हत र जन्हिA, Bहै क्रिहCह1लिहिं 5 गहि?गा ` र गहखं तॅहिर ह्नहध्चिहय लं ा.

SSC CGL 02/12/2022 (Shift- 02)

(a) 42, 21, 14 (b) 60, 30, 20

(c) 54, 27, 18 (d) 48, 24, 16

8. If one man or two women or four boys or five girls can finish a work in 39 days, then how many days will one man, one woman, one boy and one girl together take to finish the same work?

गं तहा य हे ; त्रहि गहि तहिर ं ड5 ा हि गहि उ ल्हि 5 । ह्य ह गहि क्रि 5 । ह्य गहिं र्य ल्हय रि हय हि 36हं तॅहर हे इहिय ल्हं य चहड़ीह्य चहि ा य हे ; त्रहि ा य हर ं ड5 ा हि ा य ह 5 । ह्य हि क्रि ा य ह 5 । ह्य ल ं र 5 य ल्हर्म ल्हय रि हय हिं य चॅहं तॅहर हे इहिय ल्हं?-

SSC CGL 02/12/2022 (Shift- 03)

(a) 40 (b) 10

(c) 30 (d) 20

9. A and B together can do a piece of work in 50 days. If A is 40% less efficient than B, in how many days can A working alone complete 60% of the work?

Aहै क्रिहBहं र 5 य ल्हं र्य ल्हय ग्रिहय हि क्रब्हं तॅहिर हेय ल्हं य चड़ीह्हगं तहA, Bहं ह0ब्ल्ह्य र हय ज्ञ5 हड ह्चहिAहै य 5 हय ग्रि य ल्ह्य ह्प्ब्ल्ह्य ग्रिहय हिं य चॅहं तॅहिर हे इहिय ल्हं य चहिड्द

SSC CGL 02/12/2022 (Shift- 04)

(a) 70 (b) 110

(c) 80 (d) 105

10. Ruchi, Khushi and Teju can do a piece of work in 30, 40 and 60 days respectively. In how many days can Ruchi do the work, if she is assisted by both Khushi and Teju on every third day?

, ं उ ॅह4 ज्रिहै क्रिहच- हा य हय ग्रिहय हि त र जन्हि3ब ॅह0बहै क्रि प्बहं तॅहर हे इहिय ल्हं य चहड़ीह्हगं तह4 ज्रिहै क्रिहच- हतॅहीं डल्हर्च ल्हं तॅह, ं उ हय ल्हं डगिचहिय ल्ह्हडीह्हचहि, ं उ हं य चॅह ं तॅहर हेय ग्रिहे इहिय ल्हं य चहड्द

SSC CGL 03/12/2022 (Shift- 01)

(a) $\frac{550}{12}$ days (b) $\frac{85}{4}$ days

(c) $\frac{71}{2}$ days (d) $\frac{360}{17}$ days

11. A and B can do a certain work in 6 hours, and A, B and C together take 4 hours to do the same. How long will it take for C alone to accomplish the task?

Aहै क्रिहBहा य हं अंज्ञ ल्हय ग्रिहय हि प्ह ग्रीं हर हेय ल्हं य चहड़ीह्ह ` क्रिहA, Bहै क्रिहCहं र 5 य ल्हर्म ल्हय ग्रिहय हि इहिय ल्ह्हर हे0 ग्रीं हय हिं र गह5 चहड़ीह्है य 5 ह Cहय हिय ग्रिहे इहिय ल्ह्हर हे- य चॅहिं र गह5 ??हि

SSC CGL 03/12/2022 (Shift- 02)

(a) 12 hours (b) 4 hours

(c) 2 hours (d) 6 hours

12. 5 men and 8 women can complete a work in 12 days working together, while 3 men and 7 women together can complete the same work in 15 days. In how many days will 11 women complete the same work?

क्हे ; त्रहै क्रिह व्हर ं ड5 ा हि ा य हं शिहिय रि हय ल्ह्ह डा हा य य रि हय हिएव्हं तॅहर हे इहिय ल्हं य चहड़ीह्ह ् य ह3हे ; त्रहि ` क्रिह-हर ं ड5 ा हिं र 5 य ल्हर्म ल्हय रि हय हिएव्हं तॅहर हे इहि य ल्हं य चहड़ीह्हएएहर ं ड5 ा हि ल्हर्म ल्हय रि हय हिं य चॅहं तॅहर हे- ` इहिय ल्हं?ल

SSC CGL 03/12/2022 (Shift- 03)

(a) 12 (b) 8

(c) 6 (d) 16

13. A and B working separately can complete a piece of work in 10 and 16 days, respectively. If they work for a day alternately, with A beginning the work, in how many day(s) will the work be completed?

Aहै क्रिह Bहै 5 ?रै 5 ?हय ग्रिह य ल्ह्ह डा हा य हय ग्रिह य हि- त र जन्हिएबहै क्रिहएप्हं तॅहिर हे इहिय ल्हं य चहड़ीह्हगं तह2- ा य हं तॅहय हं 5 ा ह् ल्रिस् ल्रिहं हय ग्रिहय ल्ह्हडीह्हA ह1लिहिय ग्रि ज8 हय ल्ह्हय हं शिह्हिय ग्रिहं य चॅहं तॅह ं तॅहिर हे इहिडां?हि

SSC CGL 03/12/2022 (Shift- 04)

(a) $10\frac{1}{4}$ (b) $12\frac{1}{4}$

(c) $1\frac{1}{4}$ (d) $\frac{1}{4}$

Maths by Aditya Ranjan sir

14. Numan does $\frac{4}{5}$ half the work as Gagan in time. If together they take 16 days to complete a piece of work, then how long will Gagan take to complete the work?

अ अ ह $\frac{4}{5}$ र्ह र गहर है??अर्ह है सिहिय रि हय ल्यहिड़क्हगं तह2 - ा य र्ह शिहा य हय ग्रिहय हि इहिय ल्ह्हर हिएप्हं तअह5 चहड़ीह्हचा- ??अहय हिर्म हय ग्रिहय हि इहिय ल्ह्हर हिं य चअर्हि र गह5 ??हि

SSC CGL 05/12/2022 (Shift- 01)

(a) 23 days (b) 24 days

(c) 25 days (d) 26 days

15. A contractor decided to complete a work in 80 days and employed 60 men at the beginning and 20 men additionally after 20 days and got the work completed as per schedule. If he had not employed the additional men, how many extra days would he have needed to complete the work (round off to the nearest integer)?

ा य हप्य तलिहअह्व्बहं तअहिर हा य हय रि हे इहिय ल्ह्हय हि ध्द 5 हि ं य गहि लिह ज्ः चिहर हिप्बहे ; त्रीहिय हिं लिह वबहं तअहिय - ृ तिहै ं चंल्द्रचहवबहे ; त्रीहिय हिं आद्रचहं य गहि लिहय रि हय हि- ं र गहय है अं लिहे इहिं य ग्हि गं तहर्म अ है ं चंल्द्रचहे ; त्रीहि- य हिं आगि- चहअड्हिं य गहिडचिह्हिचहिय ग्रिहय हि इहिय ल्ह्हय - ं 5 ा ह र्म ह ं य चअहै ं चंल्द्रचहं तअहि य ल्है 2 जाय चहि डचिल- खं अय ु चर हे ध्रीप्रि हचय हे ध्रीप्रि य चक्र

SSC CGL 05/12/2022 (Shift- 02)

(a) 32 days (b) 20 days

(c) 30 days (d) 26 days

16. 40 men can complete a work in 15 days. Three days after they started working, 20 more men joined them. In how many days the total work will be completed?

0बहै तिर ल्हा य हय रि हय हिएक्हं तअहिर हे इहिय ल्ह्हं य चहड़ीह्हमअय - य रि ह ज8 हय ल्ह्हय ह चल्ह्हं तअह् तिह वबहै लिहै तिर ल्हमअय - ं शिहि ा ह् चिहड़ीह्हगडहे इहिय रि हं य चअहं तअहिर हे इहिड?हि

SSC CGL 05/12/2022 (Shift- 03)

(a) 12 (b) 13

(c) 11 (d) 10

17. There are 3 taps A, B, and C in a tank. These can fill the tank in 10 hours, 20 hours and 25 hours, respectively. At first, all three taps are opened simultaneously. After 2 hours, tap C is closed and A and B keep running. After 4 hours from the beginning, tap B is also closed. The remaining tank is filled by tap A alone. Find the percentage of work done by tap A itself.

ा य हु ध्रा ह र्ह 3 ह अ ऊ ह A, B है लिह C ड़ीह्हगहु ध्रा ह य हि त र जनि एबह ृ ी श्ह वबह ृ ी है लिह वबह ृ ी ह र्ह (लिह्हि य चह ड़ीह्हि ् ं - ` ड5 ह चल्ह्हिअऊ हा य र्ह शिहि 4 ीं 5 ह चिहड़ीह्हवह ृ ी ह य ह् ति% अऊ ह C ह् ंतह डहि चिहि डहै लिह A है लिह B ह उ 5 चह ल्ह्ड चह ड़ीह ` ूलिं हिं ह 0 ह ृ ी ह् तिह अऊ ह B ह (लिह् ंतह डहि चिहि ड़क्ह जन्रि ु ध्रा ह य हि य 5 ह अऊ ह A र्ह ह (लिहि चिहि ड़क्ह अऊ ह A ह)2 गहिय - 1 लिहिं य ा ह?ा ह य ग्रिहय हि ् चजचिह्ध चिहय लं ा ्

SSC CGL 05/12/2022 (Shift- 04)

(a) 32% (b) 75%

(c) 52% (d) 72%

18. A, B and C can do a piece of work in 11 days, 20 days and 55 days respectively. If B works daily and is supported by A and C on alternate days beginning with A, then in how many days will the work be finished?

A, B है लिह C हा य हय रि हत र जन्हि एएह तअह्व्बहं तअहै लि वक्हं तअह र्ह है इहिय ल्ह्ह य चहड़ीह्हगं तह B हे ् चंत अह य ग्रिहय ल्ह्य डहै लिह A र्ह ह जऊ 8 हय ल्ह्ह डा हा य चिल्ह्हं तअहिर हे र्म य ल्ह A ं लिह C ह 1 लिहिं डगिचहिय ल्ह चिह्ह डक्ह चहिय रि हं य चअहं तअहीं र्ह ं र फिह्ह डहि ा ?हि

SSC CGL 06/12/2022 (Shift- 01)

(a) 10 (b) $9\frac{1}{3}$

(c) 12 (d) 8

19. A group of men decided to do a job in 6 days, but 18 men dropped out every day. If the job was completed in 8 days, then how many men initially decided to do the job.

` ; त्रीहिय हा य र्ह र ड्ड ह अह प्ह तअहिर हा य ह य रि ह य ल्ह्ह य हि ` ध्द 5 हिं य ग्ह्हि 5 ं य अह डल्ह तअह एव्ह . गं द्रचह य रि ह द्धी ह्ल ?ा ् हगं तह य रि ह व्हं तअहिर हे इहिं य ग हि चिहि डक्ह चहि ् ूलिं रि हिं य चअहे ; त्रीहिअह य रि ह य ल्ह्ह य हिं अय्र गिहं 5 ग हिर्शहि

SSC CGL 06/12/2022 (Shift- 02)

(a) 300 (b) 252

(c) 188 (d) 150

Maths by Aditya Ranjan Sir

20. A and B can complete a piece of work in 10 and 16 days respectively. A begins to do the work and they work alternatively one at a time for one day each. The whole work will be completed in :

Aहै ि B हा य हय ग्रिहय हि त र जन्हि एबहै ि हि एप्हं त अहिर री र फिहय र्ल्हं य च्हड़ीह्र A हय ग्रिहय ल्अहि ज 8 हय ल्च्हि डहै ि ि 2 हा य सा य हं त अहा य चिल्ह 8 हं हा य सा य हय ल्ग्र हय रि य ल्च्हड़ीह्रे इहिय ग्रिहं य च अहं त अहिर हिं र फिहडहि ि ?ि

SSC CGL 06/12/2022 (Shift- 03)

(a) $12\frac{1}{4}$ days (b) $13\frac{1}{4}$ days

(c) $15\frac{1}{4}$ days (d) $14\frac{1}{4}$ days

21. 1 man and 4 women can complete a work in $\frac{65}{4}$ days, while 3 men and 4 women can complete it in $\frac{13}{2}$ days. In who many days will be 13 women compelete the same.

1हे ; त्रहै ि हि 0 हर ं ड 5 ि हा य हय ग्रिहय हि $\frac{65}{4}$ हं त अहर हिं इ य र्ल्हं य च्हड़ीह्र ् य ह 3 हे ; त्रहै ि हि 0 हर ं ड 5 ि हिं ढ ह $\frac{13}{2}$ त अहर हिं इहिय र्ल्हं य च्हड़ीह्र ए 3 हर ं ड 5 ि हिं ढ हं य च अहं त अहर री ` इहिय ल्ही ल

SSC CGL 06/12/2022 (Shift- 04)

(a) 20 (b) 16

(c) 14 (d) 18

22. 25 men and 45 women can complete a piece of work in 15 days, while 15 men and 60 women can complete it in 20 days. In how many days can 69 men and 67 women complete the work?

वव्हे ; त्रहै ि हि 0 व्हर ं ड 5 ि हा य हय ग्रिहय हि एव्हं त अहिर री ` इहिय र्ल्हं य च्हड़ीह्र ् य ह एव्हे ; त्रहै ि हि प बहर ं ड 5 ि हिं ढ - वबहं त अहिर हिं इहिय र्ल्हं य च्हड़ीह्र प 6 हे ; त्रहै ि हि प्- हर ं ड 5 ि ि र्म हय ग्रिहय हिं य च अहं त अहिर हिं इहिय र्ल्हं य च्हड़ीह्र

SSC CGL 07/12/2022 (Shift- 01)

(a) 10 (b) 5

(c) 8 (d) 6

23. A civil contractor planned to build an over bridge of 3 km distance in 600 days. For this purpose, he employed 90 workers. After 200 days of work, it was observed that only 0.5 km of the bridge was completed. What is the number of extra workers required to complete the work in time?

ा य हं ं 25 ह ष्य त ल्हि अह प बबहं त अहिर हि 3 हं य र ल्हय ल्ह त इ य हिा य है ि 2 ल्हं ् ू ह् अ अिहय ल्ह गा- अहि अ ढ़ि हर्ढ ह मरुजा य हं 5 ा % हर्म अह 6 बहप्र ं र य हिय हिं आ द्वच्हं य ग ि हवबबहं त अहीं य हय रि हय ह् ति % ह गड हत 4 हिं ?ि गहिं य हे 5 हय हिय 25 ह बफ्क ं य र ल्ह (ि ?ि हडल्हे इहिडः हिर्शि हिय ग्रिहय र्हिं र गहे ल्हे इहिय ल्अ य हं 5 ा हं य च अहै ं चं ल्द्व च्हय र उ ि लाहिय ल्है ि 2 जाय च हिड्द

SSC CGL 07/12/2022 (Shift- 03)

(a) 100 (b) 140

(c) 125 (d) 135

24. 12 men and 12 women can complete a piece of work in 9 days. 6 men and 15 women can complete the same work in 12 days. How long (in days) would it take 9 women to complete half the work?

एव्हे ; त्रहै ि हि एव्हर ं ड 5 ि ह्र ं र्य ल्हय रि हय हि 6 हं त अहर हिं इ य र्ल्हं य च्हड़ीह्र प हे ; त्रहै ि हि एव्हर ं ड 5 ि ह्र र्म ल्हय रि हय ि- एव्हं त अहर हिं इहिय र्ल्हं य च्हड़ीह्रे सि हिय रि हे इहिय ल्अहर हि 6 र ं ड 5 ि हिय हिं य च अहिं र गहखं त अहिर हि ह 5 ? ? ?ि

SSC CGL 07/12/2022 (Shift- 04)

(a) 36 (b) 12

(c) 18 (d) 24

25. Ten men begin to do a work. But after some days, four of them left the job. As a result, the job that could have been completed in 40 days is completed in 50 days. How many days after the commencement of the work did the four men leave?

र्त है ि तिर ल्हा य हय ग्रिहय ल्अहि ज 8 हय ल्च्हड़ीह्र 5 ं -य अ हय द्व ं त अहि ् ति ह म अ र्हिं ह उ ल्हि य ग्रिह द्व ि- ह्र य ल्ह उ 5 ह च्हि ड़ीह्र र्ढ य हे ं ल्धारि) 28 ` % ह हिय ग्रिह 0 बहं त अहिर हिं इहिडहिं य च्हि र्शि % ह 2 ड ह क्बहं त अहिर हिं इहिडः ि हिय ग्रिह ज 8 ह ड अ हय हं य च अ- ं त अहि ् ति ह उ ल्हिं ै ति र ल्हय ग्रिह द्व ि- ह्र ल्ह ?ा ह श्ि

SSC CGL 08/12/2022 (Shift- 01)

(a) 30 (b) 20

(c) 35 (d) 25

Maths by Aditya Ranjan sir

26. In a factory, Ajay and Vijay work on the same machine to cut diamonds but on alternate hour basis. Ajay works for the first hour and then Vijay works for the second hour and so on. Ajay can complete the work in 6 hours, while Vijay completes it in 16 hours if they work individually. In how much time can they complete the work if they are using the machine on alternate basis?

ा य ह य ल्ि ा ि ऑ ह र ह ै गहै क्ि ह ं 2 गह ड ल्ह य ु ि ऑ ह य ह ं 5 ा ा य ह ड ल्ह र ज ल्ि ह े ल्ह य र ि ह य ल्ख ह ड ी ह 5 ं -य ऑ ह् ल्ि स् ल्ि ह ं - ग ु ी ह य ह ै स ि ल्ि ह े ल् ह ै गहे ड 5 ह ग ु ी ह य ह ं 5 ा ह य र ि ह य ल्ख ा ि ड ह ै क्ि ह ै ध्क ह ं 2 गह र त ड् ल्ह ग ु ी ह य ह ं 5 ा ह य र ि ह य ल्ख ह ि ड ह ै क्ि ा ि ढ ल्ह च ल्ड ह ै ि ? ह य र ि ह य ल्ख ह ड ी ह ै गह य र ि ह य ह ि प ् ह ग ु ी ह र ी ` ह ि ह य ल्ह ं य च ह ि ड ह ् ह ् ं य ह ं 2 गह र म ह ए प ् ह ग ु ी ह र ह े ह ि ह य ल्ख ह ि ड ह ै ? ल्ह 2 ह ै 5 ? ै 5 ? ह य र ि ह य ल्ख ह ड ी ह ् ह ग ं त ह 2 - ् ल्ि स् ल्ि ह ै स ि ल्ि ह े ल्ह र ज ल्ि ह य ह ि म े ग ि ? ह य ल्ह ल्ड ह ड ी ह ् ह च ह ि 2 - य ग्र ह य ह ि ं य च ऑ ह ् र ग ह र ह े ह ि ह य ल्ह ं य ह ड ी ह

SSC CGL 08/12/2022 (Shift- 02)

(a) 8 hours 30 min

(b) 8 hours

(c) 9 hours

(d) 9 hours 30 min

27. Raju, Sunil and Vishal can separately finish a work in 20, 30 and 40 days, respectively. In how many days Raju can finish the work, if he is assisted by Sunil and Vishal on alternate days, starting with Sunil?

ल ् ह ् ऑ ऽ ह ै क्ि ह ं 2 ज ् ि 5 ह ै 5 ? ै 5 ? ह ा य ह य र ि ह य ह ि त र ज न ि व ब ध ् ह 3 ब ह ै क्ि ह 0 ब ह ं त ऑ ह र ह े ह ि ह य ल्ह ं य च ह ड ी ह ् ह ल ् ह ं य च ऑ ह ं त ऑ ह र ह ि ग ड ह य र ि ह 4 ठ ि ह य ल्ह ं य च ह ि ड ह ् ह ग ं त ह ् ह ऑ ऽ ह ् ह - ज ् ि 8 ह य ल्ख ह ड ा ध ् ह ऑ ऽ ह ै क्ि ह ं 2 ज ् ि 5 ह 1 ल ि ह ा य ख ि ल्ह ं त ऑ ह र ी ख े ड 5 ह ं त ऑ ह ऑ ऽ ह ै क्ि ह त ड् ल्ह ं त ऑ ह ं 2 ज ् ि 5 ज ् ह ह म ल्ह ं य ल्ह ड ग ि च ह ि य ल्ह ख ि ह ड ध

SSC CGL 08/12/2022 (Shift- 03)

(a) $12\frac{3}{5}$

(b) $12\frac{1}{20}$

(c) $11\frac{1}{20}$

(d) $11\frac{3}{5}$

28. A and B can complete a piece of work in 13 and 17 days respectively. A begins to do the work, and they work alternatively one at a time for one day each. The whole work will be completed in:

Aह ै क्ि ह B ह ा य ह य र ि ह य ह ि त र ज न ् ह ि ए 3 ह ै क्ि ह ए - ह ं त ऑ ह र ह े ह ् ह ि य ल्ह ं य च ह ड ी ह ् ह A ह य र ि ह य ल्ख ह ि ज 8 ह य ल्ख ह ि ड ह ् ह ै क्ि ह 2 ह ् ह ् ल्ि स् ल्ि ह ं ह ा य स ा य ह ं त ऑ ह य ल्ख ह य ग्र ह य ल्ख ह ड ी ह ् ह ं क ् ह ् ह ि य र ि ह ं य च ऑ ह ं त ऑ ह र ह े ह ् ह ि ह ि ड ? ि

SSC CGL 08/12/2022 (Shift- 04)

(a) $17\frac{11}{17}$ days

(b) $17\frac{17}{19}$ days

(c) $14\frac{11}{17}$ days

(d) $11\frac{11}{17}$ days

29. Anshu, Swati and Rajni can finish a work in 4 days if they work together. However, Anshu alone will take 9 days to complete the work, and Swati alone will complete the work in 12 days. How many days will Rajni alone take to complete the work?

ै ज ् ह ि) 2 ि च ् ह ै क्ि ह ल ऑ ह ा य ह ं ि ह य र ि ह य ल्ख ह ड ा ह ं य ं ल य र ि ह य ह ि 0 ह ं त ऑ ह र ह े ह ् ह ि य ल्ह ं य च ह ड ी ह ् ह ड 5 क्ि य ह ै ज ् ह ि य ि - ै य 5 ह य र ि ह य ह ि ह ् ह ि य ल्ख ह र ह 6 ह ं त ऑ ह य ह ि ं र ग ह 5 ? ? ि % ै क्ि ह) 2 ि च ् ह ै य 5 ह ढ ध ह य र ि ह य ह ि ए व ह ं त ऑ ह र ह े ह ् ह ि य ल 5 ? ल ् ह ल ऑ ह य ह ि य 5 ह य र ि ह य ह ि ह ् ह ि य ल्ख ह र ह ं य च ऑ ह ं त ऑ य ह ि ं र ग ह 5 ? ? ि

SSC CGL 09/12/2022 (Shift- 01)

(a) 18

(b) 12

(c) 24

(d) 16

30. 20 men can finish a work in 220 days, but at the end of 90 days, 20 additional men are employed. In how many more days will the work be completed?

व ब ह े ; त ्र ह ा य ह य ग्र ह य ह ि व व ब ह ं त ऑ ह र ह ै ं र फ ि ह य ल्ह ं य च ड ी ह ् ह 5 ं -य ऑ ह 6 ब ह ं त ऑ ह े ह ् ह ह ड ऑ ह े ल्ह व ब ह ै क्ि ह े ; त ्र ह ं ऑ ग ि - च ं य ा ह च ् ह ि ड ी ह ् ह य ग्र ह य ह ि ं र फ ि ह ड ऑ ह र ह ै क्ि ह ं य च ऑ ह ं त ऑ 5 ? ि ?

SSC CGL 09/12/2022 (Shift- 02)

(a) 50

(b) 60

(c) 65

(d) 55

Maths by Aditya Ranjan sir

31. Abha and Anuj working together completed a job in $\frac{40}{9}$ days. If Abha had worked twice as efficiently as she actually did and Anuj had worked $\frac{1}{3}$ of his actual efficiency, then the work would have been completed in $\frac{60}{17}$ days. Find the time Abha would take to complete the work alone.

" ि(िहि क्रिहै अ हा य र्ह शिहिं र 5 य ल्हय ग्रिहय ल्ह्हडा हं यं ल्

य रि हय हि $\frac{40}{9}$ हं तअहर्रहे झहिय ल्ह्हड़ीह्हगं तहै ि(िहिअहै ` अ

2 ि)घं 2 य ह तँ चिहिं ह तर्?अह तँ चिहिं ह य ग्रिह ं य गहि डचिचि

" क्रिहै अ ह अहै ` अह 2 ि)घं 2 य ह तँ चिहिय ह $\frac{1}{3}$ र्ह ह य ग्रि

ं य गहि डचिश्हिचहिय रि ह $\frac{60}{17}$ हं तअहर्रहे झहिडहि चि्हि है ि(ि

1लिहि य 5 हय रि हय हि झहिय ल्ह्हर्रहिं 5 गहि?गर्हि र गहध्चिहिय ल्ले

SSC CGL 09/12/2022 (Shift- 03)

(a) 10 days (b) 8 days
(c) 12 days (d) 6 days

32. Two persons P and Q can do a job together in 36 days. P is 3 times as efficient as Q. In how many days can Q alone complete the work?

तहि.गं द्वच्हP है क्रिहQ हा य र्ह शिहिं र्यं ल्हय ग्रिहय हि 3प्हं तअी

र हिय ल्र्ह य च्हड़ीह्हP, Qर्ह ह 3ह?अहिय ज्र5 हड़क्हQ है य 5 -

र्म ह य ग्रिहय हिं य च्अहं तअहिर्रहे झहिय ल्र्ह य चहिड्द

SSC CGL 09/12/2022 (Shift- 04)

(a) 148 (b) 140
(c) 144 (d) 146

33. A, B and C can separately do a work in 6, 10 and 15 days respectively. They started to work together but C left after 2 days. In how many days will the remaining work be finished?

A, B है क्रिहC" 5 ?सै 5 ?हा य ह य रि हय हि त र जन्हिप्%हएब

" क्रिहएक्हं तअहिर्रहय ल्र्ह य च्हड़ीह्ह2 हा य र्ह शिहिय रि हय ल्र्ह

जि8 हय ल्ह्हड़ीह्ह5 ं-य अहC, 2हं तअहिय हृ तिहय रि हद्धी ह्ह तचि

ड़क्हजन्रिहिय ग्रिहं य च्अहं तअहिर्रहे झहिडि?कि

SSC CGL 09/12/2022 (Shift- 04)

(a) $1\frac{2}{4}$ (b) $1\frac{1}{4}$

(c) $1\frac{5}{8}$ (d) $2\frac{7}{4}$

34. If Anju is 30% more efficient than Bitt, then how much time will they take, working together, to complete a job which Anju alone could have done in 23 days?

गं तहै ी ह्ह्ं ु र्ह ह 3बम्है ` सय ह तँ हिड्ह्हचहिा य र्ह शिहिय रि

य ल्ह्हड़ा %ह 2 ह र्म ह य ग्रिहय हि झहिय ल्ह्हर्रहिं य च्अर्हि र ग

5?%हं ` है ी है य 5 ह व 3हं तअहिर्रहे झहिय ल्र्ह य च्हशलि

SSC CGL 12/12/2022 (Shift- 01)

(a) 13 days (b) $20\frac{3}{17}$ days

(c) 15 days (d) 11 days

35. A machine takes 10 h to cut 240 tools. How many tools will it cut in 25 h?

ा य ह र जत्अहव0बहै दि लिहिय हिय ु अहर्रहएबहर्ु ी ह य र्हि र ग

5 च्हड़क्हवक्हर्ु ी ह र्रहिगडहं य च्अहै दि लिहिय हिय ु ?ल

SSC CGL 12/12/2022 (Shift- 01)

(a) 600 (b) 480
(c) 550 (d) 360

36. Raju, Shobh and Mohan can do a work in 15 days, 20 days and 25 days respectively. In how many days,will the work be finished, if they do it on alternate days?

ल्र झ्ह जीं(िहि क्रिह र डिअहा य ह य रि हय हि त र जन्हिएक्हं तअी%

वबहं तअहिै क्रिह वक्हं तअहिर्रहे झहिय ल्र्ह य च्हड़ीह्हगं तह 2 -

2 य ं ` य ह ं तअहिख य ह ं तअह द्धी ह्य ल्हा य ह ं तअह र्रहिय रि

य ल्ह्हड़ीह्हचहिय रि हं य च्अहं तअहिर्रहे झहिडहि ी ?कि

SSC CGL 12/12/2022 (Shift- 02)

(a) $15\frac{9}{10}$ days (b) $18\frac{7}{10}$ days

(c) $21\frac{7}{10}$ days (d) $18\frac{9}{10}$ days

37. A is 40% more efficient than B. How much time will both, working together, take to finish the work, which B alone can finish in 36 days?

A, B र्ह ह 0बम्है ` सय ह य ज्र5 हड़क्हतअिहिं र 5 य ल्हय ग्रिहय ल्ह्

डा ह र्म ह य ग्रिहय हि झहिय ल्ह्हर्रहिं य च्अर्हि र ग ह 5?%हं ` -

B है य 5 हि 3प्हं तअहिर्रहे झहिय ल्र्ह य चहिड्द

SSC CGL 12/12/2022 (Shift- 03)

(a) 18 days (b) $9\frac{1}{3}$ days

(c) 15 days (d) $11\frac{2}{3}$ days

Maths by Aditya Ranjan sir

38. Aarif, Arun and Abraham can do a work in 12, 20 and 24 days, respectively. They all begin together. Aarif leaves the work 1 day, Arun 3 days and Abraham 4 days before its completion. In how many days is the work finished?

SSC CGL 12/12/2022 (Shift- 04)

(a) 8 (b) 10
(c) 11 (d) 9

39. A is 20% more efficient than B. How much time will they working together take to complete a job which A alone could have done in 29 days?

SSC CGL 13/12/2022 (Shift- 01)

(a) $\frac{145}{11}$ (b) $\frac{116}{11}$
(c) $\frac{203}{11}$ (d) $\frac{174}{11}$

40. A, B and C can all together do a piece of work in 10 days, in which B takes 3 times as long as A and C together to do the work. In how many days can B alone do the work?

SSC CGL 13/12/2022 (Shift- 02)

(a) 50 days (b) 40 days
(c) 10 days (d) 15 days

41. Two persons A and B working separately can sanitise a building in 6 and 10 hours, respectively. They work in stretches of one hour alternately. If A begins at 8 a.m., then when will the work be finished?

SSC CGL 13/12/2022 (Shift- 03)

(a) $9\frac{1}{3}$ hours (b) $7\frac{1}{3}$ hours
(c) $6\frac{1}{3}$ hours (d) $8\frac{1}{3}$ hours

42. Pawan can do a piece of work in 32 days. He worked for 8 days and left the work. Thereafter Sandeep finished the remaining work in 27 days. In how many days can Pawan and Sandeep together do the whole work?

SSC CGL 13/12/2022 (Shift- 04)

(a) $16\frac{16}{17}$ days (b) $16\frac{13}{17}$ days
(c) $16\frac{15}{17}$ days (d) $16\frac{14}{17}$ days

43. There are three taps of diameter 2 cm, 3 cm and 4 cm, respectively. The ratio of the water flowing through them is equal to the ratio of the square of their diameters. The biggest tap can fill an empty tank alone in 81 min. If all the taps are opened simultaneously, then how long will the tank take (in min) to be filled?

SSC CGL TIER - II 02/03/2023

(a) $34\frac{20}{29}$ (b) $60\frac{20}{29}$
(c) $54\frac{20}{29}$ (d) $44\frac{20}{29}$

44. There are two inlets A and B connected to a tank. A and B can fill the tank in 32 h and 28 h, respectively. If both the pipes are opened alternately for 1 h, starting with A, then in how much time (in hours, to nearest integer) will the tank be filled?

SSC CGL TIER- II 03/03/2023

Aditya Ranjan Maths by sir

(a) 22 (b) 30

(c) 36 (d) 24

45. A and B together can complete a piece of work in 48 days. A is 4 times as efficient as B. In how many days B alone can complete the work?

A ै लिहB हं र 5 य ल्हा य हय ग्रिहय हि0०हं तअहर्रहै इहिय र्ल्ह य च-ड़ीह्र A, B ह य हि 0ह ?अहि य ग्रिय ज्ञ5 ह ड़्क B है य 5 ह य ग्रिह य ि- ं य च अहं तअहर्रहै इहिय र्ल्ह य चहिड्द

SSC CGL TIER- II 06/03/2023

(a) 220 Day (b) 240 Day

(c) 120 Day (d) 320 Day

46. P, Q and R can finish a work in 5 days, 10 days, and 15 days, respectively, working alone. P and Q works on first day, P and R works on second day and P and Q works on third day and son on till the work is completed. In how many days the work will be completed?

P, Q है लिहR है य 5 ह य ग्रिहय ल्ह डा हं र्य ल्ह य ग्रिहय हि त र जनि क्हं तअहएबहं तअहै लिहएक्हं तअहर्रहै इहिय र्ल्ह य च्ह ड़ीह्र P है लि Q हे ड5 हं तअहय ग्रिहय ल्ह डीह्र P है लिहR हर्तइ ल्हं तअहय ग्रिहय ल्ह-डीह च्र्शहिP है लिहQ हर्च्र ल्हं तअहय ग्रिहय ल्ह डीह च्र्शहिर्ढ ल्ह त र हर्री-य ग्रिहय ल्ह डीह ् ह च्य ह य ग्रिहे इहिअडतेह डहि चि् हिय ग्रिहं य च अ-ं तअहर्रहै इहिडि? हि

SSC CGL TIER- II 07/03/2023

(a) $\frac{13}{2}$ (b) $\frac{9}{2}$

(c) $\frac{7}{2}$ (d) $\frac{5}{2}$

47. Working for 10 hours per day, 6 men can build a wall in a certain number of days. By working for how many hours/minutes per day can 12 men build the wall in the same days?

9 ं च्हं तअह एबह र्गी ह य रि ह य ल्ह ह डा ्ह प्ह. गं द्वच्हा य हं अंज्ञ च ं र गहर्रहा य ह तल्ल लि् अर्हि य च्ह ड़ीह्र एव्ह. गं द्वच्ह 9 ं च्हं तअहं य च अ-र्गी ह ं र अु ह य रि ह य ल्ह ह म च अह ड्ल्ह र गहर्रहै तल्ल लि य हिं अ्र्धि य र्ल्ह य च्ह डीह्र

SSC CGL TIER- II 07/03/2023

(a) 7 hours 30 minutes/ ्हर्गी ह अबहं र अु

(b) 5 hours/ व्हर्गी -

(c) 20 hours/ वबहर्गी -

(d) 10 hours/ एबहर्गी -

ANSWER KEY

1.(b)	2.(a)	3.(b)	4.(a)	5.(c)	6.(d)	7.(d)	8.(d)	9.(c)	10.(b)
11.(a)	12.(a)	13.(b)	14.(d)	15.(b)	16.(c)	17.(d)	18.(b)	19.(b)	20.(a)
21.(a)	22.(d)	23.(d)	24.(c)	25.(d)	26.(a)	27.(a)	28.(c)	29.(a)	30.(c)
31.(b)	32.(c)	33.(b)	34.(a)	35.(a)	36.(d)	37.(c)	38.(a)	39.(d)	40.(b)
41.(b)	42.(a)	41.(d)	42.(a)	43.(d)	44.(b)	45.(b)	46.(c)	47.(b)	

Maths by Aditya Ranjan sir

SOLUTIONS

1. (b)

P – 15 (2)
Q – 10 (3) } 30

A.T.Q.
2(P + Q) + xP = 30
2(5) + 2x = 30
2x = 20
x = 10
⇒ Whole work completed in:-
10 + 2 = 12 days

2. (a)

A – 10 (4)
B – 20 (2)
C – 40 (1) } 40 units

(A,A, A + B + C) → Working fashion
3 days → 4 + 4 + 7 = 15 units
6 days → 30 units
7 days by A → 34 units
8 days by A → 38 units

9 days by (A + B + C) → $\frac{2}{7}$

⇒ 38 + 2 = 40 units

Total days = $8\frac{2}{7}$ days.

3. (b)

$$\frac{M_1 \times D_1 \times H}{W_1} = \frac{M_2 \times D_2 \times H^2}{W_2}$$

⇒ 450 × 20 = x × 30
⇒ x = 300

4. (a)

		A	B	C
days	→	20	5	4
efficiency	→	1	4	5

Let total work = 10 × 4 = 40 units

B ⇒ $\frac{40}{4}$ = 10 days.

5. (c)
Given,
6M + 8W ⇒ 10 days
⇒ 3M + 4W → 20 days
⇒ 15M + 20W → 4 days

6. (d)
6W → 3 days ⇒ 1W → 18 days
9G → 2 days ⇒ 1G → 18 days

W 18 (1)
G 18 (1) } 18 units

8W + 6G = $\frac{18}{8+6} = \frac{18}{14} = \frac{9}{7}$

7. (d)

	A	B	C
Time	6	3	2
Efficiency	1	2	3

Total work = 8 × 6 = 48 units

A → $\frac{48}{1}$ = 48 days

B → $\frac{48}{2}$ = 24 days

C → $\frac{48}{3}$ = 16 days

'or'
Directly check from option ratio of time should be
(6 : 3 : 2)

8. (d)
1M + 2W = 4B = 5G = 39 days

1M = 39
1W = 39 × 2
1B = 39 × 4
1G = 39 × 5 } 39 × 20

⇒ 1M + 1W + 1B + 1G = $\frac{39 \times 20}{20+10+5+4}$
= 20 days

9. (c)
A + B → 50
A B
3 5
Total work = 8 × 50 = 400 units

60% work by A = $\frac{3}{5} \times \frac{400}{3}$
= 80 days

Maths by Aditya Ranjan sir

10. (b)

R → 30 (4)
K → 40 (3)
T → 60 (2)
} 40 units

Working fashion → R, R, R + K + T
3 days → 4 + 4 + 9 = 17 units
21 days → 119 units

22 days by R → $\frac{1}{4}^{th}$ days → 120 units

⇒ Total time = $21\frac{1}{4}$ days

= $\frac{85}{4}$ days

11. (a)

A + B → 6 (2)
A + B + C → 4 (3)
} 12 units

C → (1)

∴ C will take = $\frac{12}{1}$ = 12 hours

12. (a)

5M + 8W → 12 days
3M + 7W → 15 days
12(5M + 8W) = 15(3M + 7W)
20M + 32W = 15M + 35W
5M = 3W

$\frac{M}{W} = \frac{3}{5}$

⇒ Total work = 12(15 + 40)
= 660 units

⇒ 11 women → $\frac{660}{11 \times 5}$]
→ 12 days

13. (b)

A → 10 (8)
B → 16 (5)
} 80 units

Working fashion = (A, B, A, B...)
2 days → 13 units
12 days → 78 units

13th days by A → $\frac{1}{4}$ days → 80 units

∴ Total time = $12\frac{1}{4}$ days

14. (d)

	Naman		Gagan
→ Work	$\frac{1}{2}$		1
	1	:	2
→ Time	4	:	5
→ Efficiency	$\frac{1}{4}$		$\frac{2}{5}$
	5	:	8

Total work = 16 × 13

Gagan = $\frac{16 \times 13}{8}$ = 26 days

15. (b)

60 Men → 20 days
80 Men → 60 days
⇒ (60 × 20) + (80 × 60) = Total work

⇒ Required days = $\frac{6000}{60}$ = 100 days

⇒ 20 Additional days

16. (c)

(40 × 15) = Total work
A.T.Q.
(40 × 3) + (60 × x) = (40 × 15)
60x = 600 – 120
60x = 480
x = 8
⇒ Total days = 8 + 3 = 11 days

17. (d)

A – 10 (10)
B – 20 (5)
C – 25 (4)
} 100 units

A.T.Q.
2 × (A + B + C) + 2(A + B) + xA = 100
⇒ 38 + 30 + xA = 100
xA = 100 – 68 = 32

$x = \frac{32}{10} = \frac{16}{5}$ days.

Work → (2 × 10) + (2 ×10) + $\frac{16}{5} \times 10$

⇒ 40 + 32 = 72

Required% = $\frac{72}{100} \times 100$ = 72%

'or'
C = 4 × 2 = 8
B = 5 × 4 ⇒ 20
100 – 28 = 72

$\frac{72}{100} \times 100$ = 72%

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18. (b)

A → 11 (20)
B → 20 (11)
C → 55 (4)
(55 × 4) units
⇒ 220 units

working fashion → (A = B , C + B)
2 days → 31 + 15 = 46 units
8 days → 184 units
9 days → 184 + 31 = 215

10 days → $\frac{1}{3}^{rd}$ days → 220 units

Total time = $9\frac{1}{3}$ dasy

19. (b)
Let there be 'x' men initial with efficiency '1' of each man.
⇒ First day → x × 1 units
II day → (x – 18) units
VIII day → (x – 126) units
also, total work = 6x
⇒ x + (x – 18) +....+ (x – 126) = 6x
⇒ 8x – 18 – 36-------126 = 6x
⇒ 8x – 18(1 + 2 +....+ 7) = 6x
⇒ 8x – 18 × 7 × 4 = 6x
⇒ 2x = 18 × 28
⇒ x = 252.

20. (a)

A → 10 (8)
B → 16 (5)
80 units

Working fashion → (A, B, A, B,....)
2 days → 13 units
12 days → 78 units

13 days → $\frac{1}{4}$ days → 80 units

⇒ Total time = $12\frac{1}{4}$ days

21. (a)

1M + 4W = $\frac{65}{4}$ days

3M + 4W = $\frac{13}{2}$ days

$\frac{65}{4}(1M+4W)=\frac{13}{2}(3M+4W)$

⇒ 5M + 20W = 6M + 8W
12W = M

$\frac{W}{M}=\frac{1}{12}$

Total work = $\frac{13}{2}[36+4]$
= 260 units

⇒ 13 women → $\frac{260}{13\times1}$ = 20 days

22. (d)
25M + 45W → 15 days
⇒ 5M + 9W → 75 days
15 M + 60W → 20 days
⇒ 1M + 4W → 300 days
⇒ 300(1M + 4W) = 75(5M + 9W)
⇒ 4M + 16W = 5M + 9W
⇒ 7W = M

$\frac{W}{M}=\frac{1}{7}$

Total work = 300 × (7 + 4)
= 3300 units

⇒ 69 man + 67 women = $\frac{3300}{69\times7+67}$
= 6 days

23. (d)

$\frac{M_1\times D_1\times H_1}{W_1}=\frac{M_2\times D_2\times H_2}{W_2}$

⇒ $\frac{90\times200}{1/6}=\frac{M_2\times400}{5/6}$

⇒ M_2 = 225
⇒ Extra people = 225 – 90
= 135

24. (c)
12M + 12W → 9 days
1M + 1W → 108 days
also, 6M + 15W → 12
2M + 5W → 36 days
⇒ 108 (1M + 1W) = 36(2M + 5W)
3M + 3W = 2M + 5W
M = 2W

$\frac{M}{W}=\frac{2}{1}$

Total work = 36 (4 + 5)
= 36 × 9 = 324

9 Women → $\frac{162}{9}$ = 18 days

Maths by Aditya Ranjan sir

25. (d)

Let 4 men leave after x days.

A.T.Q.

$10x + 6(50 - x) = 40 \times 10$

$\Rightarrow 10x + 300 - 6x = 400$

$\Rightarrow x = 25$ days

26. (a)

A → 6 (8)
V → 16 (3)
} 48 units

Working fashion → (A, V, A, V....)

2 hours → 11 units

8 hours → 44 units

9 hours → $\frac{1}{2}$ hours → 48 units

⇒ Total time = $8\frac{1}{2}$ hours

27. (a)

R –20 (6)
S – 30 (4)
V – 40 (3)
} 120 units

Working fashion → (R + S, R + V)

2 days → 10 + 9 = 19 units

12 days → 114 units

13 days → $\frac{6}{10}$ days → 120 units

Total time $12\frac{3}{5}$ days

28. (c)

A → 13 (17)
B → 17 (13)
} 13 × 17 = 221 units

Working fashion → (A, B, A, B,....)

2 days → 30 units

14 days → 210 units

15 days → $\frac{11}{17}$ day → 221 units

Total time ⇒ $14\frac{11}{17}$ days

29. (a)

A + S + R → 4 (9)
A → 9 (4)
S → 12 (3)
} 36
R → (2)

⇒ Rajani will complete the work in

$\frac{36}{2} = 18$ days.

30. (c)

20 Men → 220 days

A.T.Q.

$(20 \times 90) + (40 \times x) = 220 \times 20$

$40x = 4400 - 1800$

$40x = 2600$

$x = 65$

31. (b)

Ab + An → $\frac{40}{9}$

2Ab + $\frac{1}{3}$ An → $\frac{60}{17}$

$\Rightarrow \frac{40}{9}(Ab + An) = \frac{60}{17}\left(2Ab + \frac{1}{3}An\right)$

$\frac{2}{9}Ab + \frac{2}{9}An = \frac{6}{17}Ab + \frac{1}{17}An$

$\left(\frac{2}{9} - \frac{1}{17}\right)^{An} = \left(\frac{6}{17} - \frac{2}{9}\right)^{Ab}$

25An = 20Ab

$\frac{An}{Ab} = \frac{4}{5}$

Total work = $\frac{40}{9}$ (9) = 40 units

Abha → $\frac{40}{5}$ = 8 days

32. (c)

P + Q → 36

P : Q

3 : 1

Let total work = 4 × 36

$\Rightarrow Q = \frac{4 \times 36}{1}$

⇒ 144 days

33. (b)

A → 6 (5)
B → 10 (3)
C → 15 (2)
} 30 units

A.T.Q.

$2(A + B + C) + x(A + B) = 30$

$20 + 8x = 30$

$8x = 10$

$x = \frac{5}{4} = 1\frac{1}{4}$ days

Maths by Aditya Ranjan sir

34. (a)

Anju : Bitt
13 : 10

Let, total work = 23 × 13

$A + B \rightarrow \frac{23 \times 13}{23} = 13$ days

35. (a)

$\frac{M_1 \times D_1}{W_1} = \frac{M_2 \times D_2}{W_2}$

$\Rightarrow \frac{10}{240} = \frac{25}{W_2}$

$\Rightarrow W_2 = 24 \times 25$
$= 600$

36. (d)

R → 15 (20)
S → 20 (15)
M → 25 (12)
} 300 units

Working fashion → (R, S, M, R, S, M....)
3 days → 47 units
18 days → 282 units

19 days → $\frac{18}{20}$ days → 300 units

⇒ Total time $18\frac{9}{10}$ days

37. (c)

A	B
14	10
⇒ 7 :	15

Let, total work = 36 × 5

Both will take = $\frac{36 \times 5}{12} = 15$ days

38. (a)

A → 12 (10)
B → 20 (16)
C → 24 (5)
} 120 units

Let, they did not leave and do some extra work
⇒ Extra work = 10 + 18 + 20
= 48 units
⇒ Total work by A, B and C = 120 + 48

⇒ Time taken = $\frac{168}{21} = 8$ days

39. (d)

A : B
6 : 5
Total work = 29 × 6
Together they can do work in:-

$\frac{29 \times 6}{11} = \frac{174}{11}$ days

40. (b)

A + B + C → 10
B : A + C
Efficiency 1 : 3
Total work = 40 units

⇒ B will do in → $\frac{40}{1} = 40$ days

41. (b)

A → 6 (5)
B → 10 (3)
} 30

Working fashion → (A, B, A, B,....)
2 hours → 8 units
6 hours → 24 units
7 hours → 29 units

8 hours → $\frac{1}{3}$ hours → 30 units

Total time → $7\frac{1}{3}$ hours ⇒ work will finish

42. (a)

P → 32

In 8 days, Pawan can do = $\frac{8}{32}$

$= \frac{1}{4}^{th}$ work

⇒ $\frac{3}{4}^{th}$ work by Sandeep in 27 days

Fill work by Sandeep in 36 days

P → 32 (9)
S → 36 (8)
} 72 × 4
= 288 units

⇒ Time = $\frac{288}{9+8}$

$= \frac{288}{17} = 16\frac{16}{17}$ days.

Maths by Aditya Ranjan sir

43. (d)

Ratio of efficiency of 3 taps:-

$(2)^2 : (3)^2 : (4)^2$

$\Rightarrow 4 : 9 : 16$

Total efficiency = 4 + 9 + 16 = 29

Given, tap with eff. 16 takes 81 min.

Let, total work = 16 × 81

Total time $= \frac{16 \times 81}{29} = \frac{1296}{29} = 44\frac{20}{29}$

44. (b)

A → 32

B → 28

$\frac{7}{8}$ → 224 Units

2 hr. → 15 units

28 hrs. → 210 units

29 hrs. → 217 units

$\frac{7}{8}$ hrs. → 224 units

⇒ Total time ⇒ $29\frac{7}{8}$ hrs.

≈ 30 hrs.

45. (b)

A + B → 48

A	B
4	1

Let, total work = 5 × 48

$\Rightarrow B \rightarrow \frac{5 \times 48}{1} = 240$ days

46. (c)

P → 5	6	30 Units
Q → 10	3	
R → 15	2	

P + Q, Q + R, P + Q, ...

2 days → 17 units

3 days → 26 units

$\frac{1}{2}$ days → 30 units

Total time $= 3\frac{1}{2} = \frac{7}{2}$ days

47. (b)

We know,

$$\frac{M_1 \times D_1 \times H_1}{W_1} = \frac{M_2 \times D_2 \times H_2}{W_2}$$

$10 \times 6 \times D_1 = 12 \times H_1 \times D_1$

$\Rightarrow 5 = H_1$

Maths by Aditya Ranjan sir

TIME & DISTANCE

चगबशि एवं ग्रैल

11

1. A truck runs 492 km on 36 Litter of diesel. How many kilometres can it run on 33 Litter of diesel?

है दितायों लंदगिअ ति रि 492 km जिदनए वीबक हहदितायों लंदगिङ्गि र्न 33 km जिदचित नए वकड

SSC CGL 01/12/2022 (Shift- 04)

(a) 454 km (b) 453 km
(c) 451 km (d) 452 km

2. If Ram covers a certain journey at 60% of his usual speed, he reaches the destination late by 36 min. His usual time (in min) to reach the destination is:

बड़ ियिगअ र्ड़ झमजनबिएस्र्ड़ शि : ' तीचिएगएस्बजिएहति तीं %5 जएहचिनिबति यनए वत्नि नए्र वहै र्ड़ि ा ति ती यतीचिद्धा।ब : यों : वक्षनए वीद्धा।बनित ि : वक्षर्ड़ गिपिचत एचिएगएस्बचिगब न र्ड़ा ा ग्रि-वीं

SSC CGL 01/12/2022 (Shift- 04)

(a) 60 (b) 72
(c) 50 (d) 54

3. Two-thirds of a certain distance was covered at the speed of 45 km/h, one-fourth at the speed of 60 km/h and the rest at the speed of 75 km/h. Find the average speed per hour for the whole journey. (correct to 2 decimal places)

ङ्क चतीई झमजनि ग्रैतति एं. एस्ङ्गनकू ट्टिएस्र्ड़ 45 km/h ति ल जएहचिबअ स्जएगएू ट्टिएस्र्ड़ 60 km/h ति तीजएहचिशि एस्र मएएं लिएस्र्ड़ 75 km/h ति तीजएहचिनिबङ्गि बएं द्धाएं ीि : ग्रैल बएस्र्ड़ति ङ्गिअ शि एस्र्ड़ नजिएहि : ङ्गनि ए एंि. एं मएाद् धिाएं नत चिक्कनि ३एति ल्ड़ अे

SSC CGL 01/12/2022 (Shift- 04)

(a) 51.25 km/h (b) 45.75 km/h
(c) 58.25 km/h (d) 49.77 km/h

4. A thief is noticed by a policeman from a distance of 97 m. The thief starts running and the policeman chases him. The thief and the policeman run at a speed of 21 m/sec and 23 m/sec respectively. What is the time taken by the policeman to catch the thief?

अ ि : ङ्गद चत गत्तति एं 97 m ति ती ग्रैतचिअ जिएहि 2 एू ट . नए वीं जिएस्र्ड़ लिएस्र्ड़ दिद्धाएं वीशि एस्र : ङ्गद चत गत्तपिचत एं : त्नाए त यनए वीं जिएशि एस्र : ङ्गद चत गत्तप्ि गमएं 21 m/sec शि एस्र 23 m/sec ति तीजएहचिं ि एस्र वीं जिएस्र्ड़ : ते ' वीगि : ङ्गद चत गत्त त एङ्गि र्न एचिगबद्धाएं वकड

SSC CGL 02/12/2022 (Shift- 01)

(a) 40 sec (b) 45 sec
(c) 62.5 sec (d) 48.5 sec

5. If a man travels at $\frac{1}{x}$ km/h on a journey and returns at $\frac{1}{x^2}$ km/h, then his average speed for the journey is:

बड़ ि अ ि। बङ्ग नबिएस्र्ड़ : यों $\frac{1}{x}$ km/h ति तीजएहचिजिदनए वीशि एस्र्ड़ $\frac{1}{x^2}$ km/h ति तीजएहचिदिएनए वत्नि नए बिएस्र्ड़ति - ङ्गद अ पिचत तीशि एस्र नजिएहि 6 बए वकड

SSC CGL 02/12/2022 (Shift- 03)

(a) $\frac{x+1}{x^2}$ (b) $\frac{2}{x+x^2}$

(c) $\frac{1}{x+x^2}$ (d) $\frac{2x^2}{x+1}$

6. A car starts from point A towards point B, travelling at the speed of 20 km/h $1\frac{1}{2}$ hours later, another car starts from point A and travelling at the speed of 30 km/h and reaches $2\frac{1}{2}$ 1hours before the first car. Find the distance between A and B.

अ ति एङ्ग 8 ि A चङ्ग 8 ि B ति तीशि एस्र 20 km/h ति ल जएहचिजिर्द एं मएहति यनतीं वीं $1\frac{1}{2}$ ि ए ध्ि ए वं ग्रैयतति एस्र ङ्ग 8 ि A चिं मएहि वि मतीं वीशि एस्र 30 km/h त तीजएहचि- जदनवक्षर्ड़ : वद्दतति एं चिं $2\frac{1}{2}$ ि ए ि : वद्द ि : वक्षनतीं वीं A श एस्र B ति ध्ि त्नाति ती ग्रैत 3 एति ल्ड़ अे

SSC CGL 03/12/2022 (Shift- 01)

(a) 300 km (b) 240 km
(c) 260 km (d) 280 km

Maths by Aditya Ranjan sir

7. A thief steals a bike at 12:30p.m. and drives it at 48km/h. But the theft is discovered after half an hour. The bike owner starts to chase him on another bike at 58km/h. The thief will be caught at _____.

अ जिएर्ं ि12:30p.m.ि: यअ ध्ऊ त जिह्यूटिश एर्ं च-48km/hति लीजिए चिजिद एए वीदिङ्ग शि एर्ं ि ए ति - ध्ए जिएस्तति एि: नएजिद नए वीध्ऊ त ति एध्ि एतल58 km/hति लीजिए चिर्ं श्रेयतध्ऊ त ि: यपिचत एि: त्मएति यं एि: एस्लए त यर्ं नए वीजिएस्ङ्ग र्न चिगबि: यि: ते सिद्ध बए एस्ड्ड

SSC CGL 03/12/2022 (Shift- 02)

(a) 3:40p.m. (b) 3:54p.m.
(c) 3:10p.m. (d) 3:24p.m.

8. Vikas covered a certain distance by bike. If he covers 40% of the distance at 40 km/h, 50% of the distance at 25 km/h and the remaining 10% distance at 10 km/h. Find his average speed over the whole distance.

ड्ड त एर्ं ि अ ईइ झमजनर्ं श्रेतध्ऊ त चिन्निबति तोबिड्ड ि क उ%5ति ली श्रेत40 km/hति लीजिए चिवि म%5र्ं श्रेत25 km/hति लीजिए चिशि एस्मिएर्ं 4%5ति ली श्रेत10 km/h त लीजिए चिन्निबति यनए क्वनिएि: श्रेतर्ं श्रेतनिबति यं गिपिचत ल श एस्मनजिए 3एति ल्ं ओ

SSC CGL 03/12/2022 (Shift- 02)

(a) 25 km/h (b) 28 km/h
(c) 26 km/h (d) 30 km/h

9. A chain Snatcher appears at a distance of 500 u on a signal. He starts chasing the running chain Snatcher with a speed of 5 m/s while Snatcher follows it with a speed of 15 m/s. What is the distance covered by the chain Snatcher when the Policeman of the chain Snatcher is caught?

अ ि: ह्ड चत गर्ल्ड एि500 mति ली श्रेत: यिर्ज-धि लायड्ड 2एू ट नए वीर्ं कि5 m/sति लीजिए चिर्ं ए स्यिर्ज-धि लायति ए : त्मएति यं एि मए ति यर्ं नए क्वर्ं ध्ङ्ग ि: ह्ड चत गर्ल्ड15 m/sति लीजिए चिपिचत एि: त्मएति यि क्वर्ं क्मए वीर्ं ध्र्ज-धि लायति ली: ह्ड चत गर्ल्ड7एर्ं ि: ते र्ं एर्ं एए क्वनिध्नित र्ज-धि लायड्ड र्न ली श्रेतनिबति यजिक्ष एि क्मए ड्ड

SSC CGL 03/12/2022 (Shift- 03)

(a) 200 m (b) 180 m
(c) 150 m (d) 250 m

10. A policeman saw a thief from a distance of 450 m. When the policeman started chasing him, the thief also started running. The ratio of speeds of the thief to the policeman is 7 : 8. After running how much distance (in km) can the policeman catch the thief?

अ ि: ह्ड चत गर्ल्ड ि अ जिएति एि450 mति ली श्रेतिच-2एी: ह्ड चत गर्ल्ड ि पिचत एि: त्मएति यं एि मए ङ्ग ि बए नए जिएस्लिएस्लिएर्ं ड्ड दिद्धी जिएति लीजिए शि एर्ं ि: ह्ड चत गर्ल्ड ति ल जिए ति एि श्रें क्ष एस्ध्ि विष्ठि वीङ्ग र्न ली श्रेत(km ग)ि ऐर्ं क्व-त ध्ए ि: ह्ड चत गर्ल्ड जिएति एि: ते सिचत नए क्वड्ड

SSC CGL 05/12/2022 (Shift- 01)

(a) 3.75 (b) 3.4
(c) 3.6 (d) 3.15

11. R jogs at twice the speed of walking and runs at twice the speed of jogging. From his home to office, he covers half of the distance by walking and the rest by jogging. From his office to home, he covers half the distance jogging and the rest by running. What is his average speed (in km/h) in a complete round from his home to office and back home if the distance between his office and home is 10 km and he walks at the speed of 5 km/h?

Rजिर्द ति लीजिए ति लीनर्ह एि गर्ं एर्ड्ड लीजिए चिर्ं एड्ड्ड त यनए वीशि एर्ं एड्ड्ड ति लीनर्ह एि गर्ं एर्ड्ड लीजिए र्ं ऐ क्वए वीशि : र्ं ि एि चिशि एड्ड ड्ड्ड नित र्ं क्वशि एर्ल श्रेतलीजिद त यनिब त यनए वीशि एर्ं मिएर्ं एड्ड्ड ति य ि र्ं क्वशि : र्ं शि एड्ड ड्ड्ड चि-ड्ड एशि एर्ं चिगबशि एर्ल श्रेतर्ं एड्ड्ड ति य शि एर्ं मिएर्ं श्रेत ऐ क्व यनिबति यनए वीर्ं ड्ड एि चिशि एड्ड ड्ड्ड नित शि एर्ं शि एड्ड ड्ड्ड चर्ं ए चि ड्ड एशि ए नित ति ि: ए एिज6त यिगिपिचत लीशि एस्मन जिए ि(km/hग)ङ्ग र्न लीक्वशि ड्ड्ड पिचत ति एए बशि एर्ं ड्ड एति ध्ल्मति ली श्रेत10 kmवीशि एर्ं र्क5 km/hति ल जिए चिजिद नए क्वड्ड

SSC CGL 05/12/2022 (Shift- 01)

(a) $\frac{90}{8}$ (b) $\frac{60}{8}$

(c) $\frac{60}{9}$ (d) $\frac{80}{9}$

12. A person travels from P to Q at a speed of 50 km/h and returns by increasing his speed by 60%. What is his average speed for both the trips?

अ ि बड्ड नर्ं Pचिर्ं Qनित ति लीबएर्ं 50 km/h त लीजिए चति यनए वीशि एर्ं शि : र्ं लीजिए चिर्ं 60%ति ली ड्ड ति यन-क्वर्ं ए चि दिए नए वीर्ं ऐ एबिएर्ं एति ड्डि अ पिचत लीशि एस्मन जिए ङ्ग र्न लीक्वड्ड

SSC CGL 05/12/2022 (Shift- 03)

(a) 36.61 km/h (b) 61.53 km/h
(c) 31.56 km/h (d) 16.53 km/h

Maths by Aditya Ranjan sir

13. Which of the following is NOT a correct statement?

ई ढे इद इ२एगिगचिति एसचएचिकति १एं ि कलिकड

SSC CGL 05/12/2022 (Shift- 03)

(a) The speed of 20 m/s is less than the speed of 85 km/h.

20 m/s त तीजएद85 km/h त तीजएद चिति गविसतीवी

(b) Time may be calculated by dividing the distance by the speed.

. श्रेति एजिएद चिड्ड लएड नति य चिगबति तीद्धुएं ए त तीं एचित नतीवी

(c) Covering the same distance in lesser time implies a higher speed.

त गचिगबगचिगएं ि श्रेतीनबति यं ति एश १एकीपरुज जएद

(d) The speed of 99 km/h is less than the speed of 24 m/s.

99 km/h त तीजएद24 m/s त तीजएद चिति गविसतीवी

14. Prasad goes 96 kilometres on a bike at a speed of 16 km/h, 124 kilometres at 31 km/h in a car, and 105 kilometres at 7 km/h in a horse cart. Find his average speed for the entire distance travelled.

:च्रए अ ध्यूत ि:यं16 km/hति तीजएद चिप्रै ड्ड द एमतय त एगि31 km/hति तीजएद चि4ण्डड्ड द एमतय श एव ऐ- ध्द्धेए वीगि7 km/hति तीजएद चि4%म्ड्ड द एमतय ' एएं वीनबति तीद्धुट ि:श्रेती श्रेति ड्ड अ पचत तीश एमन जएद3एति ड्डं अ

SSC CGL 05/12/2022 (Shift- 04)

(a) 16 km/h (b) 13 km/h
(c) 17 km/h (d) 11 km/h

15. Two tourist buses start from the same point and move along two roads at right angles at speeds of 48 km/h and 36 km/h, respectively. The distance between the buses after 15 seconds is _____.

. एं: बटत ध्चिअ क्तिड्ड8 ध्चि: ध्राएं ति यनतीवीश एव चगत एएं एनती एचे व एं: यि गमएं48 km/hश एव 36 km/hति तीजएद चिजद नतीवीं4म्चित ध्ए ध्चिए त ध्लाति तीं श्रेतीड्ड र्न तीवीएद्धड

SSC CGL 05/12/2022 (Shift- 04)

(a) 175m (b) 350m
(c) 250m (d) 150m

16. A dog saw a cat at a distance of 280 m. The cat started running at the speed of 10 km/h and the dog also ran to catch it with the speed of 24 km/h. How much time will the dog take to catch the cat?

अ ति ध्यूं ि अ ड्डं दतीं एं280 mति तीं श्रेती: यं 2एं ड्डं दतीं10 km/hति तीजएद चिं ऐंवदिद्धुश एव ति ध्यूं ल्एन 24 km/hति तीजएद चिपचि: ते 'वति ड्डि अं ऐंश्रेति ध्यूए ड्डं दतीं एं: ते 'वगिड्डि र्न एचिगबदिद्धुड

SSC CGL 06/12/2022 (Shift- 02)

(a) 1.4 min (b) 1.5 min
(c) 1.2 min (d) 1.3 min

17. A is chasing B in the same interval of time. A jumps 8 times, while B jumps 6 times. But the distance covered by A in 7 jumps is the same as that of B in 5 jumps. The ratio between the speeds of A and B is _____.

Aचिगएं चिगबशि नयएद: यं Bति एं: त्मएति यंयवएं वीं A 8 ध्एति ?नएं वीं ध्ड्ड ि B 6ध्एति ?नएं वीं दिड्ड ' ि A7एएए 7ति ?एगिनबति तीद्धुट श्रेती त ि वतीं वीं एं B7एएए 5 त ?एगिनबति तीं एतीवीं A श एव B ति तीजएद एति ध्लाश ' क्ष्एम3एति यं

SSC CGL 08/12/2022 (Shift- 01)

(a) 32 : 24 (b) 30 : 56
(c) 20 : 21 (d) 28 : 36

18. John drives 250 km at 50 km/h and then he drives 350km at 70km/h. Find his average speed for the whole journey in km/h.

' एं250 kmति तीं श्रेती50 km/hति तीजएद चिद्धेए व जदए यनबति यनएं वीश एव ड्ड: द्धुं वं350 kmति तीं श्रेत 70 km/hति तीजएद चिद्धेए तीजदए यनबति यनएं वीं: श्रेत बएद्धुति ि एं एं पिचत तीश एमन जएद (km/h ग)3एति ड्डं अ

SSC CGL 08/12/2022 (Shift- 02)

(a) 55 km/h (b) 60 km/h
(c) 58 km/h (d) 65 km/h

19. A thief stole jewellery from a shop at 8:15 p.m. and left on a bike at a speed of 60 km/h. The police were informed at 8:30 p.m. If the police want to arrest the thief at 9:00 p.m., what should be the minimum speed of the police jeep?

अ जिएं ि अ ि ध्एं चि8:15 p.m.ि: यं ् - यं जिद्धुए श एव60 km/hति तीजएद चिध्यूत ि: यं ल्एद्धुए एं: द्धुद च त एं8:30 p.m.ध्ं चिर्ने एं तीद्धुं ध्बिड्ड ि: द्धुद च जिएति ए- 9:00 p.m.ध्ं ध्ड्ड्ड्ड्ड नएति यं एं जिएनतीवं नएं: द्धुद च ' लति तीर्ब?नगजिएड्ड र्न तीवीं- तीजएद्धड

SSC CGL 08/12/2022 (Shift- 04)

(a) 60 km/h (b) 75 km/h
(c) 80 km/h (d) 90 km/h

Maths by Aditya Ranjan sir

20. Two cities A and B are 135 km apart on a straight track. One car starts from A at 8 a.m. and travels towards B at 25 km/h. Another car starts from B at 9 a.m. and travels towards A at a speed of 30 km/h. At what time will they meet?

एमिएक्यAशि एवि Bचिलायिएमर्ः यि 135 kmति ली शैतीः य कीअ ति एवि Aचि 8 a.m.ि ः यि जर्द एमिएहति यनलीक्त श एवि Bति लीश एवि 25 km/hति लीजिए चिजिद नलीकीअ श ४बति एवि 9 a.m.ि ः यि Bचिजर्द एमिएहति यनलीकीश एव Aति लीश एवि 30 km/hति लीजिए चिजिद नलीकीि क्ति च चगबइगिद द्धड

SSC CGL 09/12/2022 (Shift- 01)

(a) 11 a.m. (b) 10 a.m.
(c) 10:45 a.m. (d) 11:30 a.m.

21. A person travels in a car at 40 km/h for 3 hours, on a bike at 30 km/h for 2 hours, and in a train at 80 km/h for 5 hours. What is the average speed at which he travelled?

अ ि।बइ०नति एवगि 40 km/hति लीजिए चिहिु ए बधिएूत ः यि 30 km/hति लीजिए चिणि ु ए शि एवि ि स्गि 80 km/hति लीजिए चि 5ि ु ए बिएहति यनए कीपिचत ि 7एए इ चशि एमनजिए चिबिएहति लीद्धड

SSC CGL 09/12/2022 (Shift- 02)

(a) 56 km/h (b) 60 km/h
(c) 62 km/h (d) 58 km/h

22. Menu and Daya travel from point A to B, a distance of 105 km, at speeds of 10 km/h and 25 km/h, respectively. Daya reaches point B first and returns immediately and meets Menu at point C. Find the distance from point A to point C.

गर्लशि एवि बए ि गमए 10 km/hशि एवि 25 km/hति ल जिए चि Aचि B नत इ ४ ६105 kmति ली शैतीनबति यन- कीि बए ः कद इ ४ ६Bि ः यि ः कमनलीकीशि एवि निएमनदि एमनलीक्त श एवि गर्लशि चि इ ४ ६Cि ः यि इगिद नलीकीि इ ४ ६Aचि इ ४ ६C नत ति ली शैती3एति लुं अ

SSC CGL 09/12/2022 (Shift- 02)

(a) 35 km (b) 60 km
(c) 45 km (d) 62 km

23. A thief running at speed of 'x' km/h is chased by a policeman running at a speed of 10 km/h. If the thief is ahead by 100 metres, the policeman catches the thief after 3 minutes. At what speed is the thief running ('x' being the unknown speed)?

'x' km/hति लीजिए चिि ऐ स्मियकअ जिएति एि ः त्मए 10 km/hति लीजिए चिि ऐ स्मियकअ ि ः ह्द चत गलि 7एए इ बए एए कीबइ जिएए 4%% गिलायशि एद्धक्वनि एि ः ह्द चत गलि ह र्झ ा ति ि ध्ए जिएति एि ः ते स्मिद नए कीनए ध नए अ इ जएइ चजिए चिलिएद्धयकए कीि('x' श 3एजिए कीि)ड

SSC CGL 09/12/2022 (Shift- 03)

(a) 4 km/h (b) 8 km/h
(c) 10 km/h (d) 6 km/h

24. A person covers a certain distance by bus at 45 km/h and immediately returns to the starting point by car at a speed of 80 km/h. What is his average speed during the whole journey?

अ ि।बइ०नइ चलीई इमजनि शैति एि ध चि 7एए 45 km/h त लीजिए चिनबति यनए कीशि एवि निएमनति एवि 7एए 80 km/h ति लीजिए चि ः एइ०नए ि इ ४ ६ ः यि ए चशि एमनए कीि ः शैत बएहति ि एवए पिचत लीश एमनजिए इ इ नं लीकड

SSC CGL 09/12/2022 (Shift- 03)

(a) 57.6 km/h (b) 63.2 km/h
(c) 73.5 km/h (d) 45.5 km/h

25. A jeep travels to a place 300 km away at an average speed of 60 km/h and returns at a speed of 30 km/h. What is the average speed (in km/h) for the whole journey?

अ ि ल 300 kmि शैइ चलीधाएति लीबएहति 60 km/h ति लीश एमनजिए चिति यनलीकीश एवि 30 km/hति ल जिए चिि ए चशि एमलीकीि चि ः शैलीबएहति ि इद अ श एमन जिए ि (km/h ग)ि 3एति लुं अ

SSC CGL 12/12/2022 (Shift- 02)

(a) 75 (b) 80
(c) 40 (d) 60

26. Some students went on a field trip. At a speed of 6 km/h, they travelled by bikes for 2 hours; then at a speed of 2 km/h, they walked for another hour; then they took rest for an hour and had lunch for half an hour; then at a speed of 1 m/s, they walked for an hour to visit a garden; and finally at a speed 4 km/h, they returned home in 3 hours. Their average speed, in km/h, (rounded off to two places of decimal) is:

त ह्म सिएद्धश बिबि बिएहति ः यि द्धअ ि 6 km/hति लीजिए चबि पिछए ि ु ए नित ध्ए चि बिएहति लि इ ः ह्म 2 km/hति लीजिए चिबि ि अ ु ि ए नित जिद ग्रि इ ः ह्म पिछए ि अ ु ए शि एमगइ बए शि एवि शि एमु ि ए नित ि ए कयति एि लिएं इ बए इ ः ह्म 1 m/sति लीजिए चिबि ि अ ु ि ए नित जिद त य अ ध्द्धमगिद्धअशि एवि शि नगि 4 km/hति लीजिए चिि - हु ि ए गिु एदि एमशि एभेपि त लीश एमनजिए वि km/hगिब इ नं लीकि एि मएगद ध्धाएं नित ि ः ए एइ त्र किड

SSC CGL 12/12/2022 (Shift- 03)

(a) 3.48 (b) 129.23
(c) 0.28 (d) 251.62

Maths by Aditya Ranjan sir

27. Ram starts from point A at 8 a.m. and reaches point B at 2 p.m. on the same day. On the same day, Raju starts from point B at 8 a.m. and reaches point A at 6 p.m. on the same day. Both points A and B are separated by only a straight line track. At what time they both meet?

यएगाङ्ग्ह्ल ङ्ग्A चिर्च 8 a.m. : यजिर्द एमिएङ्ग्ह्ल ति यनएक्वीश एव पचलीङ्ग्ह्ल ङ्ग्B : यि 2 p.m. : यि : वक्ष्नएक्वीं पचलीङ्ग्ह्ल व यएं ङ्ग्B चिर्च 8 a.m. : यजिर्द एमिएङ्ग्ह्ल ति यनएक्वीश एव पचलीङ्ग्ह्ल ङ्ग्A : यि 6 p.m. : यि : वक्ष्नएक्वीं. एं एङ्ग्ह्ल ङ्ग्A श एव B ति-दअ चिलतीय 2 एं. एं ति 7 एए : ए ङ्ग्ह्ल अ ङ्ग्ह्ल अ क्वीं. ङ्ग्ह्ल एं एङ्ग्ह्ल न्र धिं ङ्गिद नक्वि ड

SSC CGL 12/12/2022 (Shift- 03)

(a) 11:45 a.m. (b) 9:42 a.m.
(c) 10:42 a.m. (d) 12:42 p.a.

28. A policeman spotted a thief 40 metres ahead of him. The moment they both saw each other they started running in the same direction on the same track. The thief was running at 10 m/sec and the policeman was chasing him at the speed of 12 m/sec. How much distance (in metres) the policeman needed to cover to catch the thief?

अ : ङ्ग्ह्ल चत गर्ल श : चिर्ण ङ्ग्% गतायति ल ङ्ग्ह्ल : यि अ जएर्ण 2 एं. एं एं अ ङ्ग्ह्ल ङ्ग्ह्ल यति एं 2 एक्वीं अ क्वीं गएङ्ग्ह्ल : य अ क्वीं ङ्ग्ह्ल मएं गङ्ग्ह्ल ऐर्ण क्वीं मएङ्ग्ह्ल ति यङ्ग्ह्ल बएं जएर्ण 10 m/sec त लजएचिं. ऐ एक्वीं मएं एं श एं : ङ्ग्ह्ल चत गर्ल 12 m/sec ति ल जएचिं पचत एं : त्मएं त यं यक्वीं मएं एं जएर्ण : ते ऐ क्वि ति ङ्ग्ह्ल अ : ङ्ग्ह्ल चत गर्ल ति एङ्ग्ह्ल न्र ल ङ्ग्ह्ल गतायग्र-निबति यं लक्वीं ड

SSC CGL 12/12/2022 (Shift- 04)

(a) 180 (b) 240
(c) 200 (d) 225

29. A student walked 6 km from his house to reach the metro station, then boarded a metro that has an average speed of 60km/h, and reached the destination. It took 3 hours for the entire journey. If the average speed of the entire journey is 32 km/h, then the speed of walking is _____.

अ सिएङ्ग्ह्ल गा-एं धि मएं नित : क्वीं ति ङ्ग्ह्ल अ श : ङ्ग्ह्ल एं चिर्च ङ्ग्ह्ल गल जद एं ङ्ग्ह्ल : तुं अ गा-एं ग चिं एं व क्वीं एं ङ्ग्ह्ल चत ल श एं न क्वीं ङ्ग्ह्ल % ङ्ग्ह्ल गल्लु एं एं क्वीं श एं क्वीं ङ्ग्ह्ल। बि : यि : क्वीं ङ्ग्ह्ल क्वीं एं : ङ्ग्ह्ल न बएं गङ्ग्ह्ल हिं ङ्ग्ह्ल एं ति एं चिगबदि क्वीं बिङ्ग्ह्ल : ङ्ग्ह्ल ति बएं ङ्ग्ह्ल ति श एं न क्वीं ङ्ग्ह्ल हिण ङ्ग्ह्ल गल्लु एं एं क्वीं नएं जद ति ल क्वीं ङ्ग्ह्ल न क्वीं

SSC CGL 13/12/2022 (Shift- 02)

(a) 1.5 km/h (b) 3 km/h
(c) 2 km/h (d) 4 km/h

30. A man can row 10 km/h in still water. When the river is running at a speed of 4.5 km/h, then it takes him 2 h to row to a place and comes back to the initial point . How far is the place (in km) (rounded off to two decimal places)?

अ श ङ्ग्ह्ल एं गल मएं न्र द गिं 10 km/h त लजएचिं. एं जद एं चत नएं क्वीं बिङ्ग्ह्ल ङ्ग्ह्ल. ल 4.5 km/h त लजएचिं धिक यक्वीं क्वीं नएं पचं अ धिएं नित ङ्ग्ह्ल एं श एं श एक्वीं ङ्ग्ह्ल ङ्ग्ह्ल ङ्ग्ह्ल ङ्ग्ह्ल नत ङ्ग्ह्ल एं चिं श एं गिं ङ्ग्ह्ल एं ति एं चिगबदि क्वीं एं क्वीं ङ्ग्ह्ल क्वीं धिएं

ङ्ग्ह्ल न्र ल ङ्ग्ह्ल ङ्ग्ह्ल km ग्र-ङ्ग्ह्ल : यि ङ्ग्ह्ल धिएं न क्वीं. एं मएं द धिएं नत : ए एङ्ग्ह्ल न्र ड

SSC CGL TIER - II 02/03/2023

(a) 5.50 (b) 8.98
(c) 7.98 (d) 6.25

31. Reshma travels 45 km at 15 km/h by cycle, 80 km at 40 km/h by car and the remaining 6 km by foot at 2 km/h. Find his average speed for the whole journey.(Rounded off to 2 decimal places)

यमएं चूङ्ग्ह्ल द चिर्च 45 km त ल ङ्ग्ह्ल 15 km/h त लजएचवति एं चिर्च 80 km त ल ङ्ग्ह्ल 40 km/h त लजएचिं श एं : तद जिद त यं धिएं ल 6 km त ल ङ्ग्ह्ल 2 km/h त लजएचिं-नबति यं तल क्वीं : ङ्ग्ह्ल बएं ङ्ग्ह्ल ति ङ्ग्ह्ल अ पचत ल श एं न जएङ्ग्ह्ल ङ्ग्ह्ल 3 एं त ल्वं अं नि एं मएं द धिएं नित : ए एङ्ग्ह्ल न्र

SSC CGL TIER- II 06/03/2023

(a) 15.25 km/h (b) 16.38 km/h
(c) 18.36 km/h (d) 43.50 km/h

ANSWER KEY

1.(c)	2.(d)	3.(d)	4.(d)	5.(b)	6.(b)	7.(d)	8.(a)	9.(d)	10.(c)
11.(d)	12.(b)	13.(d)	14.(b)	15.(c)	16.(c)	17.(c)	18.(b)	19.(d)	20.(a)
21.(d)	22.(b)	23.(b)	24.(a)	25.(c)	26.(a)	27.(a)	28.(b)	29.(d)	30.(c)
31.(b)									

Maths by Aditya Ranjan sir

SOLUTIONS

1. (c) 36 ltr. → 492 km.

$$33\,\text{ltr.} \rightarrow \frac{492}{36} \times 33$$

$= 41 \times 11$

$= 451$ km.

2. (d) $\text{Speed} \times \frac{1}{\text{Time}}$

	Usual	New
Speed	5	3
Time	3	5

2

2 → 36 min.

3 → 54 min.

3. (a) Let, Total Distance = 12 × 900

$$\Rightarrow T_1 = \frac{12 \times 900}{45} \times \frac{2}{3} = 160$$

$$T_2 = \frac{12 \times 900}{60} \times \frac{1}{4} = 45$$

$$T_3 = \frac{12 \times 900}{75} \times \frac{1}{12} = 12$$

$$\Rightarrow \text{Average Speed} = \frac{12 \times 900}{160 + 45 + 12}$$

$$= \frac{12 \times 900}{217}$$

$= 49.76$ km/hr.

4. (d) Relative speed = (23 – 21) m/sec.

= 2m/sec.

$$\Rightarrow \text{Time} = \frac{97}{2} = 48.5 \text{ sec.}$$

5. (b) $\text{Average speed} = \frac{2 \times a \times b}{a + b}$

$$\Rightarrow \frac{2 \times \frac{1}{x} \times \frac{1}{x^2}}{\frac{1}{x} + \frac{1}{x^2}}$$

$$\Rightarrow \frac{\frac{2}{x^3}}{\frac{x+1}{x^2}}$$

$$\Rightarrow \frac{2}{x^3} \times \frac{x^2}{(x+1)}$$

$$\Rightarrow \frac{2}{x(x+1)}$$

6. (b)

20 km/hr.

Let AB = x kmr. in $1\frac{1}{2}$ hrs. first can travel

$$20 \times \frac{3}{2} = 30 \text{ km.}$$

ATQ,

$$\frac{x - 30}{20} - \frac{x}{30} = \frac{5}{2}$$

$$\frac{3x - 90 - 2x}{60} = \frac{5}{2}$$

$\Rightarrow x = 240$ km.

7. (d) In how hover thief will cover $= \frac{48}{2} = 24$ km.

Relative speed = (58 – 48) km/hr.

= 10 km/hr.

$$\therefore \text{Time} = \frac{24}{10} = 2.4 \text{ hr.}$$

= 2 hr. 24 min.

⇒ at 1 : 00 + 2 hr 24 min.

⇒ 03 : 24 pm.

8. (a) Let, Total distance = 100 km.

$$\Rightarrow T_1 = \frac{40}{40} = 1 \text{ hr.}$$

$$T_2 = \frac{50}{25} = 2 \text{ hr.}$$

$$T_3 = \frac{10}{10} = 1 \text{ hr.}$$

$$\text{Average speed} = \frac{100}{T_1 + T_2 + T_3}$$

$$= \frac{100}{4} = 25 \text{ km/hr.}$$

Maths by Aditya Ranjan sir

9. (d) Relative speed = (15 – 5) m/s

= 10 m/s

$\Rightarrow$ Snatcher will be caught after $= \frac{500}{10}$

= 50 sec.

In 50 sec, distance covered by chain snatcher = (50 × 5) = 250 is.

10. (d) Relative speed = (8 – 7) = 1x

$\therefore$ Time $= \frac{450}{1_x} = \frac{450}{x}$ sec.

$\therefore$ Distance covered by thief in 450 sec.

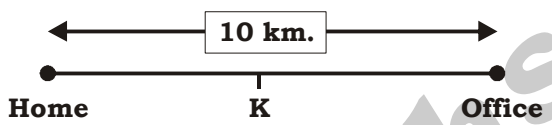
$= \frac{450}{x} \times 7x$

= 3150 m

$\Rightarrow$ 3.15 km.

11. (d)

	Walking	Jogging	Running
Speed	5	10	20



$T_1 = \frac{Hk}{5} = 1, T_2 = \frac{ko}{10} = \frac{1}{2}$

$T_3 = \frac{ok}{10} = \frac{1}{2}, T_4 = \frac{kh}{20} = \frac{1}{4}$

Avg. speed $= \frac{\text{Total distance}}{\text{Total time}}$

$= \frac{20}{1 + \frac{1}{2} + \frac{1}{2} + \frac{1}{4}}$

$= \frac{20}{2 + \frac{1}{4}}$

$= \frac{80}{9}$

12. (b) $S_1 = 50$ $S_2 = \frac{8}{5} \times 50$

= 80

Avg. speed $= \frac{2 \times S_1 S_2}{S_1 + S_2}$

= 61.53 km/hr.

13. (d) (a) $20 \times \frac{5}{18} = \frac{50}{9} < 85.$ km/hr.

(b) $T = \frac{D}{S}$

(c) Time $\times \frac{1}{\text{Speed}}$

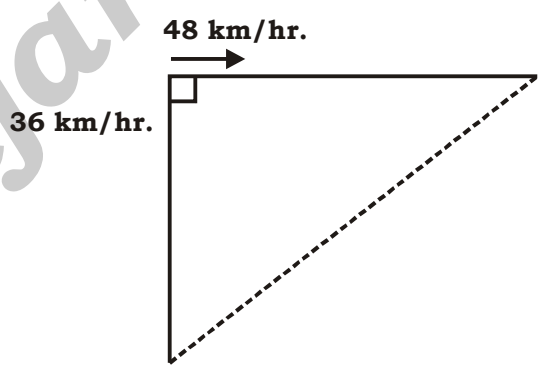
(d) $99 \times \frac{18}{5}$ 24 m/s.

14. (b) Avg. speed $= \frac{\text{Total distance}}{\text{Total time}}$

$\Rightarrow \frac{96 + 124 + 105}{\frac{96}{16} + \frac{124}{31} + \frac{105}{7}}$

$\Rightarrow \frac{325}{6 + 4 + 15} = \frac{325}{25} = 13$

15. (c)



Let, Bus 1 travels D_1 km. in 15 sec. and Bus 2 travels D_2 km. in 15 sec.

$\Rightarrow D_1 = 48 \times \frac{5}{18} \times 15 = 200$ m.

$D_2 = 36 \times \frac{5}{18} \times 15 = 150$ m.

$\therefore$ Distance b/w D_1 and D_2 :-

$= \sqrt{(200)^2 + (150)^2}$

= 250

16. (c) Relative Speed = 24 – 10

= 14 km/hr.

Time $= \frac{280 \times 18}{14 \times 5} = 72$ sec.

$\Rightarrow \frac{72}{60} = 1.2$ min.

Maths by Aditya Ranjan sir

17. (c)

	A	B
Time taken for 1 jump	$\frac{1}{8}$	$\frac{1}{6}$
Distance of 1 jump	$\frac{x}{7}$	$\frac{x}{5}$

Where, x is the distance covered in 7 jumps and 5 jumps by A and B respectively

$\Rightarrow$ Speed $\frac{8}{7} : \frac{6}{5} \Rightarrow 40 : 42$

$\Rightarrow 20 : 21$

18. (b) Avg. speed = $\frac{\text{Total distance}}{\text{Total time}}$

$= \frac{250+350}{\frac{250}{50}+\frac{350}{70}}$

$= \frac{600}{5+5} = 60$ km/hr.

19. (d) Distance travelled by thief in 15 min.

$\Rightarrow 60 \times \frac{1}{4} = 15$ km.

ATQ,

$\frac{1}{2} = \frac{15}{(P-60)}$

$30 = P - 60$

$P = 90$ km/hr.

20. (a)

Relative speed = 25 + 30

= 55 km/hr.

Distance = 135 – 25 = 110 km.

$\Rightarrow$ Time = $\frac{110}{55} = 2$ hrs.

i.e. at 11 am.

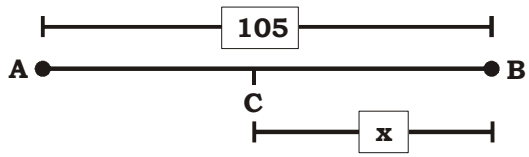
21. (d) Avg. speed = $\frac{\text{Total distance}}{\text{Total time}}$

$= \frac{(40\times3)+(30\times2)+(80\times5)}{3+2+5}$

$= \frac{120+60+400}{10}$

$= \frac{580}{10} = 58$ km/hr.

22. (a)



ATQ,

Distance travelled by Meenu = 105 – x

Distance travelled by Daya = 105 + x

$\Rightarrow \frac{105-x}{10} = \frac{105+x}{25}$

$\Rightarrow 105 \times 5 - 5x = 105 \times 2 + 2x$

$\Rightarrow 105 \times 3 = 7x$

$\Rightarrow x = 45$

$\Rightarrow$ AC = 105 – 45

= 60 km.

23. (b) Relative speed = (10 – x) km/hr.

ATQ,

$\frac{100\times18}{(10-x)\times5} = 3\times60$

$\Rightarrow 10 - x = 2$

$\Rightarrow x = 8$ km/hr.

24. (a) Avg. speed = $\frac{2\times S_1\times S_2}{S_1+S_2}$

$= \frac{2\times45\times80}{45+80}$

= 57.6 km/hr.

25. (c) Avg. speed = $\frac{\text{Total distance}}{\text{Total time}}$

$= \frac{300+300}{5+10} = \frac{600}{15}$

= 40 km/hr.

26. (a) Avg. speed = $\frac{\text{Total distance}}{\text{Total time}}$

$\Rightarrow \frac{(6\times2)+(2\times1)+\left(\frac{18}{5}\times1\right)+(4\times3)}{2+1+1+3+1+\frac{1}{2}}$

$\Rightarrow \frac{148\times2}{5\times17} = \frac{296}{85}$

= 3.48 km/hr.

Maths by Aditya Ranjan sir

27. (a)

A ●———————● B

	A		B
Time	6		10
Speed	10x	:	6x

⇒ Relative speed = 10 + 6 = 16x

Distance = 10 × 6 = 60x

Time at which they meet:-

$= \frac{60}{16} = \frac{15}{4} = 3\frac{3}{4}$ hrs.

⇒ 3 hrs. 45 min.

⇒ at 11 : 45 am.

28. (b)

Relative speed = 12 – 10

= 2 m/sec.

$\text{Time} = \frac{40}{2} = 20\,\text{sec}.$

⇒ distance by police = 20 × 12

= 240 m.

29. (d)

6 km. x km.

ATQ,

32 × 3 = 6 + 60 × t

$\Rightarrow t = \frac{3}{2} = 1.5\,\text{hr}.$

⇒ he walked of $\frac{3}{2}$ hrs.

⇒ Walking speed $= \frac{6 \times 2}{3}$

= 4 km/hr.

30. (c)

x = 10 km/hr., y = 4.5 km/hr.

$$\frac{D}{10+4.5} + \frac{D}{10-4.5} = 2$$

$$D\left[\frac{1}{14.5} + \frac{1}{5.5}\right] = 2$$

$$D = \frac{2}{20} \times 14.5 \times 5.5$$

= 7.98

31. (b)

$$\text{Average speed} = \frac{\text{Total distance}}{\text{Total time}}$$

$$= \frac{45+80+6}{\frac{45}{15}+\frac{80}{40}+\frac{6}{2}}$$

$$= \frac{131}{3+2+3} = \frac{131}{8} = 16.38$$

Maths by Aditya Ranjan sir

TRAIN

दलयें म

12

1. The distance covered by a train in (5y – 1) hours is (125y³ – 1) km. The speed of the train is:

है दिलयें मं ेदे (5y – 1) ि अरे निजलिनएं ियवकी ब (125y³ – 1) km ईचीदलयें मं ंडे ा ि ेनं मकहच

SSC CGL 02/12/2022 (Shift- 02)

(a) (5y³ – 1) km/h
(b) (25y² – 5y + 1) km/h
(c) (5y + 1) km/h
(d) (25y² + 5y + 1) km/h

2. Two trains P and Q start from stations S and T towards each other. Train P takes 4 hours 48 minutes and train Q takes 3 hours 20 minutes to reach T and S, respectively, after they meet. If the speed of train P is 45 km/h, what is the speed of train Q?

ी निरशनिP ि 8 ेदि Q, ि%र ले: ि S 8 ेदि T वलिहे ी बदलि - 8 ेलिडा : ि ेद्धं दन-ईचीवी। ै निमजा : लि निक्षे ी ि जडे प T 8 ेदि S नै ि ेड: निजलिरशनि P ै ेनि? ि अरनि? स मिज: र ि 8 ेद रशनि Q ै ेनू ि अरनिटलमिजो र ी ेविजएा ियने ईचीएमे रिशन P ै ंडे ा ि 45 km/h ईएनि निरशनि Q ै ंडे ा ि, ऐ ईं

SSC CGL 02/12/2022 (Shift- 04)

(a) 48 km/h (b) 50 km/h
(c) 54 km/h (d) 55 km/h

3. With an average speed of 45 km/h, a train reaches its destination on time. If it goes with an average speed of 30 km/h, it is late by 15 minutes. The total journey is:

है रिशनि 45 km/h ी 8 ेवनडे ा विवनि 8 न : नियतथए नै विजएनि दनि ेड न-ईचीएमे एिइ 30 km/h ी 8 ेवन डे ा विलिडा न-ईएनि ने लि 32 मिज: र ी लविलि ेड न-ईचीं ा ऐ ेसे ी ईं

SSC CGL 03/12/2022 (Shift- 04)

(a) 20.5 km (b) 40.5 km
(c) 22.5 km (d) 30.5 km

4. From point H, at 6 : 30 pm, a train starts moving towards point K at the speed of 90 km/hr. Another train starts moving from point K at 7:30 p.m. towards point H at the speed of 72 km/hr. Both the train meet at 11:30 p.m. at point J. What is the ratio of the distance HJ and KJ?

मक्ष्ी ृ H विलिहे दिलयें मं 6:30 ि 8 न देइ: नि दि K ी ी 8 ेलि प्लमे व्ज-व्केअरे ी ंडे ा विलिडा : ि 8 ेदे ी दन-ईचीहै 8 ए दिलयें मं 7:30 ि 8 न देइ: नि दि मक्ष्ी ृ K विलिमक्ष्ी ृ H ै ी 8 ेलिध्टमे व्ज-व्केअरे ी ंडे ा विलिडा : ि 8 ेदे ी दन-ईचीं ी ले निदलयें मं ऐ ि मक्ष्ी ृ J नि दि 11:30 ि 8 न देइ: नि द मजा न-ईचीHJ निंखे ि KJ ी ब ै ेनि 8 : ृ ने नि, ऐ ईं

SSC CGL 06/12/2022 (Shift- 04)

(a) 25 : 16 (b) 5 : 16
(c) 36 : 25 (d) 31 : 19

5. Two trains are moving in the same direction at the speed of 36 km/hr and 48 km/hr. The time taken by faster train to cross a man sitting in the slower train is 33 seconds. What will be the length of the faster train?

ी निदलयें मं ऐ ि ू ज्ञमे व्ज-व्केअरे निंखे ि ? स मे व्ज-व्केअरे ी - ंडे ा विलिवजे : मि ेड जिलिडा दिइ-ईचीन-उ ंडे ा डे ा - दलयें मं ेदे 4 -ज-ंडे ा डे ा -दिलयें मं जिलिक्ष्ि 7 ल्हे ि ृ न्हे ै ेनि दी द: निजलिम ऐ यिऐ विजएि ू विलषं ईचीन-उम ंडे ा डे ा -दिलयें मं ी थ्क्षे वी, ऐ ईं लु

SSC CGL 07/12/2022 (Shift- 04)

(a) 770 metres (b) 90 metres
(c) 110 metres (d) 180 metres

6. Two trains are moving in the opposite direction at the speed of 48 km/hr and 60 km/hr respectively. The time taken by the slower train to cross a man sitting in the faster train is 12 seconds. What is the length of the slower train?

ी निदलयें मं ऐ ि जडे प ? स मे व्ज-व्केअरे निंखे ि ज्ञलमे व्ज-व्केअरे ी ंडे ा विलिमक्ष्न द-नमे ेड जिलिडा दिइ-ईचीं 4 -ज-ंडे ा डे ा -दिलयें मं ेदे नि क्ष्ंडे ा डे ा -दिलयें मं जिलिक्ष्ि 7 ल है ध्ि म, नं ै ेनि दी द: निजलिम ऐ यिऐ विजएि 3 ट विलषं ईचीं 4 -ज-ंडे ा डे ा -दिलयें मं ी थ्क्षे वी, ऐ ईं

SSC CGL 08/12/2022 (Shift- 02)

(a) 480 metres (b) 720 metres
(c) 180 metres (d) 360 metres

Maths by Aditya Ranjan sir

7. A train travels at a speed of 18 m/s in the first 5 minutes, covers 7.5 km in the next 10 minutes and covers 12 km in another 10 minutes. What is its average speed (in km/h, rounded off to 1 decimal place) for the entire journey?

है रिल्ल ने इस 2 मिनट: रजिस्ट्री 18 m/s की रफ्तार से 5 दन-ईं 8 या स्टिल मिनट: रजिस्ट्री 7.5 km की दूरी बनाई दन-ईं 8 दूसरी बदस्टिल मिनट: रजिस्ट्री 12 km की दूरी बनाई दन-ईं चल बनाए सेवा सिम हकीकत रफ्तार 8 वनयिमा (km/h जस्टिफाई जा उ सिंखे : नै नि बे सेवा न)ि, ऐ ईं

SSC CGL 13/12/2022 (Shift- 03)

(a) 59.8 (b) 71.2

(c) 45.7 (d) 64.6

8. Train A running at 81 km/h takes 72 sec to overtake train B, when both the trains are running in the same direction, but it takes 36 sec to cross each other if the trains are running in the opposite direction. If the length of train B is 600 metres, then find the length of train A. (in metres)

81 km/h की रफ्तार विसिडा : सिंडो रिल्ल A, रिल्ल B विल 8 यसिमें ा : सिंजस्ट्री 72 sec की विजए निक्ष ि ला-ईं क्रिक्ष ी ले सिंरिल्ल है ि-मि ेंजिसिडा दिइ-ईं ला-ईं ि सेवा : एमि रल्ल सिम्फ दन-मि ेंजिसिडा दिइ-ईं ने सिंहै द्वी बदसिंके द द: सिंजस्ट्री 36 sec की विजए ि ला-ईं ि एमि रिल्ल B की रफ्तार वत ज़ल्ल जिर दईं ने सिंरिल्ल A की रफ्तार की नौ दल्ली (जर दजिले

SSC CGL 13/12/2022 (Shift- 03)

(a) 600 (b) 480

(c) 590 (d) 900

9. Two stations R and S are 400 km apart from each other. A train leaves from R to S and simultaneously another train leaves from S to R. Both trains meet after 10 hours. If the speed of the first train is 4 km/hr more than the second train, then what is the speed of the slower train?

दो स्टेशन: R निखे S है ि बदसिंवसि?ल्ल मि व्ज-वें दूरी बन दईं ी है दिलये मि R विसिंS की सिम हमें ा न-ईं निखे । व-विजए है 8 एदिलये मि S विसिंR की सिम हमें ा न-ईं ी 10 ि अरसिंसे कि 5 डे नौ ि ले सिंदिलये मि ऐ मिजा न-ईं ी एमि न इा -दिलये में -डे ा ि बद-दिलये मि विसि?मि व्ज-व्के अरसे 8 मीटर ि ईं ने सिंमि -जन्डे ा -दिलये में -डे ा ि, ऐ ईं

SSC CGL 13/12/2022 (Shift- 04)

(a) 18 km/h (b) 26 km/h

(c) 16 km/h (d) 22 km/h

10. A goods train 350 m long passes through a tunnel of length 1250 m in 80 seconds. What is the speed of the train?

350 m ि ह-ईं है जिा ये मि 1250 m ि ह-ईं वृदस्ट्री के सिंस्ल वैलंत जिसिंदी दन-ईं ी जिा ये में -डे ा ि, ऐ ईं

SSC CGL TIER- II 07/03/2023

(a) 64 km/h

(b) 56 km/h

(c) 78 km/h

(d) 72 km/h

ANSWER KEY

1.(d)	2.(c)	3.(c)	4.(a)	5.(c)	6.(d)	7.(a)	8.(b)	9.(a)	10.(d)

Maths by Aditya Ranjan sir

SOLUTIONS

1. (d)

Distance = $(125y^3 - 1^3)$

Time = $(5y - 1)$

$$\text{Speed} = \frac{\text{Distance}}{\text{time}}$$

$$= \frac{125y^3 - 1^3}{5y - 1}$$

$$= \frac{(5y)^3 - 1^3}{5y - 1}$$

$$= (25y^2 + 5y + 1) \text{ km/hr}$$

2. (c)

We know,

$$\frac{\text{Speed of P}}{\text{Speed of Q}} = \frac{\text{time by Q after meet}}{\text{time by p after meet}}$$

$$\Rightarrow \frac{45}{Q} = \sqrt{\frac{4\frac{48}{60}}{3\frac{20}{60}}} = \sqrt{\frac{10 \times 5}{3 \times 24}}$$

$$= \sqrt{\frac{25}{36}}$$

$$\frac{45}{Q} = \frac{5}{6}$$

$\Rightarrow$ Q = 54 km/hr

3. (c)

We know,

$$\frac{S_1 \times S_2}{S_1 - S_2} \times t = \text{Distance}$$

$$\Rightarrow \frac{45 \times 30}{45 - 30} \times \frac{15}{60} = 22.5\text{km.}$$

4. (a)

I train travelled for 5 hours before meeting

$\Rightarrow$ Distance by P = 90 × 5 = 450

= HJ

II Train travelled for 4 hours before meeting

$\Rightarrow$ Distance by θ = 72 × 4

= 288 km = KJ

$\Rightarrow$ HJ : KJ = 450 : 288

= 25 : 16

5. (c)

Relative speed = 48 – 36

= 12 km/hr

$$\Rightarrow \frac{\text{Length of faster train}}{\text{Relative speed}} = \text{time}$$

$$\Rightarrow \text{Length} = 33 \times 12 \times \frac{5}{18}$$

= 55 × 2 = 110 metre.

6. (d)

Relative speed = 48 + 60

= 108 km/hr

$$\text{Length} = 12 \times 108 \times \frac{5}{18}$$

= 360 metre.

7. (a)

Distance_1 = 18 × 5 × 60

= 5400 metre.

= 5.4 km

Distance_2 = 7.5 km

Distance_3 = 12 km

$$\Rightarrow \text{Average speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$

$$= \frac{5.4 + 7.5 + 12}{(5 + 10 + 10)} \times 60$$

$$= \frac{24.9}{25} \times 60$$

= 59.9 km/hr

Maths by Aditya Ranjan sir

8. (b)

$(A - B) \times 72 = L_A + 600$

$\Rightarrow \frac{5}{18}(81 - B) \times 72 = L_A + 600$ ...(1)

Also,

$\frac{5}{18}(A + B) \times 36 = L_A + 600$ ...(2)

From (1) and (2)

$\frac{5}{18} \times (81 - B)72 = (81 + B)\ 36 \times \frac{5}{18}$

$\Rightarrow 81 \times 2 - 2B = 81 + B$

$3B = 81$

$B = \frac{81}{3} = 27$

$\therefore$ Put B in (1)

$\Rightarrow (81 - 27) \times 72 \times \frac{5}{18} = L_A + 600$

$\Rightarrow 1080 - 600 = L_A$

$\Rightarrow L_A = 480$ mtr.

$\Rightarrow$ d

9. (a)

Let, speed of B = x

Speed o A = 4 + x

A.T.Q.

$\Rightarrow (x + 4 + x) = \frac{400}{10}$

$= 2x = 40 - 4$

$x = 18$

$\therefore$ Speed of slower train = 18 km/hr

10. (d)

$\text{Speed} = \frac{\text{Length of train + tunnel}}{\text{Time}}$

$= \frac{350 + 1250}{80} = \frac{1600}{80}$

$= 20$ m/s.

$\Rightarrow 20 \times \frac{18}{5} = 72$ km/hr.

Maths by Aditya Ranjan sir

RACE

दौड़

13

1. In a 1500 m race, Anil beats Bakul by 150 m and in the same race Bakul beats Charles by 75 m. By what distance does Anil beat Charles?

1500 m है दौड़ में अनिल बकुल को 150 m की दूरी से हराता है और उसी दौड़ में बकुल चार्ल्स को 75 m की दूरी से हराता है तो अनिल चार्ल्स को कितनी दूरी से हराता है?

SSC CGL 01/12/2022 (Shift- 01)

(a) 217.50 m (b) 200.15 m
(c) 293.50 m (d) 313.75 m

2. In a 400-metre race, A runs at a speed of 16 m/sec. If A gives B a start of 15 metres and still beats him by 10 sec, then what is the speed of B?

8%% में दौड़ है दौड़ में A 16 में दौड़ की गति से और B को 15 मीटर की बढ़त देता है फिर भी A, B को 10 सेकंड से हरा देता है तो B की गति क्या है?

SSC CGL 02/12/2022 (Shift- 02)

(a) 11 m/sec (b) 10 m/sec
(c) 13 m/sec (d) 9 m/sec

3. In a 100-m race, A beats B by 20 m and B beats C by 20 m. By how much distance does A beat C.

100 m है दौड़ में A, B को 20 m की दूरी से हराता है और B, C को 20 m की दूरी से हराता है तो A, C को कितनी दूरी से हराता है?

SSC CGL 02/12/2022 (Shift- 03)

(a) 64 m (b) 24 m
(c) 25 m (d) 36 m

4. In a 1200 m race, bike A beats bike B by 100 m. Bike B beats bike C by 100 m in a 600 m race. If bike A beats bike C by 30 sec in a 720 m race, then what is the speed of bike C?

1200 m है दौड़ में बाइक A, बाइक B को 100 m की दूरी से हराता है 600 m है दौड़ में बाइक B, बाइक C को 100 m की दूरी से हराता है तो बाइक A 720 m है दौड़ में बाइक C को 30 से कैसे हराता है बाइक C की गति क्या है

SSC CGL 03/12/2022 (Shift- 01)

(a) $\frac{17}{3}$ m / sec (b) $\frac{26}{9}$ m / sec
(c) $\frac{17}{9}$ m / sec (d) $\frac{26}{3}$ m / sec

5. In a linear race of 1000 m, A beats B by 50 m or 5 seconds. What is the difference between the speeds (in m/s) of A and B?

1000 m है सीधी दौड़ में A, B को 50 m या 5 सेकंड से हराता है A और B की गति (m/s में) में अंतर क्या है?

SSC CGL 06/12/2022 (Shift- 03)

(a) $1\frac{10}{19}$ (b) $\frac{10}{19}$
(c) $\frac{9}{19}$ (d) $\frac{9}{10}$

6. In a race, there are 4 members in a team. Each member has to cover 5 km one after another. If the total time taken is 30 minutes, then what would have been the average speed?

दौड़ में एक टीम में 4 सदस्य हैं प्रत्येक सदस्य को एक के बाद एक 5 km की दूरी तय करनी है यदि कुल समय 30 मिनट लगता है तो औसत गति क्या होगी?

SSC CGL 06/12/2022 (Shift- 04)

(a) $50\frac{km}{hr}$ (b) $40\frac{km}{hr}$
(c) $50\frac{m}{sec}$ (d) $40\frac{m}{sec}$

7. In a 1500 m race, if vehicle P gives vehicle Q a start of 200 m, then vehicle P wins the race by 8 sec. Alternatively, if vehicle P gives vehicle Q a start of 400 m, the race ends in a dead heat. How long does vehicle P take to run 1500 m?

Maths by Aditya Ranjan sir

1500 mहै हिीकहं महबत्दह, लारहPह, लारहQहै लह200 mहै हिनु`व्रहदक्रहताहक्रह, लारहP, 8 कै स्यहीकहधक्रिधलक्रहताह?कै हत, ्रीक्रिहबत्दह, लारहPह, लारहQहै लह400 mहै हिनु`व्रहदक्रहताहक्रहीकहनीलीहि्रीहकं लक्रहतलक्रहिताम, लारहPहै लह1500 mहं जरहं हतै क्रारलहकं बहज0क्रहता

SSC CGL 07/12/2022 (Shift- 01)

(a) 44 sec (b) 45 sec
(c) 40 sec (d) 60 sec

8. In a linear race of 500 m, A can beat B by 50 m and in a race of 600 m, B can beat C by 60 m. By how many metres will A beat C in a race of 400 m?

500 mहै हिू ै हीटलबिहदलोहं महA, Bहै लह50 mहकतीलहकै क्रहताहअतीह600 mहै हिदलोहं हBB, Cहै लह60 mहकहतीलहकै क्रहताह400 mहै हिदलोहं हA, Cहै लहै क्रारहं डिीहकहतीलू0ल

SSC CGL 08/12/2022 (Shift- 03)

(a) 70 (b) 68
(c) 76 (d) 72

9. In a 1000 m race, Arjun, Balaji and Charan are running. Arjun beats Balaji by 100 m, and Balaji beats Charan by 100 m. In the next 1000 m race (the speeds are the same as in the previous), Balaji gives Charan a head start of 100 m, and Arjun gives Balaji a head start of 100 m. Find the distance by which the winner is ahead of the person just behind him.

1000 mहै हिदलोहं हअधएहनल्मात्यहिअतीहं ीस्लहदलोीतहताहअधएहरहनल्मात्यहिै लह100 mहकहअतीहनल्मात्यहिर-ीस्लहै लह100 mहकहतीलात्यहअ0जहि1000 mहदलोहं म20त्रहत्सजहै हिव्रीतहतहिता-हनल्मात्यहिं ीस्लहै लह100 mहै हि।लह्अलक्रहदक्रहताहअतीहअधएहनल्मात्यहिै लह100 mहै हि।लह्अलक्रहदक्रहताह, तहदीहिं0लहै त्धिू महत्धकक-त, धक्रहकैं हत्सिह, लाहब्ब्त क्रहकहअत0हताम

SSC CGL 13/12/2022 (Shift- 01)

(a) 100 m (b) 40 m
(c) 30 m (d) 20 m

ANSWER KEY

1.(a)	2.(a)	3.(d)	4.(a)	5.(b)	6.(b)	7.(a)	8.(c)	9.(d)	

Maths by Aditya Ranjan sir

SOLUTIONS

1. (a)

Anil	Bakul	Charles
1500	1350	
	1500	1425
1500 :	1350 :	1282.5

⇒ Anil beats charles by (1500 – 1282.5)

⇒ 217.50m

2. (a) A's speed = 16 m/sec.

	A	B
Distance	400	385
Speed	16 m/s	–
Time	25 sec.	35 sec.

B's speed $= \frac{385}{35} = 11$ m/s

3. (d)

A	B	C
100	80	
	100	80
25 :	20 :	16
↓		↓
100		64

⇒ A beat C by 36 m

4. (a)

A	B	C
1200	1100	
	600	500
72	66	55
↓		↓
720		550

C cover (720 – 550)m in 30 sec.

⇒ C's Speed $= \frac{170}{30} = \frac{17}{3}$ m/sec.

5. (b)

A	B
100	950

B cover 50m in 5sec.

⇒ B's speed = 10m/sec.

A's speed ⇒

$\frac{1000}{A} = \frac{950}{B}$ = Time

$\frac{1000}{A} = \frac{950}{10}$

⇒ $A = \frac{200}{19} = \frac{10}{19}$

6. (b) $\frac{\text{Total distance}}{\text{Total time}}$ = Avg. speed

⇒ $\frac{4 \times 5}{\frac{30}{60}} = 20 \times 2 = 40$ km/hr.

7. (a)

	P	Q
Distance	1500	1100
Time	1	1
Speed	15x	11x

Also,

$\frac{1100}{11x} - \frac{1500}{15x} = 8$

$\frac{1300 - 1100}{11x} = 8$

200 = 88x

$x = \frac{200}{88}$

⇒ Speed of P $= 15 \times \frac{200}{88}$

⇒ Time $= \frac{1500}{15 \times 200} \times 88$

= 44 sec.

8. (c)

A	B	C
500	450	
	600	540
100	90	81
↓		↓
400		324

⇒ A beat C by 76 m

9. (d)

Arjun	Balay	Charan
1000	900	
	1000	900
100	90	81

Also,

In next race. –

	Arjun	Balay	Charan
Distance	1000	900	800
Speed	100	90	81
Time	10	10	$\frac{800}{81}$
Time	810	810	800
	81 :	81 :	80

∴ In 1 sec, Arjun can travel 100m and charan 80m

Maths by Aditya Ranjan sir

BOAT & STREAM

˙ लादि ल्ल्रि ल्ल्ल

14

1. A man rows a boat a certain distance downstream in 9 hours, while it takes 18 hours to row the same distance upstream. How many hours will it take him to row three-fifth of the same distance in still water?

है दितायेहि ि लाौं लि आलौं ेरि जलयिमिएकलत्तिहै है रिं रजएतिाड्रेिं चिल्लयिमित् ि इतलतिक्रिश:रै ि आल ैं ेरिग ड्रेतरि जलयिमि लाएिकलत्तिहि8यलंिाड्रेति् ि इं - यमि%8ि5वचिल्लौं लि8य् कि् तलतिक्ष्ि जलशि कयिमि8यलं ाड्रेिं तिं ि:डि लाक्ष्ि लौं लि लाएिकलंयिमि%8रि तं - चिल्लकि् ृन>

SSC CGL 01/12/2022 (Shift- 02)

(a) 9.5 (b) 7.2
(c) 10 (d) 12

2. A swimmer swims from a point P against the current for 6 min and then swims back along the current for next 6 min and reaches at a point Q. If the distance between P and Q is 120 m then the speed of the current (in km/h) is:

है तिल्लैि है रि:पिP8नि लौं रिग ड्रेतरि यं डतै तल्लतलतिमिद ल्लरि ड्रेद्ि कि यं डौं रिकहनि लौं ि8लल तल्लतलतिमिद ल्लहै रि:पिQि इ तीएतलतिक्ष्ि रा िPि द ल्ल Qौं ि:एिं ेरि ड्रेि120 mतिक्रितलकि लौं ेएिलकि(km/h यमि तिक्ष्ि

SSC CGL 01/12/2022 (Shift- 03)

(a) 0.4 (b) 0.2
(c) 1 (d) 0.6

3. The speed of a boat in still water is $5\frac{1}{3}$ km/h. It is found that the boat takes thrice as much time to row up than it does to row down the same distance in the river stream. Find the speed of the river stream.

जलशि कयिमिहै ि लाौं ेएिलकि $5\frac{1}{3}$ km/hतिक्ष्ि तं ि ल्लल तमिरै ि लाौं लि लौं ेरिग ड्रेतरि जलयिमिहै रिं रजएत ाड्रेति् ि इं यिमिकृ ं गिल्लकलि8य् क्रि लौं ेरि जलयिन गते ाड्रेति् ि इं यिमिकृ ं गिल्लकि8य् ि लीतें ृ ि लीतिक्ष्ि ं ेौं ेनि लौं ेएिलकृ लौं ेरश हब्द

SSC CGL 05/12/2022 (Shift- 02)

(a) $\frac{23}{27}$ m/sec (b) $\frac{22}{27}$ m/sec
(c) $\frac{20}{27}$ m/sec (d) $\frac{19}{27}$ m/sec

4. A boat racer can row $21\frac{3}{2}$ km/h in still water. If the speed of river is 12.5 km/h, it takes him 40 minutes to row to a place and back, how far off is the place (consider up to two decimals)?

है ि:ल्लइि8इरिटस्ल्लशि कयिमि $21\frac{3}{2}$ रि ये ल्चल्लौं ेएिलक 8ि:ल्लएिकलि8 तलतिक्ष्ि रा ि12.5रि ये ल्चल्लौं ेएिलक 8एिकं गिल्लकेिं ेयिक्रि%8ि है टिस्ल्लंतिै शिलंदि ल्ल गल8दिलंयिमि40रियं डौं लि8य् कि् तलतिक्रितलगत टस्ल्लंरि तं ेड्रेतिमि।ा जल्यकगौं ि लिटस्ल्लंतिै यिलंू ल्ल ैं इस>

SSC CGL 06/12/2022 (Shift- 01)

(a) $5\frac{5}{27}$ km (b) $5\frac{2}{5}$ km
(c) $4\frac{5}{27}$ km (d) $3\frac{5}{27}$ km

5. A man rows to a place 48 km distant and comes back in 14 hours. He finds that he can row 4 km with the stream in the same time as 3 km against the stream. The speed of the stream is:

है दितायेि48 kmड्रेहै टिस्ल्लंि इं लाएिकैल इ श ल्लतलतिमिद ल्ल5, चिल्लयिमिगल8दि ल्लतलतिक्ष्ि गत ि ल्लतलतिमिरै गत नि लौं ेि8ल्लतलि4 kmौं ेड्रेति् ि इं ि8 तलतिक्रि श:रै ि%8ि8य् यिकि लौं ेरिग ड्रेतगत ि3 kmौं ेड्रेत् ि इं ि8 तलतिक्ष्ि लौं ेएिलकतिक्ष्ि

SSC CGL 07/12/2022 (Shift- 02)

(a) 1.5 km/h (b) 3.5 km/h
(c) 1.8 km/h (d) 1 km/h

Maths by Aditya Ranjan sir

6. A boat moves 25km upstream and 39km downstream in 8 hours. It travels 35km upstream and 52km downstream in 11 hours. What is the speed of the stream if it travels at a uniform speed?

है ि ैा ातीवि चिक्कयमिक ल्लतीं ेरिग इेतरिा जत्तीयमि25 km द ल्लाक ल्लतीं ेरिा जत्तीयमि39 kmएिकतेतिम्द्धि तर55चिक्क-यमिक ल्लतीं ेरिग इेतरिा जत्तीयमि35 kmद ल्लाक ल्लतीं ेरा जत्तीयमि52 kmीं ेरिाइेति ि इेतेतिम्द्धि रा ि तहिै 8यलंएिल्कि8ि ुल्लतीं इेतेतिक्रतिलक ल्लतीं ेएिल्कि: तत्यहब्द्ध

SSC CGL 12/12/2022 (Shift- 01)

(a) 4 km/h
(b) 5 km/h
(c) 6 km/h
(d) 3 km/h

7. A boat covers a certain distance against the stream in 9 hours 36 min and it covers the same distance along the stream in 6 hours. What is the ratio of the speed of the boat in still water to that of the stream?

है ि ाक्ति ल्लतीं ेरिग इेतरिा जत्तीयक्रिहै रिं रजएतरिा इेे ं लीं चिक्क3 रियं डयिमित ि इेतेतिम्द्धिद ल्लाि तक्ति ल्लतीं ेरा जत्तीयमि8यलंरिा इेेि लीं चिक्कयमित ि इेतेतिम्द्धिरटस्ल्ल श कयमिं ाीं ेएिल्कि द ल्लाक ल्लतीं ेएिल्कि लीं दं ीला 2 लीं तृ ल्ल

SSC CGL 12/12/2022 (Shift- 02)

(a) 13 : 3
(b) 9 : 2
(c) 11 : 6
(d) 8 : 5

8. A boat covers 35 km downstream in 2 h and covers the same distance upstream in 7 h. Find the speed (in km/h) of the boat in still water.

है ि ाक्ति ल्लतीं दि ीं ी क3सरि ये पं ेरिा इेेि चिक्कयमित ं इेतेतिमिद ल्लाक ल्लतीं क्रिरतीं क8यलंरिा इेेि6चिक्कयमित ं इेतेतिम्द्धिजत्ताश कयमिं ाीं ेएिल्कि1रै ये प्ल्चक्कतीयवा ि ला ं ेरश हब्द्ध

SSC CGL TIER- II 03/03/2023

(a) 11.25
(b) 28.75
(c) 18.25
(d) 10.55

ANSWER KEY

1.(b)	2.(d)	3.(c)	4.(a)	5.(d)	6.(a)	7.(a)	8.(a)	

Maths by Aditya Ranjan sir

SOLUTIONS

1. (b)

Let, x = speed of boat

y = speed of stream

ATQ,

$9(x + y) = (x - y)\ 18$

$27y = 9x$

$\frac{y}{x} = \frac{1}{3}$

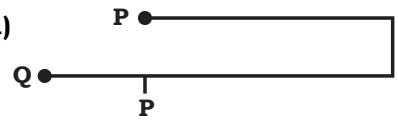
$D = 9(x + y)$

$= 9(4y)$

$\therefore \frac{\frac{3}{5} \times D}{x} \Rightarrow \frac{\frac{3}{5} \times 9x\ 4y}{3y}$

$= \frac{36}{5} = 7.2$

2. (d)



PQ = 120m

x = speed of swimmer

y = speed of stream

ATQ,

$\frac{6}{60}(x+y) - \frac{6}{60}(x-y) = \frac{120}{1000}$

$\Rightarrow (x+y) - (x-y) = \frac{20 \times 6}{100} = \frac{6}{5}$

$2y = \frac{6}{5}$

y = 0.6 km/hr.

3. (c) $x = \frac{16}{3}$ km / hr.

$\frac{x-y}{x+y} = \frac{1}{3}$

$\Rightarrow x = 2a,\ y = a$

$2a = \frac{16}{3}$

$\Rightarrow a = \frac{16}{6} = \frac{8}{3}$ km / hr.

$\frac{8}{3} \times \frac{5}{18} = \frac{20}{27}$ m / sec.

4. (a) $x = \frac{45}{2}$ km / hr.

y = 12.5 km/hr.

$\frac{D}{x-y} + \frac{D}{x+y} = \frac{40}{60}$

$D\left[\frac{1}{10} + \frac{1}{35}\right] = \frac{2}{3}$

$D = \frac{2}{3} \times \frac{35 \times 10}{45} = \frac{35 \times 4}{27} = 5\frac{5}{27}$ km.

5. (d) $\frac{x+y}{x-y} = \frac{4}{3}$

$\Rightarrow x = 7y$

ATQ,

$\frac{48}{x+y} + \frac{48}{x-y} = 14$

$\Rightarrow \frac{48}{8y} + \frac{48}{6y} = 14$

$\Rightarrow \frac{6}{y} + \frac{8}{y} = 14$

$\Rightarrow y = 1$ km/hr.

6. (a) $\frac{25}{x-y} + \frac{39}{x+y} = 8$

$\frac{35}{x-y} + \frac{52}{x+y} = 11$

$\Rightarrow x - y = 5$

$x + y = 13$

y = 4 km/hr.

7. (a) $\frac{x+y}{x-y} = \frac{9\frac{3}{5}}{6} = \frac{48}{5 \times 6} = \frac{8}{5}$

$\Rightarrow 5x + 5y = 8x - 8y$

$\Rightarrow 3x = 13y$

$\frac{x}{y} = \frac{13}{3}$

8. (a)

Let, Speed of boat = x

Speed of stream = y

A.T.Q,

$\frac{35}{x+y} = 2, \frac{35}{x-y} = 7$

$\Rightarrow x - y = 5$

$x + y = \frac{35}{2}$

$x = \frac{45}{4} = 11.25$

Maths by Aditya Ranjan sir

NUMBER SYSTEM

लनो %ड्डाद ज

15

1. Which of the following numbers is a divisor of $(49^{15}-1)$?

है ैं ह्द हलाये ंम ेगऔत र जे लनो एक्तं ैरी इे ओ ंगाचअ ड़त

SSC CGL 01/12/2022 (Shift- 01)

(a) 46 (b) 14
(c) 8 (d) 50

2. The table given below shos the number of spoon manufactured by five factories.

Factory	Spoon
P	100
Q	200
R	150
S	50
T	250

What are the ratio of number of spoon manufactured by P to the number of spoon manufactured by R?

ै जोगक्रेजश्:8याह्द ओ %ाडे %क्ह व्लोमक्षत्रो फ%ाक्रै अेजश्:8 मं मोमअेज लनो ओगक्र ाड्डेजड़?

P क्षत्रो है ंये मं मोमअेज लनो ओ R क्षत्रो है ंये मं माम अेज लनो ओ ू ै ड्डाये ू नो ड़त

SSC CGL 01/12/2022 (Shift- 02)

(a) 3 : 2 (b) 2 : 3
(c) 14 : 1 (d) 1 : 3

3. What will be the remainder when $27^{27} + 27$ is divided by 28?

चले 10^{10},10 अेग ं ै ओग1ु ेगह्र्थ ाह्यये हअनो चा32 योग्र ास%क्ह हअयै ो डाश्ा

SSC CGL 01/12/2022 (Shift- 03)

(a) 28 (b) 27
(c) 25 (d) 26

4. If the 5-digit number 750PQ is divisible by 3, 7 and 11, then what is the value of P + 2Q?

नह्के 750 Q 3अे 3गजे बरे ू अजो लनो डेत चोगप्2 0 ू ह्रे ीं ेगह्र्थ ाव्ने डेट योगP + 2Q ओ ंै ेकाये अज्ह्य3?

SSC CGL 01/12/2022 (Shift- 04)

(a) 17 (b) 15
(c) 18 (d) 16

5. If the 4-digit number x67y is exactly divisible by 9, then the least value of (x + y) is _____.

नह्के x67y 3अे 3गजेक्ू अजो लनो डेत चोगते ेग%ाड्डेख ह्र्थ ाव्ने डेट योग(x +y) ओ ज्ञै6यं ंै ेे _____ड़?

SSC CGL 02/12/2022 (Shift- 01)

(a) 9 (b) 0
(c) 5 (d) 3

6. In a class of students, the first student has 2 toffees, second has 4 toffees, third has 6 toffees and so on. If the number of students in the class is 25, then the total number of toffees are divisible by _____.

उामोमअेज3अे अमो ंये %डदे गउामे अेग%ा ेे व्ह%क्वो-डट क्र6ेगअेग%ा के व्ह%क्वो-डट यज ेगअेग%ा ेे व्ह%क्वो-डत ह्रे : जेयक्डे ंजेउामोमअेग%ा व्ह%क्वो-डं? नह्के अमा ेमउामोमअेज लनो 1बे डट योगव्ह%क्वोमअेजअदे लनो आग _____ ेगं ाव्ने हअनो चो अयो ड़?

SSC CGL 02/12/2022 (Shift- 02)

(a) 5 and 7 (b) 5 and 13
(c) 11 and 13 (d) 7 and 11

7. What will be the least number which when doubled will be exactly divisible by 15, 18, 25 and 32?

धडे उाड्डेज ेगउाड्डेज लनो ू नो डाश्जेहच ेगक्राश्टो अै ेग%ा धडे ीबे2ी ु 2 1बे ू ह्रे प्ो ेग%ाड्डेखे ह्र्थ ाव्ने डोगचा3श्ज़

SSC CGL 02/12/2022 (Shift- 02)

(a) 3600 (b) 7200
(c) 6400 (d) 3200

8. The difference of two numbers is 1564. After dividing the larger number by the smaller, we get 6 as quotient and 19 as remainder. What is the smaller number?

व्रोग लनू ोमओ ू यक्रे ीबन्के डट ल्ध्ज लनो ओगउाड्डेज ग ह्र्थ ाह्यये अै ेग%ा2 डं ंमं ाश%क्ह अेगथ % ंमे ू ह्रे, ास%क्ह अेगथ % ंमी ते %ह्यये डायो डट उाड्डेज लनो ू नो ड़त

SSC CGL 02/12/2022 (Shift- 03)

(a) 456 (b) 287
(c) 623 (d) 309

Maths by Aditya Ranjan sir

9. Which of the following numbers are divisible by 2, 3 and 5?

है ैं ह्र ह्लाये ंम ेगऔत र जे ल्लो 12 ेू ाे बे ेगर्ह्य ाव्न ड़त

SSC CGL 02/12/2022 (Shift- 04)

(a) 5467760 (b) 1345678
(c) 2345760 (d) 2456732

10. Which of the following statement is correct?

I. The value of $100^2-99^2+98^2-97^2+96^2-95^2+94^2-93^2+.....+2^2-1^2$ is 5050.

II. If $8x+\frac{8}{x}=-16$ and $x<0$, then the value of $x^{197}+x^{-197}$ is 2.

है ैं ह्र ह्लाये ंम ेगऔते ो अ ैं ेू डेजड़त

I. $100^2-99^2+98^2-97^2+96^2-95^2+94^2-93^2+.....+2^2-1^2$ ओ ंै ेू 5050 ड़?

II. नह्के $8x+\frac{8}{x}=-16$ ेू $x<0$ डे योग $x^{197}+x^{-197}$ आ ंै ेू ो ड़?

SSC CGL 02/12/2022 (Shift- 04)

(a) Only I (b) Only II
(c) Both I and II (d) Neither I nor II

11. The nearest number which is greater to 87501, and is completely divisible by 765 is :

धडे है अद्ध्यं ेू ल्लो चोगु 0ब ैं ेगल्ध्ज डेतू ाे 0-बे ग %ाखेर्ह्य ाव्ने डेत धडे काये अद्ध्च3?

SSC CGL 03/12/2022 (Shift- 01)

(a) 88975 (b) 87975
(c) 87966 (d) 87775

12. What will be the remainder when 7^{42} is divided by 48?

चले 0ौ ओगकु ेगर्ह्य ाह्यये ह्अनो चा32 योग्र ासे काय अद्ध्च3?

SSC CGL 03/12/2022 (Shift- 02)

(a) 2 (b) 3
(c) 1 (d) 0

13. A number when divided by 7 leaves remainder of 4. If the square of the same number is divided by 7, then what is the remainder?

ह्अ जे ल्लो ओगे0 ेगर्ह्य ाह्यये अै ेग%े के ास%व्दे ल्मया डे? नह्के प जे ल्लो अेगधशे8 ओगे0 ेगर्ह्य ाह्यये ह्अना चा32 योग्र ास%व्दे ेू नो डाश्ा?

SSC CGL 03/12/2022 (Shift- 03)

(a) 3 (b) 1
(c) 4 (d) 2

14. Find the largest number of 3 digits divisible by 4 and 7.

केू ाे 0 ेगर्ह्य ाव्ने ेू ओमधादजे ल ेगल्ध्ज ल्लो काये अत्र्ी

SSC CGL Pre 3/12/2022 (Shift- 04)

(a) 960 (b) 980
(c) 990 (d) 970

15. If the 8-digit number 123456xy is divisible by 8, then the total possible pairs of (x,y) are:

नह्के ु ेू ओमअेज ल्लो 123456xy, 8 ेगर्ह्य ाव्ने डर योग(x,y) अेगअदे ह्अयै ेग ंा-ाह्यये नढं ेू डाश्ग

SSC CGL 03/12/2022 *Shift- 04)

(a) 8 (b) 13
(c) 10 (d) 11

16. Which of the following pairs of non-zero values of p and q make 6-digit number 674pq0 divisible by both 3 and 11?

p ेू ाे q अेग्र ाल्लयके ंै ोमओ है ैं ह्र ह्लाये ंम ेगऔत र ा नढं ेू ओमअेज ल्लो 674pq0 ओगके ेू ाे ीं ्रौगाम ेगर्ह्य ाव्ने ै ायो ड़त

SSC CGL 05/12/2022 (Shift- 01)

(a) p = 2 and q = 2 (b) p = 5 and q = 4
(c) p = 4 and q = 2 (d) p = 5 and q = 2

17. On dividing a certain number by 363, we get 17 as the remainder. What will be the remainder when the same number is divided by 11?

3अे ल्लो ओगप्र्रे क्षत्रो र्ह्य ाह्यये ह्अनो चायो डेत याग ास%व्दे ो0 %ह्यये डायो डे? चले प जे ल्लो ओगीं क्षत्रो र्ह्य ाह्यये ह्अनो चा3शे योग्र ास%व्दे ेू नो डाश्ा?

SSC CGL 05/12/2022 (Shift- 02)

(a) 7 (b) 8
(c) 6 (d) 9

18. The largest five-digit number which when divided by 7, 9 and 11, leaves the same remainder as 3 in each case, is:

%ामे ेू ओमधादजे ल ेगल्ध्ज ल्लो औत र जेडर्ह्य ह्च ेग02 त ेू ाे ीं ेगर्ह्य ाह्यये अै ेग%े %ह्यास्ो ह्र)ह्ये ंम ंै ास%व्दे ेे ल्मयो ड़त

SSC CGL 05/12/2022 (Shift- 02)

(a) 95840 (b) 98685
(c) 96720 (d) 99795

19. Find the greatest 5-digit number which is divisible by 11, 33, 99 and 121.

बेू ओमअेज ल ेगल्ध्ज ल्लो काये अद्ध्च3े चोगीं2 ्र्र2 ततेू ाे ीं ेगर्ह्य ाव्ने डाश्ी

SSC CGL 05/12/2022 (Shift- 03)

(a) 90099 (b) 99990
(c) 99099 (d) 90909

Maths by Aditya Ranjan sir

20. What is the smallest number that should be added to 4567 so that the sum is divisible by 7?

क्क-0 ेमधडे उाह्रेज ेगउाह्रेज औत र जे ल्ला चायषेज चा3 हअे नाश%क्के 0 ेगर्ह्य ाान्ने डा्ग

SSC CGL 05/12/2022 (Shift- 03)

(a) 7 (b) 5
(c) 6 (d) 4

21. If the 9–digit number 83p93678Q is divisible by 72, then what is the value of $\sqrt{P^2 + Q^2 + 12}$?

नह्के ते ू ओमअेज ल्ला 83p93678Q, 72 ेगर्ह्य ाान्न डे योग $\sqrt{P^2 + Q^2 + 12}$ ओ ं ै ेू नो ड़त

SSC CGL 05/12/2022 (Shift- 04)

(a) 6 (b) 7
(c) 8 (d) 9

22. The value of 97 × 103 is _____.

97 × 103 ओ ं ै _____ डे

SSC CGL 06/12/2022 (Shift- 01)

(a) 7999 (b) 9991
(c) 8991 (d) 9981

23. Find the greatest number that will divide 49, 147 and 322 to leave the same remainder in each case.

धडे ल्ह्ज ेगल्ह्ज ल्ला काये अज्ह्च3 2 हच ेगक्त2 ै क0 ू ाे प1ै ओगर्ह्य ाहचये अत्रै ेग%े %ह्नमो हरु)ह्ये ं ै ं ास%क्के %ह्नुये डा्ग

SSC CGL 06/12/2022 (Shift- 01)

(a) 9 (b) 5
(c) 7 (d) 8

24. A number n when divided by 6 leaves a remainder 3. What will be the remainder when $(n^2 + 5n + 8)$ is divided by 6?

3अे ल्ला क्रे ओगचले ने ेगर्ह्य ाहचये हअनो चायो डे याग ं ास%क्के ेे ल्मयो डे $(n^2 + 5n + 8)$ ओगन ेगर्ह्य ाहचय अत्रै ेग%े ं ास%क्के ू नो डाश्ा

SSC CGL 06/12/2022 (Shift- 01)

(a) 1 (b) 3
(c) 5 (d) 2

25. $3^{50} + 9^{26} + 27^{18} + 9^{28} + 9^{29}$ is divisible by which of the following integers?

$3^{50} + 9^{26} + 27^{18} + 9^{28} + 9^{29}$ है ै ह्द ह्लाये ं ेगहअ %6ाश्ो ेगर्ह्य ाान्ने ड़त

SSC CGL 06/12/2022 (Shift- 02)

(a) 11 (b) 5
(c) 7 (d) 2

26. The average of eight consecutive odd numbers is 48. Find the sum of the fifth and seventh numbers.

ू ाे कृं ाश्ये ह्यसं ल्ला ोमओ ू ात ये कु डे %ाश्ध्ज ू ाे ायधेज ल्ला ोमओ नाश्े काये अज्ह्च3?

SSC CGL 06/12/2022 (Shift- 03)

(a) 102 (b) 86
(c) 89 (d) 90

27. What is the smallest perfect square which is completely divisible by each of 16, 18 and 36?

धडे ल ेगउाह्रे %6ो8धश्े8औते ो डेत चोगी ÷2 ै ु ू ाे प÷ ं ेग%ह्नमो ेग%6ाश्ो ेगर्ह्य ाान्ने ड़त

SSC CGL 06/12/2022 (Shift- 03)

(a) 144 (b) 81
(c) 196 (d) 169

28. Numbers divisible by 9 between 43 and 481 are:

क्के ू ाे कुं ै ओगल्ज ं ेमहअयै जे ल्ला35ते क्षत्रो र्ह्य ाान्न ड़त

SSC CGL 06/12/2022 (Shift- 03)

(a) 51 (b) 49
(c) 48 (d) 50

29. What should be subtracted from 246837 to make it divisible by 13?

1क्ु प0 ं ेम ेगहअयै ो ँ ाह्नो चा3े हअे धडे ो ेे ेगर्ह्य ाान्न डोगचा3श्ा

SSC CGL 06/12/2022 (Shift- 04)

(a) 4 (b) 5
(c) 3 (d) 6

30. If a number K = 42 × 25 × 54 × 135 is divisible by 3, then find the maximum value of a.

नह्के 3अे ल्ला K = 42 × 25 × 54 × 135, 3 क्षत्रो र्ह्य ाान्ने डे योगa ओ ू ह्र अयं ं ै काये अज्ह्च3?

SSC CGL 07/12/2022 (Shift- 01)

(a) 6 (b) 7
(c) 4 (d) 5

31. How many numbers from 1 to 430 are divisible by 7 and 11 both?

ै ेगक्र. यअे हअयै जे ल्ला350 ू ाे ीं क्रौगोम ेगर्ह्य ाान्न ड़त

SSC CGL 07/12/2022 (Shift- 02)

(a) 5 (b) 11
(c) 9 (d) 7

Maths by Aditya Ranjan sir

32. 9435 is added to 7593, then 2607 is subtracted from the sum. The result is divisible by:

तक्र बे ओग0बतपे ेमचायोके चायो डेट ू ाे ह%के 1ऱ. 0 आग ै ओगनाश%के ेगँ ाद्धनो चायो डेर %हधां ेह अ ेगर्ह्य ाव्न डाश़

SSC CGL 07/12/2022 (Shift- 03)

(a) 4 (b) 10
(c) 3 (d) 5

33. Find the remainder when we divide $3x^4 - 2x^2 + 4x - 1$ by $2x - 1$.

$3x^4 - 2x^2 + 4x - 1$ ओग $2x - 1$ क्षात्रे र्ह्य ाहचये अै ग %े %ह्रये, ास%के काये अद्धच3?

SSC CGL 07/12/2022 (Shift- 04)

(a) 2 (b) 3
(c) $\frac{11}{16}$ (d) $\frac{15}{16}$

34. A number when divided by 221, leaves a remainder 30. If the same number is divided by 13, the remainder will be:

ह अ जे ल्नो ओग11ी ेगर्ह्य ाहचये अै ेग%े, ास%के प. ऱडयो डेर नह्के प जे ल्नो ओगी ेगर्ह्य ाहचये ह अनो चा32 योग्र ास%के काये अद्धच3?

SSC CGL 08/12/2022 (Shift- 01)

(a) 4 (b) 3
(c) 2 (d) 1

35. In a division sum, the divisor is 10 times the quotient and four times the remainder. What is the dividend if the remainder is 45?

3अे र्ह्य ाचै ेनाश ेमर्ा ाचअे ाश%के ो ी ेशैटो ू ाे ास%के ओ माे शैटो डेर नह्के ास%के क्के डेत योर्ग ाव्न ू नो डाश़

SSC CGL 08/12/2022 (Shift- 02)

(a) 4123 (b) 3285
(c) 2895 (d) 5412

36. 7 is added to a certain number and the sum is multiplied by 5. The product is then divided by 3 and 4 is subtracted from the quotient. If the result comes to 16, then what is the original number?

3अे है ह मये ल्नो ेम0 चायोके डेत ू ाे नाश ओगबे ग श्टो ह अनो चायो डेर ह%के श्टौ %के ओगपे ेगर्ह्य ाहचय ह अनो चायो डेर ू ाे के ओर्ग ाश%के ेम ेगँ ाद्धनो चाया डेर नह्के %हधां ेी ेू ायो डेट योगं के ल्नो ू नो ड़त

SSC CGL 08/12/2022 (Shift- 03)

(a) 3 (b) 1
(c) 5 (d) 4

37. If 7-digit number 678p37q is divisible by 75 and p is not a composite, then the values of p and q are:

नह्के 0 ू ओमअेज ल्नो 678p37q, 75 ेगर्ह्य ाव्ने डत ू ाे p 3अे ाव्ने ल्नो डेज डेट योगp ू ाे q अेगं ै काये अद्धच3?

SSC CGL 08/12/2022 (Shift- 04)

(a) p = 5, q = 5 (b) p = 3, q = 0
(c) p = 3, q = 5 (d) p = 2, q = 5

38. The largest 5-digit number that is exactly divisible by 88 is:

बे ू ओमअेज ल ेगल्ध्ज ल्नो _____ डेट चोगु ेग %ाश्के र्ह्य ाव्ने डर

SSC CGL 09/12/2022 (Shift- 01)

(a) 99968 (b) 99689
(c) 68999 (d) 66698

39. If the number 123456789 is divided by 9, then the remainder is:

नह्के ल्नो ी 1ष्क्र-0 ु ते ओगते क्षात्रे र्ह्य ाहचये ह अनो चाया डेट योग्र ास%के ू नो डाश़

SSC CGL 09/12/2022 (Shift- 02)

(a) 0 (b) 1
(c) 2 (d) 3

40. In a 7-digit number 89476*2, what is the smallest possible value of * such that the number is divisible by 8?

3अे 0रे ू अजो ल्नो 89476*2 ेमे * ओ ज्ञै6यं ेर्-ाध ै ू नो डेत ह्य ेग ल्नो ु ेगर्ह्य ाव्ने डाग

SSC CGL 09/12/2022 (Shift- 03)

(a) 2 (b) 1
(c) 4 (d) 3

41. Three positive numbers are in the ratio of 4 : 5 : 7, and the sum of their squares is 15,210. Find the sum of the three numbers.

यैजे ू ह ं अे ल्ना3ऱ4 : 5 : 7 ओगू ै ह्राये ेमडेत ू ाे पै ओगधशेप्रओ नाश ी बे2 ी ेडर यैजोम ल्नाू ेमओ नाश काये अद्धच3?

SSC CGL 09/12/2022 (Shift- 03)

(a) 148 (b) 156
(c) 126 (d) 208

42. The remainder when $19^{19}+20$ is divided by 18 is:

चले $19^{19} + 20$ ओगी ु ेगर्ह्य ाहचये ह अनो चा32 योग्र ास काये अद्धच3?

SSC CGL 09/12/2022 (Shift- 04)

(a) 3 (b) 2
(c) 1 (d) 0

Maths by Aditya Ranjan sir

43. The least number that should be added to 35460 so that the sum is exactly divisible by 3, 4, 5 and 7 is:

पबक्र. ंमऔत्र जे ल ेगउाहेज लमो चायेचौ जेमाहड3 याहअे नाम%वे प2 के बे ू ाे 0 ेग%ाबखेहर्ध ाव्ने डाग

SSC CGL 12/12/2022 (Shift- 01)

(a) 84 (b) 420

(c) 240 (d) 180

44. Any six-digit number that is formed by repeating a three-digit number, is always divisible by:

आोर्ड जेउडे ू ओमअेज लमो चोगयैजे ू ओमअेज लमा ओगक्रमउाअे लै येजडे क्रमे हअ ेगर्ध ाव्ने डायेजड़त

SSC CGL 12/12/2022 (Shift- 02)

(a) 111 (b) 1001

(c) 19 (d) 101

45. If the seven-digit number 52A6B7C is divisible by 33, and A, B, C are primes, then the maximum value of 2A+3B+C is:

नह्के ाये ू ओमअेज लमो 52A6B7C, 33 ेगर्ध ाव्न डे ू ाे A, B, C ू ं ाव्ने डे योग2A + 3B + C आ ू हअयं ेै ेड़ह

SSC CGL 12/12/2022 (Shift- 03)

(a) 32 (b) 23

(c) 27 (d) 34

46. If a 7-digit number 54p3987 is divisible by 11, then p is equal to:

नह्के 3अे 0र ू अजो लमो 54p3987, 11 ेगर्ध ाव्ने डे योगp हअ अेगल्ताल्ते डाश़ा

SSC CGL 12/12/2022 (Shift- 04)

(a) 5 (b) 9

(c) 4 (d) 1

47. When $m^{12} - 1$ is divided by m + 1, the remainder is:

चले $m^{12}-1$ ओगm + 1 क्षत्रो हर्ध ाहचये हअनो चायो डर योग्र ास%वे ् नो डाश़ा

SSC CGL 13/12/2022 (Shift- 01)

(a) 1 (b) 2

(c) 0 (d) –1

48. Choose the option in which the numbers are in correct ascending order.

प ेह्यअि% ओ मैटाधे अत्रेमह्य ंमक्रेजश्नेज लमाउे- ू ाश्रज कृं ंमड़ाम

SSC CGL 13/12/2022 (Shift- 02)

(a) $\frac{4}{5}, \frac{2}{3}, \frac{1}{11}$ and $\frac{2}{9}$ (b) $\frac{1}{11}, \frac{2}{9}, \frac{2}{3}$ and $\frac{4}{5}$

(c) $\frac{2}{9}, \frac{1}{11}, \frac{4}{5}$ and $\frac{2}{3}$ (d) $\frac{2}{3}, \frac{4}{5}, \frac{1}{11}$ and $\frac{2}{9}$

49. A four-digit pin, say abcd, of a lock has different non-zero digits. The digits satisfy b = 2a, c = 2b, d = 2c. The pin is divisible by.

3अे दाअे अेगमाे ू ओमअेगह्% े 2 abcd अडयेगडे ं म ू दश्र ू दश्रे श्रर ाल्ते ू अे डायेगडे ू अे b = 2a, c = 2b, d = 2c ओग यस्द्रे अत्रेयेगडे ह्% ेह्य ेगर्ध ाव्ने ड़त

SSC CGL 13/12/2022 (Shift- 02)

(a) 2, 3, 5

(b) 2, 3, 7

(c) 2, 3, 13

(d) 2, 3, 11

50. If the number 6788934a4 is divisible by 11,then find the smallest whole number in the place of a.

नह्के लमो 6788934a4, 11 ेगर्ध ाव्ने डे योगa अग रुौ ेे %े ल ेगउाहेज%ोा8 लमो कये अज्ह्य3?

SSC CGL 13/12/2022 (Shift- 03)

(a) 3 (b) 4

(c) 5 (d) 2

51. If the nine-digit number 3422213AB is divisible by 99, then what is the value of 2A + B?

नह्कै ारू अजो लमो 3422213AB, 99 ेगर्ध ाव्ने डर योग2A + B ओ ंै ेह्य ेड़त

SSC CGL 05/12/2022 (Shift- 01)

(a) 11 (b) 12

(c) 10 (d) 13

Maths by Aditya Ranjan sir

52. $\sqrt{8+\sqrt{1681}}$

हक्के श्ड़े प्रचअे ओ ं ौ ` काये अज्ञच3?

$\sqrt{8+\sqrt{1681}}$

SSC CGL TIER - II 02/03/2023

(a) 5 (b) 6
(c) 4 (d) 7

53. Find the average of the cubes of the first five natural numbers.

छ ं ` %ाब्रे छात्त ह्यअे लाा ू ोमअेगँ ौ ोमओ ू ात ये काय अज्ञच3?

SSC CGL TIER - II 02/03/2023

(a) 35 (b) 40
(c) 45 (d) 50

54. The number 5769116 is divisible by which of the following numbers?

लाो ब0न्तीी ने है ैं ह्र हऊये ं`म `गहअ` लाो `गर्ह्य ाव्न ड़त

SSC CGL TIER - II 02/03/2023

(a) 4 (b) 5
(c) 12 (d) 8

55. Find the value of the given expression.

हक्के श्ड़े प्रचअे ओ ं ौ ` काये अज्ञच3?

$\sqrt{20-\sqrt{20-\sqrt{20-\sqrt{20-.....\infty}}}}$

(a)अ

SSC CGL TIER- II 03/03/2023

(a) 4 (b) 6
(c) 5 (d) 2

56. The number 2918245 is divisible by which of the following numbers?

लाो 1ती ु 1क्बे है ैं ह्र हऊये ं`म `गहअ` लाो `गर्ह्य ाव्न ड़त

SSC CGL TIER- II 03/03/2023

(a) 3 (b) 11
(c) 12 (d) 9

57. Simplify (solve) the following./है ैं ह्र हऊये ओग त्र्द एडद इे अज्ञच3?

$$\frac{\sqrt{10+\sqrt{25+\sqrt{108+\sqrt{154+\sqrt{225}}}}}}{\sqrt{16+19.25\times 4^2}}$$

SSC CGL TIER- II 06/03/2023

(a) $\frac{7}{18}$ (b) $\frac{1}{9}$
(c) $\frac{2}{9}$ (d) $\frac{5}{18}$

58. The number 1254216 is divisible by which of the following numbers?

लाो ी 1क्बी ने है ैं ह्र हऊये ं`म `गहअ` लाो `गर्ह्य ाव्न ड़त

SSC CGL TIER- II 06/03/2023

(a) 16 (b) 5
(c) 8 (d) 11

59. The largest three-digit number that gives the same remainder 2 when divided by 3, 5 and 9 is _____.

यैजे ू ओमअेज ल `गल्ध्ष लाो चोगए2 बे ू ाे ते `गर्ह्य ाह्चय डौगेगए% ं ौ ं ासए%व्बे 1 क्रयेजडे2 ////////////// डर?

SSC CGL TIER- II 07/03/2023

(a) 999 (b) 984
(c) 998 (d) 992

60. If $x=\sqrt{64}+\sqrt{121}-\sqrt{169}$, then find the value of x^2.

नहक्के $x=\sqrt{64}+\sqrt{121}-\sqrt{169}$ डे2 योग x^2 ओ ं ौ ` काय अत्र्मी

SSC CGL TIER- II 07/03/2023

(a) 16 (b) 25
(c) 36 (d) 49

61. If the four-digit number 463y is divisible by 7, then what is the value of y?

नहक्के मा ाे ू ओमअेज लाो 463y, 7 `गर्ह्य ाव्ने डे2 योग y ओ ं ौ ` ु नो डाश्ा

SSC CGL TIER- II 07/03/2023

(a) 4 (b) 6
(c) 3 (d) 5

62. If $2^x+3^y=17$ and $2^{x+2}-3^{y+1}=5$, then:

नहक्के $2^x+3^y=17$ य ो $2^{x+2}-3^{y+1}=5$ डे2 याख

SSC CGL TIER- II 07/03/2023

(a) x = 1, y = 3 (b) x = 3, y = 3
(c) x = 3, y = 2 (d) x = 1, y = 2

63. Which of the following numbers is divisible by 11?

है ैं ह्र हऊये ं`म `गऔते ेज लाो ी `गर्ह्य ाव्ने ड़त

SSC CGL TIER- II 07/03/2023

(a) 5214341 (b) 5648741
(c) 6598321 (d) 2378965

Maths by Aditya Ranjan sir

ANSWER KEY

1.(c)	2.(b)	3.(d)	4.(a)	5.(c)	6.(b)	7.(a)	8.(d)	9.(c)	10.(a)
11.(b)	12.(c)	13.(d)	14.(b)	15.(b)	16.(d)	17.(c)	18.(d)	19.(c)	20.(d)
21.(c)	22.(b)	23.(c)	24.(d)	25.(a)	26.(a)	27.(a)	28.(b)	29.(d)	30.(b)
31.(a)	32.(c)	33.(c)	34.(a)	35.(b)	36.(c)	37.(c)	38.(a)	39.(a)	40.(d)
41.(d)	42.(a)	43.(c)	44.(b)	45.(b)	46.(a)	47.(c)	48.(b)	49.(c)	50.(d)
51.(a)	52.(d)	53.(c)	54.(a)	55.(a)	56.(b)	57.(c)	58.(c)	59.(d)	50.(c)
61.(a)	62.(c)	63.(a)							

SOLUTIONS

1. (c) $49^{15} - 1$ is divisible by

$(49 - 1) = 48$ and 8 is a factor of 48

2. (b) $\frac{P}{R} = \frac{100}{150} = \frac{2}{3}$

3. (d) $\frac{27^{27} + 27}{28} = \frac{(-i)^{27} + (-i)}{28}$

$= \frac{-1-1}{28} = -2$

$= 26$

4. (a) 750 PQ

Divisible by 3:-

$7 + 5 + P + Q = 12 + P + Q$

$\Rightarrow$ $P + Q = 3a$ .....(1)

$(7 + Q) - (5 + P) = 0$ or 116

$\Rightarrow$ $2 + Q - P = 0$

$\Rightarrow$ $Q - P = -2$

$\Rightarrow$ $P - Q = 2$ .....(2)

From (1) and (2)

$(P, Q) = (4, 2)$ or $(7, 5)$

But 75042 is not divisible by 7

$\Rightarrow$ $(P, Q) = (7, 5)$

$\Rightarrow$ $P + 2Q = 17$

5. (c) x 67y

$\Rightarrow x + 6 + 7 + y \Rightarrow 9a$

$\Rightarrow x + y = 5$ (least value)

6. (b) 2, 4, 6.....

$= (2 + 4 + 6 + 8 + ... + 50)$

$= 2(1 + 2 + 3 + ... + 25)$

$= 2 \times \frac{25 \times 26}{2}$ Divisible by 13 and 5

7. (a) LCM (15, 18, 25, 32) = 7200

$\Rightarrow$ Required no. $= \frac{7200}{2} = 3600$

8. (d) $x - y = 1564$ .....(1)

$x = y \times 6 + 19$ .....(2)

But (2) in (1)

$6y - y = 1564 - 19$

$5y = 1545$

$y = 309$

9. (c) From options:-

(b) and (d) are eliminated by unit digit addivig digits of (a) $\Rightarrow$ not divisible by 3

$\therefore$ (c) is divisible by 2, 3, 5

10. (a) I. $100^2 - 99^2 + 98^2 - 97^2 + 96^2 - 95^2 + 94^2 - 93^2 + ... + 2^2 - 1^2$

$\Rightarrow (100 - 99)(100 + 99) + (98 - 97)(98 + 97) + (96 - 95)(96 + 95) + ... + (2 - 1)(2 + 1)$

Maths by Aditya Ranjan sir

$\Rightarrow 100 + 99 + 98 + 97 + 96 + 95 + ... + (2 + 1)$

$\Rightarrow \frac{n \times (n+1)}{2} = \frac{100 \times 101}{2} = 5050$

it is tone

II. $8\left(x + \frac{1}{x}\right) = -16$

$\Rightarrow x + \frac{1}{x} = -2 \Rightarrow x = -1$

$x^{197} + \frac{1}{x^{197}} = -1 - 1 = -2$

it is incorrect

11. (b) 87501 = 765 × 114 + 291
$\therefore$ Required no. = 87501 + (765 – 291)
= 87975

12. (c) $\frac{7^{42}}{48} = \frac{(7^2)^{21}}{48} = \frac{(49)^{21}}{48} = 1$

13. (d) N = 7a + 4
$N^2 = 49a^2 + 16 + 56a$
$= 7a (7a + 8) + 14 + 2$
$\Rightarrow 7 [7a^2 + 8a + 2] + 2$
$\Rightarrow$ Remainder = 2

14. (b) LCM (4, 7) = 28
999 = 28 × 35 + 19
$\Rightarrow$ Required no. = 999 – 19
= 980

15. (c) 1 2 3 4 5 6 xy
$\Rightarrow$ 6xy is divisible by 8
(x, y) = (0, 0), (1, 6) (2, 4)
(3, 2), (4, 0) (5, 6)
(7, 2), (8, 0) (8, 8), (9, 6)
$\Rightarrow$ 10 pairs

16. (d) 674pq0
$\Rightarrow 6 + 7 + 4 + p + q = 17 + p + q$
$\Rightarrow p + q = 4$ or 7 or 10 and $6 + 4 + q - (7 + p)$
$\Rightarrow 3 + q - p = 0$
$\Rightarrow q - p = -3$
or $p - q = 3$
From option
(d) P = 5, q = 2 satisfies.

17. (c) N = 363a + 17
= 11 (33a + 1) + 6
$\Rightarrow$ Remainder = 6

18. (d) LCM (7, 9, 11) = 693
99999 = 693 × 144 + 207
Required no. = 99999 – 207 + 3
= 99795

19. (c) LCM (11, 33, 99, 121) = 1089
99999 = 1089 × 91 + 900
$\Rightarrow$ Required no. = 99999 – 900
= 99099

20. (d) 4567 = 7 × 652 + 3
$\Rightarrow$ 4 should be added

21. (c) 83p93678Q ÷ (72 = 8 × 9)
78Q is divisible by 8
$\Rightarrow$ Q = 4
Now,
8 + 3 + P + 9 + 3 + 6 + 7 + 8 + 4
= 48 + P
$\Rightarrow$ P = 6
$\Rightarrow \sqrt{P^2 + Q^2 + 12} = \sqrt{36 + 16 + 12}$
= 8

22. (b) 97 × 103
$\Rightarrow (100 - 3)(100 + 3)$
$= 100^2 - 9 \Rightarrow 10000 - 9$
= 9991

23. (c) HCF (147 – 49, 322 – 147)
$\Rightarrow$ HCF (98, 175)
= 7

24. (d) n = 6a + 3
$n^2 = 36a^2 + 9 + 36a$
$n^2 + 5n = 36a^2 + 9 + 36a + 30a + 15$
$= 36a^2 + 96a + 24$
$(n^2 + 5n + 8) = 36a^2 + 96a + 32$
$= 6 (6a^2 + 16a + 5) + 2$
$\Rightarrow$ Remainder = 2

25. (a) $3^{50} + 9^{26} + 27^{18} + 9^{28} + 9^{29}$
$\Rightarrow 9^{25} + 9^{26} + 9^{27} + 9^{28} + 9^{29}$
$\Rightarrow 9^{25} [1 + 9 + 9^2 + 9^3 + 9^4]$
$\Rightarrow 9^{25} [1 + 9 + 81 + 729 + 6561]$
$\Rightarrow 9^{25} \times 7381$
= 925 × 671 × 11 is a multiple of 11

26. (a) let nos. be:-
n–6, n–4, n–2, n, n+2, n+4, n+6, n+8
$\text{Avg.} = \frac{8n + 8}{8} = 48$
$\Rightarrow n + 1 = 48$
$\Rightarrow n = 47$
$\Rightarrow$ Required sum = n + 2 + n + 6 = 2n + 8 = 102

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27. (a) LCM (16, 18, 36) = $2^4 \times 3^2 = 288$
only 144 is divisible by 288

28. (b) A = 45, L = 477, D = 9
$\Rightarrow$ L = A + (N – I) D
$\Rightarrow \frac{432}{9} = N - I$
$\Rightarrow$ N = 48 + 1 = 49

29. (d) 246837 = 13 × 18987 + 6
6 must be sulo tracted

30. (b) K = 42 × 25 × 54 × 135
= 3 × 14 × 25 × 3^3 × 2 × 3^3 × 5
$\Rightarrow$ 3^7 × 2 × 14 × 25 × 5
(question incorrect)

31. (a) LCM (7, 11) = 77
$\therefore \frac{430}{77} = 5$
Required no. = 5

32. (c) (9435 + 7593) – 2607
= 14421
by unit digit option
(a), (b) and (d) are
Eliminated

33. (c) Put 2x – 1 = 0
$x = \frac{1}{2}$
$f(x) = 3x^4 - 2x^2 + 4x - 1$
$f\left(\frac{1}{2}\right) = \frac{3}{16} - \frac{2}{4} + \frac{4}{2} - 1$
$= \frac{3 - 8 + 32 - 16}{16}$
$= \frac{11}{16}$ = Remainder

34. (a) N = 221a + 30
= 17 × 13a + 26 + 4
= 13 (17a + 2) + 4
Remainder = 4

35. (b) Divisor, d = 10q and d = 4r
r = 45
$\Rightarrow$ dividevd = dq + r
$= 4 \times 45 \times \frac{45}{10} \times 4 + 45 = 3240 + 45 = 3285$

36. (c) ATQ,
{[(7 + a) × 5] ÷ 3} – 4 = 16
$\Rightarrow \frac{35 + 5a}{3} - 4 = 16$
$\Rightarrow$ 35 + 5a = 60
$\Rightarrow$ 5a = 25
a = 5

37. (c) 678p37q is divisible by (25 and 3) = 75
$\Rightarrow$ 7q is divisible by 25
$\Rightarrow$ q = 5
Now,
6 + 7 + 8 + p + 3 + 7 + q = 36 + p, p = prime
$\Rightarrow$ p = 3.
$\therefore$ p = 3, q = 5

38. (a) 99999 = 88 × 1136 + 31
$\Rightarrow$ Required no. = 99999 – 31
= 99968

39. (a) 1 2 3 4 5 6 7 8 9 $\Rightarrow$ is divisible by 9
$\Rightarrow$ Remainder = 0

40. (d) 89476 λ 2
$\Rightarrow$ 6 λ 2 is divisible by 8
$\Rightarrow \lambda = 3$

41. (d) Let nos. be 4x, 5x, 7x.
$16x^2 + 25x^2 + 49x^2 = 15210$
$x^2 = 169$
x = 13
$\Rightarrow$ 4x +5x +7x = 16x
= 16 × 13 = 208

42. (a) $\frac{19^{19} + 20}{18}$
$\Rightarrow \frac{(1)^{19} + 2}{18} = 3$

43. (c) LCM (3, 4, 5, 7) = 420
35460 = (420 × 84) + 180
$\Rightarrow$ Required no. = 420 – 180
= 240

44. (b) xyzxyz is divisible by 1001
$\Rightarrow$ xyzxyz = xyz × 1001

45. (b) 5 2 A 6 B 7 C is divisible by 33 = 3 × 11
$\Rightarrow$ 33 = 3 × 11
$\Rightarrow$ 5 + 2 + A + 6 + B + 7 + C
$\Rightarrow$ 20 + A + B + C $\Rightarrow$ 3a
A + B + C = 4, 7, 10

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Also,

$(5 + A + B + C) - (2 + 6 + 7) = A + B + C - 10$

$= 11a$ or 0 for maximum

Value of $2A + 3B + C \Rightarrow (3 \times 2) + (5 \times 3) + 2$

$\Rightarrow 23.$

46. (a) 54p3987

$\Rightarrow (5 + p + 9 + 7) - (4 + 3 + 8) = 11a$

$\Rightarrow 21 + p - 15 = 11a$

$\Rightarrow 6 + p = 11a$

$\Rightarrow p = 5$

47. (c) $(m^{12} - 1) \div (m + 1)$

put $m + 1 = 0$

$\Rightarrow m = -1$

$\therefore f(m) = m^{12} - 1$

$f(-1) = (-1)^{12} - 1 = 1 - 1 = 0$

$\Rightarrow$ Remainder = 0

48. (b) $\frac{4}{5}, \frac{2}{3}, \frac{1}{11}, \frac{2}{9}$

clearly, $\frac{1}{11}$ is smallest of all

$\Rightarrow$ (b) is correct option.

49. (c) $\underline{a}\ \underline{b}\ \underline{c}\ \underline{d}$

$b = 2a, c = 2b, d = 2c.$

$\Rightarrow \underline{1}\ \underline{2}\ \underline{4}\ \underline{8}$

it is divisible by

$1248 = 2 \times 3 \times 13 \times 16$

50. (d) 6 78 8 9 3 4a 4

$\Rightarrow (6 + 8 + 9 + 4 + 4) - (7 + 8 + 3 + a)$

$\Rightarrow 31 - 18 - a = 11$

$\Rightarrow 13 - a = 11$

$a = 2$

51. (a) 3422213AB is divisible by $99 = 9 \times 11$

$\Rightarrow 3 + 4 + 2 + 2 + 2 + 1 + 3 + A + B$

$\Rightarrow 17 + A + B \Rightarrow A + B = 10, 19, ...$

and $(3 + 2 + 2 + 3 + B) - (4 + 2 + 1 + A)$

$\Rightarrow 10 + B - 7 - A$

$\Rightarrow 3 + (B - A)$

$\Rightarrow B - A = -3, 8$

$\Rightarrow B - A = 8$

$\Rightarrow 9 - 1 = 8$ (A, B) = (1, 9)

$\Rightarrow 2A + B = 2 + 9 = 11$

52. (d)

$\sqrt{8+\sqrt{1681}} = \sqrt{8+41} = 7$

53. (c)

Avg. of cubes $= \frac{n(n+1)^2}{4} = \frac{5(6)^2}{4} = 45$

54. (a)

Last 2 digits of the given number are divisible by 4.

$\Rightarrow$ It is divisible by 4.

55. (a)

$x = \sqrt{20 - \sqrt{20 - \sqrt{20.....\infty}}}$

We know, $4 \times 5 = 20$

$\Rightarrow x = 4$

56. (b)

Since the given number is not divisible by '3' or '9' [sum rule]

only option left is (b) 11.

57. (c)

$$\frac{\sqrt{10+\sqrt{25+\sqrt{108+\sqrt{154+\sqrt{225}}}}}}{\sqrt{16+19.25\times 4^2}} = \frac{x}{y}$$

$x = \sqrt{10+\sqrt{25+\sqrt{108+\sqrt{169}}}}$

$= \sqrt{10+\sqrt{25+11}}$

$= \sqrt{10+6} = 4$

$y = \sqrt{16+19.25\times 16} = \sqrt{16+308}$

$= \sqrt{324}$

$= 18$

$\Rightarrow \frac{x}{y} = \frac{4}{18} = \frac{2}{9}$

58. (c)

Since last there digits of the given number is divisible by 8.

$\Rightarrow$ It is divisible '8'.

59. (d)

largest 3 digit no. = 999

LCM (3, 5, 9) = 45

$999 = 45 \times 22 + 9$

$\therefore$ Given no. is $999 - 9 + 2 = 992$

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60. (c)

$x = \sqrt{64} + \sqrt{121} - \sqrt{169}$

$= 8 + 11 - 13$

$= 6$

$\Rightarrow x^2 = 36$

61. (a)

463y is divisible by 7.

$\Rightarrow y = 4$

62. (c)

$2x + 3^y = 17$ and .....(11)

$2x^{+2} - 3^{y+1} = 5$

$4 \times 2x - 3 \times 3^y = 5$ .....(2)

Let, $2x = a$ $3^y = b$

Then (1) and (2) become.

$a + b = 17$

$4a - 3b = 5$

solving above eq, we get

$a = 8, \quad b = 9$

$\Rightarrow 2x = 8 = 2^3$

$\Rightarrow x = 3$ and $3^y = 9 = 3^2$

$\Rightarrow y = 2$

63. (a)

Checking from options, we find that

(a) $5 + 1 + 3 + 1 = 2 + 4 + 4$

$\therefore$ It is divisible by 11

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LCM & HCF

इ ड़ैअ-दल-ै तर जम दं ै ए - अ-दल-ै तर जम

16

1. The HCF of two numbers is 12. Which one of the following can never be their LCM?

है दिलाये ै ं ै दिगै द- अ-दल-ै तर जम द(HCF) 12 ए ती बे त्र त्यै ज -दिलदिगै ईं लै दची गै दइ ड़ैअ-दल-ै तर मे च(LCM) ग क्रैश्दी श ै दिलग जैद ए

SSC CGL 01/12/2022 (Shift- 01)

(a) 72 (b) 60
(c) 90 (d) 84

2. What is the ratio between the HCF and LCM of the numbers whose LCM is 48 and the product of the numbers is 384?

ची दलाये ै ं ै दिग दि- अ-दल-ै तर जम द(HCF) ं ै ए दइ ड़ैअ-ल-ै तर मे च(LCM) ग दि%ऋ दगै दं ी ै जद वे ै द ए तृ ी गै इ ड़ैअ-दल-ै तर मे च(LCM) ख्द ए ं ै ए दलाये ै ं ै दिगै दक्ष्ै ी त ऋ ग । ख्ख ए

SSC CGL 01/12/2022 (Shift- 02)

(a) 1 : 4 (b) 1 : 6
(c) 1 : 3 (d) 2 : 5

3. Two numbers are in the ratio of 6 : 5. If their HCF is 3, then what is the LCM of the two numbers?

है दिलाये ै, दिस्दू दटदग दिं ी ै जद-दि ए त्र त्हदची गै द- अ-ल-ै तर जम द(HCF) 3 ए दजै दिहै ीं दिलाये ै ं ै दिगै दइ ड़ैअ-ल-ै तर जम द(LCM) ता जीं द ै दि :

SSC CGL 01/12/2022 (Shift- 03)

(a) 64 (b) 110
(c) 90 (d) 80

4. The ratio of two numbers is 5 : 4 and their HCF is 4. What is their LCM?

है दिलाये ै ं ै दिगै दं ी ै जद टू ख्ख ए ं ै ए दची गै द- अ-दल-ै तर जम (HCF) 4 ए दची गै दइ ड़ैअ-दल-ै तर मे च(LCM) वे ै द ए

SSC CGL 01/12/2022 (Shift- 04)

(a) 80 (b) 48
(c) 36 (d) 60

5. What is the largest common divisor of the numbers 1026, 2268 and 2430?

लाये ै द10,स्ल्द, ,स। दं ै ए द, ख्ख 0दगै द- अ-दल-ै तर जम द(largest common divisor) वे ै द ए

SSC CGL 02/12/2022 (Shift- 01)

(a) 108 (b) 54
(c) 81 (d) 27

6. The HCF of two numbers 2040 and 391 is:

है दिलाये ै ं ै दि, 0ख्ख दं ै दिक् 1दगै द- अ-दल-ै तर जम द(HCF) वे ै द ए

SSC CGL 02/12/2022 (Shift- 03)

(a) 17 (b) 21
(c) 16 (d) 18

7. Three numbers are in the ratio of 2 : 3 : 5 and their LCM is 90. Find their HCF.

जी दलाये ै, दि ू ू टदग दिं ी ै जद-दि ए ं ै ए दची गै दइ ड़ैज-ल-ै तर मे च(LCM) 90 ए दची गै द- अ-दल-ै तर जम द(HCF) धै जदग श्ृ, क

SSC CGL 02/12/2022 (Shift- 04)

(a) 9 (b) 1
(c) 6 (d) 3

8. Claculate the HCF of $\frac{12}{5}, \frac{14}{15}$ and $\frac{16}{17}$.

$\frac{12}{5}, \frac{14}{15}$ ं ै ए द $\frac{16}{17}$ ग दि- अ-दल-ै तर जम द(HCF) ग श्दक्ष्ै ी ग 8कि

SSC CGL 03/12/2022 (Shift-s 01)

(a) $\frac{4}{255}$ (b) $\frac{3}{255}$

(c) $\frac{2}{225}$ (d) $\frac{1}{255}$

9. What is the HCF of 36 and 198?

ग स्दं ै ए द1 । दगै द- अ-दल-ै तर जम द(HCF) धै जदग 8कि

SSC CGL 03/12/2022 (Shift- 02)

(a) 36 (b) 22
(c) 18 (d) 9

10. The LCM of two numbers is 120 and the numbers are in the ratio 3 : 8. The sum of the numbers will be:

है दिलाये ै ं ै दिगै दइ ड़ैअ-दल-ै तर जम द(LCM) 120द ए ं ै ए लाये ै, दि3 : 8दग दं ी ै जद-दि ए लो ं ै दिगै दे ै दिदधै ज ग 8कि

SSC CGL 03/12/2022 (Shift- 03)

(a) 48 (b) 55
(c) 45 (d) 60

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11. The HCF of two numbers 110 and 1980 is:

है दिलाये ं ं दि110दं ं ह्दा। ।0दगै द- अै-दल-ै त र जम व(HCF) वे ै द ए

SSC CGL 05/12/2022 (Shift- 01)

(a) 140 (b) 110
(c) 120 (d) 180

12. The LCM of the two numbers is 4104 and the HCF is 9. If one of the numbers is 171, find the other.

है दिलाये ं ं दिगै दइ ऊलऊ व(LCM) 4104 ं ं ह्द-ऊलऊ व(HCF) 9 हे त्हदलाये ं ं दि-दिलदि ग दलाये ं द121द ह्दजै दिह स्ा8श लाये ं दधै जदग शृ ् क

SSC CGL 05/12/2022 (Shift- 04)

(a) 218 (b) 215
(c) 220 (d) 216

13. Choose the correct statement from the following.

ती बी त्ह त- जद-दिलदिल श्दग ै ी दगै द5 ी दग शृ ् क

SSC CGL 06/12/2022 (Shift- 02)

(a) HCF is the least common multiple of the given numbers.

् 5 लश त्पह श्दक्ष्क्व लाये ं ं दिगै दल%लदि6 ै दलै ै ख क्ष्ै ग द क्

(b) HCF of two or more numbers is the highest number which perfectly divides all the given numbers.

है दि ै दहै दिलदि त्ह ग दलाये ं ं दिगै द-ऊलऊ दर दचउ5 ज-लाये ं द ह्ू ं दिह श्दक्ष्क्व लक्रैश्दलाये ं ं दिगै दि त्ह ै चू दत क्रै तृ ज ग 8जश्द क्

(c) HCF is also called the least common divisor.

HCFदगै दिइ ड़ैज-दल-ै त र जम दक्रैश्दग ं दृ ै जैद क्

(d) In prime factorisation method of HCF, the multiples of all the given numbers are listed.

-ऊलऊ उदग श्दं क्रै मे दक्ष्ै ी प मी दत त्ह द-दिलक्रैश्दह श्दक्ष्क्व लाये ं ं दिग दिक्ष्ै दलह श्%7 द ं दि क्

14. The sum of two numbers is 18 and their HCF and LCM are 3 and 54 respectively. What will be the sum of their reciprocals?

है दिलाये ं ं दिगै दे ै क्दि1। द ह्ं ं ह्दची गै द- अै-दल-ै त र जम (HCF) ं ं ह्द इ ड़ैअै-दल-ै त र मे व(LCM) ऊ -ष्ै ू दऊ द ं ं ह्द टब्ह्ल ह्दची ग दिष् ् म ै दिगै दे ै क्दिवे ै द ै है :

SSC CGL 06/12/2022 (Shift- 04)

(a) $\frac{1}{7}$ (b) $\frac{1}{11}$
(c) $\frac{1}{6}$ (d) $\frac{1}{9}$

15. What is the LCM of $(8x^3 + 80x^2 + 200x)$ and $(4x^4+16x^3 - 20x^2)$?

$(8x^3 + 80x^2 + 200x)$ ं ं ह्द $(4x^4 + 16x^3 - 20x^2)$ गै इ ड़ैअै-दल-ै त र मे व(LCM) वे ै द ए

SSC CGL 07/12/2022 (Shift 01)

(a) $8x^2 (x+5)^2 (x-1)$ (b) $8x^2 (x-1)^2 (x+5)$
(c) $4x^2 (x-1)^2 (x+5)$ (d) $4x^2 (x+5)^2 (x-1)$

16. Find the LCM of 186.6 and 373.2.

1। स्ऊ द ं ं ह्द क 2 3, द गै द इ ड़ैअै-दल-ै त र मे व(LCM) धै ज ग 8क्

SSC CGL 07/12/2022 (Shift- 03)

(a) 373.2 (b) 398.2
(c) 186.6 (d) 276.6

17. If the HCF of two numbers is 8, then which of the following can NEVER be their LCM?

् त्ह दहै दिलाये ं ं दिगै द- अै-दल-ै त र जम द(HCF) 8 ह्द जैा ती बी द-दिलदिगै ई लै दची गै द इ ड़ैअै-दल-ै त र मे व(LCM) ग क्रैश ी श्द ै दिलग जैद ए

SSC CGL 07/12/2022 (Shift- 04)

(a) 56 (b) 48
(c) 42 (d) 40

18. The HCF of three numbers 105, 335 and 465 will be:

जी दलाये ं ं दि10टल्क ऊ टदं ं ह्द ह्ल्ल-टदगै द- अै-दल-ै त र जम (HCF) धै जदग 8क्

SSC CGL 08/12/2022 (Shift- 01)

(a) 11 (b) 5
(c) 7 (d) 3

19. The HCF of 222, 642 and 1062 is ____.

, , , त्ह स्ह्ल दं ं ह्द10स् , दगै द- अै-दल-ै त र जम व(HCF) _____ क्

SSC CGL 08/12/2022 (Shift- 02)

(a) 6 (b) 8
(c) 4 (d) 2

20. Find the HCF of 4.08 and 6.63.

ह्ल0। दं ं ह्द स्ऊ दगै द- अै-दल-ै त र जम व(HCF) धै जदग 8क्

SSC CGL 08/12/2022 (Shift- 03)

(a) 0.50 (b) 0.52
(c) 0.51 (d) 0.53

21. If the HCF of xy^3, x^2y and x^3y^4 is xy, then their LCM is _____.

् त्ह द xy^3, x^2y ं ं ह्द x^3y^4 गै द- अै-दल-ै त र जम व(HCF), xy ह्द जैदिची गै द इ ड़ैअै-दल-ै त र मे व(LCM) _____ क्

SSC CGL 08/12/2022 (Shift- 04)

(a) x^3y^4 (b) x^3y^3
(c) x^4y^3 (d) x^4y^4

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22. The LCM of 96, 136 and 504 is:

ु स्ल्द1क स्दं ै ह्दट0ब्द्धगै दइ ड़ैअ-दल-ै त र जम द(LCM) वे ै ए

SSC CGL 09/12/2022 (Shift- 01)

(a) 34272 (b) 36548
(c) 25872 (d) 28564

23. The LCM of 144, 360 and 450 is:

1ब्द्धक्क स्0दं ै ह्दब्द्ध0दगै दइ ड़ैअ-दल-ै त र मे च(LCM) धै ज ग शृ ् क

SSC CGL 09/12/2022 (Shift- 02)

(a) 4800 (b) 3600
(c) 7200 (d) 2400

24. The HCF of $\frac{1}{2}, \frac{3}{4}, \frac{5}{6}$ and $\frac{7}{8}$ is.

$\frac{1}{2}, \frac{3}{4}, \frac{5}{6}$ दं ै ह्द $\frac{7}{8}$ दगै द- अै-दल-ै त र जम द(HCF) धै ज ग 8कि

SSC CGL 09/12/2022 (Shift- 03)

(a) $\frac{105}{2}$ (b) $\frac{1}{24}$
(c) $\frac{7}{24}$ (d) $\frac{1}{48}$

25. The LCM of $\frac{3}{8}, \frac{5}{16}$ and $\frac{7}{2}$ is

$\frac{3}{8}, \frac{5}{16}$ दं ै ह्द $\frac{7}{2}$ दगै दइ ड़ैअ-दल-ै त र मे च(LCM) वे ै द ए

SSC CGL 09/12/2022 (Shift- 04)

(a) 101½ (b) 52½
(c) 28½ (d) 25¼

26. The HCF of two numbers is 21 and their LCM is 840. If one of the numbers is 49, then the other number is:

है दिलाये ै ं ै दिगै द- अै-दल-ै त र जम द(HCF) 21 ह्दं ै ह्द ची गै दइ ड़ैअ-दल-ै त र मे च(LCM) 840 ह्दे त्हदवी -दिलि ् ग दलाये ै दब्द्ध द ह्दजै दिह सा8ह्दलाये ै दवे ै द ै दिश्

SSC CGL 12/12/2022 (Shift- 01)

(a) 650 (b) 540
(c) 810 (d) 360

27. The LCM of 1.2 and 2.7 is:

13,दं ै ह्द,32दगै दइ ड़ैअ-दल-ै त र मे च(LCM) धै जदग 8कि

SSC CGL 12/12/2022 (Shift- 02)

(a) 5.4 (b) 10.8
(c) 1.08 (d) 32.4

28. The HCF of three numbers 98, 175 and 210 will be:

जरी दलाये ै ं ै हि ।ल्द12टदं ै ह्द,10दगै द- अै-दल-ै त र जम (HCF) धै जदग 8कि

SSC CGL 12/12/2022 (Shift- 03)

(a) 6 (b) 3
(c) 5 (d) 7

29. Find the HCF of 60, 148 and 382.

स्0ल्द1ब्द्ध दं ै ह्दक ।,दगै द- अै-दल-ै त र जम द(HCF)दधै ज ग शृ ् क

SSC CGL 12/12/2022 (Shift- 04)

(a) 2 (b) 6
(c) 4 (d) 24

30. Determine the LCM of two numbers if their HCF is 9 and their ratio is 14 : 19.

है दिलाये ै ं ै दिगै दइ ड़ैअ-दल-ै त र मे च(LCM) धै जदग शृ ् ल ् त्हदची गै द- अै-दल-ै त र जम द(HCF) 9 ह्दं ै ह्द ची गै ं ी.तै जद1ब्द्ध दु द क

SSC CGL 13/12/2022 (Shift- 01)

(a) 2394 (b) 3990
(c) 1596 (d) 3192

31. The HCF of two numbers is 17 and the other two factors of their LCM are 11 and 19. The smaller of the two numbers is:

है दिलाये ै ं ै दिगै दHCF 17द ह्दं ै ह्द ची ग दिLCM ग दिं ेख है दिगै 8ग द11दं ै ह्द1ु द ह्दहै दिलाये ै ं ै दि-दिलदि6 ै द ूए

SSC CGL 13/12/2022 (Shift- 02)

(a) 209 (b) 187
(c) 323 (d) 306

32. The HCF of three numbers 72, 108 and 2010 is:

जरी दलाये ै ं ै दि2,ल्द10।दं ै ह्द,010दगै द- अै-दल-ै त र जम (HCF) वे ै द ए

SSC CGL 13/12/2022 (Shift- 03)

(a) 18 (b) 6
(c) 12 (d) 5

33. The ratio of two numbers is 6 : 7 and their HCF is 3. Their LCM is _____.

है दिलाये ै ं ै दिगै दं ी.तै जदसू 2द ह्दं ै ह्द ची गै द- अै-दल-ै त र जम (HCF), 3 ह्द ची गै दइ ड़ैअ-दल-ै त र मे च(LCM)_____ क

SSC CGL 13/12/2022 (Shift- 04)

(a) 124 (b) 128
(c) 122 (d) 126

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34. The product of the two numbers is 1500 and their HCF is 10. The number of such possible pairs is/are:

है दिलाये ं ै दिगै दक्ैरी ेत्फ द1ट00द ह्ं ै ह्दचीगै द-अनुक्र थHCFद्व10द ह्ह्र निदिलकै ेत्र जदे ,(ै दिग श्दलाये ै _____ ऐ ह्क

SSC CGL TIER - II 02/03/2023

(a) 1 (b) 3

(c) 4 (d) 2

35. The LCM of $x^2 - 8x + 15$ and $x^2 - 5x + 6$ is:

SSC CGL TIER- II 03/03/2023

(a) $(x - 2)(x - 3)(x - 5)$

(b) $(x - 6)^2 (x + 1)(x - 3)$

(c) $(x - 6)(x + 1)(x - 3)$

(d) $(x + 6)(x + 1)(x - 3)$

36. If the greatest common factor (HCF) of x and y is 15, then the HCF of $36x^2 - 81y^2$ and $81x^2 - 9y^2$ is divisible by _____?

` त्हदxदं ै ह्दyदगै द- अै-दलै ेत्र जमद(HCF) 15द ह्दजैं $36x^2 - 81y^2$ ं ै ह्द$81x^2 - 9y^2$ गै दHCF _____ लं ेत्र क्रैमे द ै ह्ैं :

SSC CGL TIER- II 06/03/2023

(a) 135

(b) 120

(c) 90

(d) 180

ANSWER KEY

1.(c)	2.(b)	3.(c)	4.(a)	5.(b)	6.(a)	7.(d)	8.(c)	9.(c)	10.(b)
11.(b)	12.(d)	13.(b)	14.(d)	15.(a)	16.(a)	17.(c)	18.(b)	19.(a)	20.(c)
21.(a)	22.(a)	23.(b)	24.(b)	25.(b)	26.(d)	27.(b)	28.(d)	29.(a)	30.(a)
31.(b)	32.(b)	33.(d)	34.(d)	35.(a)	36.(a)				

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SOLUTIONS

1. (c) LCM = HCF x a
But, 90 is not a multiple of 12

2. (b) $N_1 \times N_2$ = HCF × LCM
384 = HCF × 48
$$HCF = \frac{384}{48} = 8$$
$$\therefore \frac{HCF}{LCM} = \frac{8}{48} = \frac{1}{6}$$

3. (c) $N_1 \times N_2$ = LCM × HCF
6 × 3 × 5 × 3 = LCM × 3
LCM = 90

4. (a) $N_1 \times N_2$ = LCM × HCF
5 × 4 × 4 × 4 = LCM × 4
⇒ LCM = 80

5. (b) HCF (1026, 2268, 2430)
1026 = 2 × 3 × 9 × 19 = 2 + 3^3 × 19
2268 = $2^2 \times 3^4 \times 7$
2430 = $2 \times 3^5 \times 5$
⇒ HCF = 2×3^3 = 54

6. (a) HCF (2040, 391)
2040 = $2^3 \times 3 \times 5 \times 17$
391 = 17 × 23
HCF = 17

7. (d) 2 × 3 × 5 × x = HCF × 90
⇒ x = 3

8. (c) $$HCF\left(\frac{12}{5}, \frac{14}{15}, \frac{16}{17}\right)$$
$$= \frac{HCF\ (12, 14, 16)}{LCM\ (5, 15, 17)} = \frac{2}{225}$$

9. (c) 36 = $2^2 \times 3^2$
198 = $2 \times 3^2 \times 11$
HCF = 2×3^2 = 18

10. (b) $N_1 \times N_2$ = LCM × HCF
3x × 8x = 120 × x
⇒ x = 5
$N_1 + N_2$ = 5(3 + 8)
= 55

11. (b) 110 = 2 × 5 × 11
1980 = 110 × 18
⇒ HCF = 110

12. (d) $N_1 \times N_2$ = LCM × HCF
171 × N_2 = 4104 × 9
$$N_2 = \frac{4104 \times 9}{171}$$
= 216

13. (b) HCF = Highest common factor
Which perfectly divides all given mumbers

14. (d) $N_1 + N_2$ = 18
$N_1 + N_2$ = 3 × 54
= 162
$$\frac{1}{N_1} + \frac{1}{N_2} = \frac{N_1 + N_2}{N_1 N_2}$$
$$= \frac{18}{162}$$
$$= \frac{1}{9}$$

15. (a) $8x^3 + 80x^2 + 200x = 8x(x^2 + 10x + 25)$
$= 8x\ (x + 5)\ (x + 5)$
$4x^4 + 16x^3 - 20x^2 = 4x^2\ (x^2 + 4x - 5)$
$= 4x^2\ (x - 1)\ (x + 5)$
$\therefore$ LCM = $8x^2\ (x + 5)^2\ (x - 1)$

16. (a) $$LCM\left(\frac{1866}{10}, \frac{3732}{10}\right)$$
$$= \frac{LCM\ (1866, 3732)}{HCF\ (10, 10)} = \frac{3732}{10}$$
= 373.2

17. (c) LCM = HCF × a
= 8a
42 is not a multiple of 8.

18. (b) HCF (105, 335, 465)
105 = 3 × 5 × 7
335 = 5 × 67
465 = 3 × 5 × 31
⇒ HCF = 5

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19. (a) HCF (222, 642, 1062)
$222 = 2 \times 3 \times 37$
$642 = 2 \times 3 \times 107$
$1062 = 2 \times 3^2 \times 59$
$\Rightarrow$ HCF $= 2 \times 3 = 6$

20. (c) $\text{HCF}\left(\frac{408}{100}, \frac{663}{100}\right)$

$\Rightarrow \frac{\text{HCF (408, 663)}}{\text{LCM (100, 100)}} = \frac{3 \times 17}{100}$

$408 = 2^3 \times 3 \times 17$
$663 = 3 \times 17 \times 13$
$\Rightarrow$ HCF = 0.51

21. (a) HCF $(xy^3, x^2y, x^3y^4) = xy$
LCM $= x^3y^4$

22. (a) LCM (96, 136, 504)
$\Rightarrow 96 = 2^5 \times 3$
$136 = 2^3 \times 17$
$504 = 2^3 \times 3^2 \times 7$
$\Rightarrow$ LCM $= 2^5 \times 3^2 \times 7 \times 17$
$= 34272$

23. (b) LCM (144, 360, 450)
$144 = 2^4 \times 3^2$
$360 = 2^3 \times 3^2 \times 5$
$450 = 2 \times 3^2 \times 5^2$
LCM $= 2^4 \times 3^2 \times 5^2$
$= 3600$

24. (b) $\text{HCF}\left(\frac{1}{2}, \frac{3}{4}, \frac{5}{6}, \frac{7}{8}\right)$

$= \frac{\text{HCF (1, 3, 5, 7)}}{\text{LCM (2, 4, 6, 8)}} = \frac{1}{24}$

25. (b) $\text{LCM}\left(\frac{3}{8}, \frac{5}{16}, \frac{7}{2}\right) = \frac{105}{2} = 52\frac{1}{2}$

26. (d) $N_1 \times N_2 = \text{LCM} \times \text{HCF}$
$49 \times N_2 = 840 \times 21$
$N_2 = 360$

27. (b) $\text{LCM (1.2, 2.7)} = \text{LCM}\left(\frac{12}{10}, \frac{27}{10}\right)$

$= \frac{\text{LCM (12, 27)}}{\text{HCF (10, 10)}} = \frac{108}{10} = 10.8$

28. (d) HCF (98, 175, 210)
$98 = 2 \times 7^2$
$175 = 5^2 \times 7$
$210 = 2 \times 3 \times 5 \times 7$
HCF = 7

29. (a) HCF (60, 148, 382)
$60 = 2^2 \times 3 \times 5$
$148 = 2^2 \times 37$
$382 = 2 \times 191$
HCF = 2

30. (a) $N_1 \times N_2 = \text{LCM} \times \text{HCF}$
$14 \times 9 \times 19 \times 9 = \text{LCM} \times 9$
LCM = 2394

31. (b) $11 \times 19 \times 17 \times 17 = \text{LCM} \times 17$
$\Rightarrow$ LCM = 323

32. (b) $72 = 2^3 \times 3^2$
$108 = 2^2 \times 3^3$
$2010 = 2 \times 3 \times 5 \times 67$
HCF $= 2 \times 3 = 6$

33. (d) $N_1 \times N_2 = \text{HCF} \times \text{LCM}$
$6 \times 3 \times 7 \times 3 = 3 \times \text{LCM}$
$\Rightarrow$ LCM = 126

34. (d)
$N_1 \times N_2 = 1500 = \text{HCF} \times \text{LCM}$
$\Rightarrow$ LCM = 150
$10a \times 106 = 1500$
$\Rightarrow ab = 15$
$3 \times 5 = 15$
$1 \times 15 = 15$
$\Rightarrow$ 2 possible values.

35. (a)
$x^2 - 8x + 15 = 0$
$x^2 - 5x - 3x + 15 = 0$
$x(x - 5) - 3(x - 5) = 0$
$(x - 3)(x - 5) = 0$ .....(1)
Also $x^2 - 5x + 6 = 0$
$\Rightarrow x^2 - 2x - 3x + 6 = 0$
$\Rightarrow x(x - 2) - 3(x - 2) = 0$
$(x - 3)(x - 2) = 0$ .....(2)
$\Rightarrow$ LCM $= (x - 3)(x - 2)(x - 5)$

36. (a)
HCF $(x, y) = 15$
$\Rightarrow x = 15a, y = 156$
$36x^2 - 81y^2 = (6x)^2 - (9y)^2$
$= (6 \times 15a)^2 - (9 \times 15b)^2$
$= (45)^2 [4a^2 - 9a^2]$
$= (45)^2 (-5a^2)$
$81x^2 - 9y^2 = 9 [9x^2 - y^2]$
$= (45)^2 [9a^2 - a^2]$
$= (45)^2 (8a^2)$
HCF $= (45)^2$, which is divisible by 135

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SIMPLIFICATION

लायबै ामि

17

1. Simplify $x^9 \times x^5 \times x^{-4} \times x^0 \times x^{-6}$.

$x^9 \times x^5 \times x^{-4} \times x^0 \times x^{-6}$है हिलायहै ोंद

SSC CGL 01/12/2022 (Shift- 02)

(a) x^4 (b) x^{-4}
(c) x^{-6} (d) x^6

2. The value of $\dfrac{428 \times 428 \times 428 + 348 \times 348 \times 348}{428 \times 428 - 428 \times 348 + 348 \times 348}$ is:

$\dfrac{428 \times 428 \times 428 + 348 \times 348 \times 348}{428 \times 428 - 428 \times 348 + 348 \times 348}$ है हिगि-ह अि तहिजि

SSC CGL 01/12/2022 (Shift- 04)

(a) 776 (b) 62080
(c) 80 (d) 40

3. Simplify $x + 3(y + x - 2) - (x + y)$.

$x + 3(y + x - 2) - (x + y)$. हिलायहै ोंद

SSC CGL 02/12/2022 (Shift- 01)

(a) $x + 2y - 6$ (b) $2x + y - 6$
(c) $3x + 2y - 6$ (d) $5x + 1y - 6$

4. Simplify $\dfrac{x^2 + 2x + y^2}{x^3 - 5x^2}$ if $x + \dfrac{y^2}{x} = 5$.

अएह $x + \dfrac{y^2}{x} = 5$ हत्की हि $\dfrac{x^2 + 2x + y^2}{x^3 - 5x^2}$ है हिलायब्ही ै ोंद

SSC CGL 02/12/2022 (Shift- 02)

(a) $\dfrac{5}{y^2}$ (b) $\dfrac{7}{y^2}$
(c) $-\dfrac{5}{y^2}$ (d) $-\dfrac{7}{y^2}$

5. Simplify the following.

$$\frac{762 \times 762 \times 762 + 316 \times 316 \times 316}{762 \times 762 - 762 \times 316 + 316 \times 316}$$

न् -न्यन्ची है हिलायहै बड़ ं

$$\frac{762 \times 762 \times 762 + 316 \times 316 \times 316}{762 \times 762 - 762 \times 316 + 316 \times 316}$$

SSC CGL 02/12/2022 (Shift- 03)

(a) 1064 (b) 1056
(c) 1042 (d) 1078

6. The value of 95 × 105 is:

95 × 105है हिगि-हत्क

SSC CGL 03/12/2022 (Shift- 03)

(a) 9981 (b) 9935
(c) 9965 (d) 9975

7. Simplify the following $25^3 - 75^3 + 50^3$

न् -न्यन्ची है हिलायहै ोंद

$25^3 - 75^3 + 50^3$

SSC CGL 05/12/2022 (Shift- 03)

(a) –281250 (b) 281350
(c) 271250 (d) –281450

8. Simplify the following equation. What is the difference between the two value of x?

$$7x+4[x^2 \div (5x \div 10)] - 3\left\{5\frac{1}{3} - x^3 \div \left(3x^2 \div x\right)\right\} = 0$$

न् -न्यन्ची हलगैब ामहि हिलायहै बड़ ंहxहै हएहिगि-दि गेह अहिक्रीा हत्क

$$7x+4[x^2 \div (5x \div 10)] - 3\left\{5\frac{1}{3} - x^3 \div \left(3x^2 \div x\right)\right\} = 0$$

SSC CGL 07/12/2022 (Shift- 01)

(a) 8 (b) 16
(c) 5 (d) 17

9. Simplify the given expression.

$(5x + 8y)(25x^2 + 64y^2 - 40xy)$

न् हर् हश्अेडै है हिलायहै बड़ ं

$(5x + 8y)(25x^2 + 64y^2 - 40xy)$

SSC CGL 07/12/2022 (Shift- 03)

(a) $125x^3 - 512y^3$ (b) $25x^3 + 64y^3$
(c) $125x^3 + 512y^3$ (d) $25x^3 - 64y^3$

10. Simplify $x^4 - 15x^3 + 15x^2 - 15x + 40$; given x = 14.

$x^4 - 15x^3 + 15x^2 - 15x + 40$ हिगि-ह: ीि है बड़ $x = 14$ नएअहिर अहित्क

SSC CGL 09/12/2022 (Shift- 03)

(a) 0 (b) 40
(c) 14 (d) 26

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11. The value of $\frac{146\times146\times146-143\times143\times143}{146\times146+143\times143+146\times143}$ is:

$\frac{146\times146\times146-143\times143\times143}{146\times146+143\times143+146\times143}$ है हि गि-ह अि त द्धिि

SSC CGL 09/12/2022 (Shift- 03)

(a) 0 (b) 3
(c) 289 (d) 1

12. The value of $\frac{1.6\times1.6\times1.6-0.6\times0.6\times0.6}{1.6\times1.6+1.6\times0.6+0.6\times0.6}$ is:

$\frac{1.6\times1.6\times1.6-0.6\times0.6\times0.6}{1.6\times1.6+1.6\times0.6+0.6\times0.6}$ है हिगि-ह अहित द्धिि

SSC CGL 12/12/2022 (Shift- 03)

(a) 0
(b) 1
(c) –1
(d) 2

13. Find the value of given expression.
30 – [40 – {56 – (25 – 13 – 12)}]
नए हर हश्अेडै है हिगि-ह: ि है बाड़
30 – [40 – {56 – (25 – 13 – 12)}]

SSC CGL TIER - II 02/03/2023

(a) 38 (b) 22
(c) 14 (d) 46

14. Find the value of given expression.
[76 – {90 ÷ 5 × (24 – 36 ÷ 3) ÷ 3}]
नए हर हश्अेडै है हिगि-हश्ी ि
[76 – {90 ÷ 5 × (24 – 36 ÷ 3) ÷ 3}]

SSC CGL TIER- II 03/03/2023

(a) 71.5 (b) 75.5
(c) 4 (d) 77.5

15. Find the value of the given expression.
3 – (– 6) {– 2 – 9 – 3} ÷ 7 {1 + (– 2) (– 1)}
नए हर हश्अेडै है हिगि-हश्ी ि
3 – (– 6) {– 2 – 9 – 3} ÷ 7 {1 + (– 2) (– 1)}

SSC CGL TIER- II 06/03/2023

(a) 7 (b) 15
(c) – 1 (d) 1

16. The value of $\frac{0.7\times0.7\times0.7+0.3\times0.3\times0.3}{0.7\times0.7-0.7\times0.3+0.3\times0.3}$ is _____.

$\frac{0.7\times0.7\times0.7+0.3\times0.3\times0.3}{0.7\times0.7-0.7\times0.3+0.3\times0.3}$ है हिगि-ह[redacted]त क

SSC CGL TIER- II 07/03/2023

(a) 2 (b) 1
(c) 3 (d) – 1

ANSWER KEY

1.(a)	2.(a)	3.(c)	4.(d)	5.(d)	6.(d)	7.(a)	8.(d)	9.(c)	10.(d)
11.(b)	12.(b)	13.(d)	14.(c)	15.(c)	16.(b)				

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SOLUTIONS

1. (a)

$x^9 \times x^5 \times x^{-4} \times x^0 \times x^{-6}$

$\Rightarrow 9 + 5 - 4 + 0 - 6$

$\Rightarrow x^4$

2. (a)

$$\frac{428 \times 428 \times 428 + 348 \times 348 \times 348}{428 \times 428 - 428 \times 348 + 348 \times 348}$$

$$= \frac{a^3 + b^3}{a^2 - ab + b^2} = (a + b)$$

$= 428 + 348 = 776$

3. (c)

$x + 3(y + x - 2) - (x + y)$

$\Rightarrow x + 3y + 3x - 6 - x - y$

$\Rightarrow 3x + 2y - 6$

4. (d)

$$\frac{x^2 + 2x + y^2}{x^3 - 5x^2} \text{ if } x + \frac{y^2}{x} = 5$$

$x + \frac{y^2}{x} = 5 \Rightarrow x^2 + y^2 = 5x$ ...(1)

$\Rightarrow x^2 - 5x = -y^2$

$\Rightarrow x^3 - 5x^2 = -y^2x$ ...(2)

$\therefore$ Put (1) and (2) in original equation

$$\Rightarrow \frac{5x - y^2 + 2x + y^2}{-y^2x} = \frac{7x}{-y^2x} = -\frac{7}{y^2}$$

5. (d)

$$\frac{762 \times 762 \times 762 + 316 \times 316 \times 316}{762 \times 762 - 762 \times 316 + 316 \times 316}$$

$$= \frac{a^3 + b^3}{a^2 - ab + b^2} = (a + b)$$

$= (762 + 316) = 1078$

6. (d)

95×105

$= (100 - 5)(100 + 5)$

$= (100)^2 - (5)^2$

$= 10000 - 25$

$= 9975$

7. (a)

$25^3 - 75^3 + 50^3$

$a = 25, b = -75, c = 50$

$\Rightarrow a + b + c = 0$

$\Rightarrow a^3 + b^3 + c^3 = +3abc$

$\Rightarrow -3 \times 25 \times 75 \times 50$

$\Rightarrow -281250$

8. (d)

$$7x + 4[x^2 \div (5x \div 10)] - 3\left\{5\frac{1}{3} - x^3 \div (3x^2 \div x)\right\} = 0$$

$$\Rightarrow 7x + 4\left[x^2 \div \frac{1}{2}x\right] - 3\left\{\frac{16}{3} - x^3 \div 3x\right\} = 0$$

$\Rightarrow 7x + 4 \times 2x - (16 - x^2) = 0$

$\Rightarrow 7x + 8x - 16 + x^2 = 0$

$\Rightarrow x^2 + 15x - 16 = 0$

$\Rightarrow x^2 - x + 16x - 16 = 0$

$\Rightarrow x = 1, x = -16$

$\Rightarrow$ Difference = 17

9. (c)

$(5x + 8y)(25x^2 + 64y^2 - 40xy)$

$= (5x + 8y)((5x)^2 + (8y)^2 - 5 \times 8xy)$

$\Rightarrow a^3 + b^3 = (a + b)(a^2 + b^2 - ab)$

$\Rightarrow (5x)^3 + (8y)^3$

$= 125x^3 + 512y^3$

10. (d)

$x^4 - 15x^3 + 15x^2 - 15x + 40$ ...(1)

$x = 14$

$\Rightarrow x + 1 = 15$, put in equation (1)

$= x^4 - (x + 1)x^3 + (x + 1)^2 - (x + 1)x + 40$

$= x^4 - x^4 - x^3 + x^3 + x^2 - x^2 - x + 40$

$= 40 - x = 40 - 14 = 26$

11. (b)

$$\frac{146 \times 146 \times 146 - 143 \times 143 \times 143}{146 \times 146 + 143 \times 143 + 146 + 143}$$

$$= \frac{a^3 - b^3}{a^2 + b^2 + ab} = (a - b)$$

$\Rightarrow 146 - 143 = 3$

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12. (b)

$$\frac{1.6\times1.6\times1.6-0.6\times0.6\times0.6}{1.6\times1.6+1.6\times0.5+0.6\times0.6}$$

$$\Rightarrow \frac{a^3-b^3}{a^2+b^2+ab}=(a-b)$$

$\Rightarrow 1.6 - 0.6 = 1$

13. (d)

30 – [40 – {56 – (25 – 13 – 12)}]

= 30 – [40 – 56] = 30 + 16 = 46

14. (c)

[76 – {90 ÷ 5× (24 – 36 ÷ 3) ÷ 3}]

= [76 – {18 × (12) ÷ 3}]

= [76 – 72] = 4

15. (c)

3 – (– 6) {– 2 – 9 – 3} ÷ 7 {1 + (– 2) (– 1)}

⇒ 3 – (– 6) {– 14} ÷ 7 {3}

⇒ 3 – 84 ÷ 21

⇒ 3 – 4 = – 1

16. (b)

$$\frac{0.7\times0.7\times0.7+0.3\times0.3\times0.3}{0.7\times0.7-0.7\times0.3+0.3\times0.3}$$

$$=\frac{a^3+b^3}{a^2-ab+b^3}=(a+b)^3$$

$= (0.7 + 0.3)^3 = 1$

Maths by Aditya Ranjan sir

ALGEBRA

%रजै बे

18

1. If $x^2 - 5x + 1 = 0$, then the value of $\frac{x^6 + x^4 + x^2 + 1}{5x^3} = ? = ?$

है दि$x^2 - 5x + 1 = 0$दलाय्से ˙स $\frac{x^6 + x^4 + x^2 + 1}{5x^3} =$ द- ˙ ˙अद्त˙ द- रै जनए

SSC CGL 01/12/2022 (Shift- 01)

(a) 30 (b) 25
(c) 23 (d) 28

2. If $\frac{(17)^3 + (7)^3}{(17^2 + 7^2 - k)} = 24$, then what is the value of k?

है दि$\frac{(17)^3 + (7)^3}{(17^2 + 7^2 - k)} = 24$ दलाय्से ˙सkद- ˙द ˙अद्वह˙ दलाय

SSC CGL 01/12/2022 (Shift- 01)

(a) 119 (b) 128
(c) 24 (d) 109

3. If $\frac{4\left[(17)^3 - (7)^3\right]}{(17^2 + 7^2 + p)} = 40$, then what is the value of p?

है दि$\frac{4\left[(17)^3 - (7)^3\right]}{(17^2 + 7^2 + p)} = 40$ दलाय्से ˙सpद- ˙द ˙अद्वह˙ दलाय

SSC CGL 01/12/2022 (Shift- 01)

(a) –119 (b) –129
(c) 119 (d) 129

4. x is a negative number such that $k + k^{-1} = -2$, then what is the value of $\frac{k^2 + 4k - 2}{k^2 + k - 5}$?

xदन- दी बं इ - र्द ह्र ह्र ं द् ˙ दमक्र ं श्दलाय्से - दk + $k^{-1} = -2$ लाय्से ˙स $\frac{k^2 + 4k - 2}{k^2 + k - 5}$ द- ˙द ˙अद्वह˙ दलाय

SSC CGL 01/12/2022 (Shift- 02)

(a) 7 (b) 1
(c) –7 (d) –4

5. If $\left(x + \frac{1}{x}\right) = 5\sqrt{2}$, then what is the value of $(x^4 + x^{-4})$?

है दि$\left(x + \frac{1}{x}\right) = 5\sqrt{2}$ दलाय्से ˙स$(x^4 + x^{-4})$द- ˙द ˙अद्त˙ - श्य

SSC CGL 01/12/2022 (Shift- 02)

(a) 2542 (b) 2650
(c) 2452 (d) 2302

6. If a + b = 11 and ab = 35, then what is the value of $(a^4 + b^4)$?

है दि$a + b = 11$द: ˙श्दab = 35दलाय्से ˙स$(a^4 + b^4)$द- ˙ ˙अद्वह˙ दलाय

SSC CGL 01/12/2022 (Shift- 03)

(a) 151 (b) 261
(c) 124 (d) 102

7. If $x + y = 36$, then find $(x - 27)^3 + (y - 9)^3$.

है दि$x + y = 36$दलाय्से ˙स$(x - 27)^3 + (y - 9)^3$द- ˙द ˙अ त˙ द- रै जनए

SSC CGL 01/12/2022 (Shift- 03)

(a) 1 (b) 81
(c) 2y (d) 0

8. If $y + \frac{1}{y} = 3$, then what is the value of $\frac{1}{y^3} + y^3 + 2$?

है दि$y + \frac{1}{y} = 3$, दलाय्से ˙स $\frac{1}{y^3} + y^3 + 2$द- ˙द ˙अद्वह˙ दलाय

SSC CGL 01/12/2022 (Shift- 03)

(a) 24 (b) 18
(c) 20 (d) 29

9. If p + q = 6 and pq = 4, then what is the value of $p^3 + q^3$?

है दि$p + q = 6$दे ˙ ˙ ˙ दpq = 4दलाय्से ˙स$p^3 + q^3$द- ˙द ˙अ वह˙ दलाय

SSC CGL 01/12/2022 (Shift- 04)

(a) 81 (b) 64
(c) 144 (d) 256

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10. If $x = \frac{\sqrt{5}-2}{\sqrt{5}+2}$, then the value of $x^2 + x^{-2}$ is :

है दि $x = \frac{\sqrt{5}-2}{\sqrt{5}+2}$ दलाय्दे ं स $x^2 + x^{-2}$ द- ं द ं अस्तए

SSC CGL 02/12/2022 (Shift- 01)

(a) 350 (b) 345
(c) 284 (d) 322

11. If $x > 0$, and $x^4 + \frac{1}{x^4} = 2207$, what is the value of $x^7 + \frac{1}{x^7}$?

है दि $x > 0$ दलाय्दः ं एद $x^4 + \frac{1}{x^4} = 2207$ दलाय्दे ं स $x^7 + \frac{1}{x^7}$ - ं द ं अस्वह ं दलत

SSC CGL 02/12/2022 (Shift- 01)

(a) 710649 (b) 710647
(c) 710654 (d) 710661

12. If a + b = 5 and ab = 6, then find $3(a^2 + b^2)$.

है दि a + b = 5 : ं एद ab = 6 दलाय्दे ं स $3(a^2 + b^2)$ दत ं - रैजनए

SSC CGL 02/12/2022 (Shift- 02)

(a) 39 (b) 48
(c) 26 (d) 13

13. If a + b + c = 6, $a^2 + b^2 + c^2 = 14$ and ab + bc + ca = 11, then what is the value of $a^3 + b^3 + c^3 - 3abc$?

है दि a + b + c = 6, $a^2 + b^2 + c^2 = 14$ द: ं एद ab + bc + ca = 11 दलाय्दे ं स $a^3 + b^3 + c^3 - 3abc$ द- ं द ं अ वह ं दलत

SSC CGL 02/12/2022 (Shift- 03)

(a) 31 (b) 12
(c) 18 (d) 42

14. If $k^4 + \frac{1}{k^4} = 194$, then what is the value of $k^3 + \frac{1}{k^3}$?

है दि $k^4 + \frac{1}{k^4} = 194$ दलाय्दे ं स $k^3 + \frac{1}{k^3}$ द- ं द ं अस्वह ं लत

SSC CGL 02/12/2022 (Shift- 03)

(a) 42 (b) 52
(c) 36 (d) 18

15. If $x + \frac{1}{x} = 8$, then find the value of $\frac{5}{x^2 - 8x + 2}$.

है दि $x + \frac{1}{x} = 8$ दलाय्दे ं स $\frac{5}{x^2 - 8x + 2}$ द- ं द ं अस्त ं द- रैजनए

SSC CGL 02/12/2022 (Shift- 04)

(a) 3 (b) 4
(c) 0 (d) 5

16. If $K + \frac{1}{K} = 3$, then what is the value of $\frac{1}{K^3} + K^3$?

है दि $K + \frac{1}{K} = 3$ दलाय्दे ं स $\frac{1}{K^3} + K^3$ द- ं द ं अस्वह ं दलत

SSC CGL 02/12/2022 (Shift- 04)

(a) 36 (b) 10
(c) 18 (d) 54

17. If $\left(4a + \frac{5}{a} + 5\right) = 14$, what is the value of $\left(16a^2 + \frac{25}{a^2}\right)$?

है दि $\left(4a + \frac{5}{a} + 5\right) = 14$ दलाय्दे ं स $\left(16a^2 + \frac{25}{a^2}\right)$ द- ं द ं अ वह ं दलंस ं त

SSC CGL 03/12/2022 (Shift- 01)

(a) 25 (b) 36
(c) 41 (d) 40

18. If $x - \frac{1}{x} = 13$, what will be the valuek of $x^4 + \frac{1}{x^4}$?

है दि $x - \frac{1}{x} = 13$ दलाय्दे ं स $x^4 + \frac{1}{x^4}$ द- ं द ं अस्वह ं दलंस ं त

SSC CGL 03/12/2022 (Shift- 01)

(a) 28561 (b) 29243
(c) 27887 (d) 29239

19. the factors of $x^4 + x^2 + 25$ are:

$x^4 + x^2 + 25$ - सगबं अड्ंचद् अ सी स- ं अद्र्द सलत

SSC CGL 03/12/2022 (Shift- 01)

(a) $(x^2 + 3x - 5)(x^2 - 3x + 5)$
(b) $(x^2 + 3x + 5)(x^2 - 3x + 5)$
(c) $(x^2 - 3x + 5)(x^2 - 3x + 5)$
(d) $(x^2 + 3x + 5)(x^2 + 3x + 5)$

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20. If $x + \frac{1}{x} = 2\cos\theta$, then $x^3 + \frac{1}{x^3} = ?$

है दि $x + \frac{1}{x} = 2\cos\theta$ दलाइ ं स $x^3 + \frac{1}{x^3} = ?$

SSC CGL 03/12/2022 (Shift- 02)

(a) $2\cos\theta\ 2\theta$ (b) $\cos 3\theta$
(c) $2\cos 3\theta$ (d) $\cos 2\theta$

21. If $x = 3 + 2\sqrt{2}$, $x > 0$, then the value of $\sqrt{x} - \frac{1}{\sqrt{x}}$ is:

है दि $x = 3 + 2\sqrt{2}$, $x > 0$ दलाइ ं स $\sqrt{x} - \frac{1}{\sqrt{x}}$ द- ं द ं अ वह ं दलात

SSC CGL 03/12/2022 (Shift- 02)

(a) 1 (b) $\sqrt{2}$
(c) 2 (d) $2\sqrt{2}$

22. If $x + \frac{1}{x} = -2$ then what is the value of $x^{17} + x^{-17} + x^{12} + x^{-12}$? $(x < 0)$

है दि $x + \frac{1}{x} = -2$ दलाइ ं स $x^{17} + x^{-17} + x^{12} + x^{-12}$ द- ं ं अ वह ं दलात $(x < 0)$

SSC CGL 03/12/2022 (Shift- 02)

(a) –2 (b) –1
(c) 1 (d) 0

23. If $x - y = 1$ and $x^2 + y^2 = 41$ where $x, y \geq 0$, then the value of $x + y$ will be:

है दि $x - y = 1$ द: ं ए द $x^2 + y^2 = 41$ दलाइ ं स $x, y \geq 0$ लाइ ं स $x + y$ - ं द ं अ लंस ं ए

SSC CGL 03/12/2022 (Shift- 02)

(a) 9 (b) 8
(c) 6 (d) 7

24. If $\frac{k - k\cot^2 30^\circ}{1 + \cot^2 30^\circ} = \sin^2 60^\circ + 4\tan^2 45^\circ - \text{cosec}^2 60^\circ$, then the value of k (correct to two decimal places) is:

है दि $\frac{k - k\cot^2 30^\circ}{1 + \cot^2 30^\circ} = \sin^2 60^\circ + 4\tan^2 45^\circ - \text{cosec}^2 60^\circ$ लाइ ं स k द- ं द ं अ क्ष ि ं पर द- स% ं दि ं स: चदे -> दत ं - ै जनए

SSC CGL 03/12/2022 (Shift- 03)

(a) 5.55 (b) –6.83
(c) –5.58 (d) 6.83

25. If $8a^3 + 27b^3 = 16$ and $2a + 3b = 4$, then find the value of $16a^4 + 81b^4$.

है दि $8a^3 + 27b^3 = 16$ द: ं ए द $2a + 3b = 4$ दलाइ ं स $16a^4 + 81b^4$ द- ं द ं अ त ं द- ै जनए

SSC CGL 03/12/2022 (Shift- 03)

(a) 26 (b) 30
(c) 28 (d) 32

26. Find the value of the following expression.
$12^3 + (-8)^3 + (-4)^3$

ै अ ैपै डे दस्ह च- द- ं द ं अ त ं द- श्व
$12^3 + (-8)^3 + (-4)^3$

SSC CGL 03/12/2022 (Shift- 03)

(a) 952 (b) 1152
(c) 1052 (d) 852

27. $(mx + n)$ is a factor of:

$(mx + n)$ दै अ ैअ स ी ी स ै - ं - ं दन- द ग ब ं अ ड ं च दलात

SSC CGL 03/12/2022 (Shift- 04)

(a) $m^2x^2 + 2nx + n^2$ (b) $m^2x^2 + 2mnx + n^2$
(c) $m^2x^2 + 2mx + n^2$ (d) $m^2x^2 + 2mn + n^2$

28. If $x + y + z = 0$, then what is the value of $\frac{x^2}{(yz)} + \frac{y^2}{(xz)} + \frac{z^2}{(xy)}$?

है दि $x + y + z = 0$ दलाइ ं स $\frac{x^2}{(yz)} + \frac{y^2}{(xz)} + \frac{z^2}{(xy)}$ द- ं ं अ वह ं दलात

SSC CGL 03/12/2022 (Shift- 04)

(a) 1 (b) 0
(c) 2 (d) 3

29. What is the possible value of $(a + b + c) - 3$, if $a^2 + b^2 + c^2 = 9$ and $ab + bc + ca = 8$?

है दि $a^2 + b^2 + c^2 = 9$ द: ं ए द $ab + bc + ca = 8$ दलाइ ं स $(a + b + c) - 3$ - ं द ं ू ं ै ं द ं अ वह ं दलंस ं त

SSC CGL 03/12/2022 (Shift- 04)

(a) 5 (b) 3
(c) 9 (d) 2

30. If $x + \frac{1}{x} = -14$, and $x < -1$, what will be the value of $x^2 - \frac{1}{x^2}$?

है दि $x + \frac{1}{x} = -14$ दलाइ: ं ए द $x < -1$ दलाइ ं स $x^2 - \frac{1}{x^2}$ - ं द ं अ वह ं दलंस ं त

SSC CGL 05/12/2022 (Shift- 01)

(a) $-112\sqrt{3}$ (b) $112\sqrt{3}$
(c) $-140\sqrt{2}$ (d) $140\sqrt{2}$

Maths by Aditya Ranjan Sir

31. If $k^4 + \frac{1}{k^4} = 47$, then what is the value of $k^3 + \frac{1}{k^3}$?

है कि $k^4 + \frac{1}{k^4} = 47$ दलमसे ं स $k^3 + \frac{1}{k^3}$ द- ं द ं अहवह ं दलत

SSC CGL 05/12/2022 (Shift- 01)

(a) 4.5 (b) 54

(c) 18 (d) 9

32. The simplified form of $(x + 2y)^3 + (x - 2y)^3$ is:

$(x + 2y)^3 + (x - 2y)^3$द- ं र्द श्पर्टे दल मदवह ं दलंसं त

SSC CGL 05/12/2022 (Shift- 01)

(a) $2x^3 + 24xy^2$ (b) $2x^3 - 24xy^2$

(c) $x^3 - 8y^3$ (d) $x^3 + 8y^3$

33. If a – b = 2 and $a^3 - b^3 = 80$, then what will be the value of ab?

है कि $a - b = 2$: ं एद$a^3 - b^3 = 80$दलंसे ं सab द- ं द ं अ वह ं दलंसं त

SSC CGL 05/12/2022 (Shift- 02)

(a) 12 (b) –24

(c) 24 (d) –12

34. If $\frac{1}{x^2 + a^2} = x^2 - a^2$, then the value of x is:

है कि $\frac{1}{x^2 + a^2} = x^2 - a^2$ दलमसे ं सx - ं द ं अहलए

SSC CGL 05/12/2022 (Shift- 02)

(a) $(1 - a^4)^{\frac{1}{4}}$ (b) a

(c) $(a^4 - 1)^{\frac{1}{4}}$ (d) $(a^4 + 1)^{\frac{1}{4}}$

35. Which of the following statement is correct?

ै अ्रैअपै डे द र्ो स- ं ब्र्द्र ं द- ं ड अ्र लसदलत

I. The value of $100^2 - 99^2 + 98^2 - 97^2 + 96^2 - 95^2 + 94^2 - 93^2 + ... + 22^2 - 21^2$ is 4840.

$100^2 - 99^2 + 98^2 - 97^2 + 96^2 - 95^2 + 94^2 - 93^2 + ... + 22^2 - 21^2$द- ं द ं अह4840दलए

II. The value of

$$\left(k^2 + \frac{1}{k^2}\right)\left(k - \frac{1}{k}\right)\left(k^4 + \frac{1}{k^4}\right)\left(k + \frac{1}{k}\right)\left(k^4 - \frac{1}{k^4}\right)$$

is $k^{16} - \frac{1}{k^{16}}$

$$\left(k^2 + \frac{1}{k^2}\right)\left(k - \frac{1}{k}\right)\left(k^4 + \frac{1}{k^4}\right)\left(k + \frac{1}{k}\right)\left(k^4 - \frac{1}{k^4}\right)$$

- ं द$k^{16} - \frac{1}{k^{16}}$ दलए

SSC CGL 05/12/2022 (Shift- 02)

(a) Neither I nor II (b) Only II

(c) Only I (d) Both I and II

36. Select the correct algebraic expression.

ं लवद%रजरह दसह च- द- ं द1 ह अह- ै जनए

SSC CGL 05/12/2022 (Shift- 03)

(a) ab – a – b + 1 = (a – 1) (b – 1)

(b) ab + a – b + 1 = (1 – a) (a – b) (1 + a) (a + b)

(c) ab – a – b + 1 = (1 – a) (b – 1)

(d) ab – a – b + 1 = (a – 1) (1 – b)

37. What is the value of

$100^2 - 99^2 + 98^2 - 97^2 + 96^2 - 95^2 + 94^2 - 93^2 + ... + 12^2 - 11^2$?

$100^2 - 99^2 + 98^2 - 97^2 + 96^2 - 95^2 + 94^2 - 93^2 + ... + 12^2 - 11^2$द- ं द ं अहवह ं दलत

SSC CGL 05/12/2022 (Shift- 03)

(a) 5050 (b) 4985

(c) 4995 (d) 4950

38. If $x^2 + y^2 + z^2 = xy + yz + zx$ and $x = 1$, then find the value of $\frac{10x^4 + 5y^4 + 7z^4}{13x^2y^2 + 6y^2z^2 + 3z^2x^2}$

है कि$x^2 + y^2 + z^2 = xy + yz + zx$द: ं एद$x = 1$दलमसे ं ग

$\frac{10x^4 + 5y^4 + 7z^4}{13x^2y^2 + 6y^2z^2 + 3z^2x^2}$ द- ं द ं अहत ं द- ै जनए

SSC CGL 05/12/2022 (Shift- 04)

(a) 2 (b) 0

(c) –1 (d) 1

39. If $x + \frac{1}{2x} = 3$, then exaluate $8x^3 + \frac{1}{x^3}$.

है कि$x + \frac{1}{2x} = 3$, दलमसे ं स$8x^3 + \frac{1}{x^3}$ द- ं द ं अहत ं द- ै जनए

SSC CGL 05/12/2022 (Shift- 04)

(a) 212 (b) 216

(c) 180 (d) 196

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40. If $x^2 - 2xy = 84$ and $x - y = -10$, then the value of y is:

है दि $x^2 - 2xy = 84$ द: ए $x - y = -10$ दल मे य y द- अक्ह दल

SSC CGL 05/12/2022 (Shift- 04)

(a) 2 (b) 1
(c) 4 (d) 3

41. If $x + \frac{1}{x} = 1$, then the value of $x^{12} + x^9 + x^6 + x^3 + 1$ is:

है दि $x + \frac{1}{x} = 1$ दल मे य $x^{12} + x^9 + x^6 + x^3 + 1$ द- अक्ह दल

SSC CGL 06/12/2022 (Shift- 01)

(a) 1 (b) –1
(c) 0 (d) –2

42. If $\frac{a}{b} + \frac{b}{a} = 1$ and a + b = 2, then the value of $a^3 + b^3$ is:

है दि $\frac{a}{b} + \frac{b}{a} = 1$ द: ए $a + b = 2$ दल मे य $a^3 + b^3$ द- अत द- रै जनए

SSC CGL 06/12/2022 (Shift- 02)

(a) 0 (b) 3
(c) 1 (d) 2

43. If $4x^2 + y^2 = 40$ and $xy = 6$, find the positive value of $2x + y$.

है दि $4x^2 + y^2 = 40$ द: ए $xy = 6$ दल मे य $2x + y$ द- 0 अंइ - द अत द- रै जनए

SSC CGL 06/12/2022 (Shift- 02)

(a) 8 (b) 6
(c) 5 (d) 4

44. If $p = 7 + 4\sqrt{3}$, then what is the value of $\frac{p^6 + p^4 + p^2 + 1}{p^3}$?

है दि $p = 7 + 4\sqrt{3}$ दे य $\frac{p^6 + p^4 + p^2 + 1}{p^3}$ द- द अै - अंदल

SSC CGL 06/12/2022 (Shift- 02)

(a) 2617 (b) 2167
(c) 2716 (d) 2176

45. If 2a + 3b = 10 and ab = 3, then find the value of $4a^2 + 9b^2$.

है दि $2a + 3b = 10$ द: ए $ab = 3$ दल मे य $4a^2 + 9b^2$ - द अत द- रै जनए

SSC CGL 06/12/2022 (Shift- 03)

(a) 60 (b) 62
(c) 64 (d) 66

46. If $(4x - 7y) = 11$ and $xy = 8$, what is the value of $16x^2 + 49y^2$ given that x and y are positive numbers?

है दि $(4x - 7y) = 11$ द: ए $xy = 8$ दल मे x द: ए y द, अंइ - ह नच दल मे य $16x^2 + 49y^2$ द- द अक्ह दल मं त

SSC CGL 06/12/2022 (Shift- 03)

(a) 596 (b) 484
(c) 569 (d) 448

47. What is the value of

$$\left(k - \frac{1}{k}\right)\left(k^2 + \frac{1}{k^2}\right)\left(k^4 + \frac{1}{k^4}\right)\left(k^8 + \frac{1}{k^8}\right)\left(k^{16} + \frac{1}{k^{16}}\right)\left(k^{32} + \frac{1}{k^{32}}\right)?$$

$$\left(k - \frac{1}{k}\right)\left(k^2 + \frac{1}{k^2}\right)\left(k^4 + \frac{1}{k^4}\right)\left(k^8 + \frac{1}{k^8}\right)\left(k^{16} + \frac{1}{k^{16}}\right)\left(k^{32} + \frac{1}{k^{32}}\right)$$ - द अक्ह दल

SSC CGL 06/12/2022 (Shift- 03)

(a) $\frac{k^{64} - \frac{1}{k^{64}}}{k + \frac{1}{k}}$ (b) $\frac{k^{32} - \frac{1}{k^{32}}}{k - \frac{1}{k}}$

(c) $\frac{k^{32} - \frac{1}{k^{32}}}{k + \frac{1}{k}}$ (d) $\frac{k^{32} + \frac{1}{k^{32}}}{k + \frac{1}{k}}$

48. If $x + \frac{1}{x} = 2$, then the value of $x^{57} + \frac{1}{x^{57}}$ is:

है दि $x + \frac{1}{x} = 2$ दल मे य $x^{57} + \frac{1}{x^{57}}$ द- द अक्ह दल

SSC CGL 06/12/2022 (Shift- 04)

(a) 1 (b) –2
(c) 0 (d) 2

Maths by Aditya Ranjan sir

49. If $mx^m - nx^n = 0$, then what is the value of $\frac{1}{x^m + x^n} + \frac{1}{x^m - x^n}$ terms of x^n is:

Where x, m, n are > 0

है दि $mx^m - nx^n = 0$ द लायदे ं स x^n द- स मा ं स्व स्व

$\frac{1}{x^m + x^n} + \frac{1}{x^m - x^n}$ द- ं द ं अद्वह ं दलं स ं त

जलं स x, m, n > 0 दलाए

SSC CGL 06/12/2022 (Shift- 04)

(a) $\frac{2mn}{(x^n(n^2 + m^2))}$ (b) $\frac{2mn}{(x^n(m^2 - n^2))}$

(c) $\frac{2mn}{(x^n(m^2 + n^2))}$ (d) $\frac{2mn}{(x^n(n^2 - m^2))}$

50. If, for a non-zero x, $5x^2 + 7x + 5 = 0$, then the value of $x^3 + \frac{1}{x^3}$ is:

न- द ्रुं ह्वेगश्द x द- सै प नद $5x^2 + 7x + 5 = 0$ द लायदे ं ग

$x^3 + \frac{1}{x^3}$ द- ं द ं अद्वत ं द- रै जनए

SSC CGL 06/12/2022 (Shift- 04)

(a) $\frac{496}{125}$ (b) $\frac{532}{343}$

(c) $\frac{125}{532}$ (d) $\frac{182}{125}$

51. If $x^2 + y^2 + 2y + 4x + 5 = 0$, then $\frac{x+y}{x-y}$.

है दि $x^2 + y^2 + 2y + 4x + 5 = 0$ दलायदे ं स $\frac{x+y}{x-y}$ द- ं

ं अद्वह ं दलं स ं त

SSC CGL 07/12/2022 (Shift- 01)

(a) –3 (b) $\frac{1}{3}$

(c) –1 (d) 3

52. The value of $\frac{(x-y)^3 + (y-z)^3 + (z-x)^3}{6(x-y)(y-z)(z-x)}$, where $x \neq y \neq z$, is equal to:

$\frac{(x-y)^3 + (y-z)^3 + (z-x)^3}{6(x-y)(y-z)(z-x)}$ द- ं द ं अद्वह ं दलं स $x \neq y \neq z$ दलाए

SSC CGL 07/12/2022 (Shift- 01)

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$

(c) $\frac{1}{3}$ (d) $\frac{1}{9}$

53. If $K + \frac{1}{K} + 2 = 0$ and $K < 0$, then what is the value of $K^{10} \frac{1}{K^{11}}$?

है दि $K + \frac{1}{K} + 2 = 0$ दे 8 ं द $K < 0$ दलायदे ं स $K^{10} \frac{1}{K^{11}}$ द- ं

ं अद्वह ं दलं स

SSC CGL 07/12/2022 (Shift- 02)

(a) 1 (b) 0

(c) – (d) 2

54. If $x + \frac{1}{x} = 2$, then $x^3 + \frac{1}{x^3} = ?$

है दि $x + \frac{1}{x} = 2$ दलायदे ं स $x^3 + \frac{1}{x^3} = ?$

SSC CGL 07/12/2022 (Shift- 02)

(a) 1 (b) 8

(c) 2 (d) 0

55. $3\left[a - \frac{1}{a}\right] + \left[a - \frac{1}{a}\right]^3 = ?$

SSC CGL 07/12/2022 (Shift- 02)

(a) $a^2 - \frac{1}{a^3}$ (b) $a^3 - \frac{1}{a^3}$

(c) $a^3 + \frac{1}{a^3}$ (d) $a^2 - \frac{1}{a^2}$

56. If $x^4 + \frac{1}{x^4} = 194$ and $x^3 + \frac{1}{x^3} = ?$

है दि $x^4 + \frac{1}{x^4} = 194$ दलायदे ं स $x^3 + \frac{1}{x^3} = ?$

SSC CGL 07/12/2022 (Shift- 03)

(a) 52 (b) 58

(c) 76 (d) 67

Maths by Aditya Ranjan sir

57. Simplify $\sqrt{36x^2 - 108x + 81}$.

$\sqrt{36x^2 - 108x + 81}$ द- ं र्ब श्प द- रै जनए

SSC CGL 07/12/2022 (Shift- 03)

(a) 6x – 9 (b) 2x – 9

(c) 5x – 9 (d) 3x – 9

58. If $x + \frac{1}{x} = 7$, find the value of $x^3 + \frac{1}{x^3}$.

है दि $x + \frac{1}{x} = 7$ दे ं स $x^3 + \frac{1}{x^3}$ द- ं द ं अह ं द- श्य

SSC CGL 07/12/2022 (Shift- 04)

(a) 343 (b) 322

(c) 340 (d) 332

59. Which of the following statement is correct?

ै अैअैपै डे द र्ब स- ं धंर्द्ध ं द- ं अर्द लाद्दलत

I. If $K + \frac{1}{K} = 12$, then $K^2 + \frac{1}{K^2} = 142$

है दि $K + \frac{1}{K} = 12$ दलाद्दे ं स $K^2 + \frac{1}{K^2} = 142$

II. The value of $\left(k^2 + \frac{1}{k^2}\right)\left(k - \frac{1}{k}\right)\left(k^4 + \frac{1}{k^4}\right)\left(k + \frac{1}{k}\right)$ is $k^{16} - \frac{1}{k^{16}}$.

$\left(k^2 + \frac{1}{k^2}\right)\left(k - \frac{1}{k}\right)\left(k^4 + \frac{1}{k^4}\right)\left(k + \frac{1}{k}\right)$ द - ं द ं अ $k^{16} - \frac{1}{k^{16}}$ दलए

SSC CGL 07/12/2022 (Shift- 04)

(a) Only I (b) Neither I nor II

(c) Both I and II (d) Only II

60. What is the value of $(a + b)^2 - (a - b)^2$?

$(a + b)^2 - (a - b)^2$ द- ं द ं अह ं दलत

SSC CGL 08/12/2022 (Shift- 01)

(a) $2(a^2 + b^2)$ (b) $4(a^2 + b^2)$

(c) 8ab (d) 4ab

61. If m and n are two positive real numbers such that $9m^2 + n^2 = 40$ and mn = 4, then the value of 3m + n is:

है दि m द: ं श्द n द र्ं स0 अंइ - द क ं उै न - द ं ह ं न चलत: ं श $9m^2 + n^2 = 40$ दे ं द mn = 4 लाद्दे ं स 3m + n द- ं अह ं दलंस ं त

SSC CGL 08/12/2022 (Shift- 01)

(a) 160 (b) 64

(c) 10 (d) 8

62. The foctors of $x^2 + 4y^2 + 4y - 4xy - 2x - 8$ are:

$x^2 + 4y^2 + 4y - 4xy - 2x - 8$ द- स5 बं अंइ ं चदलत्य

SSC CGL 08/12/2022 (Shift- 01)

(a) $(x - 2y - 4)(x - 2y + 2)$

(b) $(x^2 - 2y - 4)(x^2 - 2y + 2)$

(c) $(x + 2y - 4)(x + 2y + 2)$

(d) $(x^2 - 2y - 4)(x^2 + 2y + 2)$

63. If $y = 1 + \sqrt{3} + \sqrt{4}$, then the value of $2y^4 - 8y^3 - 6y^2 + 28y - 84$ is:

है दि $y = 1 + \sqrt{3} + \sqrt{4}$ दलाद्दे ं स $2y^4 - 8y^3 - 6y^2 + 28y - 84$ द- ं द ं अह ं दलंस ं त

SSC CGL 08/12/2022 (Shift- 02)

(a) $40\sqrt{3}$ (b) $80\sqrt{3}$

(c) $20\sqrt{3}$ (d) $60\sqrt{3}$

64. If $x = \frac{\sqrt{5} - \sqrt{4}}{\sqrt{5} + \sqrt{4}}$ and $y = \frac{\sqrt{5} + \sqrt{4}}{\sqrt{5} - \sqrt{4}}$ then the value of $\frac{x^2 - xy + y^2}{x^2 + xy + y^2} = ?$

है दि $x = \frac{\sqrt{5} - \sqrt{4}}{\sqrt{5} + \sqrt{4}}$ द : ं श्द $y = \frac{\sqrt{5} + \sqrt{4}}{\sqrt{5} - \sqrt{4}}$ द लाद्दे ं ग $\frac{x^2 - xy + y^2}{x^2 + xy + y^2}$ द- ं द ं अह ं दलंस ं त

SSC CGL 08/12/2022 (Shift- 02)

(a) $\frac{361}{363}$ (b) $\frac{341}{343}$

(c) $\frac{384}{387}$ (d) $\frac{321}{323}$

Maths by Aditya Ranjan sir

65. If $\frac{2p}{p^2-5p+1}=\frac{1}{10}$, $p \neq 0$, then the value of $\left(p+\frac{1}{p}\right)$ is:

है कि $\frac{2p}{p^2-5p+1}=\frac{1}{10}$, दलमेंp ≠ 0दे ंय $\left(p+\frac{1}{p}\right)$ द- ंद ंअत ंद- रै जनए

SSC CGL 08/12/2022 (Shift- 02)

(a) 10 (b) 25
(c) 1 (d) 15

66. If abc = 5, what is the value of

$$\left(\frac{1}{1+a+b^{-1}}+\frac{1}{1+b+5c^{-1}}+\frac{1}{1+\frac{c}{5}+a^{-1}}\right)?$$

है कि abc = 5दलमेंे ंग

$\left(\frac{1}{1+a+b^{-1}}+\frac{1}{1+b+5c^{-1}}+\frac{1}{1+\frac{c}{5}+a^{-1}}\right)$ द - ंद ंअ

ै - ंअंदलए

SSC CGL 08/12/2022 (Shift- 03)

(a) 5 (b) 1
(c) 0 (d) (a + b + c)

67. If 4(z + 7) (2z – 1) = Az² + Bz + C, then the value of A + B + C is:

है कि4(z + 7) (2z – 1) = Az² + Bz + Cदलमेंे ंयA + B + Cद- ंद ंअत ंद- श्य

SSC CGL 08/12/2022 (Shift- 03)

(a) 28 (b) 32
(c) 74 (d) 81

68. Factorize the following expression:
p³ + 27

ै अंअैपै डे दस्हच- द- ंद5बं अडं बृ दत ंद- श्य

p³ + 27

SSC CGL 08/12/2022 (Shift- 03)

(a) (p – 3) (p² – 3p + 9)
(b) (p + 3) (p² + 3p + 9)
(c) (p + 3) (p² – 3p + 9)
(d) (p + 3) (p² – 3p – 9)

69. If $K+\frac{1}{K}=3$, then what is the value of $k^2+\frac{1}{k^2}$?

है कि $K+\frac{1}{K}=3$ दलमेंे ंय $k^2+\frac{1}{k^2}$ द- ंद ंअवह ंदलम

SSC CGL 08/12/2022 (Shift- 04)

(a) 9 (b) 6
(c) 7 (d) 5

70. What is the value of a² + b² + c², if a + b + c = 9 and ab + bc + ca = 23?

a² + b² + c²द- ंद ंअवह ंदलमहै कि a + b + c = 9 : ंएदab + bc + ca = 23दलम

SSC CGL 08/12/2022 (Shift- 04)

(a) 22 (b) 32
(c) 49 (d) 35

71. If $x+\frac{1}{x}=2\sqrt{5}$ where x > 1, then the value of $x^3-\frac{1}{x^3}$ is:

है कि $x+\frac{1}{x}=2\sqrt{5}$ दजलंहx > 1दलमेंे ंय $x^3-\frac{1}{x^3}$ द- ंद ंअत ंद- रै जनए

SSC CGL 08/12/2022 (Shift- 04)

(a) 82 (b) 76
(c) 86 (d) 78

72. If x + y + z = 0, then the value of $\frac{x^2}{yz}+\frac{y^2}{zx}+\frac{z^2}{xy}$ is:

है कि x + y + z = 0दे ंय $\frac{x^2}{yz}+\frac{y^2}{zx}+\frac{z^2}{xy}$ द- ंद ंअत ंद- श्य

SSC CGL 09/12/2022 (Shift- 01)

(a) 3 (b) 1
(c) 0 (d) 2

73. The value of $\frac{(p-q)^3+(q-r)^3+(r-p)^3}{12(p-q)(q-r)(r-p)}$, where $p \neq q \neq r$, is equal to:

$\frac{(p-q)^3+(q-r)^3+(r-p)^3}{12(p-q)(q-r)(r-p)}$ द- ंद ंअत ंद- श्यजलं।

p ≠ q ≠ rदलए

SSC CGL 09/12/2022 (Shift- 01)

(a) $\frac{1}{9}$ (b) $\frac{1}{3}$

(c) $\frac{1}{4}$ (d) $\frac{1}{2}$

Maths by Aditya Ranjan sir

74. What is the value of $(a + b)^3 - a^3 + b^3$?

$(a + b)^3 - a^3 + b^3$द- ˙द ˙अहवं दलत

SSC CGL 09/12/2022 (Shift- 01)

(a) $-3ab(a - b) + 2b^3$

(b) $3ab(a + b) + 2b^3$

(c) $3ab(a - b)b^3$

(d) $-3ab(a + b) + b^3$

75. If $x^2 + \frac{1}{x^2} = 66$, then value of $x - \frac{1}{x}$ is____

है दि$x^2 + \frac{1}{x^2} = 66$ दलमे ˙ष$x - \frac{1}{x}$द- ˙द ˙अ____दलए

SSC CGL 09/12/2022 (Shift- 02)

(a) 10 (b) 8

(c) 9 (d) 6

76. If $k + \frac{1}{k} = 4$, then what is the value of $k^4 + \frac{1}{k^4}$?

है दि$k + \frac{1}{k} = 4$ दलमे ˙ष$k^4 + \frac{1}{k^4}$द- ˙द ˙अहवं दलत

SSC CGL 09/12/2022 (Shift- 02)

(a) 410 (b) 192

(c) 212 (d) 194

77. If p + q = 6 and pq = 4, then what is the value of $3(p^3 + q^3)$?

है दि$p + q = 6$दे 8˙दpq = 4दलमे ˙ष$3(p^3 + q^3)$द- ˙ ˙अहवं दलत

SSC CGL 09/12/2022 (Shift- 02)

(a) 512 (b) 144

(c) 288 (d) 432

78. If $p - \frac{1}{p} = 6$, the what is the value of $p^4 + \frac{1}{p^4}$?

है दि$p - \frac{1}{p} = 6$ दलमे ˙ष$p^4 + \frac{1}{p^4}$द- ˙द ˙अहवं दलत

SSC CGL 09/12/2022 (Shift- 03)

(a) 1562 (b) 1432

(c) 1442 (d) 1444

79. If $y + \frac{1}{y} = 11$, then the value of $y^3 - \frac{1}{y^3}$ is:

है दि$y + \frac{1}{y} = 11$ दलमे ˙ष$y^3 - \frac{1}{y^3}$द- ˙द ˙अत ˙ द- श्य

SSC CGL 09/12/2022 (Shift- 04)

(a) $345\sqrt{13}$ (b) $360\sqrt{13}$

(c) $352\sqrt{13}$ (d) $368\sqrt{13}$

80. If $\left(x - \frac{1}{x}\right)^2 = 12$, what is the value of $\left(x^2 - \frac{1}{x^2}\right)$, given that x > 0?

है दि$\left(x - \frac{1}{x}\right)^2 = 12$ दलमे: ˙एदx > 0दै हि द5हं दलमे ˙ग $\left(x^2 - \frac{1}{x^2}\right)$द- ˙द ˙अहवं दलंत

SSC CGL 09/12/2022 (Shift- 04)

(a) $6\sqrt{2}$ (b) $8\sqrt{3}$

(c) $6\sqrt{3}$ (d) $8\sqrt{2}$

81. $a^3 + b^3 + c^3 = 3abc$ if____

$a^3 + b^3 + c^3 = 3abc$दहै ि____

SSC CGL 09/12/2022 (Shift- 04)

(a) a = b = c (b) a + b + c = 0

(c) a + b + c = 0 (d) a + b + c = –1

82. If $m + \frac{1}{m-2} = 4$, then find the value of $(m - 2)^2 + \frac{1}{(m-2)^2}$.

है दि$m + \frac{1}{m-2} = 4$ दलमे ˙ष$(m - 2)^2 + \frac{1}{(m-2)^2}$द- ˙ ˙अत ˙ द- रै जनए

SSC CGL 12/12/2022 (Shift- 01)

(a) –2 (b) 4

(c) 0 (d) 2

83. If $5x - \frac{5}{x} + 6 = 0$, then $x^2 + \frac{1}{x^2}$ is:

है दि$5x - \frac{5}{x} + 6 = 0$ दलमे ˙ष$x^2 + \frac{1}{x^2} = ?$

SSC CGL 12/12/2022 (Shift- 01)

(a) $\frac{86}{25}$ (b) $\frac{43}{12}$

(c) $\frac{81}{10}$ (d) $\frac{86}{11}$

Maths by Aditya Ranjan sir

84. If a = 26 and b = 22, then the value of $\frac{a^3-b^3}{a^2-b^2}-\frac{3ab}{a+b}$ is.

है दि a = 26 द: ए द b = 22 दलाय ह ए $\frac{a^3-b^3}{a^2-b^2}-\frac{3ab}{a+b}$ द- अलए

SSC CGL 12/12/2022 (Shift- 01)

(a) $\frac{5}{3}$ (b) $\frac{13}{11}$

(c) $\frac{1}{3}$ (d) $\frac{11}{13}$

85. If $a+\frac{1}{a}=5$, then what is the value of $a^3+\frac{1}{a^3}$?

है दि $a+\frac{1}{a}=5$ दलाय ह ए $a^3+\frac{1}{a^3}$ द- द अवह दलाए

SSC CGL 12/12/2022 (Shift- 02)

(a) 110 (b) 15

(c) 105 (d) –10

86. What is the value of $a^2 + b^2 + c^2 - 2ab - 2bc + 2ca$?

$a^2 + b^2 + c^2 - 2ab - 2bc + 2ca$ द- द अवह दलाए

SSC CGL 12/12/2022 (Shift- 02)

(a) $(2a + b + c)^2$ (b) $(a - b + c)^2$

(c) $(a - b - 2c)^2$ (d) $(a + 2b - c)^2$

87. If $\frac{x}{8}+\frac{8}{x}=1$, then the value of x^3 is:

है दि $\frac{x}{8}+\frac{8}{x}=1$ दलाय ह ए x^3 द- द अत द- रै जनए

SSC CGL 12/12/2022 (Shift- 02)

(a) –256 (b) –512

(c) 256 (d) 512

88. If p = 8.15, q = 9.06 and r = –17.21, then the value of $p^3 + q^3 + r^3 - 3pqr$ is:

है दि p = 8.15, q = 9.06 द: ए द r = –17.21 दलाय ह ग $p^3 + q^3 + r^3 - 3pqr$ द- द अवह दलंसं त

SSC CGL 12/12/2022 (Shift- 03)

(a) –3.81 (b) –5.62

(c) 4.75 (d) 0

89. If $x^4+\frac{16}{x^4}=15617$, x > 0, then find the value of $x+\frac{2}{x}$.

है दि $x^4+\frac{16}{x^4}=15617$, x > 0 दलाय ह ए $x+\frac{2}{x}$ द- अत द- रै जनए

SSC CGL 12/12/2022 (Shift- 03)

(a) $\sqrt{121}$ (b) $\sqrt{129}$

(c) $\sqrt{123}$ (d) $\sqrt{127}$

90. If x = 222, y = 223 and z = 224, then find the value of $x^3 + y^3 + z^3 - 3xyz$.

x = 222, y = 223 द: ए द z = 224 दलाय ह ए $x^3 + y^3 + z^3 - 3xyz$ द- द अत द- रै जनए

SSC CGL 12/12/2022 (Shift- 04)

(a) 2007 (b) 2004

(c) 2006 (d) 2005

91. If α, β are the roots of $6x^2 + 13x + 7 = 0$, then the equation whose roots are α^2, β^2 is:

है दि $6x^2 + 13x + 7 = 0$ द- स ुप द α, β लाय ह ए स ल र- श्बंद त द- रै जनयै र्ज - स ुप द α^2, β^2 दलाय

SSC CGL 12/12/2022 (Shift- 04)

(a) $36x^2 - 87x\ 49 = 0$

(b) $36x^2 - 85x + 49 = 0$

(c) $36x^2 - 85x - 49 = 0$

(d) $36x^2 + 87x - 49 = 0$

92. If x + y + z = 0 and $x^2 + y^2 + z^2 = 40$, then what is the value of xy + yz + zx?

है दि x + y + z = 0 दे ं द $x^2 + y^2 + z^2 = 40$ दलाय ह ग xy + yz + zx द- द अवह दलाए

SSC CGL 12/12/2022 (Shift- 04)

(a) –20 (b) 5

(c) –5 (d) –10

Maths by Aditya Ranjan sir

93. Which of the following statement is correct?

ै अिअैपै डे द र्ी स- ंभर्द्ध ंद- ंअर्द लरदलत

I. If x = 12, y = –2 and z = –10, then $x^3 + y^3 + z^3 = 360$.

है दि x = 12, y = –2दे ं दz = –10दलाये ंस $x^3 + y^3 + z^3 = 360$

II. If x + y = 48 and 4xy = 128, then $4x^2 + 4y^2 = 4480$.

है दि x + y = 48दे ं द4xy = 128दलाये ंस $4x^2 + 4y^2 = 4480$

SSC CGL 13/12/2022 (Shift- 01)

(a) Neither I nor II (b) Only I
(c) Both I and II (d) Only II

94. If $K + \frac{1}{K} + 2 = 0$ and K < 0, then what is the value of $K^{11} + \frac{1}{K^4}$?

है दि $K + \frac{1}{K} + 2 = 0$ दे ं द K < 0दलाये ंस $K^{11} + \frac{1}{K^4}$ - ंद ंअक्ह ंदलत

SSC CGL 13/12/2022 (Shift- 01)

(a) 0 (b) –2
(c) –1 (d) –17

95. If $x + \frac{1}{x} = 6$, then find the value of $\frac{3x}{2x^2 - 5x + 2}$.

है दि $x + \frac{1}{x} = 6$ दलाये ंस $\frac{3x}{2x^2 - 5x + 2}$ द- ंद ंअत ै - ै जनए

SSC CGL 13/12/2022 (Shift- 01)

(a) 1 (b) $\frac{3}{7}$
(c) $\frac{2}{3}$ (d) 0

96. If a – b = 8 and ab = 9, then the value of a + b is.

है दि a – b = 8दे ं द ab = 9दलाये ंस a + bद- ंद ंअ त ै द- श्य

SSC CGL 13/12/2022 (Shift- 02)

(a) ±9 (b) ±7
(c) ±8 (d) ±10

97. If 2p + q = 19 and $8p^3 + q^3 = 361$, then find the value of pq.

है दि 2p + q = 19दे ं द $8p^3 + q^3 = 361$दलाये ंस pq - ंद ंअत ै द- श्य

SSC CGL 13/12/2022 (Shift- 02)

(a) 56 (b) 59
(c) 58 (d) 57

98. Which of the following statement is correct?

ै अिअैपै डे द र्ी स- ंभर्द्ध ंद- ंअर्द लरदलत

I. If x = 12, y = –2 and z = –10, then $x^3 + y^3 + z^3 = 720$

है दि x = 12, y = –2दे ं द z = –10दलाये ंस $x^3 + y^3 + z^3 = 720$

II. If x + y = 48 and 4xy = 128, then s the value of $4x^2 + 4y^2$ is 8960

है दि x + y = 48दे ं द 4xy = 128दलाये ंस $4x^2 + 4y^2$द- ंद ंअसम्भव दलए

SSC CGL 13/12/2022 (Shift- 02)

(a) Neither I nor II (b) Only I
(c) Both I and II (d) Only II

99. If $\frac{r}{13} + \frac{13}{r} = 1$ then the value of r^3 is:

है दि $\frac{r}{13} + \frac{13}{r} = 1$ दलाये ंस r^3द- ंद ंअत ै द- ै जनए

SSC CGL 13/12/2022 (Shift- 03)

(a) –2157 (b) 2197
(c) 2157 (d) –2197

100. If $\frac{a}{b} + \frac{b}{a} = -1$ and a – b = 2 then the value $a^3 - b^3$ is:

है दि $\frac{a}{b} + \frac{b}{a} = -1$ द: ंश्दa – b = 2दलाये ंस $a^3 - b^3$द- ंअत ै द- श्य

SSC CGL 13/12/2022 (Shift- 03)

(a) 0 (b) $\frac{1}{2}$
(c) 1 (d) –1

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101. If $x = 2 - 2^{\frac{1}{3}} + 2^{\frac{2}{3}}$, then find the value of $x^3 - 6x^2 + 18x$.

है दि $x = 2 - 2^{\frac{1}{3}} + 2^{\frac{2}{3}}$, दलाइसे ं स $x^3 - 6x^2 + 18x$ द- ं ं अइक्हं दलाइ

SSC CGL 13/12/2022 (Shift- 04)

(a) 40 (b) 33
(c) 45 (d) 22

102. If a + b + c = 5, $a^3 + b^3 + c^3 = 85$ and abc = 25, then find the value of $a^2 + b^2 + c^2 - ab - bc - ca$.

है दि a + b + c = 5, $a^3 + b^3 + c^3 = 85$ द: ं एद abc = 25 दलाइसे ं स $a^2 + b^2 + c^2 - ab - bc - ca$ द- ं द ं अइ ं - रै जनए

SSC CGL 13/12/2022 (Shift- 04)

(a) 2 (b) 4
(c) 6 (d) 8

103. If a = –12, b = –6 and c = 18, then what is the value of $\frac{(2abc)}{9}$

है दि a = –12, b = –6 दे 8 ं द c = 18 दलाइसे ं स $\frac{(2abc)}{9}$ - ं द ं अइक्हं दलाइ

SSC CGL 13/12/2022 (Shift- 04)

(a) 554 (b) 228
(c) –288 (d) 144

104. If $\frac{1}{x} + x = 4$, then find $\frac{1}{x^2} + x^2$.

है दि $\frac{1}{x} + x = 4$, दलाइसे ं स $\frac{1}{x^2} + x^2$. त ं दै - ै जनए

SSC CGL TIER - II 02/03/2023

(a) 14 (b) 5
(c) 7 (d) 15

105. What is the simplifie form of the expression $(1 + x)(1 + x^2)(1 + x^4)(1 + x^8)(1 - x)$?

स्हब- द $(1 + x)(1 + x^2)(1 + x^4)(1 + x^8)(1 - x)$ द- ं र्व श्प - रै जनए

SSC CGL TIER- II 03/03/2023

(a) $1 - x^{40}$ (b) $1 - x^{32}$
(c) $1 - x^{16}$ (d) $1 - x^{42}$

106. If $4x^2 + y^2 = 40$ and xy = 6, then find the value of 2x + y.

है दि $4x^2 + y^2 = 40$: ं एद xy = 6 लाइसे ं स 2x + y - ं द ं अ त ं द- रै जनए

SSC CGL TIER- II 06/03/2023

(a) 8 (b) 6
(c) 4 (d) 5

ANSWER KEY

1.(c)	2.(a)	3.(c)	4.(b)	5.(d)	6.(a)	7.(d)	8.(c)	9.(c)	10.(d)
11.(b)	12.(a)	13.(c)	14.(b)	15.(d)	16.(c)	17.(c)	18.(d)	19.(b)	20.(c)
21.(c)	22.(d)	23.(a)	24.(b)	25.(d)	26.(b)	27.(b)	28.(d)	29.(d)	30.(b)
31.(c)	32.(a)	33.(a)	34.(d)	35.(c)	36.(a)	37.(c)	38.(d)	39.(c)	40.(c)
41.(a)	42.(a)	43.(a)	44.(c)	45.(c)	46.(c)	47.(a)	48.(d)	49.(d)	50.(d)
51.(d)	52.(b)	53.(b)	54.(c)	55.(b)	56.(a)	57.(a)	58.(b)	59.(a)	60.(d)
61.(d)	62.(a)	63.(a)	64.(d)	65.(b)	66.(b)	67.(b)	68.(c)	69.(c)	70.(d)
71.(b)	72.(a)	73.(c)	74.(b)	75.(b)	76.(d)	77.(d)	78.(c)	79.(b)	80.(b)
81.(b)	82.(d)	83.(a)	84.(c)	85.(a)	86.(b)	87.(b)	88.(d)	89.(b)	90.(a)
91.(b)	92.(a)	93.(a)	94.(a)	95.(b)	96.(d)	97.(d)	98.(c)	99.(d)	100.(a)
101.(d)	102.(a)	103.(b)	104.(a)	105.(c)	106.(a)				

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SOLUTIONS

1. (c)

$x^2 - 5x + 1 = 0$ .....(1)

Consider,

$$\frac{x^6 + x^4 + x^2 + 1}{5x^3} = \frac{1}{5}\left[x^3 + x + \frac{1}{x} + \frac{1}{x^3}\right]$$

$$= \frac{1}{5}\left[\left(x + \frac{1}{x}\right) + \left(x^3 + \frac{1}{x^3}\right)\right]$$

From (1)

$$x - 5 + \frac{1}{x} = 0$$

$$\Rightarrow x + \frac{1}{x} = 5 \Rightarrow x^3 + \frac{1}{x^3} = 5^3 - 3 \times 5 = 110$$

$$\therefore \frac{x^6 + x^4 + x^2 + 1}{5x^3} = \frac{1}{5}[5 + 110] = 23$$

2. (a)

$$\frac{(17)^3 + 7^3}{17^2 + 7^2 - k} = 24$$

$\because a^3 + b^3 = (a + b)(a^2 + b^2 - ab)$

$$\Rightarrow \frac{(17 + 7)(17^2 + 7^2 - 17 \times 7)}{(17^2 + 7^2 - k)} = 24$$

$\Rightarrow k = 17 \times 7 = 119$

3. (c)

$$\frac{4[17^3 - 7^3]}{17^2 + 7^2 + P} = 40$$

$$\Rightarrow \frac{4(17 - 7)(17^2 + 7^2 + 17 \times 7)}{17^2 + 7^2 + P} = 40$$

$\Rightarrow P = 119$

4. (b)

$$k + \frac{1}{k} = -2$$

$\Rightarrow k = -1$

$$\therefore \frac{k^2 + 4k - 2}{k^2 + k - 5} = \frac{1 - 4 - 2}{1 - 1 - 5} = 1$$

5. (d)

$$x + \frac{1}{x} = 5\sqrt{2}$$

$$x^2 + \frac{1}{x^2} = \left(5\sqrt{2}\right)^2 - 2$$

$= 48$

$$x^4 + \frac{1}{x^4} = (48)^2 - 2$$

$= 2302$

6. (a)

$a + b = 11, ab = 35$

We know,

$a^4 + b^4 = (a^2 + b^2)^2 - 2a^2b^2$

$a^2 + b^2 = 121 - 70 = 51$

$\therefore a^4 + 6^4 = 2601 - 2450$

$= 151$

7. (d)

$x + y = 36 \Rightarrow x - 27 + y - 9 = 0$

Consider,

$(x - 27)^3 + (y - 9)^3 = (x - 27^\circ + y - 9)(x - 27)^\circ + (y - 9)^3 - (x - 27)(y - 9)$

$= 0$

8. (c)

$$y + \frac{1}{y} = 3 \Rightarrow y^3 + \frac{1}{y^3} = 3^3 - 3 \times 3 = 18$$

Consider,

$$\frac{1}{y^3} + y^3 + 2 = 18 + 2 = 20$$

9. (c)

$p + q = 6, pq = 4$

$p^3 + q^3 = (p + q)^3 - 3pq(p + q)$

$= 6^3 - 12(6)$

$= 144$

10. (d)

$$x = \frac{\sqrt{5} - 2}{\sqrt{5} + 2}, \quad \frac{1}{x} = \frac{\sqrt{5} + 2}{\sqrt{5} - 2}$$

$$x + \frac{1}{x} = \frac{\sqrt{5} - 2}{\sqrt{5} + 2} + \frac{\sqrt{5} + 2}{\sqrt{5} - 2}$$

$$x + \frac{1}{x} = \frac{18}{1}$$

$$x + \frac{1}{x^2} = 18^2 - 2 = 322$$

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11. (b)

$$x^4 + \frac{1}{x^4} = 2207$$

$$x^2 + \frac{1}{x^2} = \sqrt{2207+2} = \sqrt{2209} = 47$$

$$x + \frac{1}{x} = \sqrt{47+2} = 7$$

$$\Rightarrow x^3 + \frac{1}{x^3} = 7^3 - 3 \times 7 = 322$$

$$\therefore x^7 + \frac{1}{x^7} = \left(x^3 + \frac{1}{x^3}\right)\left(x^4 + \frac{1}{x^4}\right) - \left(x + \frac{1}{x}\right)$$

$$= 322 \times 2207 - 7$$

$$= 710647$$

12. (a)

$a + b = 5, ab = 6$

$3(a^2 + b^2) = 3[(a + b)^2 - 2ab]$

$= 3[25 - 12]$

$= 39$

13. (c)

$a^3 + b^3 + c^3 - 3abc = (a + b + c)[a^2 + b^2 + c^2 - (ab + bc + ac)]$

$= (6)[14 - 11]$

$= 18$

14. (b)

$$k^4 + \frac{1}{k^4} = 194$$

$$k^2 + \frac{1}{k^2} = \sqrt{196} = 14$$

$$k + \frac{1}{k} = \sqrt{16} = 4$$

$$\Rightarrow k^3 + \frac{1}{k^3} = 4^3 - 12$$

$$= 52$$

15. (d)

$$x + \frac{1}{x} = 8 \Rightarrow x^2 + 1 = 8x$$

Consider,

$$\frac{5}{x^2 - 8x + 2} = \frac{5}{-1+2} = 5$$

16. (c)

$$k + \frac{1}{k} = 3$$

$$k^3 + \frac{1}{k^3} = 3^3 - 3 \times 3 = 18$$

17. (c)

$$4a + \frac{5}{a} + 5 = 14$$

$$4a + \frac{5}{a} = 9$$

$$\Rightarrow 16a^2 + \frac{25}{a^2} = 9^2 - 2 \times 4 \times 5$$

$$= 41$$

18. (d)

$$x - \frac{1}{x} = 13$$

$$\Rightarrow x^2 + \frac{1}{x^2} = 13^2 + 2 = 171$$

$$\Rightarrow x^4 + \frac{1}{x^4} = 171^2 - 2 = 29239$$

19 (b)

$x^4 + x^2 + 25$, Let $x^2 = a$

$\Rightarrow a^2 + a + 25 = a^2 + 10a + 25 - 9a$

$\Rightarrow (a + 5)^2 - \left(\sqrt{a}\right)^2$

$\Rightarrow \left(a + 5 - 3\sqrt{a}\right)\left(a + 5 + 3\sqrt{a}\right)$

$\Rightarrow (x^2 + 5 - 3x)(x^2 + 5 + 3x)$

20. (c)

$$x + \frac{1}{x} = 2\cos\theta$$

$$x^3 + \frac{1}{x^3} = 8\cos^3\theta - 6\cos\theta$$

$$= 2[4\cos^3\theta - 3\cos\theta]$$

$$= 2\cos 3\theta$$

21. (c)

$$x = 3 + 2\sqrt{2}$$

$$\frac{1}{x} = 3 - 2\sqrt{2}$$

$$x + \frac{1}{x} = 6$$

$$\Rightarrow \sqrt{x} - \frac{1}{\sqrt{x}} = \sqrt{6-2} = 2$$

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22. (d)

$$x + \frac{1}{x} = -2$$

$\Rightarrow$ $x = -1$

$\Rightarrow$ $x^{17} + x^{-17} + x^{12} + x^{-12}$

$= -1 - 1 + 1 + 1 = 0$

23. (a)

$$(x + y) = \sqrt{(x - y)^2 + 4xy} \quad \text{.....(1)}$$

Also,

$(x - y)^2 = x^2 + y^2 - 2xy$

$1 = 41 - 2xy$

$\Rightarrow$ $xy = 20$ .....(2)

Put (2) in (1)

$$(x + y) = \sqrt{1 + 80}$$

$$= \sqrt{81} = 9$$

24. (b)

$$\frac{k - k\cot^2 30°}{1 + \cot^2 30} = \sin^2 60 + 4\tan^2 45 - \text{cosec}^2 60°$$

LHS:-

$$\frac{k - 3k}{1 + 3} = \frac{-k}{2}$$

RHS:-

$$\frac{3}{4} + 4 - \frac{4}{3} = \frac{9 + 48 - 16}{12}$$

$$= \frac{41}{12}$$

$$\Rightarrow \frac{-k}{2} = \frac{41}{12} \quad \Rightarrow = \frac{-41}{6} = -6.83$$

25. (d)

$8a^3 + 27b^3 = 16,\ 2a + 3b = 4$

We know,

$(2a + 3b)^3 = 8a^3 + 27b^3 + 3 \times 2a \times 3b\ (2a + 3b)$

$\Rightarrow$ $64 = 16 + 18\ ab\ (4)$

$$\Rightarrow \frac{48}{42} = ab = \frac{2}{3}$$

$\therefore$ $(2a)^2 + (3b)^2 = (2a + 3b)^2 - 12ab$

$$= 16 - 12 \times \frac{2}{3} = 8$$

$\therefore$ $16a^4 + 81b^4 = (8)^2 - 2 \times 4a^2 \times 96^2$

$$= 64 - 72 \times \frac{4}{9}$$

$$= 32$$

26. (b)

$12^3 + (-8)^3 + (-4)^3$

We know,

$a^3 + b^3 + c^3 = 3abc$, if $a + b + c = 0$

Here,

$12 - 8 - 4 = 0$

$\Rightarrow$ $(12)^3 + (-8)^3 + (-4)^3 = 3 \times 12 \times 8 \times 4$

$= 1152$

27. (b)

Squaring, we get

$(mx + n)^2 = m^2 x^2 + n^2 + 2\ mnx$

28. (d)

Consider,

$$\frac{x^2}{yz} + \frac{y^2}{xz} + \frac{z^2}{xy}$$

$$= \frac{x^3}{xyz} + \frac{y^3}{xyz} + \frac{z^3}{xyz}$$

$$= \frac{x^3 + y^3 + z^3}{xyz} = \frac{3xyz}{xyz} = 3$$

$[\therefore x + y + z = o \Rightarrow x^3 + y^3 + z^3 = 3\ xyz]$

29. (d)

$(a + b + c)^2 = a^2 + b^2 + c^2 + 2\ (ab + bc + ca)$

$= 9 + 2 \times 8$

$= 25$

$\Rightarrow$ $a + b + c = 5$

$\therefore$ $(a + b + c) - 3 = 2$

30. (d)

$$x + \frac{1}{x} = -14$$

$$x^2 + \frac{1}{x^2} = 196 + 2 = 198$$

$$x^2 - \frac{1}{x^2} = \sqrt{(198)^2 - 4}$$

$$= \sqrt{39200}$$

$$= \sqrt{2 \times 19600}$$

$$= 140\sqrt{2}$$

31. (c)

$$k^4 + \frac{1}{k^4} = 47$$

$$x^2 + \frac{1}{k^2} = \sqrt{47 + 2} = 7$$

$$k + \frac{1}{k} = \sqrt{7 + 2} = 3$$

$$\Rightarrow k^3 + \frac{1}{k^3} = 3^3 - 3 \times 3 = 18$$

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32. (a)

$(x + 2y)^3 + (x - 2y)^3$

$a^3 + b^3 = (a + b)(a^2 + b^2 - ab)$

$= (2x)[x^2 + 4y^2 + 4xy + x^2 + 4y^2 - 4xy - x^2 + 4y^2]$

$= (2x)[x^2 + 12y^2]$

$\Rightarrow 2x^3 + 24xy^2$

33. (d)

$a^3 - b^3 = (a - b)^3 - 3ab(a - b)$

$80 = 8 - 3ab(2)$

$\frac{72}{6} = -ab \Rightarrow ab = -12$

34. (d)

$\frac{1}{x^2 + a^2} = x^2 - a^2$

$\Rightarrow x^4 - a^4 = 1$

$\Rightarrow x^4 = 1 + a^4$

$\Rightarrow x = (1 + a^4)^{\frac{1}{4}}$

35. (c)

I. $100^2 - 99^2 + 98^2 - 97^2 + 96^2 - 95^2 + 94^2 - 93^2 + \ldots\ldots\ldots + 22^2 - 21^2$

$\Rightarrow (100 - 99)(100 + 99) + (98 - 97)(98 + 97) + \ldots\ldots + (22 - 21)(22 + 21)$

$= 100 + 99 + 98 + 97 + \ldots\ldots + 22 + 21$

$= \frac{100 \times 101}{2} - \frac{20 \times 21}{2}$

$= 5050 - 210 = 4840.$

$\Rightarrow$ It is true

II. $\left(k^2 + \frac{1}{k^2}\right)\left(k - \frac{1}{k}\right)\left(k^4 + \frac{1}{k^4}\right)\left(k + \frac{1}{k}\right)\left(k^4 - \frac{1}{k^4}\right)$

$= \left(k^2 + \frac{1}{k^2}\right)\left(k^2 - \frac{1}{k^2}\right)\left(k^4 + \frac{1}{k^4}\right)\left(k^4 - \frac{1}{k^4}\right)$

$= \left(k^4 - \frac{1}{k^4}\right)\left(k^8 - \frac{1}{k^8}\right) \Rightarrow \left(k^{16} - \frac{1}{k^{16}}\right)$

$\Rightarrow$ It is true

36. (a)

$(a - 1)(b - 1) = ab - a - b + 1$

$\Rightarrow$ option (a) is correct.

37. (c)

$100^2 - 99^2 + 98^2 - 97^2 + 96^2 - 95^2 + \ldots\ldots + 12^2 - 11^2$

$\Rightarrow (100 - 99)(100 + 99) + (98 - 97)(97 + 97) + (96 - 95)(96 + 95) + \ldots\ldots + (12 - 11)(12 + 11)$

$\Rightarrow 100 + 99 + 98 + 97 + 96 + 95 + \ldots\ldots 12 + 11$

$\Rightarrow \frac{100 \times 101}{2} - \frac{10 \times 11}{2}$

$\Rightarrow 5050 - 55$

$\Rightarrow 4995$

38. (d)

$x^2 + y^2 + z^2 = xy + yz + zx$

$\Rightarrow x = y = z = 1$

$\therefore \frac{10x^4 + 5y^4 + 7z^4}{13x^2y^2 + 6y^2z^2 + 3z^2x^2} = \frac{10 + 5 + 7}{13 + 6 + 3}$

$= 1$

39. (c)

$x + \frac{1}{2x} = 3$

$\Rightarrow 2x + \frac{1}{x} = 6$

$\Rightarrow (2x)^3 + \left(\frac{1}{x}\right)^3 = 6^3 - 3 \times 6 \times 2$

$= 180$

40. (c)

$x^2 - 2xy = 84$

$\Rightarrow x(x - 2y) = 84$ .....(1)

$x - y = -10$

$\Rightarrow x = y - 10$ .....(2)

Put (2) in (1)

$(y-10)(y-10-2y) = 84$

$-(y-10)(y+10) = 84$

$y^2 - 100 = -84$

$y^2 = 16$

$y = 4$

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41. (a)

$$x+\frac{1}{x}=1$$

Consider,

$$x^{12}+x^9+x^6+x^3+1$$

$$\Rightarrow x^6+x^3+1+\frac{1}{x^3}+\frac{1}{x^6}$$

$$\Rightarrow \left(x^6+\frac{1}{x^6}\right)+\left(x^3+\frac{1}{x^3}\right)+1 \quad .....(1)$$

Now,

$$x+\frac{1}{x}=1$$

$$\Rightarrow x^3+\frac{1}{x^3}=1-3=-2$$

$$\Rightarrow x^6+\frac{1}{x^6}=4-2=2$$

$$\therefore x^6+\frac{1}{x^6}+x^3+\frac{1}{x^3}\Rightarrow 2-2+1=1$$

42. (a)

$$\frac{a}{b}+\frac{b}{a}=1$$

$\Rightarrow a^2+b^2=ab,\ a+b=2$

$(a+b)^2=a^2+b^2+2ab$

$\Rightarrow 4=3ab$

$$ab=\frac{4}{3}$$

Consider,

$a^3+b^3=(a+b)(a^2+b^2-ab)$

$=2(0)=0$

43. (a)

$4x^2+y^2=40,\quad xy=6$

$$(2x+y)=\sqrt{4x^2+y^2+2\times 2xy}$$

$$=\sqrt{40+24}$$

$$=\sqrt{64}=8$$

44. (c)

$$P=7+4\sqrt{3}\ \Rightarrow \frac{1}{P}=7-4\sqrt{3}$$

$$\frac{P^6+P^4+P^2+1}{P^3}=P^3+P+\frac{1}{P}+\frac{1}{P^3}$$

$$P+\frac{1}{P}=14$$

$$\Rightarrow P^3+\frac{1}{P^3}=14^3-14\times 3$$

$$\Rightarrow \frac{P^6+P^4+P^2+1}{P^3}=14^3-14\times 3+14$$

$$=2716$$

45. (c)

$4a^2+9b^2=(2a+3b)^2-2\times 2a\times 3b$

$=100-12\times 3$

$=64$

46. (c)

$16x^2+49y^2=(4x-7y)^2+2\times 4x\times 7y$

$=121+448$

$=569$

47. (a)

$$\left(k-\frac{1}{k}\right)\left(k^2+\frac{1}{k^2}\right)\left(k^4+\frac{1}{k^4}\right)\left(k^8+\frac{1}{k^8}\right)$$

$$\left(k^{16}+\frac{1}{k^{16}}\right)\left(k^{32}+\frac{1}{k^{32}}\right)$$

$$=\frac{\left(k+\frac{1}{x}\right)}{\left(k+\frac{1}{x}\right)}\left[\left(k-\frac{1}{x}\right)\left(k^2+\frac{1}{x^2}\right)\left(k^4+\frac{1}{x^4}\right)\left(k^8+\frac{1}{x^8}\right)\left(k^{16}+\frac{1}{x^{16}}\right)\left(k^{32}+\frac{1}{x^{32}}\right)\right]$$

$$=\frac{k^{64}-\frac{1}{k^{64}}}{k+\frac{1}{k}}$$ [Using $(a-b)(a+b)=a^2-b^2$]

48. (d)

$$x+\frac{1}{x}=2,\quad x^{57}+\frac{1}{x^{57}}\Rightarrow 1+1=2$$

$=x=1$

49. (d)

$mx^m-nx^n=0$

$$x^m=\frac{nx^n}{m}$$

Consider,

$$\frac{1}{x^m+x^n}+\frac{1}{x^m-x^n}$$

$$\Rightarrow \frac{1}{\frac{n}{m}x^n+x^n}+\frac{1}{\frac{x}{m}x^n-x^n}$$

$$\Rightarrow \frac{m}{nx^n+mx^n}+\frac{m}{nx^n-mx^n}$$

$$\Rightarrow \frac{m}{x^n(n+m)}+\frac{m}{x^n(n-m)}$$

$$\Rightarrow \frac{m(n-m)+m(n+m)}{x^n(n^2-m^2)}$$

$$\Rightarrow \frac{2mn}{x^n(n^2-m^2)}$$

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50. (d)

$5x^2 + 7x + 5 = 0$

$5x + 7 + \frac{5}{x} = 0$

$\Rightarrow x + \frac{1}{x} = \frac{-7}{5}$

$\Rightarrow x^3 + \frac{1}{x^3} = \frac{-343}{125} + \frac{21}{5}$

$= \frac{182}{125}$

51. (d)

$x^2 + y^2 + 2y + 4x + 5 = 0$

$x^2 + 4x + 4 + y^2 + 2y + 1 = 0$

$(x + 2)^2 + (y + 1)^2 = 0$

$\Rightarrow x = -2, y = -1$

$\Rightarrow \frac{x+y}{x-y} = \frac{-3}{-1} = 3$

52. (b)

$\frac{(x-y)^3 + (y-z)^3 + (z-x)^3}{6(x-y)(y-z)(z-x)}$ (1)

Consider,

$(x - y) + (y - z) + (z - x) = 0$

$\Rightarrow (x - y)^3 + (y - z)^3 + (z - z)^3 = 3 (x - y) (y - z) (z - x)$

So, equation (1) we come:-

$\frac{3(x-y)(y-z)(3-x)}{6(x-y)(y-z)(z-x)} = \frac{1}{2}$

53. (b)

$k + \frac{1}{k} = -2$

$\Rightarrow k = -1$

$\Rightarrow k^{10} - \frac{1}{k^{11}} = -1 + 1 = 0$

(Typing error in question)

54. (c)

$x + \frac{1}{x} = 2 \Rightarrow x = 1$

$\Rightarrow x^3 + \frac{1}{x^3} = 2$

55. (b)

$3\left[a - \frac{1}{a}\right] + \left[a - \frac{1}{a}\right]^3$

$\Rightarrow 3\left[a - \frac{1}{a}\right] + \left\{a^3 - \frac{1}{a^3} - 3\left[a - \frac{1}{a}\right]\right\}$

$\Rightarrow a^3 - \frac{1}{a^3}$

56. (a)

$x^4 + \frac{1}{x^4} = 194$

$x^2 + \frac{1}{x^2} = \sqrt{194 + 2} = 14$

$x + \frac{1}{x} = \sqrt{14 + 2} = 4$

$\Rightarrow x^3 + \frac{1}{x^3} = 4^3 - 12$

$= 52$

57. (a)

$\sqrt{36x^2 - 108x + 81}$

$= \sqrt{9(4x^2 - 12x + 9)}$

$= 3\sqrt{(2x - 3)^2}$

$= 3 (2x - 3)$

$= 6x - 9$

58. (b)

$x + \frac{1}{x} = 7$

$x^3 + \frac{1}{x^3} = 343 - 7 \times 3$

$= 322$

59. (a)

I. $k + \frac{1}{k} = 12$

$x^2 + \frac{1}{k^2} = 144 - 2$

$= 142$

$\Rightarrow$ It is true

II. $\left(k^2 + \frac{1}{k^2}\right)\left(k - \frac{1}{k}\right)\left(k^4 + \frac{1}{k^4}\right)\left(k + \frac{1}{k}\right)$

$\Rightarrow \left(k^2 + \frac{1}{k^2}\right)\left(k^2 - \frac{1}{k^2}\right)\left(k^4 + \frac{1}{k^4}\right)$

$\Rightarrow \left(k^4 - \frac{1}{k^4}\right)\left(k^4 + \frac{1}{k^4}\right) = k^8 - \frac{1}{k^8} \neq k^{16} - \frac{1}{k^{16}}$

$\Rightarrow$ It is not true

Maths by Aditya Ranjan sir

60. (d)

$(a + b)^2 - (a - b)^2$

$= 2ab + 2ab$

$= 4ab$

61. (d)

$9m^2 + n^2 = 40, mn = 4$

$\Rightarrow 3m + n = \sqrt{(9m^2 + n^2 + 6mn)}$

$= \sqrt{40 + 24}$

$= \sqrt{64} = 8$

62. (a)

$x^2 + 4y^2 + 4y - 4xy - 2x - 8$

We will check from options.

Option (a) satisfies the equation

Coefficient of x	Coefficient of y	Constant
1	– 2	– 4
1	– 2	2

$x^2 \Rightarrow 1, y^2 = 4$, constant = – 8, $xy = -4$

$y = +4, x = -2$

63. (a)

$y = 1 + \sqrt{3} + \sqrt{4} = 1 + \sqrt{3} + 2 = 3 + \sqrt{3}$

$y - 3 = \sqrt{3}$

Squaring both sides

$y^2 + 9 - 6y = 3$

$\Rightarrow y^2 = 6y - 6$ .....(1)

Squaring both sides again:-

$\Rightarrow y^4 = 36 [y^2 + 1 - 2y]$ .....(2)

$y^3 = y.y^2 = 6 (y^2 - y)$ .....(3)

Putting (1), (2) and (3) in given equation

$\Rightarrow 2y4 - 8y^3 - 6y^2 + 28y - 84 = 72y^2 + 72 - 144y - 48y^2 + 48y - 6y^2 + 28y - 84$

$= 18y^2 - 68y - 12$

$= 108y - 108 - 68y - 12$

$= 40y - 120$

$= 40 [y - 3] = 40 \left[3 + \sqrt{3} - 3\right]$

$= 40\sqrt{3}$

64. (d)

$$x = \frac{\sqrt{5} - \sqrt{4}}{\sqrt{5} + \sqrt{4}} = 9 - 4\sqrt{5},\ y = \frac{\sqrt{5} + \sqrt{4}}{\sqrt{5} - \sqrt{4}} = 9 + 4\sqrt{5}$$

We know,

$x^2 + y^2 = (x + y)^2 - 2xy = 18^2 - 2xy = 3zy - 2xy = 322$

Consider,

$$\frac{x^2 - xy + y^2}{x^2 + xy + y^2} = \frac{322 - 1}{322 + 1} = \frac{321}{323}$$

65. (b)

$$\frac{2P}{P^2 - 5P + 1} = \frac{1}{10}$$

$$\Rightarrow \frac{2}{P - 5 + \frac{1}{P}} = \frac{1}{10} \Rightarrow 20 = P + \frac{1}{P} - 5$$

$$\Rightarrow 25 = P + \frac{1}{P}$$

66. (b)

Consider,

$$\frac{1}{1 + a + \frac{1}{b}} + \frac{1}{1 + b + \frac{5}{c}} + \frac{1}{1 + \frac{c}{5} + \frac{1}{a}}$$

$abc = 5$ Let, $a = 1, b = 1, c = 5$

$$\Rightarrow \frac{1}{3} + \frac{1}{3} + \frac{1}{3} = 1$$

67. (b)

$4 (z + 7) (2z - 1) = Az^2 + Bz + C$

$\Rightarrow 8z^2 - 4z + 56z - 28 = Az^2 + Bz + C$

$\Rightarrow 8z^2 + 52z - 28 = Az^2 + Bz + C$

$\Rightarrow A = 8, B = 52, C = -28$

$\Rightarrow A + B + C = 8 + 52 - 28$

$= 32$

68. (c)

$P^3 + 27 = P^3 + 3^3$

$= (P + 3) (P^2 + 9 - 3P)$

$[\therefore a^3 + b^3 = (a + b) (a^2 + b^2 - ab)]$

69. (c)

$$k + \frac{1}{k} = 3$$

$$k^2 + \frac{1}{k^2} = 9 - 2 = 7$$

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70. (d)

$a^2 + b^2 + c^2 = (a + b + c)^2 - 2(ab + bc + ca)$

$= 81 - 2 \times 23$

$= 35$

71. (b)

$x + \frac{1}{x} = 2\sqrt{5}$

$\Rightarrow x - \frac{1}{x} = \sqrt{\left(2\sqrt{5}\right)^2 - 4} = \sqrt{16} = 4$

$x^3 - \frac{1}{x^3} = 4^3 + 3 \times 4$

$= 76$

72. (a)

$x + y + z = o \Rightarrow x^3 + y^3 + z^3 = 3xyz$

Consider,

$\frac{x^2}{yz} + \frac{y^2}{zx} + \frac{z^2}{xy} = \frac{x^3 + y^3 + z^3}{xyz}$

$= 3$

73. (c)

Consider,

$(p - q) + (q - r) + (r - p) = 0$

$\Rightarrow (p - q)^3 + (q - r)^3 + (r - p)^3 = 3(p - q)(q - r)(r - p)$

$\therefore \frac{(p - q)^3 (q - r)^3 + (r - p)^3}{12(p - q)(q - r)(r - p)} = \frac{3}{12} = \frac{1}{4}$

74. (b)

$(a + b)^3 - a^3 + b^3$

$a^3 + b^3 + 3ab(a + b) - a^3 + b^3$

$2b^3 + 3ab(a + b)$

75. (b)

$x^2 + \frac{1}{x^2} = 66$

$\left(x - \frac{1}{x}\right) = \sqrt{66 - 2} = 8$

76. (d)

$k + \frac{1}{k} = 4$

$x^2 + \frac{1}{k^2} = 14$

$k^4 + \frac{1}{k^4} = 194$

77. (d)

$p^2 + q^2 = (p + q)^2 - 2pq$

$= 36 - 8$

$= 28$

$\Rightarrow 3(p^3 + q^3) = 3[(p + q)(p^2 + q^2 - pq)]$

$= 3[6[28 - 4]]$

$= 432$

78. (c)

$p - \frac{1}{p} = 6$

$p^2 + \frac{1}{p^2} = \left(p - \frac{1}{p}\right)^2 + 2$

$= 38$

$p^4 + \frac{1}{p^4} = 1444 - 2$

$= 1442$

79. (b)

$y + \frac{1}{y} = 11 \Rightarrow y - \frac{1}{y} = \sqrt{121 - 4}$

$y^3 - \frac{1}{y^3} = \left(3\sqrt{13}\right)^3 - 3 \times 3\sqrt{13}$

$= 351\sqrt{13} + 9\sqrt{13}$

$= 360\sqrt{13}$

80. (b)

$\left(x - \frac{1}{x}\right)^2 = 12 \Rightarrow x - \frac{1}{x} = 2\sqrt{3}$

Now,

$x^2 - \frac{1}{x^2} = \left(x + \frac{1}{x}\right)\left(x - \frac{1}{x}\right)$

$= 4 \times 2\sqrt{3}$

$= 8\sqrt{3}$

81. (b)

$a^3 + b^3 + c^3 = 3abc$

if $a + b + c = o$

82. (d)

$m + \frac{1}{m - 2} = 4$

$\Rightarrow (m - 2) + \frac{1}{(m - 2)} = 2$

$\Rightarrow (m - 2) = 1$

$\Rightarrow m = 3$

$\therefore (m - 2)^2 + \frac{1}{(m - 2)^2} = 2$

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83. (a)

$$5\left(x-\frac{1}{x}\right)=-6$$

$$x^2+\frac{1}{x^2}=\left(x-\frac{1}{x}\right)^2+2$$

$$=\frac{36}{25}+2$$

$$=\frac{86}{25}$$

84. (c)

$$\frac{a^3-b^3}{a^2-b^2}-\frac{3ab}{a+b}$$

$$\Rightarrow \frac{a^2+b^2+ab}{a+b}-\frac{3ab}{a+b}$$

$$\Rightarrow \frac{a^2+b^2-2ab}{a+b}=\frac{(a-b)^2}{a+b}$$

$$=\frac{(4)^2}{48}=\frac{16}{48}=\frac{1}{3}$$

85. (a)

$$a+\frac{1}{a}=5$$

$$a^3+\frac{1}{a^3}=5^3-3\times 5=110$$

86. (b)

$a^2+b^2+c^2-2ab-2bc+2ca$

$=(a-b+c)^2$

87. (b)

$\frac{x}{8}+\frac{8}{x}=1$ Let $\frac{x}{8}=y$

$y+\frac{1}{y}=1 \Rightarrow y^3=-1$

$$\Rightarrow \left(\frac{x}{8}\right)^3=-1$$

$$\Rightarrow x^3=-512$$

88. (d)

Consider,

$p+q+r=8.15+9.06-17.21$

$=0$

$\Rightarrow p^3+q^3+r^3-3pqr=0$

89. (b)

$$x^4+\left(\frac{2}{x}\right)^4=15617$$

$$x^2+\left(\frac{2}{x}\right)^2=\sqrt{15617+8}=\sqrt{15625}=125$$

$$x+\frac{2}{x}=\sqrt{125+4}=\sqrt{129}$$

90. (a)

We know that,

$a^3+b^3+c^3-3abc=\frac{1}{2}(a+b+c)[(a-b)^2+(b-c)^2+(c-a)^2]$

$=\frac{1}{2}(222+223+224)[1+1+4]$

$=3[669]$

$\Rightarrow 2007$

91. (b) $6x^2+13x+7=0$

$\alpha+\beta=\frac{-13}{6}, \alpha\beta=\frac{7}{6}$

$\Rightarrow \alpha^2+\beta^2=[\alpha+\beta]^2-2\alpha\beta$

$$=\frac{169}{36}-\frac{7}{3}$$

$$=\frac{169-84}{36}$$

$$=\frac{85}{36}$$

$$\alpha^2\beta^2=\frac{49}{36}$$

$\Rightarrow x^2-(\alpha^2+\beta^2)x+\alpha^2\beta^2=o$ is therequired equation

$$\Rightarrow x^2-\frac{85}{36}x+\frac{49}{36}=0$$

$\Rightarrow 36x^2-85x+49=0$

92. (a)

$(x+y+z)^2=x^2+y^2+z^2+2(xy+yz+xz)$

$0=40+2(xy+yz+xz)$

$\Rightarrow (xy+yz+xz)=-20$

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93. (a)

I. $x + y + z = 12 - 2 - 10 = 0$

$\Rightarrow x^3 + y^3 + z^3 = 3xyz$

$= 3 \times 12 \times (-2)(-10)$

$= 720$

II. $4(x^2 + y^2) = 4[(x + y)^2 - 2xy]$

$= 4[(48)^2 - 64]$

$= 8960$

$\Rightarrow$ both statements are false

94. (a)

$$k + \frac{1}{x} = -2 \Rightarrow k = -1$$

$$k^4 + \frac{1}{k^4} = -1 + 1 = 0$$

95. (b)

$$x + \frac{1}{x} = 6$$

Consider,

$$\frac{3x}{2x^2 - 5x + 2} = \frac{3}{2x - 5 + \frac{2}{x}}$$

$$= \frac{3}{2\left(x + \frac{1}{x}\right) - 5}$$

$$= \frac{3}{12 - 5} = \frac{3}{7}$$

96. (d)

$$(a + b) = \sqrt[4]{(a - b)^2 + 4ab}$$

$$= \sqrt[4]{64 + 36}$$

$= \pm 10$

97. (d)

$8p^3 + q^3 = (2p + q)^3 - 6pq(p + q)$

$361 = 19^3 - 6pq(19)$

$361 = 19(361 - 6pq)$

$19 = 361 - 6pq$

$6pq = 342$

$$pq = \frac{114}{2} = 57$$

98. (c)

I. $x + y + z = 0$

$\Rightarrow x^3 + y^3 + z^3 = 3xyz = 3 \times 12 \times (-2) \times (-10)$

II. $4(x^2 + y^2) = 4[(x + y)^2 - 2xy]$

$= 4[(48)^2 - 64]$

$= 8960$

$\Rightarrow$ Both I and II are correct.

99. (d)

$$\frac{r}{13} + \frac{13}{r} = 1$$

$$\text{If } x + \frac{1}{x} = 1$$

$\Rightarrow x^3 = -1$

$$\Rightarrow \left(\frac{r}{13}\right)^3 = -1$$

$\Rightarrow r^3 = -2197$

100. (a)

$$\frac{a}{b} + \frac{b}{a} = -1$$

$\Rightarrow a^2 + b^2 + ab = 0$

$\Rightarrow a^3 - b^3 = (a - b)(a^2 + b^2 + ab)$

$= 0$

101. (d)

$$x = 2 - 2^{\frac{1}{3}} + 2^{\frac{2}{3}}$$

$$\Rightarrow (x - 2)^3 = \left(2^{\frac{2}{3}} - 2^{\frac{1}{3}}\right)^3$$

$\Rightarrow x^3 - 8 - 3x \times 2(x - 2) = 2^2 - 2 -$

$$3 \times 2^{\frac{2}{3}} . 2^{\frac{1}{3}}\left(2^{\frac{2}{3}} - 2^{\frac{1}{3}}\right)$$

$x^3 - 6x^2 + 12x = 2 - 3 \times 2(x - 2)$

$x^3 - 6x^2 + 12x - 8 = 2 - 6x + 12$

$\Rightarrow x^3 - 6x^2 + 18x = 22$

102. (a)

$a + b + c = 5, a^3 + b^3 + c^3 = 85, abc = 25$

We know,

$a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$

$85 - 75 = 5(a^2 + b^2 + c^2 - ab - bc - ca)$

$2 = a^2 + b^2 + c^2 - ab - bc - ca$

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103. (b)

$a = -12$, $b = -6$, $c = 18$

$$2\frac{(abc)}{a}$$

$$2\frac{[(-12)\times(-6)\times 18]}{9}$$

$$\frac{2\times(1296)}{9}$$

$$\frac{2592}{9} \Rightarrow 288$$

104. (a)

$$\frac{1}{x} + x = 4$$

$$x^2 + \frac{1}{x^2} = 4^2 - 2 = 14$$

105. (c)

$(1 + x)(1 + x^2)(1 + x^4)(1 + x^8)(1 - x)$

$= (1 - x^2)(1 + x^2)(1 + x^4)(1 + x^8)$

$= (1 - x^4)(1 + x^4)(1 + x^8)$

$= (1 - x^8)(1 + x^8)$

$= (1 - x^{16})$

106. (a)

$4x^2 + y^2 = 40, \quad xy = 6$

$(2x + y)^2 = 4x^2 + y^2 + 4xy$

$= 40 + 24 = 64$

$2x + y = 8$

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TRIGONOMETRY

य ल अय य

19

1. Simplify $\frac{\cos 45^\circ}{\sec 30^\circ + \operatorname{cosec} 30^\circ}$

$\frac{\cos 45^\circ}{\sec 30^\circ + \operatorname{cosec} 30^\circ}$ है दिहलाये ं ग

SSC CGL 01/12/2022 (Shift- 01)

(a) $\frac{3\sqrt{2}+\sqrt{6}}{8}$ (b) $\frac{\sqrt{3}}{2\sqrt{2}-2\sqrt{6}}$

(c) $\frac{3\sqrt{2}-\sqrt{6}}{8}$ (d) $\frac{\sqrt{3}}{2\sqrt{6}-2\sqrt{2}}$

2. In a right-angled triangle PQR, right-angled at Q, the length of the side PR is 17 units, length of the base QR is 8 units, and length of the side PQ is 15 units. If ∠RPQ = α, then sinα + cosα is:

ं लहै -ल अहय जेन हPQRह-ब्रQहतहै -ल अही ब्रजेन PRहलाहद ह्ं ह्17र्ह ल ं ह्ी ब्रड. हिQRहलाहद ह्ं ह्8 ं ल ं ह्ी ब्रड ब्रिजेन हPQहलाहद ह्ं ह15र्ह ल ं ह्ी ब्रमफ्र ∠RPQ = αही ह्ए ह्sinα + cosαहल ह- : ह8म ही ब्र

SSC CGL 01/12/2022 (Shift- 01)

(a) $\frac{18}{17}$ (b) $\frac{23}{17}$

(c) $\frac{21}{17}$ (d) $\frac{15}{17}$

3. The value of $\tan^2\theta + \cot^2\theta - \sec^2\theta \operatorname{cosec}^2\theta$ is:

$\tan^2\theta + \cot^2\theta - \sec^2\theta \operatorname{cosec}^2\theta$हल ह- : ह8म ही ब्र

SSC CGL 01/12/2022 (Shift- 01)

(a) 2 (b) –2

(c) 0 (d) $\frac{1}{2}$

4. What will be the value of

$\frac{\sin 30^\circ \sin 40^\circ \sin 50^\circ \sin 60^\circ}{\cos 30^\circ \cos 40^\circ \cos 50^\circ \cos 60^\circ}$?

$\frac{\sin 30^\circ \sin 40^\circ \sin 50^\circ \sin 60^\circ}{\cos 30^\circ \cos 40^\circ \cos 50^\circ \cos 60^\circ}$ हल ह- : ह8म ही अ%

SSC CGL 01/12/2022 (Shift- 02)

(a) $\frac{1}{\sqrt{2}}$ (b) $\sqrt{3}$

(c) 1 (d) $\frac{1}{\sqrt{3}}$

5. The value of (sin30° cos60° – cos30° sin60°) is equal to:

(sin30° cos60° – cos30° sin60°)हल ह- : हय व ह-ब्र ै ह्मलै लह्ह ि इ ही ब्र

SSC CGL 01/12/2022 (Shift- 02)

(a) –cos30° (b) –sin30°

(c) cos30° (d) sin30°

6. What is sinα – sinβ ?

sinα – sinβह8म ही ब्र

SSC CGL 01/12/2022 (Shift- 02)

(a) $2\cos\frac{\alpha+\beta}{2}\sin\frac{\alpha-\beta}{2}$

(b) $2\sin\frac{\alpha+\beta}{2}\sin\frac{\alpha-\beta}{2}$

(c) $2\cos\frac{\alpha-\beta}{2}\sin\frac{\alpha+\beta}{2}$

(d) $2\cos\frac{\alpha+\beta}{2}\cos\frac{\alpha-\beta}{2}$

7. The value of $\frac{2\tan 60^\circ}{1+\tan^2 60^\circ}$ is:

$\frac{2\tan 60^\circ}{1+\tan^2 60^\circ}$ हल ह- : ह8म ही ब्र

SSC CGL 01/12/2022 (Shift- 03)

(a) cos60° (b) tan60°

(c) sin60° (d) sin30°

8. What is the value of tan240°?

tan240°हल ह- : ह8म ही ब्र

SSC CGL 01/12/2022 (Shift- 03)

(a) √2 (b) (–)√3

(c) √3 (d) 3

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9. If $\tan\theta + \sec\theta = 7$, θ being acute, then the value of $5\sin\theta$ is:

मयक्रह $\tan\theta + \sec\theta = 7$ ही ब्रह ड हि θ ह मछ्ही ब्रह श ह $5\sin\theta$ ल ह- : ही अ।

SSC CGL 01/12/2022 (Shift- 03)

(a) $\frac{25}{24}$ (b) $\frac{24}{25}$

(c) $\frac{1}{24}$ (d) $\frac{24}{5}$

10. $16\cos^3\frac{\pi}{6} - 12\cos\frac{\pi}{6} = .$

SSC CGL 01/12/2022 (Shift- 04)

(a) 0 (b) 2

(c) 1 (d) –1

11. If $\frac{a^2 + b^2 + c^2 - 1024}{ab - bc - ca} = -2$ and $a + b = 5c$, where $c > 0$, then the value of c is.

मयक्रह $\frac{a^2 + b^2 + c^2 - 1024}{ab - bc - ca} = -2$ ह ड हि $a + b = 5c$ ही क ` ी ह $c > 0$ ही ब्रह श ह c ह ल ह- : ह> श्हलाये ं ग

SSC CGL 01/12/2022 (Shift- 04)

(a) 8 (b) 4

(c) 12 (d) 5

12. If $\cos A = \frac{9}{41}$, find cotA.

मयक्रह $\cos A = \frac{9}{41}$ ही ब्रह श ह cotA ह> श्हलाये ं ग

SSC CGL 01/12/2022 (Shift- 04)

(a) $\frac{9}{40}$ (b) $\frac{41}{40}$

(c) $\frac{40}{9}$ (d) $\frac{9}{41}$

13. If $\tan^2\theta = 1 - a^2$, then the value of $\sec\theta + \tan^3\theta \operatorname{cosec}\theta$ is:

मयक्रह $\tan^2\theta = 1 - a^2$ ही ब्रह श ह $\sec\theta + \tan^3\theta \operatorname{cosec}\theta$ ल ह- : ह8म ही ब्र

SSC CGL 01/12/2022 (Shift- 04)

(a) $(2 - a)^{\frac{3}{2}}$ (b) $(a^2 - 1)^{\frac{3}{2}}$

(c) $(2 - a^2)^{\frac{3}{2}}$ (d) $a^{\frac{3}{2}}$

14. If $\cot x - \tan x = \frac{3}{2}$, then what will be the value of $\cot x + \tan x$?

मयक्रह $\cot x - \tan x = \frac{3}{2}$, ही ब्रह श ह $\cot x + \tan x$ ह ल - : ह8म ही अ%

SSC CGL 02/12/2022 (Shift- 01)

(a) 3 (b) 2

(c) $\frac{5}{2}$ (d) $\frac{7}{2}$

15. If $\sec^2 A + \tan^2 A = \frac{4}{17}$, then $\sec^4 A - \tan^4 A$ is equal to:

मयक्रह $\sec^2 A + \tan^2 A = \frac{4}{17}$ ही ब्रह श ह $\sec^4 A - \tan^4 A$ ल ह- : ह8म ही अ%

SSC CGL 02/12/2022 (Shift- 01)

(a) $\frac{13}{17}$ (b) $\frac{4}{13}$

(c) $\frac{4}{17}$ (d) $\frac{5}{17}$

16. If $\sin(A + B) = \cos(A + B)$, what is the value of tanA?

मयक्रह $\sin(A + B) = \cos(A + B)$ ही ब्रह श ह tanA ह ल ह- : यनश: ही अ%

SSC CGL 02/12/2022 (Shift- 01)

(a) $\frac{1 - \tan B}{1 + \tan B}$ (b) $\frac{1 + \tan B}{1 - \tan B}$

(c) $\frac{1 + \sec B}{1 - \sec B}$ (d) $\frac{1 - \operatorname{cosec} B}{1 + \operatorname{cosec} B}$

17. In ΔABC, right-angled at B, AB = 7 cm and AC – BC = 1 cm. Find the value of sin C.

ΔABC, ह-ह B तहि -ल अक्र AB = 7 cm ड हि AC – BC = 1 cm ी ब्र sinC ल ह- : ह> श्हलाये ं ग

SSC CGL 02/12/2022 (Shift- 02)

(a) $\frac{3}{7}$ (b) $\frac{12}{13}$

(c) $\frac{3}{25}$ (d) $\frac{7}{25}$

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18. If $\sin\theta + \cos\theta = \sqrt{5}\sin(90 - \theta)$, find the value of $\cot\theta$.

मयह $\sin\theta + \cos\theta = \sqrt{5}\sin(90 - \theta)$ ही ब्रश ह $\cot\theta$ हल - : ह> श्हलाये ं ग

SSC CGL 02/12/2022 (Shift- 02)

(a) $\frac{\sqrt{5}-1}{5}$ (b) $\frac{\sqrt{5}+1}{4}$

(c) $\frac{\sqrt{5}+1}{3}$ (d) $\frac{\sqrt{5}-1}{4}$

19. If $\operatorname{cosec}A - \cot A = \frac{1}{4}$, then the value of $\tan A$ is:

मयह $\operatorname{cosec}A - \cot A = \frac{1}{4}$ ही ब्रश ह $\tan A$ हल ह- : ह8म ही ब्र

SSC CGL 02/12/2022 (Shift- 02)

(a) $\frac{8}{15}$ (b) $\frac{8}{17}$

(c) $\frac{15}{17}$ (d) $\frac{17}{15}$

20. The value of $\cot 15° \cot 25° \cot 45° \cot 75° \cot 65°$ is:

$\cot 15° \cot 25° \cot 45° \cot 75° \cot 65°$ हल ह- : ह8म ी अ%

SSC CGL 02/12/2022 (Shift- 03)

(a) 1 (b) $\sqrt{3}$

(c) 2 (d) $\sqrt{2}$

21. In triangle PQR, right angled at Q, if $\cot P = \sqrt{3}$, then the value of $\sin P$ is:

य जेन ह PQR, हे ह Q हत है -ल अही ब्र ै -ह मयह $\cot P = \sqrt{3}$ ही ब्रश ह $\sin P$ हल ह- : ह8म ही अ%

SSC CGL 02/12/2022 (Shift- 03)

(a) 1 (b) $\frac{1}{\sqrt{3}}$

(c) $\frac{\sqrt{3}}{2}$ (d) $\frac{1}{2}$

22. If $\tan A + \cot A = 2$, then the value of $2(\tan^2 A + \cot^2 A)$ is:

मयह $\tan A + \cot A = 2$ ही ब्रश ह $2(\tan^2 A + \cot^2 A)$ ल ह- : ह> श्हलाये ं ग

SSC CGL 02/12/2022 (Shift- 04)

(a) 1 (b) 4

(c) 2 (d) 3

23. If $\frac{(1-\cos\theta)}{\sin\theta} = \frac{1}{5}$, then what will be the value of $\frac{(1+\cos\theta)}{\sin\theta}$?

मयह $\frac{(1-\cos\theta)}{\sin\theta} = \frac{1}{5}$, ही ब्रश ह $\frac{(1+\cos\theta)}{\sin\theta}$ हल ह- : ह8म ी अ%

SSC CGL 02/12/2022 (Shift- 04)

(a) 5 (b) $\frac{2}{5}$

(c) $\frac{4}{5}$ (d) $\frac{1}{5}$

24. If $\sin A = \frac{4}{5}$ and $\sin B = \frac{15}{17}$, what is the value of $\sin(A - B)$?

मयह $\sin A = \frac{4}{5}$ हड ह $\sin B = \frac{15}{17}$ ही ब्रश ह $\sin(A - B)$ ल ह- : ह8म ही अ%

SSC CGL 02/12/2022 (Shift- 04)

(a) $-\frac{32}{45}$ (b) $-\frac{13}{85}$

(c) $\frac{13}{85}$ (d) $\frac{32}{45}$

25. Simplify: $\frac{\cos A}{1+\tan A} - \frac{\sin A}{1+\cot A}$

$\frac{\cos A}{1+\tan A} - \frac{\sin A}{1+\cot A}$ हल ह- : ह> श्हलाये ं ग

SSC CGL 03/12/2022 (Shift- 01)

(a) $\tan A$ (b) $\cos A - \sin A$

(c) $\cos A . \sin A$ (d) $\cos A + \sin A$

26. $\frac{1}{1+\cos(90°-\theta)} + \frac{1}{1-\cos(90°-\theta)} =$ ——.

SSC CGL 03/12/2022 (Shift- 01)

(a) $2\sec^2\theta$ (b) 1

(c) 0 (d) $2\tan^2\theta$

27. $\sin^4\theta + \cos^4\theta$ in terms of $\sin\theta$ can be written as:

$\sin^4\theta + \cos^4\theta$ हल ह $\sin\theta$ हल ह प तह - ह ै हत्ल हि य ` है लश ही ब्र

SSC CGL 03/12/2022 (Shift- 02)

(a) $2\sin 4\theta + 2\sin^2\theta - 1$

(b) $2\sin^4\theta - 2\sin^2\theta$

(c) $2\sin^4\theta - 2\sin^2\theta - 1$

(d) $2\sin^4\theta - 2\sin^2\theta + 1$

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28. $\tan(\theta - 14\pi)$ is equal to:

$\tan(\theta - 14\pi)$हय व ह- ह्यनै लह्ह ि इहिं ब

SSC CGL 03/12/2022 (Shift- 02)

(a) $\tan\theta$ (b) $-\cot\theta$
(c) $\cot\theta$ (d) $-\tan\theta$

29. If $\dfrac{k - k\cot^2 30^\circ}{1 + \cot^2 30^\circ} = \sin^2 60^\circ + 4\tan^2 45^\circ - \operatorname{cosec}^2 60^\circ$, then the value of k (correct to two decimal places) is:

मयह $\dfrac{k - k\cot^2 30^\circ}{1 + \cot^2 30^\circ} = \sin^2 60^\circ + 4\tan^2 45^\circ - \operatorname{cosec}^2 60^\circ$

ी ब्ह श ह्kहल ह- : ह?क्र -दू हलह्ह क्रहक्र ह्ड ह्ह्ह श्लटह> श लाये ं ग

SSC CGL 03/12/2022 (Shift- 03)

(a) 5.55 (b) –6.83
(c) –5.58 (d) 6.83

30. If cot B = 9, then what will be the value of sec2 B?

मयह cotB = 9ही ब्ह श ह्sec²Bहल ह- : ह8म ही अ%

SSC CGL 03/12/2022 (Shift- 03)

(a) $\dfrac{98}{81}$ (b) $\dfrac{92}{81}$
(c) $\dfrac{42}{81}$ (d) $\dfrac{82}{81}$

31. Simplify the following: $\dfrac{\cos x - \sqrt{3}\sin x}{2}$

य व यह्य श हल है दि हलह्ह $\dfrac{\cos x - \sqrt{3}\sin x}{2}$

SSC CGL 03/12/2022 (Shift- 03)

(a) $\cot\left(\dfrac{\pi}{3} - x\right)$ (b) $\sin\left(\dfrac{\pi}{3} + x\right)$
(c) $\cos\left(\dfrac{\pi}{3} + x\right)$ (d) $\sin\left(\dfrac{\pi}{3} - x\right)$

32. The value of $\sqrt{\dfrac{1 + \cos A}{1 - \cos A}}$ is:

$\sqrt{\dfrac{1 + \cos A}{1 - \cos A}}$ हल ह- : ही ब

SSC CGL 03/12/2022 (Shift- 04)

(a) secA – tanA (b) cosecA + cotA
(c) secA + tanA (d) cosecA + cotA

33. ΔABC is a right-angle triagle at B. If tanA = $\dfrac{5}{12}$, then sinA + sinB + sinC will be equal to:

ΔABC, Bह तहिं लहै -ल अह य जेन ही ब्ह मयह tanA = $\dfrac{5}{12}$ श ह्sinA + sinB + sinCहयनै लह्ह ि इहिं अ%

SSC CGL 03/12/2022 (Shift- 04)

(a) $1\dfrac{5}{13}$ (b) $2\dfrac{4}{13}$
(c) $3\dfrac{1}{13}$ (d) $2\dfrac{1}{13}$

34. If $\sin\theta + \cos\theta = \dfrac{\sqrt{3} - 1}{2\sqrt{2}}$, then what is the value of $\tan\theta + \cot\theta$?

मयह $\sin\theta + \cos\theta = \dfrac{\sqrt{3} - 1}{2\sqrt{2}}$ ही ब्ह श ह्tanθ + cotθहल - : ह8म ही ब

SSC CGL 05/12/2022 (Shift- 01)

(a) $8(\sqrt{3} - 2)$ (b) $12(\sqrt{3} - 2)$
(c) $12(\sqrt{3} + 2)$ (d) $8(\sqrt{3} + 2)$

35. If $\sin\theta = \dfrac{8}{17}$, then find the value of $\tan\theta$.

मयह $\sin\theta = \dfrac{8}{17}$ ही ब्ह श ह्tanθहल ह- : ह> श्हलाये ं ग

SSC CGL 05/12/2022 (Shift- 01)

(a) $\dfrac{15}{17}$ (b) $\dfrac{8}{15}$
(c) $\dfrac{15}{8}$ (d) $\dfrac{17}{15}$

36. If $\sec 2\theta = \operatorname{cosec}(\theta - 36^\circ)$, where 2θ is an acute angle, find the value of θ.

मयही क sec2θ = cosec (θ – 36°)ही ह्ब ी ह2θह ं ल ह्ह मह्ह्ह्ल अही ब्ह श ह्θहल ह- : ह> श्हलाये ं ग

SSC CGL 05/12/2022 (Shift- 01)

(a) 32° (b) 46°
(c) 20° (d) 42°

37. $\cos^2 35^\circ + \cos 55^\circ \cdot \sin 35^\circ + \dfrac{\tan 34^\circ}{\cot 56^\circ} = .$

SSC CGL 05/12/2022 (Shift- 02)

(a) 2 (b) 3
(c) 4 (d) 1

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38. $\sqrt{\frac{1+\cos\theta}{1-\cos\theta}}+\sqrt{\frac{1-\cos\theta}{1+\cos\theta}}=$.

SSC CGL 05/12/2022 (Shift- 02)

(a) $2\sin\theta$ (b) $2\cos\theta$

(c) $2\operatorname{cosec}\theta$ (d) $2\sec\theta$

39. What will be the value of cosx cosecx – sinx secx?

cosx cosecx – sinx secxहल ह- : ह8म ही अ%

SSC CGL 05/12/2022 (Shift- 02)

(a) $\cot\frac{2x}{2}$ (b) tan2x

(c) cot2x (d) 2cot 2x

40. If $\tan A=\frac{2}{3}$, then what is the value of the following?

$(5\sin^2A-2\cos^2A)\div(15\sin^2A+3\cos^2A)$

मयग्रह $\tan A=\frac{2}{3}$ ही ब्रह्श ह्य व यग्र श्हल ह- : ह8म ही ब्र

$(5\sin^2A-2\cos^2A)\div(15\sin^2A+3\cos^2A)$

SSC CGL 05/12/2022 (Shift- 03)

(a) $\frac{21}{47}$ (b) $\frac{2}{87}$

(c) $\frac{2}{5}$ (d) $\frac{3}{77}$

41. If θ is an acute angle and $\tan\theta+\cot\theta=2$, then the value of $\tan^2\theta+\cot^2\theta+2\tan^5\theta\cot^4\theta$ is:

मयग्रह θ लह् मद्धल अहड ह्रि $\tan\theta+\cot\theta=2$ ी ब्रह्श अ

$\tan^2\theta+\cot^2\theta+2\tan^5\theta\cot^4\theta$ ल ह- : ह8म ही ब्र

SSC CGL 05/12/2022 (Shift- 03)

(a) 3 (b) 4

(c) 1 (d) 2

42. $\cot^2A-\cos^2A$ is equal to:

$\cot^2A-\cos^2A$ हयले लह्ह ि इिही ब्र

SSC CGL 05/12/2022 (Shift- 03)

(a) $\cos^2A\,.\,\sin^2A$ (b) $\cos^2A\,.\,\cot^2A$

(c) 1 (d) 0

43. $\sqrt{\frac{1+\sin A}{1-\sin A}}=$.

SSC CGL 05/12/2022 (Shift- 04)

(a) cosecA – cotA (b) secA – tanA

(c) secA + tanA (d) secA

44. If $8\cot\theta=6$, then the value of $\frac{\sin\theta+\cos\theta}{\sin\theta-\cos\theta}$ is :

मयग्रह $8\cot\theta=6$ ही ब्रह्श ह $\frac{\sin\theta+\cos\theta}{\sin\theta-\cos\theta}$ हल ह- : ह> श्हलोये ग

SSC CGL 05/12/2022 (Shift- 04)

(a) 12 (b) 7

(c) 2 (d) 5

45. If $\tan A=\frac{5}{12}$, then the value of cosA =.

मयग्रह $\tan A=\frac{5}{12}$ ही ब्रह्श ह cosA हल ह- : ह8मही ब्र

SSC CGL 05/12/2022 (Shift- 04)

(a) $\frac{12}{5}$ (b) $\frac{13}{5}$

(c) $\frac{5}{13}$ (d) $\frac{12}{13}$

46. If $b\sin\theta=a$, then $\sec\theta+\tan\theta=$?

मयग्रह $b\sin\theta=a$ ही ब्रह्श ह $\sec\theta+\tan\theta=$?

SSC CGL 06/12/2022 (Shift- 01)

(a) $\sqrt{\frac{b+a}{b-a}}$ (b) $\sqrt{\frac{1}{b+a}}$

(c) $\sqrt{\frac{1}{b-a}}$ (d) $\sqrt{\frac{b-a}{b+a}}$

47. $\frac{\cos20^\circ}{\sin70^\circ}+\frac{\cos\theta}{\sin(90^\circ-\theta)}=$.

SSC CGL 06/12/2022 (Shift- 01)

(a) –2 (b) $\frac{1}{2}$

(c) $-\frac{1}{2}$ (d) 2

48. What will be the value of $\sin10^\circ-\frac{4}{3}\sin^3 10^\circ$?

$\sin10^\circ-\frac{4}{3}\sin^3 10^\circ$ हल ह- : ह8म ही अ%

SSC CGL 06/12/2022 (Shift- 01)

(a) $\frac{1}{3\sqrt{3}}$ (b) $\frac{1}{6}$

(c) $\frac{1}{2\sqrt{3}}$ (d) $\frac{\sqrt{3}}{6}$

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49. If $\cot A = \frac{15}{8}$, then what will be the value of tan2A?

मयह $\cot A = \frac{15}{8}$ ही ब्रश ह tan2Aहल ह- : ह8म ही अ%

SSC CGL 06/12/2022 (Shift- 02)

(a) $\frac{200}{161}$ (b) $\frac{240}{161}$

(c) $\frac{240}{173}$ (d) $\frac{220}{171}$

50. What is the value of $\frac{\cos 37^\circ}{\sin 53^\circ}$?

$\frac{\cos 37^\circ}{\sin 53^\circ}$ हल ह- : ह8म ही अ%

SSC CGL 06/12/2022 (Shift- 02)

(a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$

(c) 0 (d) 1

51. What is the value of $\cos\left(-\frac{17\pi}{3}\right)$

$\cos\left(-\frac{17\pi}{3}\right)$ हल ह- : ह8म ही अ%

SSC CGL 06/12/2022 (Shift- 02)

(a) 1 (b) $\frac{\sqrt{3}}{2}$

(c) $\frac{1}{2}$ (d) 0

52. Simplify the follwing:
cot13° cot27° cot45° cot63° cot77° = ?

य व यह्य श हल है दि हलाये ं ग

cot13° cot27° cot45° cot63° cot77° = ?

SSC CGL 06/12/2022 (Shift- 03)

(a) 1 (b) √3

(c) 2 (d) √2

53. Solve the following to find its value in terms of trigonometric ratios.
(sin A + cos A) (1 – sin A cosA)

य व यह्य श हल ह्य ल अय शमहड : त श ह्य ल है क्रजह्य ही ल - : ह> श हलाि : ह्य ल ह्य ं ही द हल ि

(sin A + cos A) (1 – sin A cosA)

SSC CGL 06/12/2022 (Shift- 03)

(a) $\sin^3 A + \cos^3 A$]
(b) $\sin^2 A - \cos^2 A$
(c) [cosA – sinA] [$\sin^2 A + \cos^2 A$]
(d) $\sin^3 A - \cos^3 A$

54. If $\sin\theta = \frac{1}{2}$, then the value of $(3\cos\theta - 4\cos^3\theta)$ is:

मयह $\sin\theta = \frac{1}{2}$ ही ब्रश ह $(3\cos\theta - 4\cos^3\theta)$ ल ह- : ही अ

SSC CGL 06/12/2022 (Shift- 03)

(a) 0 (b) 1
(c) 2 (d) –1

55. If $\sec\theta - 2\cos\theta = \frac{7}{2}$, where θ is a positive acute angle, then the value of secθ is:

मयह $\sec\theta - 2\cos\theta = \frac{7}{2}$ ही ब्रे ी ह θ हं लह : ल लह् मद्ध ल अही ब्रश ह secθहल ह- : ह> श हलाये ं ग

SSC CGL 06/12/2022 (Shift- 04)

(a) 6 (b) 8
(c) 5 (d) 4

56. Find the value of tan3θ if sec 3θ = cosec (4θ – 15°).

मयह sec 3θ = cosec (4θ – 15°) ही ब्रश ह tan3θहल - : ह> श हलाये ं ग

SSC CGL 06/12/2022 (Shift- 04)

(a) $\frac{1}{\sqrt{3}}$ (b) √3

(c) –1 (d) 1

57. What is the value of $\cos^2 15^\circ$?

$\cos^2 15^\circ$ हल ह- : ह8म ही अ

SSC CGL 06/12/2022 (Shift- 04)

(a) (2 + √3) (b) $\frac{(2+\sqrt{3})}{4}$

(c) $\frac{(2+\sqrt{3})}{2}$ (d) $\frac{(1+\sqrt{3})}{2}$

58. In ΔXYZ, ∠X = 90°, YZ = 15 cm, and XZ = 12 cm. Then find CosY.

ΔXYZह- ह ΔXYZ, ∠X = 90°, YZ = 15 cmहड ह XZ = 12 cmही ह या हि CosYह> श हलाये ं ग

SSC CGL 07/12/2022 (Shift- 01)

(a) $\frac{2}{5}$ (b) $\frac{4}{5}$

(c) $\frac{3}{5}$ (d) $\frac{3}{4}$

59. If tan A – tan B – tan C = tan A tan B tan C, what is the value of A in terms of B and C?

मयह tan A – tan B – tan C = tan A tan B tan C ी ब्रश ह B हड ह C है क्रजह्य ह A हल ह- : ह8म ही अ%

SSC CGL 07/12/2022 (Shift- 01)

(a) A = B + C (b) A = 2B – 2C

(c) A = B – C (d) $A = \frac{B-C}{2}$

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60. If $\tan^2\alpha = 3 + Q^2$, then $\sec\alpha + \tan^3\alpha \operatorname{cosec}\alpha = ?$

मयक्रह$\tan^2\alpha = 3 + Q^2$ही बहश हस$\sec\alpha + \tan^3\alpha \operatorname{cosec}\alpha = ?$

SSC CGL 07/12/2022 (Shift- 01)

(a) $(3+Q^2)^{\frac{3}{2}}$ (b) $(7+Q^2)^{\frac{3}{2}}$

(c) $(5-Q^2)^{\frac{3}{2}}$ (d) $(4+Q^2)^{\frac{3}{2}}$

61. What is the value of $\cos45^\circ \sin15^\circ$?

$\cos45^\circ \sin15^\circ$हल ह- : ह8म ही ब्र

SSC CGL 07/12/2022 (Shift- 02)

(a) $\frac{(\sqrt{3}-1)}{2}$ (b) $\frac{(\sqrt{3}-1)}{4}$

(c) $(\sqrt{3} + 1)$ (d) $2\sqrt{3} - 1$

62. If $1 + \sin\theta = m\cos\theta$, then what is the value of $\sin\theta$?

मयक्रह$1 + \sin\theta = m\cos\theta$ही बहश हस$\sin\theta$हल ह- : ह8म ही अ%

SSC CGL 07/12/2022 (Shift- 02)

(a) $\frac{2m^2-1}{m^2+1}$ (b) $\frac{m^2-1}{m^2+1}$

(c) $\frac{m^2+1}{2m^2-1}$ (d) $\frac{m^2+1}{m^2-1}$

63. $\cos(30^\circ + \theta) - \sin(60^\circ - \theta) = .$

SSC CGL 07/12/2022 (Shift- 03)

(a) $\frac{\sqrt{3}}{2}$ (b) 0

(c) $\frac{1}{2}$ (d) $\frac{1}{\sqrt{2}}$

64. Find the value of the following expression.

$5(\sin^4\theta + \cos^4\theta) + 3(\sin^6\theta + \cos^6\theta) + 19\sin^2\theta \cos^2\theta$

य व यद्य श्ह0मेए लहल ह- : ह> श्हलाये ं ग

$5(\sin^4\theta + \cos^4\theta) + 3(\sin^6\theta + \cos^6\theta) + 19\sin^2\theta \cos^2\theta$

SSC CGL 07/12/2022 (Shift- 03)

(a) 8 (b) 5

(c) 6 (d) 7

65. What will be the value of $\frac{\tan45^\circ - \tan15^\circ}{1+\tan45^\circ\tan15^\circ}$?

$\frac{\tan45^\circ - \tan15^\circ}{1+\tan45^\circ\tan15^\circ}$ हल ह- : ह8म ही अ%

SSC CGL 07/12/2022 (Shift- 03)

(a) $\sqrt{3}$ (b) $\frac{1}{\sqrt{2}}$

(c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{2}$

66. If $\sin\theta = \frac{3}{5}$, then what is $\tan\theta$?

मयक्रह$\sin\theta = \frac{3}{5}$ही बहश हस$\tan\theta$हयलश: ही ब्र

SSC CGL 07/12/2022 (Shift- 03)

(a) $\frac{3}{5}$ (b) $\frac{4}{3}$

(c) $\frac{4}{5}$ (d) $\frac{3}{4}$

67. If $4\tan\theta = 3$, then $\frac{4\sin\theta - \cos\theta + 1}{4\sin\theta + \cos\theta - 1} = .$

मयक्रह$4\tan\theta = 3$ही बहश हस$\frac{4\sin\theta - \cos\theta + 1}{4\sin\theta + \cos\theta - 1} =$ही अग

SSC CGL 07/12/2022 (Shift- 04)

(a) $\frac{14}{11}$ (b) $\frac{12}{11}$

(c) $\frac{10}{11}$ (d) $\frac{13}{11}$

68. If $\tan\theta + \cot\theta = 12$, then $\tan^2\theta + \cot^2\theta$ is:

मयक्रह$\tan\theta + \cot\theta = 12$ही बहश हस$\tan^2\theta + \cot^2\theta$हल - : ह8म ही अ%

SSC CGL 07/12/2022 (Shift- 04)

(a) 66 (b) 128

(c) 142 (d) 132

69. If $\sin Y = x$, then what will be the value of $\cos2Y$ (where $0 \le Y \le 90^\circ$)?

मयक्रह$\sin Y = x$ही बहश हस$\cos2Y$हो ी ह$0 \le Y \le 90^\circ$)हल - : ह8म ही अ%

SSC CGL 08/12/2022 (Shift- 01)

(a) $(\sqrt{2} - 1)x$ (b) $\sqrt{2}x$

(c) $1 - 2x$ (d) $1 - 2x^2$

70. If $A + B = C$, then $\tan A \tan B \tan C = ?$

मयक्रह$A + B = C$ही बहश हस$\tan A \tan B \tan C$हल ह- : 8म ही अ%

SSC CGL 08/12/2022 (Shift- 01)

(a) $\tan C + \tan A - \tan B$

(b) $\tan C + \tan A + \tan B$

(c) $\tan A - \tan B - \tan C$

(d) $\tan C - \tan A - \tan B$

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71. If $x = 8(\sin\theta + \cos\theta)$ and $y = 9(\sin\theta - \cos\theta)$, then the value of $\frac{x^2}{8^2} + \frac{y^2}{9^2}$ is:

मयह $x = 8(\sin\theta + \cos\theta)$ हड है $y = 9(\sin\theta - \cos\theta)$ ी ब्रश ह $\frac{x^2}{8^2} + \frac{y^2}{9^2}$ हल ह- : ह8म ही अ%

SSC CGL 08/12/2022 (Shift- 01)

(a) 4 (b) 6
(c) 8 (d) 2

72. If $\cot A = \frac{12}{5}$, then the value of $\sin A$ = ?

मयह $\cot A = \frac{12}{5}$ ही ब्रश ह $\sin A$ हल ह- : ह= ?

SSC CGL 08/12/2022 (Shift- 02)

(a) $\frac{5}{13}$ (b) $\frac{12}{13}$
(c) $\frac{5}{12}$ (d) $\frac{13}{12}$

73. What is the value of $\tan 6° \times \tan 45° \times \tan 84°$?

$\tan 6° \times \tan 45° \times \tan 84°$ हल ह- : ह8म ही अ

SSC CGL 08/12/2022 (Shift- 03)

(a) 1
(b) $\tan 6° \times \tan 90°$
(c) 3
(d) $\tan 6° + \tan 45° + \tan 84°$

74. If $\sin\theta - \cos\theta = \frac{4}{5}$, then find the value of $\sin\theta + \cos\theta$.

मयह $\sin\theta - \cos\theta = \frac{4}{5}$ ही ब्रश ह $\sin\theta + \cos\theta$ हल ह- : ३ श्हलाये ं ग

SSC CGL 08/12/2022 (Shift- 02)

(a) $\frac{5}{\sqrt{34}}$ (b) $\frac{5}{\sqrt{24}}$
(c) $\frac{\sqrt{34}}{5}$ (d) $\frac{\sqrt{24}}{5}$

75. If $\tan(\alpha + \beta) = \sqrt{3}$, $\tan(\alpha - \beta) = 1$ where $(\alpha + \beta)$ and $(\alpha - \beta)$ are acute angles, then what is $\tan(6\alpha)$?

मयह $\tan(\alpha + \beta) = \sqrt{3}$, $\tan(\alpha - \beta) = 1$ हे ी ह $(\alpha + \beta)$ हतर्ि श, ह $(\alpha - \beta)$ ह मद्धल अही ब्रश ह $\tan(6\alpha)$ हल ह- : ह8म ही अ

SSC CGL 08/12/2022 (Shift- 02)

(a) −1 (b) 0
(c) 1 (d) $\sqrt{2} - 1$

76. Which of the following will satisfy $a^2 = b^2 + (ab)^2$ for the values a and b?

$a^2 = b^2 + (ab)^2$ ह- ह a हड है b हल ह- : हल ह्यम हल ब्रु ै यू लध्ध ह2तमह श्ही अ

SSC CGL 08/12/2022 (Shift- 03)

(a) a = sinx, b = cotx
(b) a = cosx, b = tanx
(c) a = cotx, b = cosx
(d) a = sinx, b = tanx

77. $\theta = 135°$; $y = 15°$
What is the value of $2\cos(\theta)\sin(y)$?

$\theta = 135°$; $y = 15°$

$2\cos(\theta)\sin(y)$ हल ह- : ह8म ही अ

SSC CGL 08/12/2022 (Shift- 03)

(a) $\frac{\sqrt{3} - 1}{2}$ (b) $\frac{1 - \sqrt{3}}{2}$
(c) $2 - \sqrt{3}$ (d) $\sqrt{3} - 2$

78. If $\sec x - \cos x = 4$, then what will be the value of $\frac{(1 + \cos^2 x)}{\cos x}$?

मयह $\sec x - \cos x = 4$ ही ब्रश ह $\frac{(1 + \cos^2 x)}{\cos x}$ हल ह- : 8म ही अ%

SSC CGL 08/12/2022 (Shift- 03)

(a) $\frac{9}{4}$ (b) $\frac{1}{4}$
(c) $2\sqrt{5}$ (d) $\sqrt{5}$

79. Evaluate the expression $\frac{\sin^2 63° + \sin^2 27°}{\cos^2 17° + \cos^2 73°}$.

ऽमेए लह $\frac{\sin^2 63° + \sin^2 27°}{\cos^2 17° + \cos^2 73°}$ हल ह- : ह३ श्हलाये ं ग

SSC CGL 08/12/2022 (Shift- 04)

(a) 0 (b) 3
(c) 1 (d) 2

80. If α is an acute angle, $\tan(4\alpha - 50°) = \cot(50° - \alpha)$, then find the value of α (in degreees).

मयह α हल ह्यम मद्धल अही ब्रश $\tan(4\alpha - 50°) = \cot(50° - \alpha)$ श ह α? यस5ह- ह्यहल ह- : ह३ श्हलाये ं ग

SSC CGL 08/12/2022 (Shift- 04)

(a) 60° (b) 45°
(c) 30° (d) 90°

Maths by Aditya Ranjan sir

81. If $\tan A \tan B + \frac{\cos x}{\cos A \cos A} = 1$, then x = ?

मयक्रह $\tan A \tan B + \frac{\cos x}{\cos A \cos A} = 1$ ही बहश हx = ?

SSC CGL 08/12/2022 (Shift- 04)

(a) A (b) B
(c) A + B (d) A – B

82. $\cos^3 60 - \cos^3 240 - \cos^3 360$ = .

SSC CGL 09/12/2022 (Shift- 01)

(a) $\frac{-3}{4}$ (b) $\frac{-7}{5}$
(c) $\frac{-3}{5}$ (d) $\frac{-9}{7}$

83. If $5\sin^2 A + 3\cos^2 A = 4$, $0 < A < 90°$, then what is the value of tanA?

मयक्रह $5\sin^2 A + 3\cos^2 A = 4$, $0 < A < 90°$ही बहश अ tanAहल ह- : ह8म ही अ%

SSC CGL 09/12/2022 (Shift- 01)

(a) 0 (b) 3
(c) 1 (d) 2

84. What is the value of sin28° sin35° sin45° sec62° sec55°?

sin28° sin35° sin45° sec62° sec55°हल ह- : ह8म ही अ

SSC CGL 09/12/2022 (Shift- 01)

(a) 2 (b) $\frac{1}{\sqrt{2}}$
(c) $\sqrt{2}$ (d) $\frac{1}{2}$

85. If $\cos(A - B) = \frac{\sqrt{3}}{2}$, and $\cos(A + B) = 0$, where A and B positive acut angles and $A \geq B$, then the measures of A and B are:

ड5हि $\cos(A - B) = \frac{\sqrt{3}}{2}$ हड हि $\cos(A + B) = 0$ही क ी हAहड हिBह : ल्लह मद्धल अही हड हि $A \geq B$ही क श हAहड हिBहलह- तह8म ही अ

SSC CGL 09/12/2022 (Shift- 02)

(a) 80° and 10° (b) 60° and 30°
(c) 70° and 20° (d) 50° and 40°

86. If $\tan A = \frac{2}{3}$, then find sinA.

मयक्रह $\tan A = \frac{2}{3}$ हश हsinAह> श्हलाये ं ग

SSC CGL 09/12/2022 (Shift- 02)

(a) $\frac{1}{3}$ (b) $\frac{2}{\sqrt{13}}$
(c) $\frac{2}{3}$ (d) $\frac{3}{\sqrt{13}}$

87. If $\frac{\sin\theta + \cos\theta}{\sin\theta - \cos\theta} = \frac{3}{2}$, then the value of $\sin^4\theta - \cos^4\theta$ is:

मयक्रह $\frac{\sin\theta + \cos\theta}{\sin\theta - \cos\theta} = \frac{3}{2}$ ही बहश हsin⁴θ – cos⁴θहल ह- : ह8म ही अ%

SSC CGL 09/12/2022 (Shift- 02)

(a) $\frac{5}{12}$ (b) $\frac{12}{13}$
(c) $\frac{11}{12}$ (d) $\frac{5}{13}$

88. If $\sin\theta = \frac{8}{17}$ where θ is an acute angle, then what is the value of tanθ + cotθ?

मयक्रह $\sin\theta = \frac{8}{17}$ ही बे ी हθह मद्धल अही बहश हtanθ + cotθ ल ह- : ह> श्हलाये ं ग

SSC CGL 09/12/2022 (Shift- 03)

(a) $\frac{217}{110}$ (b) $\frac{281}{190}$
(c) $\frac{289}{120}$ (d) $\frac{512}{312}$

89. If $\sin^2\theta \cos^2\theta = \frac{2}{9}$, then what will be the value of $\operatorname{cosec}^2\theta + \sec^2\theta$?

मयक्रह $\sin^2\theta \cos^2\theta = \frac{2}{9}$ ही बहश हcosec²θ + sec²θहल – : ह8म ही अ%

SSC CGL 09/12/2022 (Shift- 03)

(a) $\frac{7}{2}$ (b) $\frac{5}{2}$
(c) $\frac{9}{2}$ (d) $9\sqrt{2}$

Maths by Aditya Ranjan sir

90. If $2\frac{\cos^2 x - \sec^2 x}{\tan^2 x}$ = a + b cos2x then a, b = ?

मयक्रह $2\frac{\cos^2 x - \sec^2 x}{\tan^2 x}$ = a + b cos2xही क्रश हक्र a, b = ?

SSC CGL 09/12/2022 (Shift- 04)

(a) $\frac{-3}{2}, \frac{-1}{2}$ (b) $\frac{3}{2}, \frac{1}{2}$

(c) –3, –1 (d) 3, 1

91. What is the value of sin75° + sin15°?

sin75° + sin15°हल ह- : ह8म ही ब

SSC CGL 09/12/2022 (Shift- 04)

(a) $\frac{1}{\sqrt{2}}$ (b) $\frac{\sqrt{3}}{2}$

(c) $\sqrt{\frac{3}{2}}$ (d) $\frac{3}{\sqrt{2}}$

92. If cosecθ + cotθ = 2, then what is the value of cosecθ ?

मयक्रहcosecθ + cotθ = 2हश हcosecθहल ह- : ह8म ही ब

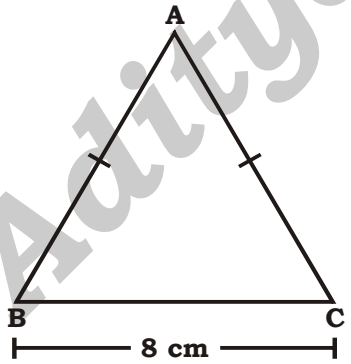
SSC CGL 09/12/2022 (Shift- 04)

(a) $\frac{5}{4}$ (b) √2

(c) √5 (d) $\frac{3}{2}$

93. In the given figure, ABC is an isosceles triangle with BC = 8 cm and AB = AC = 5 cm. The value of tanC – cotB is.

व्रहई हड ए यह- ABCहं लहै -यइ ी हय जेन ही ब्रयै -ए BC = 8 cmह ड हि AB = AC = 5 cmही ब tanC – cotBहल ह- : ही ब



SSC CGL 09/12/2022 (Shift- 04)

(a) $-\frac{5}{12}$ (b) $-\frac{7}{12}$

(c) $\frac{7}{12}$ (d) $\frac{5}{12}$

94. If b cosθ = a, then cosecθ + cotθ = ___.

मयक्रहb cosθ = aही क्रश हcosecθ + cotθ =ही अ%

SSC CGL 09/12/2022 (Shift- 04)

(a) $\sqrt{\frac{1}{b+a}}$ (b) $\sqrt{\frac{b-a}{b+a}}$

(c) $\sqrt{\frac{b+a}{b-a}}$ (d) $\sqrt{\frac{1}{b-a}}$

95. If cosecθ + cotθ = p, then the value of $\frac{p^2-1}{p^2+1}$ is:

मयक्रहcosecθ + cotθ = p श ह $\frac{p^2-1}{p^2+1}$ हल ह- : ही ब

SSC CGL 12/12/2022 (Shift- 01)

(a) cosθ (b) sinθ

(c) cotθ (d) cosecθ

96. What is the value of the expression cos2A cos2B + sin²(A – B) – sin²(A + B)?

ए लहcos2A cos2B + sin²(A – B) – sin²(A + B) ल ह- : ह8म ही अ%

SSC CGL 12/12/2022 (Shift- 01)

(a) sin (2A – 2B) (b) sin (2A + 2B)

(c) cos (2A + 2B) (d) cos (2A – 2B)

97. Find the value of tan27° tan34° + tan34° tan29° + tan29° tan27°.

tan27° tan34° + tan34° tan29° + tan29° tan27° ल ह- : ह> श हलाये ं ग

SSC CGL 12/12/2022 (Shift- 01)

(a) 0 (b) –1

(c) √3 (d) 1

98. If sin²θ – 3 sinθ + 2 = 0, then find the value of θ(0° ≤ θ ≤ 90°).

मयक्रहsin²θ – 3 sinθ + 2 = 0ही क्रश हθ(0° ≤ θ ≤ 90°) ल ह- : ह> श हलाश

SSC CGL 12/12/2022 (Shift- 02)

(a) 45° (b) 0°

(c) 60° (d) 90°

Maths by Aditya Ranjan sir

99. $\frac{1+\sin\theta}{\cos\theta}$ is equal to which of the following $\left(\text{where}\,\theta \neq \frac{\pi}{2}\right)$?

$\frac{1+\sin\theta}{\cos\theta}$ हय व यय श्ह-है ह्यनै लह्ह इहिं वे ी श्ह $\left(\theta \neq \frac{\pi}{2}\right)$?

SSC CGL 12/12/2022 (Shift- 02)

(a) $\frac{1+\cos\theta}{\sin\theta}$ (b) $\frac{\tan\theta+1}{\tan\theta-1}$

(c) $\frac{\tan\theta-1}{\tan\theta+1}$ (d) $\frac{\cos\theta}{1-\sin\theta}$

100. If $\tan3\theta \cdot \tan7\theta = 1$, where 7θ is an acute angle, then find the value of $\cot15\theta$.

मयग्रह $\tan3\theta \cdot \tan7\theta = 1$ही बहे ी ह्ह 7θहं लह् मह्ह्ल अ ी बह्श ह्ह $\cot15\theta$हल ह- : ह> श्हलाये ं ग

SSC CGL 12/12/2022 (Shift- 03)

(a) 1 (b) –1

(c) $-\sqrt{3}$ (d) $\sqrt{3}$

101. Find the value of $\sec\theta - \tan\theta$, if $\sec\theta + \tan\theta = \sqrt{5}$.

मयग्रह $\sec\theta - \tan\theta$ही बह्श ह्ह $\sec\theta + \tan\theta = \sqrt{5}$हल ह- : ह> श्हलाये ं ग

SSC CGL 12/12/2022 (Shift- 03)

(a) 5 (b) $5\frac{1}{5}$

(c) $\frac{\sqrt{5}}{5}$ (d) $\sqrt{5}$

102. If $2\sin\theta + 2\sin^2\theta = 2$, then the value of $2\cos^4\theta + 2\cos^2\theta$ is:

मयग्रह $2\sin\theta + 2\sin^2\theta = 2$हश ह्ह $2\cos^4\theta + 2\cos^2\theta$ ल ह- : ह8म ही अ%

SSC CGL 12/12/2022 (Shift- 03)

(a) 4 (b) 2

(c) 1 (d) 0

103. If $\sec A = \frac{5}{4}$, then the value of $\frac{\tan A}{1+\tan^2 A} - \frac{\sin A}{\sec A}$ is:

मयग्रह $\sec A = \frac{5}{4}$ हश ह्ह $\frac{\tan A}{1+\tan^2 A} - \frac{\sin A}{\sec A}$ हल ह- : ह> श्लाये ं ग

SSC CGL 12/12/2022 (Shift- 04)

(a) 2 (b) 1

(c) 0 (d) 3

104. If $\sin A = \frac{4}{5}$, then what is the value of $\sin^2 A$?

मयग्रह $\sin A = \frac{4}{5}$ ही बह्श ह्ह $\sin^2 A$हल ह- : ह8म ही अ

SSC CGL 12/12/2022 (Shift- 04)

(a) $\frac{26}{25}$ (b) $\frac{36}{25}$

(c) $\frac{48}{25}$ (d) $\frac{16}{25}$

105. If $\sec^2 A + \tan^2 A = 3$, then what is the value of $\cot A$?

मयग्रह $\sec^2 A + \tan^2 A = 3$ही बह्श ह्ह $\cot A$हल ह- : ह8म ही अ%

SSC CGL 13/12/2022 (Shift- 01)

(a) $\frac{1}{\sqrt{3}}$ (b) 0

(c) 1 (d) $\sqrt{3}$

106. If θ is an acute angle and $\tan\theta + \cot\theta = 2$, then the value of $\tan^{200}\theta + \cot^{200}\theta$ is:

मयग्रह θहं लह् मह्ह्ल अही ह्ह ह्ह $\tan\theta + \cot\theta = 2$ही बह्श ह्ह $\tan^{200}\theta + \cot^{200}\theta$हल ह- : ह> श्हलाये ं ग

SSC CGL 13/12/2022 (Shift- 01)

(a) 1 (b) 2

(c) –1 (d) 0

107. If $a = 45°$ and $b = 15°$, what is the value of $\frac{\cos(a-b)-\cos(a+b)}{\cos(a-b)+\cos(a+b)}$?

मयग्रह $a = 45°$ह्ह ह्ह $b = 15°$ श अ

$\frac{\cos(a-b)-\cos(a+b)}{\cos(a-b)+\cos(a+b)}$ हल ह- : ह8म ही अ

SSC CGL 13/12/2022 (Shift- 02)

(a) $2 - 2\sqrt{2}$ (b) $3 - \sqrt{6}$

(c) $3 - \sqrt{2}$ (d) $2 - \sqrt{3}$

108. What is the value of $\operatorname{cosec}15° \sec15°$

$\operatorname{cosec}15° \sec15°$हल ह- : ह8म ही अ

SSC CGL 13/12/2022 (Shift- 02)

(a) 0.5 (b) 4

(c) 2 (d) 1

109. $\frac{\cos A}{1-\tan A} + \frac{\sin A}{1-\cot A} =$

SSC CGL 13/12/2022 (Shift- 02)

(a) $\tan A - \cot A$ (b) $\tan A + \cot A$

(c) $\sin A - \cos A$ (d) $\sin A + \cos A$

Maths by Aditya Ranjan sir

110. If $\sec\theta + \frac{1}{\cos\theta} = 2$. find the value of $\sec^{55}\theta + \frac{1}{\sec^{55}\theta}$.

मयह $\sec\theta + \frac{1}{\cos\theta} = 2$ ही ह $\sec^{55}\theta + \frac{1}{\sec^{55}\theta}$ हल – : ह श्हलाये ं ग

SSC CGL 13/12/2022 (Shift- 03)

(a) 2 (b) 0
(c) 1 (d) 55

111. If tan40° = α, then find $\frac{\tan320° - \tan310°}{1 + \tan320°.\tan310°}$.

मयह tan40° = α ही ह $\frac{\tan320° - \tan310°}{1 + \tan320°.\tan310°}$ हल – : ह श्हलाये ं ग

SSC CGL 13/12/2022 (Shift- 03)

(a) $\frac{1-\alpha^2}{\alpha}$ (b) $\frac{1+\alpha^2}{\alpha}$

(c) $\frac{1-\alpha^2}{2\alpha}$ (d) $\frac{1+\alpha^2}{\alpha}$

112. If $\tan^2\theta + \tan^4\theta = 1$, then:

मयह $\tan^2\theta + \tan^4\theta = 1$ ही ह ही अ

SSC CGL 13/12/2022 (Shift- 03)

(a) $\cot^2\theta + \cot^4\theta = 1$ (b) $\cos^2\theta + \cos^4\theta = 1$
(c) $\sin^2\theta + \sin^4\theta = 1$ (d) $\text{cosec}2\theta + \sec4\theta = 1$

113. If tan(α + β) = a, tan(α – β) = b, then the value of tan2α is:

मयह tan(α + β) = a, tan(α – β) = b ही ह tan2α ल ह– : ह श्हलाये ं ग

SSC CGL 13/12/2022 (Shift- 04)

(a) $\frac{a+b}{1-ab}$ (b) $\frac{a+b}{1+ab}$

(c) $\frac{a-b}{1+ab}$ (d) $\frac{a-b}{1-ab}$

114. If A is an acute angle, the simplified from of

$$\frac{\cos(\pi - A).\cot\left(\frac{\pi}{2} + A\right)\cos(-A)}{\tan(\pi + A)\tan\left(\frac{3\pi}{2} + A\right)\sin(2\pi - A)} \text{ is :}$$

मयह A हं लह् मह्ल अही ह श हय व हल है दिए श्ह प त 8म ही अ%

$$\frac{\cos(\pi - A).\cot\left(\frac{\pi}{2} + A\right)\cos(-A)}{\tan(\pi + A)\tan\left(\frac{3\pi}{2} + A\right)\sin(2\pi - A)} \text{ is :}$$

SSC CGL 13/12/2022 (Shift- 04)

(a) Cos^2A (b) SinA
(c) Sin^2A (d) CosA

115. Evaluate the following.

sin 25° sin 65° – cos25° cos 65°.

य व यह य श्हल ह– : हय ल यह ं ग

sin 25° sin 65° – cos25° cos 65°.

SSC CGL TIER - II 02/03/2023

(a) 4 (b) 1

(c) 0 (d) 40

116. If tan(A + B) = $\sqrt{3}$ and tan (A – B) = $\frac{1}{\sqrt{3}}$; 0° < (A + B) < 90°; A > B, then the values of A and B are _____.respectively.

मयह tan(A + B) = $\sqrt{3}$ हड ह tan (A – B) = $\frac{1}{\sqrt{3}}$; 0° < (A + B) < 90°; A > B, हश ह A ड ह B हल ह : ह6 –स । _____ ही ब

SSC CGL TIER - II 02/03/2023

(a) 45° and 15° (b) 15° and 45°
(c) 30° and 30° (d) 60° and 30°

117. Select the INCORRECT formula from the following options.

य व यह श्ह्यू लध्त ह ह ह ह द श्है ख्ह्ल ह ध म: हलाये ं ग

SSC CGL TIER- II 03/03/2023

(a) $\text{cosec}^2\theta - \cot^2\theta = 1$
(b) $\sin^2\theta + \cos^2\theta = 1$
(c) $\sec^2\theta + \cos^2\theta = 1$
(d) $\sec^2q - \tan^2\theta = 1$

118. Find the exact value of 120°.

cos 120° ल है खलह– : ह श्हलाये ं ग

SSC CGL TIER- II 06/03/2023

(a) – 0.5 (b) 0

(c) 1 (d) 0.5

119. If a cotθ + b cosecθ = p and b cotθ + a cosecθ = q then $p^2 - q^2$ is equal to _____.

मयह a cotθ + b cosecθ = p हड ह b cotθ + a cosecθ = q ी ह श ह $p^2 - q^2$ हय व ह– ह ह मनै लह ह ि ह ि ह अ

SSC CGL TIER- II 07/03/2023

(a) $b^2 - a^2$ (b) $a^2 - b^2$

(c) b – a (d) $a^2 + b^2$

Maths by Aditya Ranjan sir

120. $(\sin\theta + \operatorname{cosec}\theta)^2 + (\cos\theta + \operatorname{sc}\theta)^2 = ?$

SSC CGL TIER- II 07/03/2023

(a) $5 + \tan^2\theta + \cot^2\theta$

(b) $7 + \tan^2\theta - \cot^2\theta$

(c) $7 + \tan^2\theta + \cot^2\theta$

(d) $5 + \tan^2\theta - \cot^2\theta$

121. Two ships are on the opposite of a light house such that all three of them are colline Zar. The angles of depression of the two ships from the top of the light house 30° and 60°. If the ships are $230\sqrt{3}$ m apart, then find the height of the light house (in m).

क्रहे ी` हं लहतल स ज्ञ्रएहलहै व्न हैं हतल हिी ह्यनहू अ श: है ए्अही ह्तल स ज्ञ्रएहलह्स उहै ह्क्रहे ी` ह्लहू : -: ल अह 30°ह ड हि 60°ही ह्क मयक्रहे ी` ह्लहड़ाध हलाह क्रद्धि $230\sqrt{3}$ m ही ह्व श ह्तल स ज्ञ्रएह लाह 2ह्ं ह्र?m -ह्ह ञ श लाये ं ग

SSC CGL TIER - II 02/03/2023

(a) 175.4

(b) 165.2

(c) 172.5

(d) 180.5

122. The angle of elevation of the top of a building at a distance of 70 m from its foot on a horizontal plane is found to be 60°. Find the height of the building.

ं लहम्ब हश्दहतहि लहं - श्हिलह्ड. हि ह्र70 mहला क्रद्धितहि2 लह्स उह्ल ह2 : म: हल अह60°हत म हे श ही ब ं - श्हिलाह4 ह्ं ह्र श्हलाये ं ग

SSC CGL TIER- II 03/03/2023

(a) $70\sqrt{3}$ m

(b) $60\sqrt{3}$ m

(c) $50\sqrt{3}$ m

(d) $70\sqrt{2}$ m

123. From the top of an upright pole 17.75 m high, the angle of elevation of the top of an upright tower was 60° . If the tower was 57.75 m tall, how far away (in m) from the foot of the pole was the foot of the tower?

7-ष्ठ ष्ठहm ह4 ह्ए ह्ं लहै ! ह्र सह्र ए्ह्लह्स उहै ह्क ं लहै ! ा क साह्ह-ा: हिलह्स उह्ल ह2 : म: हल अह60°ह, ग्हमयक्रह-ा: ि ष्ठ-ष्ठ ष्ठहm ह4 ह्ए ाह, ाक्रश ह्र ए्ह्लह्ड. हि ह्र ा: हिल हड द्व ि यनश: ाहक्रद्धि? mह-ह्ह तहि, %

SSC CGL TIER- II 03/03/2023

(a) $40\sqrt{3}$

(b) $\frac{151\sqrt{3}}{6}$

(c) $\frac{77}{4}\sqrt{3}$

(d) $\frac{40\sqrt{3}}{3}$

124. The angle of elevation of the top of an upright tower from the top of a straight pole $24\sqrt{3}$ feet high is 60°. If the base of the pillar was at a distance of 60 feet from the base of the tower, what was the height (in feet) of the tower?

$24\sqrt{3}$ हत ाख्ह 2 ह्ए ह्ं लहै ! ह्र सह्र ए्ह्लह्स हि ह्र ं ल ै ! ाह साह्ह-ा: हिलह्स हिल ह2 : म: हल अह60° , ग्हमयक्र ए्ह्ल हड. हि-ा: हिलह्ड. हि ह्र ( )हत ाख्ह लाह क्रद्धिहत ि , ाक्रश ह्र ा: हिलाह2 ह्ए ह्र हत ाख्ह-ह्ह 8म ह, ा%

SSC CGL TIER- II 06/03/2023

(a) $44\sqrt{3}$

(b) $36\sqrt{3}$

(c) $60\sqrt{3}$

(d) $84\sqrt{3}$

125. The angle of elevation of the top of a tower from the top of a building whose height is 680 m is 45° and the angle of elevation of the top of same tower from the foot of the same building is 60°. What is the height (in m) of the tower?

(.)ह-ाखहि 4 ह्ह ाहं लहं - श्हिलह्स उहै ह्ं लहखू हिलह्स उच ल ह2 : म: हल अह45°ही ह्र श, ह2 ाहं - श्हिलह्ड. हि ह्र ै खू हिलह्स उह्ल ह2 : म: हल अह60°ही ह्क खू हिलाह4 ह्ह ं च ?-ाखहि-ह्ह 8म ही ह्र

SSC CGL TIER- II 07/03/2023

(a) $340(3+\sqrt{3})$

(b) $310(3-\sqrt{3})$

(c) $310(3+\sqrt{3})$

(d) $340(3-\sqrt{3})$

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ANSWER KEY

1.(c)	**2.**(b)	**3.**(b)	**4.**(c)	**5.**(b)	**6.**(a)	**7.**(c)	**8.**(c)	**9.**(d)	**10.**(a)
11.(a)	**12.**(a)	**13.**(c)	**14.**(c)	**15.**(c)	**16.**(a)	**17.**(d)	**18.**(b)	**19.**(a)	**20.**(a)
21.(d)	**22.**(b)	**23.**(a)	**24.**(b)	**25.**(b)	**26.**(a)	**27.**(d)	**28.**(a)	**29.**(b)	**30.**(d)
31.(c)	**32.**(b)	**33.**(b)	**34.**(a)	**35.**(b)	**36.**(d)	**37.**(a)	**38.**(c)	**39.**(d)	**40.**(b)
41.(b)	**42.**(b)	**43.**(c)	**44.**(b)	**45.**(d)	**46.**(a)	**47.**(d)	**48.**(b)	**49.**(b)	**50.**(d)
51.(c)	**52.**(a)	**53.**(a)	**54.**(a)	**55.**(d)	**56.**(d)	**57.**(b)	**58.**(c)	**59.**(a)	**60.**(d)
61.(b)	**62.**(b)	**63.**(b)	**64.**(a)	**65.**(c)	**66.**(d)	**67.**(d)	**68.**(c)	**69.**(d)	**70.**(d)
71.(d)	**72.**(a)	**73.**(a)	**74.**(c)	**75.**(a)	**76.**(c)	**77.**(b)	**78.**(c)	**79.**(c)	**80.**(c)
81.(c)	**82.**(a)	**83.**(c)	**84.**(b)	**85.**(b)	**86.**(b)	**87.**(b)	**88.**(c)	**89.**(c)	**90.**(c)
91.(c)	**92.**(a)	**93.**(b)	**94.**(c)	**95.**(a)	**96.**(c)	**97.**(d)	**98.**(d)	**99.**(d)	**100.**(b)
101.(c)	**102.**(b)	**103.**(c)	**104.**(d)	**105.**(c)	**106.**(b)	**107.**(d)	**108.**(b)	**109.**(d)	**110.**(a)
111.(c)	**112.**(b)	**113.**(a)	**114.**(d)	**115.**(c)	**116.**(a)	**117.**(c)	**118.**(a)	**119.**(a)	**120.**(c)
121.(c)	**122.**(a)	**123.**(d)	**124.**(d)	**125.**(a)					

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SOLUTIONS

1. (c) $\dfrac{\cos 45^\circ}{\sec 30^\circ + \operatorname{cosec} 30^\circ}$

$$\Rightarrow \frac{\frac{1}{\sqrt{2}}}{\frac{2}{\sqrt{3}} + \frac{2}{1}}$$

$$\Rightarrow \frac{\frac{1}{\sqrt{2}}}{\frac{2+2\sqrt{3}}{\sqrt{3}}}$$

$$\Rightarrow \frac{1}{\sqrt{2}} \times \frac{\sqrt{3}}{2+2\sqrt{3}}$$

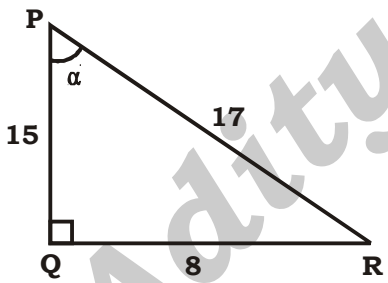
$$\Rightarrow \frac{\sqrt{3}}{2\sqrt{2}+2\sqrt{6}}$$

$$\Rightarrow \frac{\sqrt{3}\left(2\sqrt{6}-2\sqrt{2}\right)}{16}$$

$$\Rightarrow \frac{6\sqrt{2}-2\sqrt{6}}{16}$$

$$\Rightarrow \frac{3\sqrt{2}-\sqrt{6}}{8}$$

2. (b)



$$\sin\alpha + \cos\alpha = \frac{8}{17} + \frac{15}{17}$$

$$= \frac{23}{17}$$

3. (b) $\tan^2\theta + \cot^2\theta - \sec^2\theta \operatorname{cosec}^2\theta$.

Let $\theta = 45^\circ$

$\Rightarrow 1 + 1 - (\sqrt{2})^2 (\sqrt{2})^2$

$\Rightarrow 2 - 4 = -2$

4. (c) $\dfrac{\sin 30^\circ \sin 40^\circ \sin 50^\circ \sin 60^\circ}{\cos 30^\circ \cos 40^\circ \cos 50^\circ \cos 60^\circ}$

We know, $\sin\theta = \cos(90^\circ - \theta)$

$$= \frac{\cos 60^\circ \cos 50^\circ \cos 40^\circ \cos 30^\circ}{\cos 30^\circ \cos 40^\circ \cos 50^\circ \cos 60^\circ}$$

$= 1$

5. (b) $\sin 30^\circ \cos 60^\circ - \cos 30^\circ \sin 60^\circ$

$\Rightarrow \sin 30^\circ \sin 30^\circ - \cos 30^\circ \cos 30^\circ$

$= \sin^2 30^\circ - \cos^2 30^\circ$

$= -\cos 60^\circ$

$= -\sin 30^\circ$

6. (a) $\sin\alpha - \sin\beta = 2\cos\dfrac{\alpha+\beta}{2}\sin\dfrac{\alpha-\beta}{2}$

by direct formula.

7. (c) $\dfrac{2\tan 60^\circ}{1+\tan^2 60^\circ} = \dfrac{2\times\sqrt{3}}{1+3}$

$$= \frac{\sqrt{3}}{2}$$

$= \sin 60^\circ$

8. (c) $\tan 240^\circ$

$\Rightarrow \tan(180^\circ + 60^\circ)$

$\Rightarrow \tan 60^\circ = \sqrt{3}$

9. (d) $\tan\theta + \sec\theta = 7$

$$\sec\theta - \tan\theta = \frac{1}{7}$$

$$\Rightarrow 2\sec\theta = \frac{50}{7}$$

$$\sec\theta = \frac{25}{7}$$

$$\cos\theta = \frac{7}{25}$$

$$\Rightarrow \sin\theta = \frac{24}{25}$$

$$\Rightarrow 5\sin\theta = \frac{24}{5}$$

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10. (a) $16\cos^3\frac{\Pi}{6} - 12\cos\frac{\Pi}{6}$

$\Rightarrow 16\times\left(\frac{\sqrt{3}}{2}\right)^3 - 12\times\frac{\sqrt{3}}{2}$

$\Rightarrow 6\sqrt{3} - 6\sqrt{3} = 0$

11. (a) $\frac{a^2+b^2+c^2-1024}{ab-bc-ca} = -2$

$a^2 + b^2 + c^2 - 1024 = 2bc + 2ca - 2ab$

$\Rightarrow a^2 + b^2 + c^2 + 2ab - 2ca - 2bc = 1024$

$\Rightarrow (a + b - c)^2 = 1024$

$\Rightarrow a + b - c = 32$ .....(1)

Given,

$a + b - 5c = 0$ .....(2)

From (1) and (2)

$4C = 32$

$\Rightarrow C = 8$

12. (a) $\cos A = \frac{9}{41} \Rightarrow \sin A = \frac{40}{41}$

$\Rightarrow \cot A = \frac{\cos A}{\sin A} = \frac{9}{40}$

13. (c) $\tan^2\theta = \frac{1-a^2}{1} \Rightarrow \tan\theta = \frac{(1-a^2)^{\frac{1}{2}}}{1}$

$\Rightarrow \sec\theta = \frac{1}{\cos\theta} = \frac{(2-a^2)^{\frac{1}{2}}}{1}$

$\tan^3\theta = (1-a^2)^{\frac{3}{2}}$

$\text{cosec}\,\theta = \left(\frac{2-a^2}{1-a^2}\right)^{\frac{1}{2}}$

$\Rightarrow \sec\theta + \tan^3\theta.\ \text{cosec}\theta$

$= (2-a^2)^{\frac{1}{2}} + (1-a^2)^{\frac{3}{2}} \times \frac{(2-a^2)^{\frac{1}{2}}}{(1-a^2)^{\frac{1}{2}}}$

$(2-a^2)^{\frac{1}{2}}\ [1 + (1-a^2)]$

$\Rightarrow (2-a^2)^{\frac{1}{2}}\ (2-a^2)$

$= (2-a^2)^{\frac{3}{2}}$

14. (c) $\cot x - \tan x = \frac{3}{2} = 2 - \frac{1}{2}$

$\Rightarrow \cot x = 2, \tan x = \frac{1}{2}$

$\Rightarrow \cot x + \tan x = 2 + \frac{1}{2} = \frac{5}{2}$

15. (c) $\sec^2A + \tan^2A = \frac{4}{17}$

$\sec^4A - \tan^4A = (\sec^2A - \tan^2A)(\sec^2A + \tan^2A)$

$= 1\ (\sec^2A + \tan^2A)$

$= \frac{4}{17}$

16. (a) $\sin(A + B) = \cos(A + B)$

$\Rightarrow \frac{\sin(A+B)}{\cos(A+B)} = 1$

$\Rightarrow \tan(A + B) = 1$

$\Rightarrow \frac{\tan A + \tan B}{1 - \tan A\tan B} = 1$

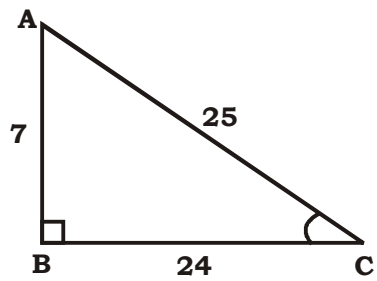
$\Rightarrow \tan A + \tan B = 1 - \tan A\tan B$

$\tan A + \tan A + \tan B = 1 - \tan B$

$\Rightarrow \tan A(1 + \tan B) = 1 - \tan B$

$\Rightarrow \tan A = \frac{1-\tan B}{1+\tan B}$

17. (d)



$AC - BC = 1$

$\Rightarrow AC = 25, BC = 24$

$\Rightarrow \sin C = \frac{7}{25}$

18. (b) $\sin\theta + \cos\theta = \sqrt{5}\ \sin(90 - \theta)$

$\sin\theta = \sqrt{5}\ \cos\theta - \cos\theta$

$\sin\theta = \cos\theta\left(\sqrt{5} - 1\right)$

$\Rightarrow \cot\theta = \frac{1}{\sqrt{5}-1}$

$\cot\theta = \frac{\sqrt{5}+1}{4}$

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19. (a) $\text{cosec}\,A - \cot A = \frac{1}{4}$

$\Rightarrow \text{cosec}\,A + \cot A = 4$

$\Rightarrow 2\cot A = 4 - \frac{1}{4} = \frac{15}{4}$

$\Rightarrow \cot A = \frac{15}{8}$

$\Rightarrow \tan A = \frac{8}{15}$

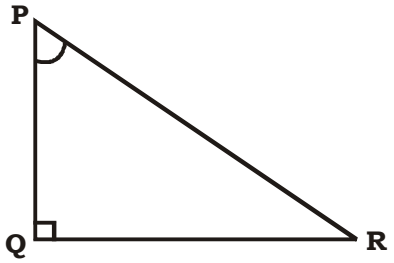
20. (a)

$\cot 15^\circ \cot 25^\circ \cot 45^\circ \cot 75^\circ \cot 65^\circ$

$\Rightarrow \tan 75^\circ \tan 65^\circ \cot 45^\circ \cot 75^\circ \cot 65^\circ$

$\Rightarrow \cot 45^\circ = 1$

21. (d)



$\cot P = \frac{\text{base}}{\text{perp.}} = \frac{\sqrt{3}}{1}$

$\Rightarrow$ Hypotenus = 2

$\Rightarrow \sin P = \frac{1}{2}$

'OR'

$\cot P = \sqrt{3} \Rightarrow P = 30^\circ$

$\Rightarrow \sin 30^\circ = \frac{1}{2}$

22. (b) $\tan A + \cot A = 2$

Squaring Both sides:-

$\tan^2 A + \cot^2 A + 2 = 4$

$2(\tan^2 A + \cot^2 A) = 4$

23. (a) $\frac{1-\cos\theta}{\sin\theta} = \frac{1}{5}$

Multiply and divide by $(1 + \cos\theta)$

$\Rightarrow \frac{(1-\cos\theta)(1+\cos\theta)}{\sin(1+\cos\theta)} = \frac{1}{5}$

$\Rightarrow \frac{\sin^2\theta}{\sin\theta(1+\cos\theta)} = \frac{1}{5}$

$\Rightarrow \frac{\sin\theta}{1+\cos\theta} = \frac{1}{5}$

$\Rightarrow \frac{1+\cos\theta}{\sin\theta} = 5$

24. (b) $\sin A = \frac{4}{5}, \quad \sin B = \frac{15}{17}$

$\Rightarrow \cos A = \frac{3}{5}, \quad \cos B = \frac{8}{17}$

$\Rightarrow \sin(A - B) = \sin A \cos B - \cos A \sin B$

$= \frac{4}{5} \times \frac{8}{17} - \frac{3}{5} \times \frac{15}{17}$

$= \frac{32}{85} - \frac{45}{85}$

$= -\frac{13}{85}$

25. (b) $\frac{\cos A}{1+\tan A} - \frac{\sin A}{1+\cot A}$

$\Rightarrow \frac{\cos A}{1+\frac{\sin A}{\cos A}} - \frac{\sin A}{1+\frac{\cos A}{\sin A}}$

$\Rightarrow \frac{\cos^2 A}{\cos A + \sin A} - \frac{\sin^2 A}{\sin A + \cos A}$

$\Rightarrow \frac{\cos^2 A - \sin^2 A}{\cos A + \sin A}$

$\Rightarrow \cos A - \sin A$

26. (a) $\frac{1}{1+\cos(90-\theta)} + \frac{1}{1-\cos(90-\theta)}$

$= \frac{1}{1+\sin\theta} + \frac{1}{1-\sin\theta}$

$\Rightarrow \frac{2}{1-\sin^2\theta} = \frac{2}{\cos^2\theta}$

$\Rightarrow 2\sec^2\theta$

27. (d)

We know,

$\sin^4\theta + \cos^4\theta = 1 - 2\sin^2\theta\cos^2\theta$

$= 1 - 2\sin^2\theta(1 - \sin^2\theta)$

$= 1 - 2\sin^2\theta + 2\sin^4\theta$

$= 2\sin^4\theta - 2\sin^2\theta + 1$

28. (a)

$\tan(\theta - 14\pi)$

$\Rightarrow -\tan(14\pi - \theta)$

$\Rightarrow -\tan(7 \times 2\pi - \theta)$

$= \tan\theta$

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29. (b)

$$\frac{k - k\cot^2 30^\circ}{1+\cot^2 30^\circ} = \sin^2 60^\circ + 4\tan^2 45^\circ - \operatorname{cosec}^2 60^\circ$$

$$\Rightarrow \frac{k(1-\cot^2 30^\circ)}{1+\cot^2 30^\circ}$$

$$= \sin^2 60^\circ + 4\tan^2 45^\circ - \operatorname{cosec}^2 60^\circ$$

$$\Rightarrow \frac{k(-2)}{4} = \frac{3}{4} + 4 - \frac{4}{3}$$

$$\Rightarrow k = \left[\frac{9+48-16}{12}\right] \times (-2)$$

$$= -6.83$$

30. (d)

$\cot B = 9$

$$\Rightarrow \tan B = \frac{1}{9}$$

$$\Rightarrow \tan^2 B = \frac{1}{81}$$

$$\Rightarrow \sec^2 B = 1 + \tan^2 B$$

$$= \frac{82}{81}$$

31. (c)

$$\frac{\cos x - \sqrt{3}\sin x}{2}$$

$$\Rightarrow \frac{1}{2}\cos x - \frac{\sqrt{3}}{2}\sin x$$

$$\Rightarrow \cos 60^\circ \cos x - \sin 60^\circ \sin x$$

$$\Rightarrow \cos(60^\circ + x)$$

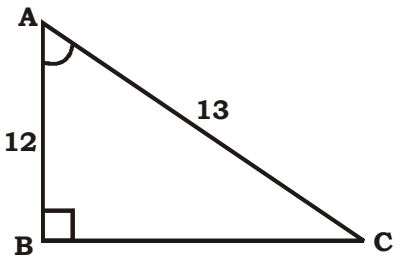
$$\Rightarrow \cos\left(\frac{\pi}{3} + x\right)$$

32. (b)

$$\sqrt{\frac{(1+\cos A)(1+\cos A)}{(1-\cos A)(1+\cos A)}}$$

$$\frac{1+\cos A}{\sin A} = \operatorname{cosec} A + \cot A$$

33. (b)



$$\tan A = \frac{5}{12}$$

$\sin A + \sin B + \sin C$

$$\Rightarrow \frac{5}{13} + 1 + \frac{12}{13}$$

$$\Rightarrow \frac{30}{13} = 2\frac{4}{13}$$

34. (a)

$$\sin\theta + \cos\theta = \frac{\sqrt{3}-1}{2\sqrt{2}} \quad .....(1)$$

Consider, $\tan\theta + \cot\theta$

$$= \frac{\sin\theta}{\cos\theta} + \frac{\cos\theta}{\sin\theta} \Rightarrow \frac{1}{\sin\theta\cos\theta}$$

squaring both sides in (1)

$$\Rightarrow 1 + 2\sin\theta\cos\theta = \frac{4-\sqrt{3}-8}{8}$$

$$= -\frac{(4+2\sqrt{3})}{8}$$

$$= -\frac{(2+\sqrt{3})}{4}$$

$$\therefore \tan\theta + \cot\theta = \left[\frac{-4\times 2}{2+\sqrt{3}}\right]$$

$$= \left[-8(\sqrt{3})\right]$$

$$\Rightarrow 8(\sqrt{3}-2)$$

35. (b)

$$\sin\theta = \frac{8}{17}$$

$$\tan\theta = \frac{8}{\sqrt{17^2 - 8^2}} = \frac{8}{15}$$

36. (d)

$\sec^2\theta = \operatorname{cosec}(\theta - 36^\circ)$

$\operatorname{cosec}(90^\circ - 2\theta) = \operatorname{cosec}(\theta - 36^\circ)$

$\Rightarrow 90^\circ - 2\theta = \theta - 36^\circ$

$\Rightarrow 3\theta = 126^\circ$

$\theta = 42^\circ$

37. (a)

$$\cos^2 35^\circ + \cos 55^\circ \sin 35^\circ + \frac{\tan 34^\circ}{\cot 56^\circ}$$

$$\Rightarrow \cos^2 35^\circ + \sin^2 35^\circ + \frac{\cot 56^\circ}{\cot 56^\circ}$$

$$\Rightarrow 1 + 1 = 2$$

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38. (c)

Let, $\sqrt{\frac{1+\cos\theta}{1-\cos\theta}}+\sqrt{\frac{1-\cos\theta}{1+\cos\theta}}=x$

Squaring both sides

$\frac{1+\cos\theta}{1-\cos\theta}+\frac{1-\cos\theta}{1+\cos\theta}+2=x^2$

$\Rightarrow \frac{(1+\cos\theta)^2+(1-\cos\theta)^2+2\sin^2\theta}{\sin^2\theta}=x^2$

$\Rightarrow \frac{(1+\cos\theta+1-\cos\theta)^2}{\sin^2\theta}=x^2$

$\Rightarrow \left(\frac{2}{\sin\theta}\right)^2=x^2$

$\Rightarrow x = 2\operatorname{cosec}\theta$

39. (d)

$\cos x \operatorname{cosec} x - \sin x \sec x$

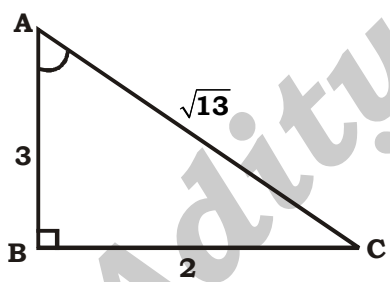
$\Rightarrow \frac{\cos x}{\sin x}-\frac{\sin x}{\cos x}$

$\Rightarrow \frac{\cos^2 x-\sin^2 x}{\cos x\sin x}$

$=\frac{\cos 2x}{2\cos x\sin x}\times 2$

$\Rightarrow \frac{\cos 2x}{\sin 2x}\times 2 = 2\cot 2x$

40. (b)



$\tan A = \frac{2}{3}$

$\Rightarrow (5\sin^2A - 2\cos^2A) \div (15\sin^2A + 3\cos^2A)$

$\Rightarrow \left(5\times\frac{4}{13}-2\times\frac{9}{13}\right)\div\left(15\times\frac{4}{13}+3\times\frac{9}{13}\right)$

$\Rightarrow \frac{2}{13}\times\frac{13}{87}=\frac{2}{87}$

41. (b)

$\tan\theta + \cot\theta = 2$ .....(1)

Consider,

$\tan^2\theta + \cot^2\theta + 2\tan^5\theta\cot^4\theta$

$\Rightarrow \tan^2\theta + \cot^2\theta + 2\tan\theta$

Squaring (1)

$\tan^2\theta + \cot^2\theta + 2 = 4$

$\Rightarrow \tan^2\theta + \cot^2\theta = 2$ .....(2)

From (1) and (2)

$\tan\theta = 1 = \cot\theta$

$\Rightarrow \theta = 45°$

$\therefore \tan^2\theta + \cot^2\theta + 2\tan^5\theta\cot^4\theta$

$\Rightarrow 2 + 2 = 4$

42. (b)

$\cot^2A - \cos^2A$

$\Rightarrow \cos^2A[\operatorname{cosec}^2A - 1]$

$\Rightarrow \cos^2A \times \cot^2A$

43. (c)

$\sqrt{\frac{1+\sin A}{1-\sin A}}$

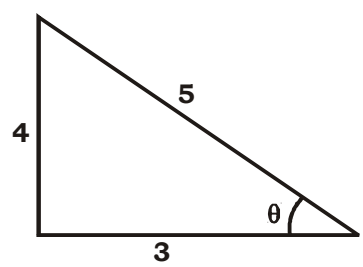
Rationalizing we, get

$\Rightarrow \sqrt{\frac{(1+\sin A)^2}{\cos^2A}}$

$\Rightarrow \frac{1+\sin A}{\cos A}$

$\Rightarrow \sec A + \tan A$

44. (b)



$8\cot\theta = 6$

$\cot\theta = \frac{3}{4}$

$\Rightarrow \frac{\sin\theta+\cos\theta}{\sin\theta-\cos\theta}=\frac{\frac{4}{5}+\frac{3}{5}}{\frac{4}{5}-\frac{3}{5}}$

$\Rightarrow \frac{7}{1}$

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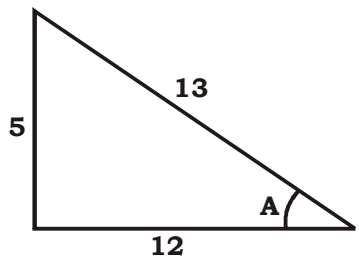
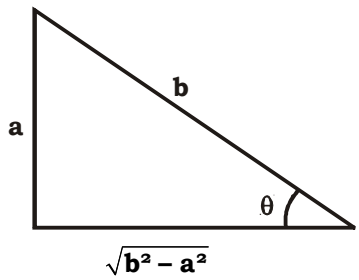
45. (d)



$\tan A = \frac{5}{12} \Rightarrow \cos A = \frac{12}{13}$

46. (a)



$b \sin\theta = a$

$\sin\theta = \frac{a}{b}$

$\sin\theta + \tan\theta = \frac{1+\sin\theta}{\cos\theta}$

$= \frac{1+\frac{a}{b}}{\frac{\sqrt{b^2-a^2}}{b}}$

$\Rightarrow \frac{b+a}{\sqrt{b^2-a^2}} \Rightarrow \frac{b+a}{(b+a)^{\frac{1}{2}}(b-c)}$

$\Rightarrow \sqrt{\frac{b+a}{b-a}}$

47. (d)

$\frac{\cos 20}{\sin 70} + \frac{\cos\theta}{\sin(90-\theta)}$

$\Rightarrow \frac{\sin 70}{\sin 70} + \frac{\cos\theta}{\cos\theta} = 2$

48. (b)

$\sin 10^\circ \frac{4}{3} - \sin^3 10^\circ$

$\Rightarrow \frac{1}{3}[3\sin 10^\circ - 4\sin^3 10^\circ]$

$\Rightarrow \frac{1}{3}[\sin 30^\circ]$

$\Rightarrow \frac{1}{6}$

49. (b)

$\cot A = \frac{15}{8} \Rightarrow \tan A = \frac{8}{15}$

$\tan 2A = \frac{2\tan A}{1-\tan^2 A}$

$= \frac{2\times\frac{8}{15}}{1-\frac{64}{225}} = \frac{\frac{16}{15}}{\frac{161}{225}}$

$= \frac{240}{161}$

50. (d)

$\frac{\cos 37^\circ}{\sin 53^\circ} = \frac{\sin(90^\circ - 37^\circ)}{\sin 53^\circ}$

$\Rightarrow 1$

51. (c)

$\cos\left(-\frac{17\pi}{3}\right)$

$\Rightarrow \cos\left(\frac{17\pi}{3}\right)$ [$\because \cos(-x) = \cos x$]

$= \cos\left(6\pi - \frac{\pi}{3}\right)$

$= \cos\left(\frac{\pi}{3}\right) = \frac{1}{2}$

52. (a)

$\cot 13^\circ \cot 27^\circ \cot 45^\circ \cot 63^\circ \cot 77^\circ$

$\Rightarrow \tan 77^\circ \tan 63^\circ \cot 45^\circ \cot 63^\circ \cot 77^\circ$

$\Rightarrow 1$

53. (a)

$(\sin A + \cos A)(1 - \sin A \cos A)$

$\Rightarrow (\sin A + \cos A)(\sin^2 A + \cos^2 A - \sin A \cos A)$

$\Rightarrow \sin^3 A + \cos^3 A$

54. (a)

$\sin\theta = \frac{1}{2}$

Consider. $(3\cos\theta - 4\cos^3\theta) = -\cos^3\theta$

$\Rightarrow \cos 90^\circ$

$= 0$

55. (d)

$\sec\theta - 2\cos\theta = \frac{7}{2} \Rightarrow \sec\theta - \frac{2}{\sec\theta} = \frac{7}{2}$

Directly from options, we can see that option (d) $\sec\theta = 4$ satisfies the given equation.

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56. (d)

$\tan 3\theta = ?\ \sec 3\theta = \operatorname{cosec}(4\theta - 15^\circ)$

$\Rightarrow \operatorname{cosec}(90^\circ - 3\theta) = \operatorname{cosec}(4\theta - 15^\circ)$

$\Rightarrow 90^\circ - 3\theta = 4\theta - 15^\circ$

$\Rightarrow 105^\circ = 7\theta$

$\Rightarrow \theta = 15^\circ$

$\Rightarrow \tan 3\theta = \tan 45^\circ = 1$

57. (b)

$\cos^2 15^\circ$

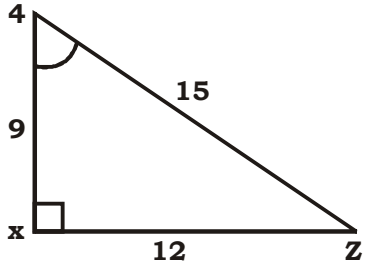
We know, $\cos^2\theta = 2\cos^2\theta - 1$

$$\Rightarrow \cos^2\theta = \frac{\cos^2\theta}{2}$$

$$= \frac{\cos 30^\circ + 1}{2}$$

$$\cos^2 15^\circ = \frac{2+\sqrt{3}}{4}$$

58. (c)



$yx = \sqrt{225 - 144} = \sqrt{81} = 9$

$$\Rightarrow \cos y = \frac{9}{15} = \frac{3}{5}$$

59. (a)

$\tan A - \tan B - \tan C = \tan A \tan B \tan C$

$\Rightarrow \tan A + \tan(-B) + \tan(-C) = \tan A \tan B \tan C$

We know, $\tan A + \tan B + \tan C = \tan A \tan B \tan C$

If $A + B + C = n\pi$, where $n = 0, 1, 2, 3$

$\therefore$ for $A + B + C = 0$, it is true

$\Rightarrow A + (-B) + (-C) = 0$

$\Rightarrow A = B + C$

60. (d)

$\tan^2\alpha = 3 + Q^2$

$\Rightarrow \sec^2\alpha = 1 + 3 + Q^2 = 4 + Q^2$

$\Rightarrow \sec\alpha = (4+Q^2)^{\frac{1}{2}}$

Consider, $\sec\alpha + \tan^3\alpha \operatorname{cosec}\alpha = \sec\alpha + \dfrac{\sin^3\alpha}{\cos^3\alpha}$

$$\operatorname{cosec}\alpha = \sec\alpha + \frac{\sin^2\alpha}{\cos^3\alpha}$$

$$\Rightarrow \frac{\cos^2\alpha + \sin^2\alpha}{\cos^3\alpha} = \sec^3\alpha \Rightarrow (4+Q^2)^{\frac{3}{2}}$$

61. (b)

$\cos 45^\circ \sin 15^\circ$

$\Rightarrow \cos 45^\circ \times \sin(45^\circ - 30^\circ)$

$$= \frac{1}{\sqrt{2}}\ [\sin 45^\circ \cos 30^\circ - \cos 45^\circ \sin 30^\circ]$$

$$= \frac{1}{\sqrt{2}}\left[\frac{1}{\sqrt{2}} \times \frac{\sqrt{3}}{2} - \frac{1}{\sqrt{2}} \times \frac{1}{2}\right]$$

$$= \frac{1}{\sqrt{2}}\left[\frac{\sqrt{3}}{2\sqrt{2}} - \frac{1}{2\sqrt{2}}\right]$$

$$= \frac{\sqrt{3}-1}{4}$$

62. (b)

$1 + \sin\theta = m\cos\theta$

$$\Rightarrow m = \frac{1+\sin\theta}{\cos\theta} = \sqrt{\frac{(1+\sin\theta)^2}{1-\sin^2\theta}}$$

$$= \sqrt{\frac{(1+\sin\theta)(1+\sin\theta)}{(1-\sin\theta)(1+\sin\theta)}} = \sqrt{\frac{1+\sin\theta}{1-\sin\theta}}$$

$$\Rightarrow \frac{m^2}{1} = \frac{1+\sin\theta}{1-\sin\theta}$$

Using Component and dividend.

$$\Rightarrow \frac{m^2+1}{m^2-1} = \frac{1}{\sin\theta} \Rightarrow \sin\theta = \frac{m^2-1}{m^2+1}$$

63. (b)

$\cos(30^\circ + \theta) - \sin(60^\circ - \theta)$

$\Rightarrow \cos 30^\circ \cos\theta - \sin 30^\circ \sin\theta - \sin 60^\circ \cos\theta + \cos 60^\circ \sin\theta$

$$\Rightarrow \left(\frac{\sqrt{3}}{2} - \frac{\sqrt{3}}{2}\right)\cos\theta + \sin\theta\left[\frac{1}{2} - \frac{1}{2}\right] = 0$$

64. (a)

$5(\sin^4\theta + \cos^4\theta) + 3(\sin^6\theta + \cos^6\theta) + 19\sin^2\theta\cos^2\theta$

$= 5[1 - 2\sin^2\theta\cos^2\theta] + 3[1 - 3\sin^2\theta\cos^2\theta] + 19\sin^2\theta\cos^2\theta$

$= 5 - 10\sin^2\theta\cos^2\theta + 3 - 9\sin^2\theta\cos^2\theta + 19\cos^2\theta\sin^2\theta$

$= 8$

65. (c)

$$\frac{\tan 45^\circ - \tan 15^\circ}{1 + \tan 45^\circ \tan 15^\circ} \Rightarrow \tan(45 - 15) = \tan 30$$

$$= \frac{1}{\sqrt{3}}$$

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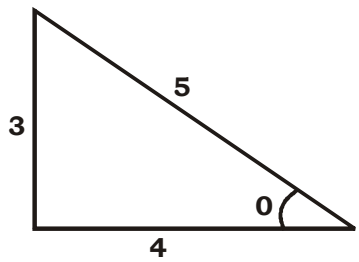
66. (d)

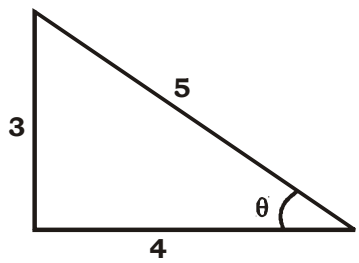


$\sin\theta = \frac{3}{5}$

$\tan\theta = \frac{3}{4}$

67. (d)

$4\tan\theta = 3$, then $\frac{4\sin\theta - \cos\theta + 1}{4\sin\theta + \cos\theta - 1}$



$\Rightarrow \tan\theta = \frac{3}{4}$

$$\Rightarrow \frac{4\sin\theta - \cos\theta + 1}{4\sin\theta + \cos\theta - 1} = \frac{4\times\frac{3}{5} - \frac{4}{5} + 1}{4\times\frac{3}{5} + \frac{4}{5} - 1} = \frac{\frac{13}{5}}{\frac{11}{5}} = \frac{13}{11}$$

68. (c)

$\tan\theta + \cot\theta = 12$

$\Rightarrow \tan^2\theta + \cot^2\theta + 2 = 144$

$\Rightarrow \tan^2\theta + \cot^2\theta = 142$

69. (d)

$\sin y = x$

$\cos 2y = 1 - 2\sin^2 y$

$= 1 - 2x^2$

70. (d)

$A + B = C \Rightarrow A + B - C = 0$

$\Rightarrow \tan A \tan B \tan C = \tan A + \tan B - \tan C$

'or'

$C - A - B = O$

$\Rightarrow \tan A \tan B \tan C = \tan C - \tan A - \tan B$

71. (d)

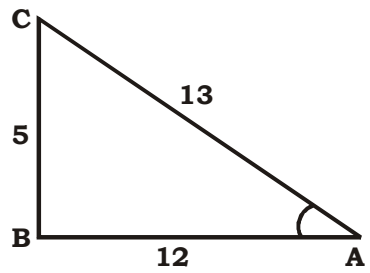
$x = 8(\sin\theta + \cos\theta)$

$y = 9(\sin\theta - \cos\theta)$

$x^2 = 64[1 + 2\sin\theta\cos\theta]$

Consider, $\frac{x^2}{8^2} + \frac{y^2}{9^2} = 1 + 2\sin\theta\cos\theta + 1 - 2\sin\theta\cos\theta = 2$

72. (a)



$\cot A = \frac{12}{5}$

$\sin A = \frac{5}{13}$

73. (a)

$\tan 6^\circ \tan 45^\circ \tan 84^\circ$

Consider, $\tan 6^\circ \tan 84^\circ$

$A + B = 6^\circ + 84^\circ = 90^\circ$

If $(A + B) = 90^\circ$

$\Rightarrow \tan A \tan B = 1$

$\Rightarrow \tan 6^\circ \tan 84^\circ \tan 45^\circ = 1$

74. (c)

$\sin\theta - \cos\theta = \frac{4}{5}$

$$\sin\theta + \cos\theta = \sqrt{1 + 1 - \frac{4^2}{5^2}}$$

$$= \sqrt{2 - \frac{16}{25}}$$

$$= \frac{\sqrt{34}}{5}$$

75. (a)

$\tan(\alpha + \beta) = \sqrt{3} \Rightarrow \alpha + \beta = 60^\circ$

$\tan(\alpha + \beta) = 1 \quad \alpha - \beta = 45^\circ$

$\Rightarrow 2\alpha = 105^\circ$

$6\alpha = 315^\circ$

$\tan 6\alpha = \tan(315^\circ) = \tan(360^\circ - 45^\circ)$

$= -\tan 45^\circ$

$= -1$

76. (c)

$a^2 = b^2 + (ab)^2$

$\Rightarrow a^2 - a^2b^2 = b^2$

$\Rightarrow a^2(1 - b^2) = b^2$

$\Rightarrow a^2 = \frac{b^2}{1 - b^2}$

From option, (c) $a = \cot x$

$b = \cos x$

Satisfies the condition.

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77. (b)

$\theta = 135^\circ$, $y = 15^\circ$

$\Rightarrow$ $2\cos(\theta)\sin(y)$

$\cos 135^\circ = \cos(45^\circ + 90^\circ) = -\cos 45^\circ$

$$= -\frac{1}{\sqrt{2}}$$

$\sin 15^\circ = \sin(45^\circ - 30^\circ) = \sin 45^\circ \cos 30^\circ - \cos 45^\circ \sin 30^\circ$

$$\Rightarrow \frac{\sqrt{3}-1}{2\sqrt{2}}$$

$\Rightarrow$ $2\cos 135^\circ \sin y$

$$\Rightarrow 2\times\left(-\frac{1}{\sqrt{2}}\right)\left(\frac{\sqrt{3}-1}{2\sqrt{2}}\right)$$

$$= \frac{1-\sqrt{3}}{2}$$

78. (c)

Consider, $\frac{1+\cos^2 x}{\cos x} = \sec x + \cos x$

$\sec x - \cos x = 4$

$\Rightarrow$ $\sec x + \cos x = \sqrt{(\sec x - \cos x)^2 + 4}$

$= \sqrt{20} = 2\sqrt{5}$

$\left[\text{Using, if } x - \frac{1}{x} = a \;\; x + \frac{1}{x} = \sqrt{a^2+4}\right]$

79. (c)

$$\frac{\sin^2 63 + \sin^2 27}{\cos^2 17 + \cos^2 73}$$

$$\Rightarrow \frac{\sin^2 63 + \sin^2 63}{\cos^2 17 + \cos^2 17}$$

$\Rightarrow$ 1

80. (c)

$\tan(4\alpha - 50) = \cot(50 - \alpha)$

$\Rightarrow$ $\cot[90 - 4\alpha + 50] = \cot(50 - \alpha)$

$\Rightarrow$ $90 - 4\alpha + 50 = 50 - \alpha$

$\Rightarrow$ $90 = 3\alpha$

$\Rightarrow$ $\alpha = 30^\circ$

81. (c)

$$\tan A \tan B + \frac{\cos x}{\cos A \cos B} = 1$$

$$\frac{\sin A \sin B}{\cos A \cos B} + \frac{\cos x}{\cos A \cos B} = 1$$

$\Rightarrow$ $\sin A \sin B + \cos x = \cos A \cos B$

$\Rightarrow$ $\cos x = \cos A \cos B - \sin A \sin B$

$\Rightarrow$ $\cos x = \cos(A + B)$

82. (a)

$\cos^3 60^\circ - \cos^3 240^\circ - \cos^3 360^\circ$

$= \cos^3 60^\circ + \cos^3 60^\circ - \cos^3 0^\circ$

We know,

$\cos 60^\circ + \cos 60^\circ - \cos 0^\circ$

$$= \frac{1}{2} + \frac{1}{2} - 1 = 0$$

$\Rightarrow$ $\cos^3 60^\circ + \cos^3 60^\circ - \cos^3 0^\circ$

$\Rightarrow$ $-3 \times \cos 60^\circ \times \cos 60^\circ \times \cos 0^\circ$

$$\Rightarrow -3 \times \frac{1}{2} \times \frac{1}{2} \times 1 = -\frac{3}{4}$$

83. (c)

$5\sin^2 A + 3\cos^2 A = 4$

$2\sin^2 A + 3 = 4$

$\sin^2 A = 1$

$$\sin A = \frac{1}{\sqrt{2}}$$

$\Rightarrow$ $A = 45^\circ$

$\tan A = \tan 45^\circ = 1$

84. (b)

$\sin 28^\circ \sin 35^\circ \sin 45^\circ \sec 62^\circ \sec 55^\circ$

$\Rightarrow$ $\cos 62^\circ \cos 55^\circ \sin 45^\circ \sec 62^\circ \sec 55^\circ$

$$\Rightarrow \frac{1}{\sqrt{2}}$$

85. (b)

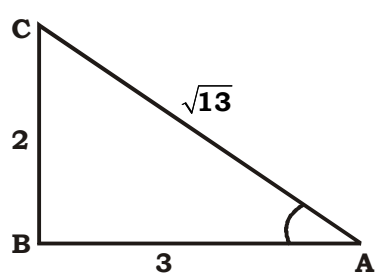
$\cos(A - B) = \frac{\sqrt{3}}{2}$, $\cos(A + B) = 0$

$\Rightarrow$ $A - B = 30^\circ$

$A + B = 90^\circ$

$\Rightarrow$ $A = 60^\circ$, $B = 30^\circ$

86. (b)



$$\tan A = \frac{2}{3}$$

$$\sin A = \frac{2}{\sqrt{13}}$$

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87. (b)

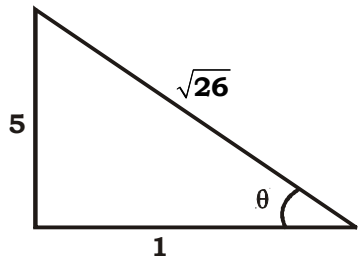
$$\frac{\sin\theta+\cos\theta}{\sin\theta-\cos\theta}=\frac{3}{2} \quad .....(1)$$

$\sin^4\theta - \cos^4\theta = (\sin^2\theta - \cos^2\theta)(\sin^2\theta + \cos^2\theta)$

$= \sin^2\theta - \cos^2\theta$ .....(2)

Using Compounds and dividend in (1)

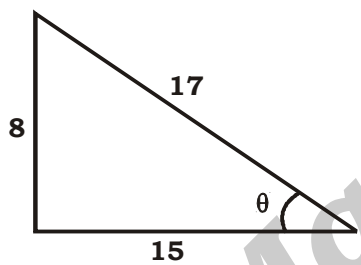
$$\Rightarrow \frac{\sin\theta}{\cos\theta}=\frac{5}{1} \quad \tan\theta=\frac{5}{1}$$



∴ Form (2)

$$\sin^4\theta - \cos^4\theta = \frac{25}{26}-\frac{1}{26}=\frac{24}{26}=\frac{12}{13}$$

88. (c)



$$\sin\theta=\frac{8}{17}$$

$\tan\theta + \cot\theta$

$$\Rightarrow \frac{8}{15}+\frac{15}{8} \Rightarrow \frac{64+225}{120}$$

$$=\frac{289}{120}$$

89. (c)

$$\sin^2\theta\cos^2\theta=\frac{2}{9}$$

$$\operatorname{cosec}^2\theta+\sec^2\theta=\frac{1}{\sin^2\theta}+\frac{1}{\cos^2\theta}=\frac{1}{\sin^2\theta\cos^2\theta}=\frac{9}{2}$$

90. (c)

$$2\left(\frac{\cos^2x-\sec^2x}{\tan^2x}\right)=a+b\cos 2x$$

$$\Rightarrow 2\frac{\left(\cos^2x-\frac{1}{\cos^2x}\right)}{\frac{\sin^2x}{\cos^2x}}=a+b\cos 2x$$

$$\Rightarrow \frac{2(\cos^4x-1)}{\sin^2x}=a+b\cos 2x$$

$$\Rightarrow \frac{((\cos^2x-1)(\cos^2x+1))}{\sin^2x}=a+b\cos 2x$$

$\Rightarrow -2(\cos^2x+1)=a+b\cos 2x$

$\Rightarrow -(2\cos^2x-1)-3=a+b\cos 2x$

$\Rightarrow -\cos 2x-3=a+b\cos 2x$

$\Rightarrow a=-3,\ b=-1$

91. (c)

$\sin 75° + \sin 15°$

We know,

$\Rightarrow \sin(A+B)+\sin(A-B)=2\sin A\cos B$

$\Rightarrow \sin(45°+30°)+\sin(45°-30°)=2\sin 45°\cos 30°$

$$=2\times\frac{1}{\sqrt{2}}\times\frac{\sqrt{3}}{2}$$

$$=\sqrt{\frac{3}{2}}$$

92. (a)

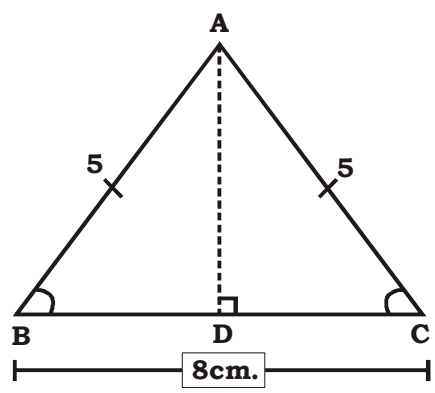
$\operatorname{cosec}\theta + \cot\theta = 2$, $\operatorname{cosec}\theta = ?$

$$\Rightarrow \operatorname{cosec}\theta-\cot\theta=\frac{1}{2}$$

$$\Rightarrow 2\operatorname{cosec}\theta=2+\frac{1}{2}=\frac{5}{2}$$

$$\Rightarrow \operatorname{cosec}\theta=\frac{5}{4}$$

93. (b)



Since, ABC is an is scales triangle.

AD is the perpendicular bisector.

$\Rightarrow BD = DC = 4$

$\Rightarrow AD=\sqrt{25-16}=3$

$$\Rightarrow \tan C-\cot B=\frac{3}{4}-\frac{4}{3}$$

$$=\frac{9-16}{12}$$

$$=-\frac{7}{12}$$

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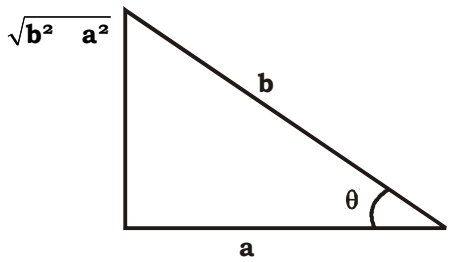
94. (c)



$b\cos\theta = a$

$\Rightarrow \cos\theta = \frac{a}{b}$

$\Rightarrow \text{cosec}\theta + \cot\theta$

$$\Rightarrow \frac{b}{\sqrt{b^2 - a^2}} + \frac{\frac{a}{b}}{\frac{\sqrt{b^2 - a^2}}{b}}$$

$$\Rightarrow \frac{b + a}{\sqrt{b^2 - a^2}} = \sqrt{\frac{b + a}{b - a}}$$

95. (c)

$\text{cosec}\theta + \cot\theta = p$

$\text{cosec}\theta - \cot\theta = \frac{1}{p}$

$\Rightarrow \text{cosec}\,\theta = \frac{p^2 + 1}{2p}$ and $\cot\theta = \frac{p^2 - 1}{2p}$

Consider,

$$\frac{p^2 - 1}{p^2 + 1} = \frac{\cot\theta}{\text{cosec}\,\theta} = \cos\theta$$

96. (b)

$\cos 2A \cos 2B + \sin^2 (A - B) - \sin^2 (A + B)$

Let, $A = B$

$\Rightarrow \cos^2 2A + \sin^2 (0) - \sin^2 (2A)$

$\Rightarrow \cos^2 2A - \sin^2 2A$

$\Rightarrow \cos 4A = \cos (2A + 2B) = \cos (2A + 2B)$

97. (d)

We know,

If $A + B + C = 90°$

$\Rightarrow \tan A \tan B + \tan B \tan C + \tan A \tan C$

$\Rightarrow \tan 27° \tan 34° + \tan 34° \tan 29° + \tan 29° \tan 27°$
$= 1$

98. (d)

$\sin^2\theta - 3\sin\theta + 2 = 0$

$$\Rightarrow \sin\theta = \frac{3 \pm \sqrt{9 - 8}}{2}$$

$$= \frac{3 + 1}{2}, \frac{3 - 1}{2}$$

$= 2.\ 1$

But $O \le \theta \le 90°$

$\Rightarrow \sin\theta = 1 = \sin 90°$

99. (d)

$$\frac{1 + \sin\theta}{\cos\theta} \times \frac{(1 - \sin\theta)}{(1 - \sin\theta)}$$

$$\Rightarrow \frac{1 - \sin^2\theta}{\cos\theta(1 - \sin\theta)} = \frac{\cos\theta}{1 - \sin\theta}$$

100. (b)

$\tan 3\theta \tan 7\theta = 1$

$\Rightarrow 3\theta + 7\theta = 90$

$\Rightarrow 10\theta = 90$

$\theta = 9$

$\Rightarrow \cot 15\theta = \cot 135°$

$= \cot(180° - 45°)$

$= -\cot 45°$

$= -1$

101. (c)

$\sec\theta + \tan\theta = \sqrt{5}$

$$\sec\theta - \tan\theta = \frac{1}{\sqrt{5}}$$

$$= \frac{\sqrt{5}}{5}$$

102. (b)

$2\sin\theta + 2\sin^2\theta = 2$

$\Rightarrow \sin\theta + \sin^2\theta = 1$

$\sin\theta = 1 - \sin^2\theta$

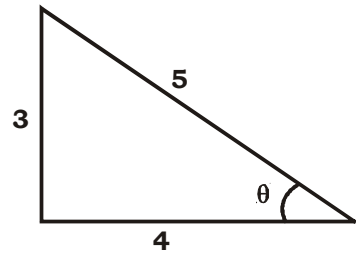
$\sin\theta = \cos^2\theta$

$\sin^2\theta = \cos^4\theta$

$\Rightarrow 2\cos^4\theta + 2\cos^2\theta = 2[\sin^2\theta + \sin\theta]$

$= 2$

103. (c)



$\sec A = \frac{5}{4}$

$$\frac{\tan A}{1 + \tan^2 A} - \frac{\sin A}{\sec A}$$

$$\Rightarrow \frac{\tan A - \sin A \sec A}{\sec^2 A} = 0$$

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104. (d)

$\sin A = \frac{4}{5}$, $\sin^2 A = \frac{16}{25}$

105. (c)

$\sec^2 A + \tan^2 A = 3$

$\sec^2 A - \tan^2 A = 1$

$\tan^2 A = 1$

$\Rightarrow A = 45$

$\Rightarrow \cot A = 1$

106. (b)

$\tan\theta + \cot\theta = 2$

$\tan^{2n}\theta + \cot^{2n}\theta = 2$

$\tan\theta = \cot\theta = 1$

$\Rightarrow \tan^{200}\theta + \cot^{200}\theta = 2$

107. (d)

$$\frac{\cos(a-b) - \cos(a+b)}{\cos(a-b) + \cos(a+b)}$$

$$\Rightarrow \frac{\cos 30^\circ - \cos 60^\circ}{\cos 30^\circ + \cos 60^\circ} = \frac{\sqrt{3}-1}{\sqrt{3}+1}$$

$$= \frac{4 - 2\sqrt{3}}{2}$$

$$= 2 - \sqrt{3}$$

108. (b)

$\operatorname{cosec} 15^\circ \sec 15^\circ$

$$\Rightarrow \frac{1}{\sin 15^\circ \cos 15^\circ}$$

$$\Rightarrow \frac{2}{\sin(2\times 15^\circ)}$$

$$\Rightarrow \frac{2}{\sin 30^\circ} = 4$$

109. (d)

$$\frac{\cos A}{1-\tan A} + \frac{\sin A}{1-\cot A}$$

$$\Rightarrow \frac{\cos^2 A}{\cos A - \sin A} + \frac{\sin^2 A}{\sin A - \cos A}$$

$$\Rightarrow \frac{\cos^2 A - \sin^2 A}{\cos A - \sin A} = \cos A + \sin A$$

110. (a)

$$\sec\theta + \frac{1}{\cos\theta} = 2$$

$\Rightarrow 2\sec\theta = 2$

$\Rightarrow \sec\theta = 1$

$$\Rightarrow \sec^{55}\theta + \frac{1}{\sec^{55}\theta} = 2$$

111. (c)

$$\frac{\tan 320^\circ - \tan 310^\circ}{1 + \tan 320^\circ \tan 310^\circ} = \tan 10^\circ$$

$\tan 10^\circ = \tan(50^\circ - 40^\circ)$

$$= \frac{\tan 50^\circ - \tan 40^\circ}{1 + \tan 50^\circ \tan 40^\circ}$$

$$= \frac{\cot 40^\circ - \tan 40^\circ}{1 + \cot 40^\circ \tan 40^\circ}$$

$$= \frac{\frac{1}{\alpha} - \alpha}{2} \Rightarrow \frac{1-\alpha^2}{2\alpha}$$

112. (b)

$\tan^2\theta + \tan^4\theta = 1$

$\tan^2\theta\,[1 + \tan^2\theta] = 1$

$\tan^2\theta.\ \sec^2\theta = 1$

$\Rightarrow \tan^2\theta = \cos^2\theta$

$\Rightarrow -1 + \sec^2\theta = \cos^2\theta$

$$\Rightarrow -1 + \frac{1}{\cos^2\theta} = \cos^2\theta$$

$\Rightarrow \cos^4\theta + \cos^2\theta = 1$

113. (a)

$\tan(\alpha + \beta) = a$

$\tan(\alpha - \beta) = b$

$\tan 2\alpha = \tan(\alpha - \beta + \alpha - \beta)$

let $\alpha + \beta = A$

$\alpha - \beta = B$

$$\Rightarrow \tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$$

$$\tan 2\alpha = \frac{a+b}{1-ab}$$

114. (d)

$$\frac{\cos(\pi - A)\cot\left(\frac{\pi}{2} + A\right)\cos(-A)}{\tan(\pi + A)\tan\left(\frac{3\pi}{2} + A\right)\sin(2\pi - A)}$$

$$\Rightarrow -\frac{\cos A(-\tan A)\cos A}{\tan A(-\cot A)(-\sin A)}$$

$$\Rightarrow \frac{\sin A \cos A}{\sin A}$$

$= \cos A$

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115. (c)

$\sin 25^\circ \sin 65^\circ - \cos 25^\circ \cos 65^\circ$

$= -\cos(25^\circ + 65)$

$= 0$

116. (a)

$\tan(A + B) = \sqrt{3}$

$\tan(A - B) = \frac{1}{\sqrt{3}}$

$\Rightarrow A + B = 60^\circ$

$A - B = 30^\circ$

$\Rightarrow A = 45^\circ, B = 15^\circ$

117. (c)

We know,

$\sec^2\theta + \cos^2\theta \neq 1$

118. (a)

$\cos 120^\circ = \cos(180^\circ - 60^\circ)$

$= \cos 180^\circ \cos 60^\circ - \sin 180^\circ \sin 60^\circ$

$= -1\frac{1}{2} - 0 = -\frac{1}{2} = -0.5$

119. (a)

$a \cot\theta + b\operatorname{cosec}\theta = P$

$b \cot\theta + a \operatorname{cosec}\theta = q$

Let $\theta = 30^\circ$

Then,

$\sqrt{3}a + 2b = P$

$2a + \sqrt{3}b = q$

$p - q = (\sqrt{3} - 2)a + (2 - \sqrt{3})b$

$p + q = (\sqrt{3} + 2)a + (2 + \sqrt{3})b$

$\Rightarrow p^2 - q^2 = -a^2 + b^2$

120. (c)

$\left(\sin\theta + \frac{1}{\sin\theta}\right)^2 + \left(\cos\theta + \frac{1}{\cos\theta}\right)^2$

$\Rightarrow \sin^2\theta + \frac{1}{\sin^2\theta} + 2 + \cos^2\theta + \frac{1}{\cos^2\theta} + 2$

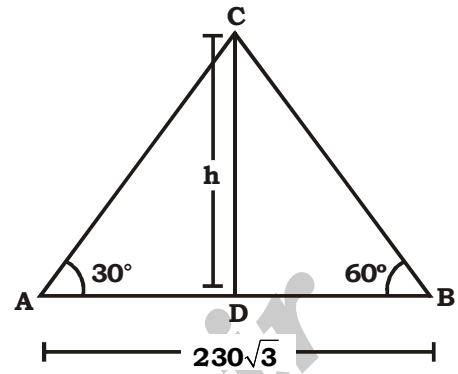
$= 5 + \frac{1}{\sin^2\theta} + \frac{1}{\cos^2\theta}$

$= 5 + \operatorname{cose}^2\theta + \sec^2\theta$

$= 5 + 1 + \cot^2\theta + 1 + \tan^2\theta$

$= 7 + \cot^2\theta + \tan^2\theta$

121. (c)



We know, $\frac{AD}{DB} = \frac{3}{1}$

$\Rightarrow 4 \rightarrow 230\sqrt{3}$

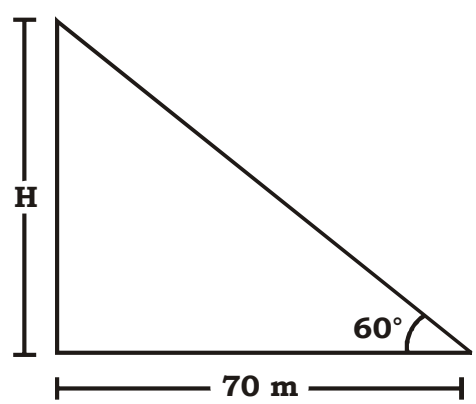
DB $1 \rightarrow \frac{230\sqrt{3}}{4}$

$\tan 60^\circ = \frac{CD}{DB}$

$\Rightarrow CD = \sqrt{3} \times \frac{230\sqrt{3}}{4}$

$= 172.5$

122. (a)



$\tan 60^\circ = \frac{H}{70}$

$\Rightarrow H = 70\sqrt{3}$

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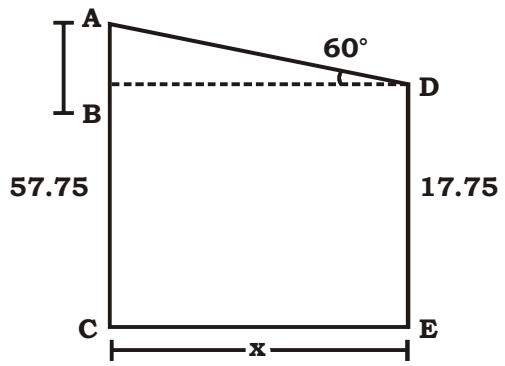
123. (d)



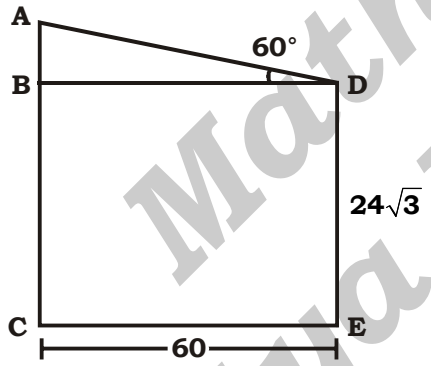
AB = 57.75 – 17.75 = 40 m

$\Rightarrow \tan 60^\circ = \frac{AB}{BD} = \frac{AB}{CE}$

$\sqrt{3} = \frac{40}{CE}$

$CE = \frac{40}{\sqrt{3}} = \frac{40\sqrt{3}}{3}$

124. (d)

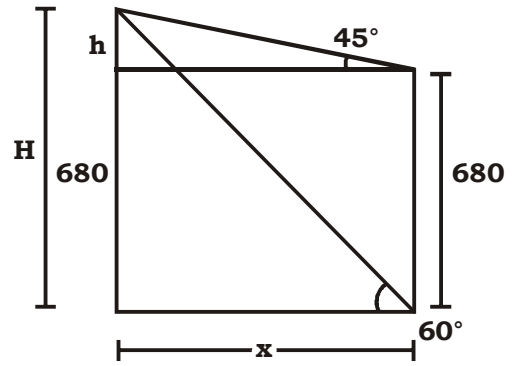


$\tan 60^\circ = \frac{AB}{CE} = \frac{AB}{60}$

$AB = 60\sqrt{3}$

$AC = 60\sqrt{3} + 24\sqrt{3} = 84\sqrt{3}$

125. (a)



$\tan 60^\circ = \frac{h + 680}{x}$

$x = \frac{h + 680}{\sqrt{3}}$ .....(1)

$\tan 45^\circ = \frac{h}{x}$

$x = h$ .....(2)

put (2) in (1)

$h = \frac{h + 680}{\sqrt{3}}$

$\Rightarrow \sqrt{3}\ h - h = 680$

$\Rightarrow h = \frac{680}{\sqrt{3} - 1} = 340\left(\sqrt{3} + 1\right)$

$H = 680 + 340\left(\sqrt{3} + 1\right)$

$= 340\left[\sqrt{3} + 1 + 2\right]$

$= 340\left[\sqrt{3} + 3\right]$

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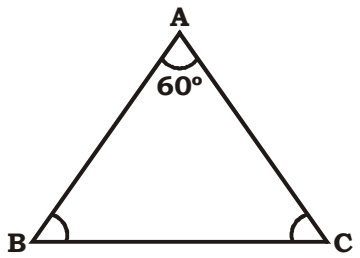
TRIANGLE

है दिलि

20

1. In the triangle ABC, AB = 12cm and AC = 10cm, and ∠BAC = 60° What is the value of the length of the side BC?

है दिलिय ABC ` य AB = 12 cm - अिय AC = 10 cm, - अिय ∠BAC = 60° त य दलिय BC जन्य ए क्तिय जयि बिई यि च



SSC CGL 01/12/2022 (Shift- 01)

(a) 10 cm (b) 7.13 cm
(c) 13.20 cm (d) 11.13 cm

2. If ares of similar triangles ΔABC and ΔDEF are x^2 cm² nad y^2 cm² respectively, and EF = a cm, then BC (in cm) is:

' हडय ` म क्रय है दिलिय ΔABC - अिय ΔDEF जंयशैं क्रिए य 8 ` %f5 x^2 cm² - अिय y^2 cm² त व्य- अिय EF = a cm त व्य यि BC ब्द ` न्ये ंग_____ त र

SSC CGL 01/12/2022 (Shift- 02)

(a) $\frac{y^2}{a^2x^2}$ (b) $\frac{y}{ax}$

(c) $\frac{ax}{y}$ (d) $\frac{a^2x^2}{y^2}$

3. If the angles of a triangle are $(x - 46)$ degrees, $(x + 96)$ degrees and $8x$ degrees, then what is the value of $2x$?

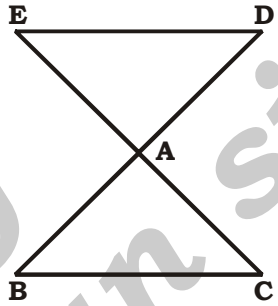
' हडय क्ष जय है दिलिय जंयज ि यि (x – 46) हपर न्य (x + 96) हपर न्य- अिय 8x य हपर न्य त यू यि 2x जयि बिई यि च

SSC CGL 01/12/2022 (Shift- 02)

(a) 15 degrees (b) 24 degrees
(c) 26 degrees (d) 13 degrees

4. In the figure, AB = AD = 7cm and AC = AE and BC = 11cm, then find the length of ED.

- ि? हू ये ` य AB = AD = 7 - अिय AC = AE ॰ सयि BC = 11 ॰ ` न्य त व्यि यि ED जन्य ए क्तिय ू ि यज न्ह क्ष र

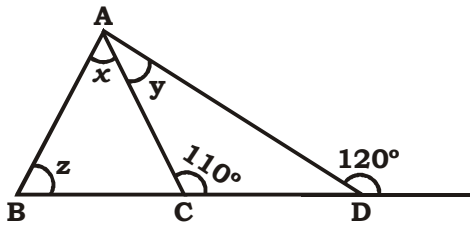


SSC CGL 01/12/2022 (Shift- 03)

(a) 12 (b) 10
(c) 11 (d) 2

5. From the following figure find x + y + z.

ह्वटबय- ि? हू य ` य x + y + z ॰ ि यज अंा



SSC CGL 01/12/2022 (Shift III

(a) 100° (b) 130°
(c) 120° (d) 110°

6. In triangle ABC, the bisector of angle BAC cuts the line BC at D. If BD = 6 and BC = 14 then what is the value of AB : AC?

है दिलिय ABC ` य जज ि यि BAC जयि ` ह्वर्दी जयअं यि BC जयि D क्रअय जि ि यि त र्य हडय BD = 6 - अिय BC = 14 ॰ ि AB : AC जयि बिई यि च

SSC CGL 01/12/2022 (Shift- 03)

(a) 3 : 4 (b) 7 : 3
(c) 3 : 10 (d) 3 : 7

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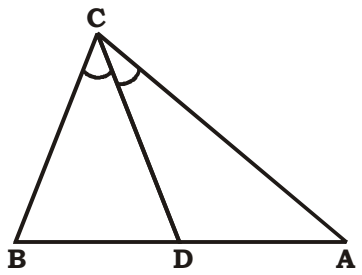
7. In the given triangle, CD is the bisector of ∠BCA. CD = DA. If ∠BDC = 76°, what is the degree measure of ∠CBD?

हडक्ष्य क्ष्यहैदिलिये ंक्यCD ∠BCA जयि` हल्दीं जयत रयCD = DA ' हडय∠BDC = 76° त क्यृ यि∠CBD जयि- ग्रयि क्रि हजृ बयिक्ति चि



SSC CGL 01/12/2022 (Shift- 04)

(a) 32° (b) 76°
(c) 80° (d) 66°

8. In DABC, AB = AC, O is a point on BC such that BO = CO and OD is perpendicular to AB and OE is perpendicular to AC. If ∠BOD = 60°, then measure of ∠AOE is:

हैदिलियABC, ` यAB = AC त क्यहक्कडलO, BC क्रअयत क्रजअिय यहजयBO = CO त य- अिOD आंयिAB क्रअयए क्क,ं त य- अिOE आंयिAC क्रअयए क्क,ं यत र्य हडय∠BOD = 60° त क्यृ यि∠AOE जयि क्रिअत कि ि5

SSC CGL 02/12/2022 (Shift- 02)

(a) 120° (b) 60°
(c) 30° (d) 90°

9. The sides of a triangle are in the ratio 4 : 6 : 8. The triangle is a/an:

क्ष्जयहैदिलियजन्यदलिश्चियधय3352यजंय- बत्रृ ये ंयत र्य त यज् ि हैदिलियत च

SSC CGL 02/12/2022 (Shift- 02)

(a) isosceles triangle (b) obtuse-angled
(c) acute-angled (d) right-angled

10. Side of an equilateral triangle is 24 cm. What will be the radius of in circle of this equilateral triangle?

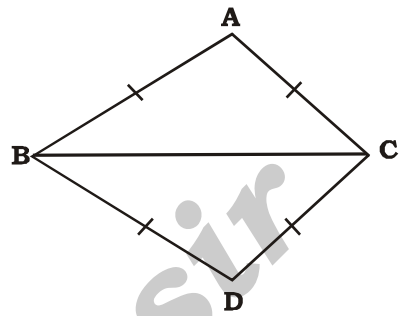
क्ष्जय् ` कति ल्बहैदिलियजन्यदलियिसधय् ` नय्त रयत् य् ` कति ल हैदिलियजंय- ृग5य, वयिजन्यहैहिं यिई यिक्ति नय

SSC CGL 02/12/2022 (Shift- 03)

(a) 6 cm (b) 12 cm
(c) 8 cm (d) 3 cm

11. In the given figure, AB=DB and AC = DC. If ∠ABD = 58° and ∠DBC = (2x + 4)°, ∠ACB = (y + 15)° and ∠DCB = 63°, then the value of 2x + 5y is:

डनक्र तीय- ि? हृ ये ंयAB = DB - अिAC = DC त र्य हड जत्रियिABD = 58° - अिजत्रियि∠DBC = (2x – 4)°, जत्रियिACB = (y + 15)° - अिजत्रियि∠DCB = 63° त र ृ यि2x + 5yयजयि बियई यिक्ति चि



SSC CGL 02/12/2022 (Shift- 04)

(a) 325 (b) 273
(c) 259 (d) 268

12. O is the incentre of the triangle PQR. If angle POR = 140 degree, then what is the angle PQR?

O हैदिलियPQR जयि- ृग5जंध्व्यत र्य हडयजत्रियिPOR = 140 हयत्र नयत क्यृ यिजत्रियिPQR ई यिक्ति च

SSC CGL 02/12/2022 (Shift- 04)

(a) 40 degree (b) 140 degree
(c) 100 degree (d) 70 degree

13. From the circumcentre L of ΔXYZ, perpendicular LM is drawn on side YZ. If ∠XYZ = 60°, then the measure of ∠YLM is:

ΔXYZ जंयत्रहअंध्डयL. ंक्यदलियिYZ क्रअयए क्यLM 1न्निि ा ृ यिक्ति र्य हडय∠XYZ = 60°, ृ यि∠YLM जयि क्रिअत 5

SSC CGL 02/12/2022 (Shift- 04)

(a) 60° (b) 120°
(c) 180° (d) 90°

14. In triangle ABC, the bisector of angle BAC cuts the side BC at D. If AB = 10 cm, and AC = 14 cm, then what is BD : BC ?

हैदिलियABC ` क्यजत्रियिBAC जयि` हल्दीं जयदलियिBC जयिD क्रअयजए्ि यिक्ति र्य हडयAB = 10. ` नय- अिAC = 14. ` नयत क्यृ यिBD : DC ई यिक्ति च

SSC CGL 03/12/2022 (Shift- 01)

(a) 10 : 7 (b) 5 : 7
(c) 7 : 5 (d) 7 : 10

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15. In an equilateral triangle ABC, D is the midpoint of side BC. If the length of BC is 8 cm, then the height of the triangle is:

क्षजय् ` कति लहै दिलियABC ` क्याD दलियिBC जयि ई हक्कडल तर्य हडयBC जन्याए क्तीय8 cm तव्यू यिहै दिलियजन्याम् ुज्ञ्तिं _____ तर

SSC CGL 03/12/2022 (Shift- 02)

(a) 5.5 cm (b) 4.5 cm
(c) $6\sqrt{36}$ cm (d) $4\sqrt{3}$ cm

16. If ΔABC ~ ΔFDE such that AB = 9 cm, AC = 11 cm, DF = 16 cm and DE = 12 cm, then the length of BC is:

ं हडयΔABC ~ ΔFDEयत् यक्रजअिय्त यहजयAB = 9 cm, AC = 11 cm, DF = 16 cm - अिय्DE = 12 cm, ि BC जन्याए क्तीयू ृ यजअ्ा

SSC CGL 03/12/2022 (Shift- 02)

(a) $5\frac{3}{4}$ cm (b) $4\frac{3}{5}$ cm
(c) $3\frac{5}{7}$ cm (d) $6\frac{3}{4}$ cm

17. ΔXYZ ~ ΔGST and XY: GS = 2:3, XV is the median to the side YZ, and GD is the median to the side ST. the value of $\left(\frac{YV}{SD}\right)^2$ is _____.

ΔXYZ ~ ΔGST - अिय्XY : GS = 2 : 3, XV दलियिYZ जन्ये हिई जयित व्य- अिय्GD दलियिST जन्ये हिई जयित रयू ि $\left(\frac{YV}{SD}\right)^2$ जयि बियू ृ यजन्ह क्षर

SSC CGL 03/12/2022 (Shift- 02)

(a) $\frac{4}{9}$ (b) $\frac{3}{9}$
(c) $\frac{1}{4}$ (d) $\frac{2}{3}$

18. A,B,C are three angles of a triangle. If A – B = 45° and B – C = 15° then ∠A = ?

A, B, C है दिलियजंयू न्बयजत्रियित र्य हडयA – B = 45° - अिय्B – C = 15° तव्यू यि∠A = ?

SSC CGL 03/12/2022 (Shift- 03)

(a) 83° (b) 85°
(c) 95° (d) 75°

19. Suppose ΔABC be a right-angled triangle where ∠A = 90° and AD ⊥ BC. If area (ΔABC) = 80 cm² and BC = 16 cm, then the length of AD is:

` बियए न्ह क्षयΔABC क्षजय् ` जत्रियिहै दिलियत या तु ∠A = 90° - अिय्AD ⊥ BC तर्य हडयशैं क्रिए य(ΔABC) = 80 cm² - अिय्BC = 16 cm तव्यू यिAD जन्याए क्तीयत ि न्ह

SSC CGL 03/12/2022 (Shift- 03)

(a) 10 cm (b) 24 cm
(c) 18 cm (d) 12 cm

20. In a ΔABC, the median BE intersects AC at E. If BG = 12 cm, where G is the centroid, then BE is equal to:

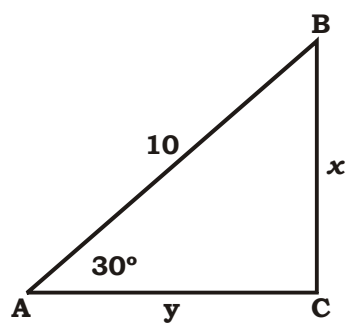
है दिलियΔABC ` यAC जयि हिई जयिBE हक्कडलE व्रअ्यजि ृ न तर्य हडयBG = 12 cm तव्या तुयिG जंह्नजयत व्यू यिBE जं कअ्किअ्यत र

SSC CGL 03/12/2022 (Shift- 04)

(a) 16 cm (b) 18 cm
(c) 15 cm (d) 13 cm

21. Study the given triangle and find the length of BC.

हडक्षक क्षयहै दिलियजयि- ई ` बयजन्ह क्षय- अिय्BC जन्याए क्तीं ृ यजन्ह क्षर



SSC CGL 03/12/2022 (Shift- 04)

(a) $\frac{5}{2}$ (b) 6
(c) 5 (d) 3

22. If ΔBPQ ASR and ∠A = $\frac{1}{3}$ ∠R = ∠S then find ∠Q. (All angles are in degrees).

- तअ्ΔBPQ ASR यू सयि∠A = $\frac{1}{3}$ ∠R = ∠Sयह्क्रअ ∠Q ृ यजन्ह क्षयद्ध दन्निजत्रियिहयक्न्ये ंयक्तार

SSC CGL 03/12/2022 (Shift- 04)

(a) 108° (b) 36°
(c) 72° (d) 118°

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23. In triangle ABC, AD is the angle bisector of angle A. If AB = 8.4 cm and AC = 5.6 cm and DC = 2.8 cm, then the length of side BC will be:

है दिलियABC` यAD ज त्रियिA ज यिज त्रियि` हल्दीं ज यत र ' हडयAB = 8.4 cm - अिAC = 5.6 cm - अिDC = 2.8 cm त व्यू यिदलियिBC ज न्यए र्कतीय त नि न

SSC CGL 05/12/2022 (Shift- 01)

(a) 4.2 cm (b) 5.6 cm
(c) 7 cm (d) 2.8 cm

24. I

m त

SSC CGL 05/12/2022 (Shift- 01)

(a) A (b) A
(c) A (d) A

25. ΔABC and ΔDEF are congruent respectively. If AB = 6 = DE, BC = 8 = EF and m ∠B = 30°, then m ∠D + m ∠C =_____.

ΔABC - अिΔDEF 8` %ड्यि , गि` यत र्य हडय AB = 6 = DE, BC = 8 = EF - अिm ∠B = 30°यत व्यू यिm ∠D + m ∠Cयज यि बियई यि त नि चि

SSC CGL 05/12/2022 (Shift- 02)

(a) 160° (b) 120°
(c) 130° (d) 150°

26. If an angle of a right-angled triangle is 35°, then find the other angles.

' हडयक्ष्जय` ज त्रियिहै दिलियज यिक्ष्ज यज त्रियि35° त व्यू यि- ई ज त्रियि ू ि यज न्ह क्ष्र

SSC CGL 05/12/2022 (Shift- 02)

(a) 90° and 75° (b) 90° and 35°
(c) 90° and 55° (d) 90° and 45°

27. The lengths (in cm) of three sides of a triangle are, respectively, 48, 55 and 73. What is the length (in cm) of the median joining the mid-point of the longest side to its opposite vertex?

हज् न्महै दिलियज न्यू न्यदलि- यिज न्यए र्कतीय(cm` )ा8` %ड5 ध2क्य44य- अि7- न यत रय् क् ंयए र्कन्यदलियिज ंये उ यहक्ष्डलज त् ज ंय् टे लयि%निधिय् ंया पिबंय, एि न्ये हिई ज यिज न्यए र्कती (cm`)ाहज् बन्यत नि न्य

SSC CGL 05/12/2022 (Shift- 03)

(a) 27.5 (b) 73
(c) 24 (d) 36.5

28. The perimeter of a triangle with sides of integer values is equal to 13. How many such triangles are possible?

क्र्ष्ीिय बियिज न्यदलि- यि, एि ंयहै दिलियज यिक्रहअे क्रिम्द्ध- यज ं कअकिअत रय्क्ष् ंयहज् बंयहै दिलियक्बबयि् सि, यत स्य

SSC CGL 05/12/2022 (Shift- 03)

(a) 5 (b) 8
(c) 7 (d) 6

29. In a ΔABC, the internal bisectors of the angle B and the angle C intersect at an angle of 105°. What is the value of the angle A?

क्ष्जयΔABC` यज त्रियिB - अिज त्रियिC ज ंय- ृ गिहअ्नय` हल्दीं ज 105° ज ंयज त्रियिक्रअ्यक्रह ( )ंडयज अ्ंयत र्यज त्रियिA ज यि बि ई यि त च

SSC CGL 05/12/2022 (Shift- 03)

(a) 52.5° (b) 75°
(c) 15° (d) 30°

30. If ΔABC ~ ΔQRP, $\frac{ar(\Delta ABC)}{ar(\Delta QRP)} = \frac{9}{4}$, AB = 18 cm, BC = 15 cm, then the length of PR is:

' हडयΔABC ~ ΔQRP, $\frac{ar(\Delta ABC)}{ar(\Delta QRP)} = \frac{9}{4}$, AB = 18 cm, BC = 15 cmयू यिPRयज न्यए र्कतीय त र

SSC CGL 05/12/2022 (Shift- 04)

(a) 16 cm (b) 14 cm
(c) 10 cm (d) 12 cm

31. If ΔABC ~ ΔDEF, and BC = 4 cm, EF = 5 cm and the area of triangle ABC = 80 cm², then the area of the triangle DEF is:

' हडयΔABC ~ ΔDEFयत य- अिBC = 4 cm, EF = 5 cmय- अिहै दिलियABCयज यिर्शे क्रिए य80 cm²यत व्यू ि है दिलि DEFयज यिर्शे क्रिए यत र

SSC CGL 05/12/2022 (Shift- 04)

(a) 169 cm² (b) 80 cm²
(c) 144 cm² (d) 125 cm²

32. In a ΔABC, AB = BC, and P, Q and R are the mid points of the sides AB, BC and AC, respectively. If PR = 5 cm, then find the length of QR.

ΔABC` यAB = BC, - अिP, Q - अिR 8` %ड्यदलि- गि AB, BC - अिAC ज ंये उ यहक्ष्डलक र्य हडयPR = 5 cm त व्यि यिQR ज न्यए र्कतीय ू ि यज न्ह क्ष्र

SSC CGL 05/12/2022 (Shift- 04)

(a) 5 cm (b) 2 cm
(c) 7 cm (d) 4 cm

Maths by Aditya Ranjan sir

33. The mid points of AB and AC of a ΔABC are X and Y, respectively. If BC + XY = 24 units, then the value of BC – XY is:

ΔABC जन्यदलियिAB - अिAC जंये ई यहकड्डलाः %ड्यिX - अिY त र्यं हडयBC + XY = 24 तज तिंयत वृ यिBC – XY जयि बियू ृ यजन्ह क्ष्र

SSC CGL 06/12/2022 (Shift- 01)

(a) 5 cm (b) 4 cm

(c) 6 cm (d) 8 cm

34. AD is the median of triangle ABC. P is the centroid of triangle ABC. If AP = 14 cm, then what is the length of PD?

AD है दिलियABC जन्ये हिंई जयि त्यP है दिलियABC जयिजंध्ढज त र्यं हडयAP = 14. ेन्यत वृ यिPD जन्यए क्तिंयहज़ बन्यत च

SSC CGL 06/12/2022 (Shift- 01)

(a) 14 cm (b) 28 cm

(c) 21 cm (d) 7 cm

35. ΔPQR is an isosceles triangle and PQ = PR = 2a unit, QR = a unit. Draw PX ⊥ QR, and find the length of PX.

ΔPQR क्षजय़ ेहल्कति लाहै दिलियत य- अिPQ = PR = 2a तज तिंयQR = a तज तिंयत त्यPX ⊥ QR 1न्हिक्ष्र क्ष्य- अिPX जन्यए क्तिंयू ृ यजन्ह क्ष्र

SSC CGL 06/12/2022 (Shift- 04)

(a) $\sqrt{5}a$ (b) $\frac{\sqrt{5}a}{2}$

(c) $\frac{\sqrt{10}a}{2}$ (d) $\frac{\sqrt{15}a}{2}$

36. ΔABC ~ ΔDEF such that AB = 9.1 cm and DE = 6.5 cm. If the perimeter of ΔDEF = 25 cm, then the perimeter of ΔABC is:

ΔABC ~ ΔDEF त् यक्रज अिंत यहज यAB = 9.1 cm - अि DE = 6.5 cm ं हडयΔDEF जयिव्रहेअ क्रिय= 25 cm,ं यि ΔABC जयिव्रहेअ क्रिय्यत र

SSC CGL 06/12/2022 (Shift- 04)

(a) 40 cm (b) 30 cm

(c) 35 cm (d) 45 cm

37. If the angles of a triangle are in the ratio of 1 : 2 : 3, what is the type of such triangle?

ं हडयहज़ न्यहै दिलियजंयज त्रिंयिजयि- बन्यृ यद्वयऽयसयऽय- यत व ं र्यि त यहज़ यक्रज अिंत जयिहै दिलियत च

SSC CGL 07/12/2022 (Shift- 01)

(a) Isosceles triangle

(b) Equilateral triangle

(c) Right-angle triangle

(d) Obtuse-angle triangle

38. In triangle XYZ, P is the incentre of the triangle XYZ. If angle XYZ = 50°, then what is the value of angle XPZ?

है दिलियXYZ ेक्यP है दिलियXYZ जयि- ृगऽजंध्ढयत र्यं हड जत्रियिXYZ = 50° त वृ यिजत्रियिXPZ जयि बियई यित च

SSC CGL 07/12/2022 (Shift- 02)

(a) 100° (b) 115°

(c) 140° (d) 130°

39. Two concentric circles are drawn with radii 20 cm and 16 cm. What will be the length of a chord of the larger circle which is tangent to the smaller circle?

स य़ ेन्य- अिद्धऽय़ ेन्यहै ठि यि, एिंयडयि यांहृ य, वयिकबिंद्धि ा ृ यित यक्रपंध, वयिज न्यम् या न, यिज न्यए क्तिंयई यित ि न्या ि)ठि य, वयिज न्यक्रक्रंतिंया यित च

SSC CGL 07/12/2022 (Shift- 02)

(a) 34 cm (b) 24 cm

(c) 48 cm (d) 12 cm

40. If ΔABC ~ ΔDEF such that 2AB = DE and BC = 8 cm, then the length of EF is:

ं हडयΔABC ~ ΔDEF त् यक्रज अिंत यहज य2AB = DE - अि BC = 8 cm,ं यिEF जन्यए क्तिंयत र

SSC CGL 07/12/2022 (Shift- 02)

(a) 16 cm (b) 18 cm

(c) 22 cm (d) 20 cm

41. In a ∠XYZ, XO is the median and XO = $\frac{1}{2}$YZ. If ∠YXO = 30°, then what is the value of ∠XYZ?

हज़ न्यΔXYZ ेयXO ेहिंई जयित य- अिXO = $\frac{1}{2}$YZ त र ं हडय∠YXO = 30°,ं यि∠XYZ जयि बियहज़ बयित च

SSC CGL 07/12/2022 (Shift- 03)

(a) 15° (b) 90°

(c) 30° (d) 60°

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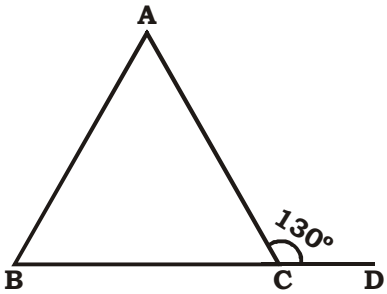
42. If in a triangle ABC as drawn in the figure, AB = AC and ∠ACD = 130°, then ∠BAC is equal to:

ˆ हडय- ि? हू ये ंयहड1ंक्षिय क्ष्य- बलअिक्षजयहै दिलिय ABC 1न्हि यि ˆ यि क्यह. ` ंयAB = AC - अिय∠ACD = 130° त ˜ यि∠BAC हज़ जंयकअकिअत ि चि



SSC CGL 07/12/2022 (Shift- 04)

(a) 60° (b) 50°
(c) 70° (d) 80°

43. In ΔABC, P and Q are points on AB and BC, respectively, such that PQ || AC. Given that AB = 26, PQ = 7 and AC = 10 find the value of AP.

ΔABC ` ंयP - अिय Q 8 ` %ड्यिAB - अिय BC क्रअक्ष ` ंयकक्डलक्र ग हजयPQ || AC त रयहर्ड कि ˆ यि त यहजयAB = 26, PQ = 7 - अिय AC = 10˜ यिAP जयि बियू ृ यजन्ह क्ष्र

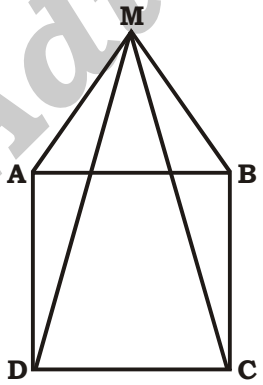
SSC CGL 08/12/2022 (Shift- 01)

(a) 7.1 (b) 7.8
(c) 18.2 (d) 16.4

44. ABCD is a square and ΔMAB is an equilateral triangle. MC and MD are joined. What is the degree measure of ∠MDC?

ABCD क्ष्जय, न ैक्र य- अिय∠MAB क्ष्जय ` ंकति ल्है दिलिय त रयMC - अिय MD ा सांक क्षय त रय∠MDC जयि- ंयि क्रिय्हजृ बयि ि चि

SSC CGL 08/12/2022 (Shift- 01)



(a) 78° (b) 60°
(c) 65° (d) 75°

45. In ΔABC and ΔPQR, AB = PQ and ∠B = ∠Q. The two triangles are congruent by SAS criteria if:

ΔABC - अिय ΔPQR ` ंयAB = PQ - अिय∠B = ∠Q त र ˆ हड_____त व्ृ यिदिलियजि यिदिलिय(SAS) ` बिडपयजंय- बलअि डयिहै दिलिय˜ , गि ` यत रा

SSC CGL 08/12/2022 (Shift- 02)

(a) BC = QR (b) AC = PR
(c) AC = QR (d) BC = PQ

46. In ΔABC and ΔDEF, ∠A = 55°, AB = DE, AC = DF, ∠E = 85° and ∠F = 40°. By which property are ΔABC and ΔDEF congruent?

ΔABC - अिय ΔDEF ` क्य∠A = 55°, AB = DE, AC = DF, ∠E = 85° - अिय∠F = 40° त रयजबिय ` यक लयिजं - बसक्रय ΔABC - अिय ΔDEF. , गि ` यत रा

SSC CGL 08/12/2022 (Shift- 02)

(a) SAS property
(b) ASA property
(c) RHS property
(d) SSS property

47. If the angles of a triangle are (x – 6) degree, (x + 26) degree and 8x degree, then what is the value of 2x?

ˆ हडयक्ष्जय है दिलियजंयजि यि(x – 6) हपक्र नक्य(x + 26) हपक्र न ˜ सयि8x हपक्र नत व्ृ यि2x जयि बियई ` यि च

SSC CGL 08/12/2022 (Shift- 03)

(a) 12 degrees (b) 16 degrees
(c) 48 degrees (d) 32 degrees

48. In a ΔABC, AD, BE and CF are the medians from vertices A, B and C, respectively. The point of intersection of AD, BE and CF is called.

क्ष्जय ΔABC ` क्यAD, BE - अिय CF 8 ` %ड्य%निंयिA, B - अिय C. ` ये हिंउ जक्षिय त रयAD, BE - अिय CF जयिक्रहू ( )ंडब हकक्डल_ जत एृ यि त र

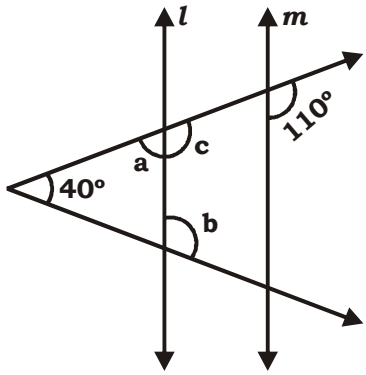
SSC CGL 08/12/2022 (Shift- 03)

(a) median point
(b) orthocentre
(c) centroid
(d) incentre

Maths by Aditya Ranjan sir

49. In the follwing figure, if $l \parallel m$, then find the measures of angles marked by a and b.

हवबव्हह्र हा ि य- ि? ह ये र्ग हडयif $l \parallel m$ त यृ यिaय- अिb लअियिह्ल हद्ृ यजत्रियिजन्ये क्रिय्रू ि यजअंश



SSC CGL 08/12/2022 (Shift- 04)

(a) a = 90° and b = 90°
(b) a = 55° and b = 125°
(c) a = 70° and b = 110°
(d) a = 60° and b = 120°

50. In a ΔPRQ, AB is drawn parallel to QR, cutting sides at A and B where length of PQ = 6cm, length of QR = 8cm and length of QA = 3cm. What is the length of AB?

हज़ न्यΔPQR ` यAB, QR जंय` बिगिअा न्ति न्क तीयत व्या ि दलिि- यिजयिA - अिB क्रअअजि ि न्यत व्या त ु PQ जन्यए क्रती = 6 cm, QR जन्यए क्रतीय= 8 cm - अिQA जन्यए क्रती = 3 cm त रयAB ए क्रतीयहज़ ृ बनयत च

SSC CGL 08/12/2022 (Shift- 04)

(a) 4.0 cm (b) 4.2 cm
(c) 5.0 cm (d) 2.4 cm

51. In triangle ABC, ∠B = 90°, and ∠C = 45°. If AC = 2√2 cm, then the length of BC is:

है दिलियABC ` य∠B = 90°, - अि∠C = 45° त र्ग हड AC = 2√2 cm त व्ृ यिBC जन्यए क्रतीयई यित च

SSC CGL 09/12/2022 (Shift- 01)

(a) 3 cm (b) 2 cm
(c) 1 cm (d) 4 cm

52. ABC is an isosceles triangle such that AB = AC, ∠ABC = 55°, and AD is the median to the base BC. Find the measure of ∠BAD.

ABC क्षजय` हल्क्ति ल्है दिलियत य- अिAB = AC, ∠ABC = 55°, - अिAD, - रुिअिBC जन्ये हिई जयित रय∠BAD जयि क्रिय्रू ि यजन्ह क्षर

SSC CGL 09/12/2022 (Shift- 01)

(a) 50° (b) 55°
(c) 35° (d) 90°

53. Triangle ABC and DEF are similar. If AB = 92 cm, BC = 48 cm, AC =120 cm, and the length of the smallest side of DEF is 200 cm, then find the length of the longest side of triangle DEF?

है दिलियABC - अिDEF ` म क्रयत र्ग हडयAB = 92 cm, BC = 48 cm, AC = 120 cm त व्य- अिDEF जन्य़ क `)ि न्यदलियिजन्यए क्रतीय200 cm त व्ृ यिहै दिलियDEF जन . क ` ए क्रन्यदलियिजन्यए क्रतीय्रू ि यजन्ह क्षच

SSC CGL 09/12/2022 (Shift- 02)

(a) 400 cm (b) 225 cm
(c) 350 cm (d) 500 cm

54. Two angles of a triangle are equal and the third angle measures 78°. What is the measure of each of the unknown angles?

क्षजयहै दिलियजंयडयिजत्रियिकअकिअत य- अिृ न अंअजत्रियिजन ` क्रिय78° त रयक्रय्र जंय- ृ ि यजत्रियिजन्ये क्रिय्रई यित च

SSC CGL 09/12/2022 (Shift- 02)

(a) 50° (b) 51°
(c) 49° (d) 52°

55. If it is given that for two right angled triangles ABC and DFE, ∠A = 25°, ∠E = 25°, ∠B = ∠F = 90° and AC = ED, then which one of the following is TRUE?

` हडय त यहर्ड यि ि यित यहजयडयि ` जत्रियिहै दिलियिABC - अिDFE जंयहए क्षय∠A = 25°, ∠E = 25°, ∠B = ∠F = 90° - अिAC = ED त व्ृ यिहबव्हह्र हा ि ये य़ ` यजबिए ि ह, जक्रय़ प्र यत च

SSC CGL 09/12/2022 (Shift- 03)

(a) ΔABC ≅ ΔFED (b) ΔABC ≅ ΔDEF
(c) ΔABC ≅ ΔEFD (d) ΔABC ≅ ΔDEF

56. If ΔABC ≅ ΔPQR, BC = 6 cm, and ∠A = 75°, then which one of the follwoing is true?

` हडयΔABC ≅ ΔPQR, BC = 6 cmय- अि∠A = 75° त व्ृ यिहबव्हह्र हा ि ये य़ ` यजबिए यिह, जक्रय़ प्र यत च

SSC CGL 09/12/2022 (Shift- 03)

(a) QR = 6 cm, ∠R = 75°
(b) QR = 6 cm, ∠Q = 75°
(c) QR = 6 cm, ∠P = 75
(d) PR = 6 cm, ∠P = 75°

57. The side of an equilateral triangle is 36 cm. What is the radius of the circle circumscribing this equilateral triangle?

क्षजय` क्ति ल्है दिलियजन्यदलियि-3य` ेन्यत रयत य़ ` क्ति ल है दिलियजयिक्रहअ ृ यजअंय, एि ंय, वयिजन्यहै ि ि यिई यित च

SSC CGL 09/12/2022 (Shift- 03)

(a) 13√3 cm (b) 10√3 cm
(c) 12√3 cm (d) 9√3 cm

Maths by Aditya Ranjan sir

58. If the ratio of corresponding sides of two similar triangles is √5 : √7 then what is the ratio of the area of the two triangles?

हडयडयि` मक्रयहैदिलियिजन्य गृ यदलि- यिजयि- बत्रृ √5 : √7 त क्यृ यिडबियिहैदिलियिजंयशैं क्रिए यजयि- बत्रृ ई यि च

SSC CGL 09/12/2022 (Shift- 04)

(a) $\sqrt[3]{5}$: √7 (b) 25 : 49

(c) √5 : √7 (d) 5 : 7

59. In ΔABC, D and E are points on sides AB and AC, such that DE || BC. If AD = x + 3, DB = 2x – 3, AE = x + 1 and EC = 2x – 2, then the value of x is:

ΔABC` क्यD - अिAE क्ष ंयहक्कडलत या यिAB - अिAC क्रअ त् यक्रजअिअत यहजयDE || BC त्रृ यित र्य हडयAD = x + 3, DB = 2x – 3, AE = x + 1 - अिEC = 2x – 2, ृ यिx जयि बियत 5

SSC CGL 12/12/2022 (Shift- 01)

(a) $\frac{4}{5}$ (b) $\frac{1}{2}$

(c) $\frac{3}{5}$ (d) $\frac{1}{5}$

60. If ΔABC ~ ΔEDF such that AB = 6 cm, DF = 16 cm and DE = 8 cm, then the length of BC is:

हडयΔABC ~ ΔEDFयत् यक्रजअिअत यहजयAB = 6 cm, DF = 16 cmय- अिDE = 8 cmयृ यिBCयजन्यए क्रतीं ृ यिजन्य क्षर

SSC CGL 12/12/2022 (Shift- 01)

(a) 12 cm (b) 10 cm

(c) 14 cm (d) 8 cm

61. What is the ASA congruence rule of triangles, where A and S represents angle and side of triangle respectively?

हैदिलियिजयिक्षप्क्ष्य(ASA). ,गि` ृ यिहर्व` यई यित व ा त्युिA - अिS 8` %ड्यिहैदिलियजंयजत्रियि- अिदलियिजंि ह्वम ह्कृ यजअृ ंयत्र या

SSC CGL 12/12/2022 (Shift- 03)

(a) Two triangles are said to be congruent if all three sides of both the triangles are equal.

डयिहैदिलियृ क्य ,गि` यजत एृ ंयत र्य हडयडबियिहैदिलिगि जन्य न्ययिदलिक्षियकअकिअत रि

(b) Two triangles are said to be congruent if 2 angles and the included side of one triangle are equal to 2 angles and the included side of the other triangle.

डयिहैदिलियृ क्य ,गि` यजत एृ ंयत र्य हडयक्ष्जयहैदिलि जंयसयजत्रियि- अिअ-ृगृ यदलियिड़थ अंहैदिलियजंयसयजत्रि - अिअ-ृगृ यदलियिजंयकअकिअत रि

(c) Two triangles are said to be congruent if 2 sides and the included angle of one triangle are equal to 2 sides and the included angle of the other triangle.

डयिहैदिलियृ क्य ,गि` यजत एृ ंयत र्य हडयक्ष्जयहैदिलि जन्यसयदलिक्षियि- अिअ-ृगृ यजत्रियिड़थ अंहैदिलियजन्यस दलि- यि- अिअ-ृगृ यजत्रियिजंयकअकिअत रि

(d) Two triangles are said to be congruent if any pair of 2 angles and any 1 pair of sides of both the triangles are equal.

डयिहैदिलियृ क्य ,गि` यजत एृ ंयत र्य हडयडबियिहैदिलिगि जंयसयजत्रियिजयिजतिथ्र लैय- अिदलि- यिजयिजतिथद्व ंलैयकअकिअत रि

62. If the areas of two isosceles triangles are in the ratio of x^2: y^2, then the ratio of their corresponding heights is:

हडयडयि` ह्वक्तिल्हैदिलियिजंयशैं क्रिए य$x^2$ : $y^2$ जंय- बत्रृ ` यत क्यृ यि-बजन्य गृ य्र ुज्ञर्ति यिजयि- बत्रृ यई यि च

SSC CGL 12/12/2022 (Shift- 04)

(a) x : y (b) √x : √y

(c) x^3 : y^3 (d) x^2 : y^2

63. ΔABC ~ ΔDEF and the perimeters of these triangles are 32 cm and 12 cm, respectively. If DE = 6 cm, then what will be the length of AB?

ΔABC ~ ΔDEFय- अितबयहैदिलियिजयिक्रहेअ क्रिय8` %ड 32 cm - अि12 cm त र्य हडयDE = 6 cm त क्यृ यिAB जन्यए क्रतीयई यि कि न्य

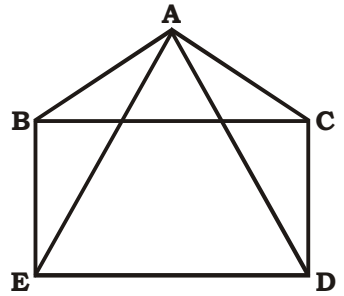
SSC CGL 13/12/2022 (Shift- 01)

(a) 16 cm (b) 14 cm

(c) 12 cm (d) 18

64. In the figure BCDE is a square and ABC is equilateral triangle then ∠ADC is:

डन्यक तीथ- ि? हू ये यBCDE क्ष्जय,ग्रीत य- अिABC. ` कति ल हैदिलियत क्यृ यि∠ADCयत र



SSC CGL 13/12/2022 (Shift- 01)

(a) 45° (b) 30°

(c) 60° (d) 15°

Maths by Aditya Ranjan Sir

65. In ΔPQR, $\angle Q = 90°$, PQ = 8 cm and $\angle PRQ = 45°$. Find the length of QR.

ΔPQR ` य $\angle Q = 90°$, PQ = 8 cm य- अि $\angle PRQ = 45°$ य- रय QR यज न्यए क्तीयू ृ यज न्ह क्ष्र

SSC CGL 13/12/2022 (Shift- 01)

(a) 6 cm (b) 3 cm
(c) 5 cm (d) 8 cm

66. ΔABC and ΔDEF are similar triangles and their areas are 49 cm² and 144 cm² respectively. If EF = 16.80 cm, then find BC.

ΔABC - अि ΔDEF ` म क्र्यहै दिलियत य- अि म बजं यशैं क्रिए 8 ` %ड्यिधभ्य ` नँय- अि द्वधधय ` नँय त र्य हडय EF = 16.80 ` न्य त व्यृ यि BC ृ यज न्ह क्ष्र

SSC CGL 13/12/2022 (Shift- 02)

(a) 7.5 cm (b) 9.8 cm
(c) 8.7 cm (d) 11.4 cm

67. The side of an equilateral triangle is 9 cm. What is the radius of the circle circumscribing this equilateral triangle?

क्ष्जय ` कति ल्है दिलिय ज न्य दलिय भ्य ` ेन्य त रय तृ य ` कति ल है दिलिय ज यि क्रह अ ृ यज अ्रंय, एि ंय, वयि ज न्यहै र्ि ि यिई यि च

SSC CGL 13/12/2022 (Shift- 03)

(a) $2\sqrt{3}$ cm (b) $5\sqrt{3}$ cm
(c) $4\sqrt{3}$ cm (d) $3\sqrt{3}$ cm

68. The area of two similar triangles are 324 cm² and 289 cm², respectively. What is the ratio of their corresponding altitudes?

हज क्न्य डयि ` म क्र्यहै दिलिय ि ज यशैं क्रिए य 8 ` %ड्यि 324 cm² - अि 289 cm² त रय म बजं य गृ य %न्यिीए क्य ि ज यि- बल्र्ृ यू ृ ि ज न्ह क्ष्र

SSC CGL 13/12/2022 (Shift- 03)

(a) $\frac{17}{18}$ (b) $\frac{17}{19}$
(c) $\frac{19}{17}$ (d) $\frac{18}{17}$

69. If $\Delta ABC \cong \Delta PQR$ and $\angle ABC = (x + 60)°$, $\angle PQR = (85 - 4x)°$, and $\angle RPQ = (3x + 65)°$, then the value of $\angle ABC$ in degree is:

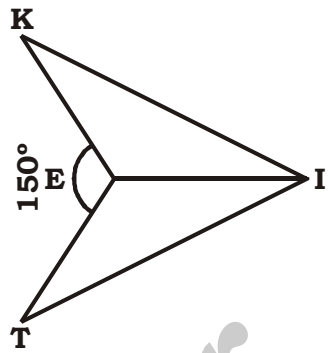
` हडय $\Delta ABC \cong \Delta PQR$ य त य- अि $\angle ABC = (x + 60)°$, $\angle PQR = (85 - 4x)°$ य- अि $\angle RPQ = (3x + 65)°$ य त व ृ यि $\angle ABC$ य ज यि बिय- ग्र यि ` य त र

SSC CGL 13/12/2022 (Shift- 03)

(a) 15 (b) 5
(c) 45 (d) 65

70. In the given figure, if KI = IT and EK = ET, then $\angle TEI$ = ____.

डन्य तीय- ि? ह ये ` र्य हडय KI = IT य- अि EK = ET य त व्यृ ि $\angle TEI$ =



SSC CGL 13/12/2022 (Shift- 04)

(a) 75° (b) 125°
(c) 105° (d) 150°

71. In a ΔABC, $\angle B + \angle C = 110°$, then find the measure of $\angle A$.

क्ष्जय ΔABC ये ` य $\angle B + \angle C = 110°$ य त व्यृ यि $\angle A$ यज यि क्रि ृ ि यज न्ह क्ष्र

SSC CGL 13/12/2022 (Shift- 04)

(a) 90° (b) 70°
(c) 80° (d) 60°

72. ΔPQR is right-angled at Q. The length of PQ is 5 cm and $\angle PRQ = 30°$. Determine the length of side QR.

ΔPQR, Q क्र्अ ` ज त्रि यित रय PQ यज न्यए क्तीय 5 cm य- अि $\angle PRQ = 30°$ य त रय दलिय QR यज न्यए क्तीयू ृ यज न्ह क्ष्र

SSC CGL 13/12/2022 (Shift- 04)

(a) $5\sqrt{3}$ cm (b) $3\sqrt{3}$ cm
(c) $\frac{1}{\sqrt{3}}$ cm (d) $\frac{5}{\sqrt{3}}$ cm

73. 'O' is a point in the interior of an equilateral triangle. The perpendicular distance from 'O' to the sides are $\sqrt{3}$ cm, $2\sqrt{3}$ cm, $5\sqrt{3}$ cm. The perimeter of the triangle is:

'O' क्ष्जय ` कति ल्है दिलिय ज य- र्द ृ गअ ` य क्ष्ज य ह क्ष्ड ल्त रय 'O' ` य दलि- यि ज न्यए क्, ृ य ड अ्र $\sqrt{3}$ cm, $2\sqrt{3}$ cm, $5\sqrt{3}$ cm य त रय है दिलिय ज न्य क्रह अ क्रिय त र

SSC CGL 13/12/2022 (Shift- 04)

(a) 48 cm (b) 32 cm
(c) 24 cm (d) 64 cm

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74. A,B, C are three points such that AB = 9 cm, BC = 11 cm and AC = 20 cm. The number of circles passing through points A,B,C is:

A, B, C, नायहकडलत यक्रज अिय यहजयAB = 9 cm, BC = 11 cm - अिAC = 20 cmयत रयहकडलA, B, Cय् ंक लअबं , एिं य,ृ ठयिजन्य् र्गा यिई यित च

SSC CGL TIER - II 02/03/2023

(a) 2 (b) 0

(c) 1 (d) 3

75. A circle touches all four sides of a quadrilateral ABCD. If AB = 18 cm, BC = 21 cm and AD = 15 cm, then length CD is:

क्षजय,ृ ठयवयज्ञ् ली यABCDयजन्यज्ञ अियदलिं- यिजयिक्कश्ली जअ्र यित र्य हडयAB = 18 cm, BC = 21 cm - अिAD = 15 cmयत व्यृ यिजन्यCD एकतीयई यित कि न्य

SSC CGL TIER - II 02/03/2023

(a) 16 cm (b) 14 cm

(c) 12 cm (d) 18 cm

76. In ΔPQR, PQ = QR and O is an interior point of ΔPQR such that ∠OPR = ∠ORP.

Consider the following statements:

(i) ΔPOR is an isosceles triangle.

(ii) O is the centroid of ΔPQR.

(iii)ΔPQO is congruent to ΔRQO.

Which of the above statements are correct?

ΔPQR` चPQ = QR तय- अिΔPQR` यO तृ यर्जिअिय् क्षजय-ृ गऽयहकडलत यहजय∠OPR = ∠ORP तर

हवत्वहए ह्ए् यजसबियिक्रअह, ज्ञ अिजन्य क्ष5

(i) ΔPOR क्षजय्` हल्कतिल्हे दिलियत र

(ii)ययO यहकडलΔPQR जयिजं ध्ज्जयत र

(iii)यΔPQOक्यΔRQO जंय् , गि्` यत र

म्क्रअविःयजसबियि य् ंयजबिय् ंयजसबिय् तन्यत स्य

SSC CGL TIER - II 02/03/2023

(a) Only (i) and (ii) (b) Only (i) and (iii)

(c) Only (ii) and (iii) (d) Only (ii)

77. ABCD is a cyclic quadrilateral and BC is a diameter of the related circle on which A and D also lie. ∠BCA = 19° and ∠CAD = 32°. What is the measure of ∠ACD?

ABCD क्षजयज्ञ 8 नं यज्ञ् लीयत य- अिBCय् यह्ह् य, वयिजि र्छ् ि यत यह्. यक्रअA - अिDयदन्यिह्हर्सृ यत स्य∠BCA = 19° - अि∠CAD = 32° तस्य∠ACD जयि क्रिय् ृ यजअं

SSC CGL TIER- II 03/03/2023

(a) 41° (b) 38°

(c) 40° (d) 39°

78. If the external angle of a regular polygon is 18°, then the number of diagonals in this polygon is:

` हडयक्षजय्` यक्त लीयजयिक्ह् ध्जत्रियि18°यत व्यृ यित् यक्त लीं ` यह, जत्रंत्रिजन्य् र्गा यिई यित कि न्य

SSC CGL TIER- II 03/03/2023

(a) 180 (b) 150

(c) 170 (d) 140

79. If the areas of two similar triangles are in the ratio 196 : 625, what would be the ratio of the corresponding sides?

` हडयडयि` म क्रम्है दिलियिजं यर्शै क्रिए यिजयि- बत्र्ी यद्ध्भ्3यस्य3स्य4 तव्यृ यि् गृ यदलिं- यिजयि- बत्र्ी यई यित कि चि

SSC CGL TIER- II 03/03/2023

(a) 14 : 25 (b) 13 : 20

(c) 14 : 20 (d) 13 : 25

80. If ΔABC is right angled at B, AB = 12 cm. and ∠CAB = 60°, then find the length of BC.

` हडयΔABC, B क्रअ्` जत्रियित व्यAB = 12 cm - अि∠CAB = 60° तव्यृ यिBCयजन्यए कतीयृ ृ यजन्ह क्षर

SSC CGL TIER- II 06/03/2023

(a) $24\sqrt{3}$ cm (b) 12 cm

(c) $12\sqrt{3}$ cm (d) $12\sqrt{2}$ cm

81. L is the centroid of an equilateral triangle PQR. If PQ = 6 cm, then what is the length of PL?

क्षजय्` कतिल्हे दिलियPQR जयिजंध्ज्जयL तर्य हडयPQ = 6 cm,ृ यिPL जन्यए कतीयई यित च

SSC CGL TIER- II 06/03/2023

(a) $5\sqrt{3}$ cm (b) $4\sqrt{3}$ cm

(c) $3\sqrt{3}$ cm (d) $2\sqrt{3}$ cm

82. Find the number of diagonals of a regular polygon whose interior angles sum to 2700°.

क्षजय्` यक्त लीयजंयह, जत्रंत्रिजन्य् र्गा यिू ृ यजन्ह क्षव्यह. जं -ृ गऽजत्रिंत्रिजर्यि कि य2700° तर

SSC CGL TIER- II 06/03/2023

(a) 127 (b) 121

(c) 119 (d) 117

Maths by Aditya Ranjan sir

83. If one of the interior angles of a regular polygon is $\frac{15}{16}$ times of one of the interior angles of a regular decagon, then find the number of diagonals of the polygon.

ं हडयहज़ न्य़ ` यक्त ललियजयिक्ष्जय-ृगऽजिनियिहज़ न्य़ ` यड़ दलि जंयक्ष्जय-ृगऽजिनियिजयि $\frac{15}{16}$ क लयित व्यृ यिक्त ललियजंयह, जऽत्ति जन्य़ र्गी यिू ृ यजन्ह क्ष्र

SSC CGL TIER- II 07/03/2023

(a) 20

(b) 14

(c) 2

(d) 35

84. PQRS is a cyclic quadrilateral. If ∠P is three times of ∠R and ∠S is four times of ∠Q, then the sum of ∠S + ∠R will be:

PQRS क्ष्जयज्ञ 8 नं यज्ञृ ललियत र्य हडय∠P, ∠Rयजयिृ न्नय लि - अि∠S, ∠Qयजयिज्ञ अिक लयित व्यृ यि∠S + ∠Rयजयि र्यि हि ई यित हि चि

SSC CGL TIER- II 07/03/2023

(a) 169°

(b) 171°

(c) 187°

(d) 189°

85. It is given that ΔABC ≅ ΔPQR, AB = 5 cm, ∠B = 40°, and ∠A = 80°. Which of the following options is true?

हई यिन् यित यहजयΔABC ≅ ΔPQR, AB = 5 cm, ∠B = 40°,य- अि ∠A = 80°यहबबहए हाृ ये य़ यजबिए हि ह, जकृन्य़ त्नयत च

SSC CGL TIER- II 07/03/2023

(a) PQ = 5 cm and ∠R = 60°

(b) QR = 5 cm and ∠R = 60°

(c) QR = 5 cm and ∠Q = 60°

(d) PQ = 5 cm and ∠P = 60°

86. For what value of m will the system of equations $17x + my + 102 = 0$ and $23x + 299y + 138 = 0$ have infinite number of solutions?

हबबहए ह्ृ ये य़ यmयजंयहज़ ये बिय़ य़ ` नजऊयिह्वजर्ि 17x + my + 102 = 0 - अि23x + 299y + 138 = 0यजंय-. र्गी यत एयर्ि ृिक्यत हि ंया

SSC CGL TIER - II 02/03/2023

(a) 221

(b) 223

(c) 220

(d) 219

87. For which of the following values of the system of equations 18x – 72y + 13 = 0 and 7x – my – 17 = 0 will have no solution?

हबबहए हाृ ये य़ यm जंयहज़ ये बिय़ य़ ` नजऊयिह्वजर्ि 18x – 72y + 13 = 0 - अि7x – my – 17 = 0यजर्ि जतिक्त एयबत नयत हि चि

SSC CGL TIER- II 06/03/2023

(a) 9

(b) 12

(c) 24

(d) 28

88. Find the coordinates of the points where the graph 57x – 19y = 399 cuts the coordinate axes.

म्बय हकडल यि जंयहबडीर्ंखिय यू ृ यजन्ह क्ष्यह्य बे ंय - अि 57x – 19y = 399यहबडीर्ंखिय- शयिजयिजिृ यित र

SSC CGL TIER- II 07/03/2023

(a) x – axis at (– 7,0) and y – axis at (0, – 21)

x – - शयिक्रअय(– 7,0) - अिy – - शयिक्रअय(0, – 21)

(b) x – axis at (– 7,0) and y – axis at (0,21)

x – - शयिक्रअय(– 7,0) - अिy – - शयिक्रअय(0,21)

(c) x – axis at (7,0) and y – axis at (0, – 21)

x – - शयिक्रअय(7,0) - अिy – - शयिक्रअय(0, – 21)

(d) x – axis at (7,0) and y – axis at (0,21)

x – - शयिक्रअय(7,0) - अिy – - शयिक्रअय(0,21)

Maths by Aditya Ranjan sir

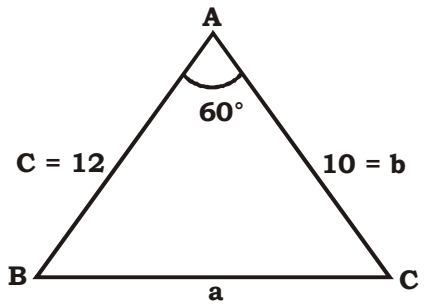
ANSWER KEY

1.(d)	**2.**(c)	**3.**(c)	**4.**(c)	**5.**(c)	**6.**(a)	**7.**(d)	**8.**(c)	**9.**(b)	**10.**(c)
11.(b)	**12.**(b)	**13.**(a)	**14.**(b)	**15.**(d)	**16.**(d)	**17.**(a)	**18.**(c)	**19.**(a)	**20.**(b)
21.(c)	**22.**(a)	**23.**(c)	**24.**(d)	**25.**(d)	**26.**(c)	**27.**(d)	**28.**(a)	**29.**(d)	**30.**(c)
31.(d)	**32.**(a)	**33.**(d)	**34.**(d)	**35.**(d)	**36.**(c)	**37.**(c)	**38.**(b)	**39.**(b)	**40.**(a)
41.(c)	**42.**(d)	**43.**(b)	**44.**(d)	**45.**(a)	**46.**(a)	**47.**(d)	**48.**(c)	**49.**(c)	**50.**(a)
51.(b)	**52.**(c)	**53.**(d)	**54.**(b)	**55.**(c)	**56.**(c)	**57.**(c)	**58.**(d)	**59.**(c)	**60.**(a)
61.(b)	**62.**(a)	**63.**(a)	**64.**(d)	**65.**(d)	**66.**(b)	**67.**(d)	**68.**(d)	**69.**(d)	**70.**(c)
71.(b)	**72.**(a)	**73.**(a)	**74.**(b)	**75.**(d)	**76.**(b)	**77.**(d)	**78.**(c)	**79.**(a)	**80.**(c)
81.(d)	**82.**(c)	**83.**(a)	**84.**(d)	**85.**(a)	**86.**(a)	**87.**(d)	**88.**(c)		

Maths by Aditya Ranjan sir

SOLUTIONS

1. (d)



We know,

$a^2 = b^2 + c^2 - 2bc \cos A$

$= 100 + 144 - 2 \times 120 \times \cos 60°$

$= 244 - 240 \times \frac{1}{2}$

$a^2 = 124$

$a = \sqrt{124} \approx 11$

$= 11.13$ cm.

2. (c) $\frac{ar\ \triangle ABC}{ar\ \triangle DEF} = \frac{(x)^2}{(y)^2} = \left(\frac{BC}{EF}\right)^2$

Given, EF = a

$\Rightarrow \frac{BC^2}{a^2} = \frac{x^2}{y^2}$

$\Rightarrow BC = \frac{ax}{y}$

3. (c) By angle sum property:-

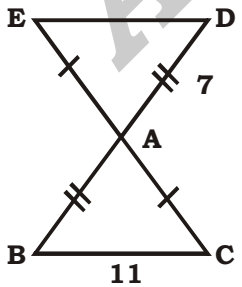
$(x - 46°) + (x + 96°) + 8x = 180°$

$\Rightarrow 10x = 180° - 50° = 130°$

$x = 13°$

$2x = 26°$

4. (c)



In ΔABC, ΔADE

AB = AD (given)

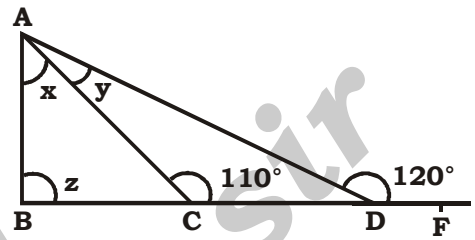
AE = AC

$\angle BAC = \angle EAD$ (VOA)

$\Rightarrow \Delta ABC \cong \Delta ADE$

$\Rightarrow$ BC = ED = 11 cm.

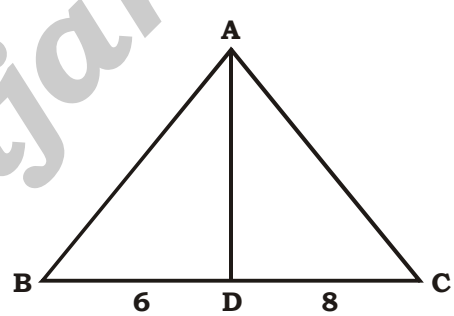
5. (c)



$\angle A + \angle B = \angle ADF$ [Exterior angle]

$\Rightarrow x + y + z = 120°$

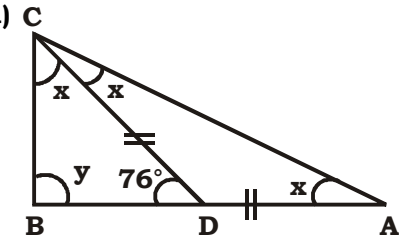
6. (a)



By angle bisector theorem:-

$\frac{AB}{AC} = \frac{BD}{DC} = \frac{6}{8} = \frac{3}{4}$

7. (d)



$\angle BCD = \angle DCA = x$ (given)

$\angle DCA = \angle DAC = x$ [$\therefore$ CD = AD]

Also,

$2x = 76°$ [Exterior angle]

$x = 38°$

By angle sum property:-

$y + 3x = 180°$.

$y = 180° - 38° \times 3$

$y = 66°$.

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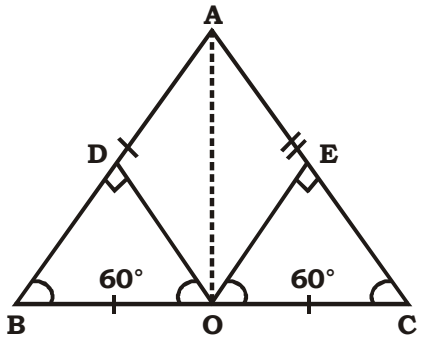
8. (c)



AB = AC

$\Rightarrow$ $\angle ABC = \angle ACB = x$ (say)

In ΔODB, ΔOEC

$\angle D = \angle E$

$\angle B = \angle C$

$\Rightarrow$ $\angle BOD = \angle EOC = 60°$

Since, ABC is an isosceles triangle.

$\Rightarrow$ AO is the perpendicular bisector

$\Rightarrow$ $\angle AOC = 90°$

$\Rightarrow$ $\angle AOE = 90° - 60°$

$= 30°$

9. (b) Given:-

Sides ratio $= 4 : 6 : 8$

$= 2 : 3 : 4$

Consider,

$(2x)^2 + (3x)^2 = 4x^2 + 9x^2$

$= 13x^2$

$13x^2 < (4x)^2 = 16x^2$

$\Rightarrow$ $a^2 + b^2 < C^2$

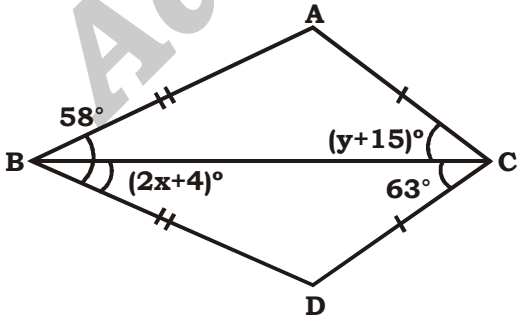
$\Rightarrow$ It is an obtuse angled triaugle.

10. (c) In radius $= \dfrac{\text{Side}}{2\sqrt{3}}$

$= \dfrac{12}{\sqrt{3}}$

$= 4\sqrt{3}$

11. (b)



(Question printing mistake)

In ΔABC, ΔDBC

AB = BD

AC = CD

BC = BC

$\Rightarrow$ $\Delta ABC \cong \Delta DBC$ (Bysss)

$\Rightarrow$ $ABC = \angle DBC$

$\Rightarrow$ $2x - 4 = \dfrac{58}{2} = 29$

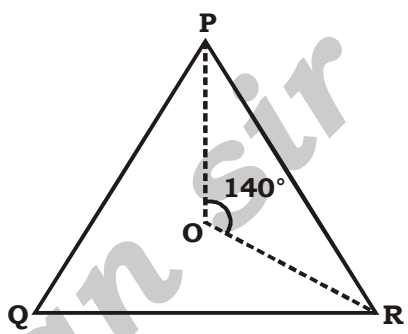
$\Rightarrow$ $2x = 33$

Also,

$y + 15 = 63$

$\Rightarrow$ $y = 48 \Rightarrow 2x + 5y = 273$

12. (c)

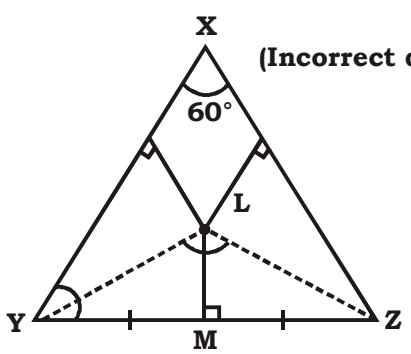


$\angle POR = 90 + \dfrac{1}{2}\angle PQR$

$\Rightarrow$ $140° = 90° + \dfrac{1}{2}\angle PQR$

$\Rightarrow$ $PQR = 100°$

13. (a)



(Incorrect question)

$\angle YXZ = 60°$

$\Rightarrow$ $\angle YLZ = 2 \times \angle YXZ$

$= 120°$

In ΔYLM, ΔZLM

YM = MZ

$\angle YML = \angle LMZ$

LY = LZ (Radius of circumcircle)

$\Rightarrow$ $\Delta YLM \cong \Delta ZLM$ (By RHS)

$\Rightarrow$ $\angle YLM = \angle ZLM = \dfrac{120°}{2} = 60°$

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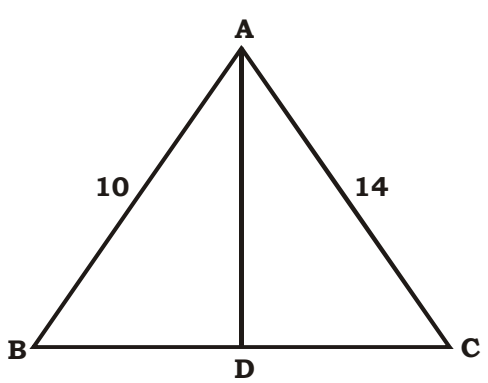
14. (b)

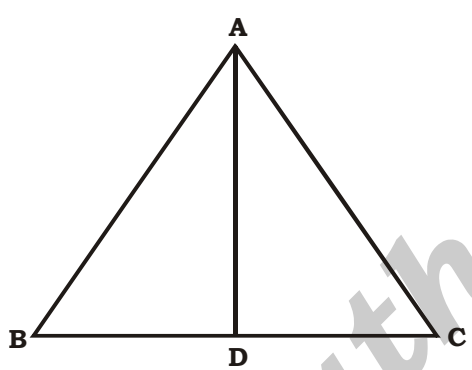


By angle bisector theorem:-

$$\frac{AB}{AC} = \frac{BD}{DC} = \frac{10}{14}$$

$$\Rightarrow \frac{5}{7} = \frac{BD}{DC}$$

15. (d)



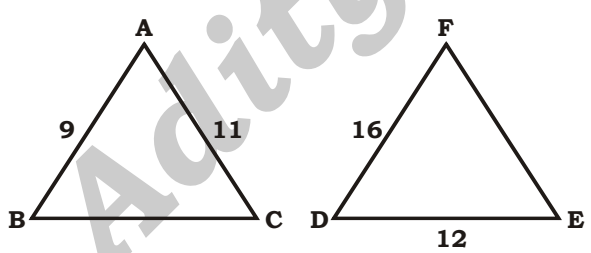
Side = 8 cm

$$\text{Height} = \frac{\sqrt{3}}{2} \times \text{side}$$

$$= \frac{\sqrt{3}}{2} \times 8$$

$$= 4\sqrt{3} \text{ cm.}$$

16. (d)



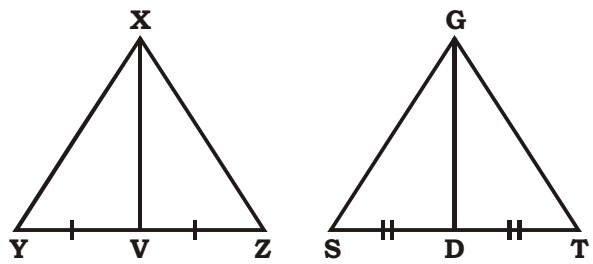
$\Rightarrow \Delta ABC \sim \Delta FDE$

$$\Rightarrow \frac{AB}{FD} = \frac{BC}{DE}$$

$$\Rightarrow \frac{9}{16} = \frac{BC}{12}$$

$$\Rightarrow BC = \frac{27}{4} = 6\frac{3}{4} \text{ cm.}$$

17. (a)



$\Delta XYZ \sim \Delta GST$

$$\frac{XY}{GS} = \frac{2}{3} = \frac{YZ}{ST} = \frac{\frac{1}{2}YZ}{\frac{1}{2}ST}$$

$$= \frac{YV}{SD}$$

$$\Rightarrow \left(\frac{YV}{SD}\right)^2 = \frac{4}{9}$$

18. (c) $A - B = 45°$

$B - C = 15°$

$A + B + C = 180°$ (Angle sum prop.)

let $c = x$

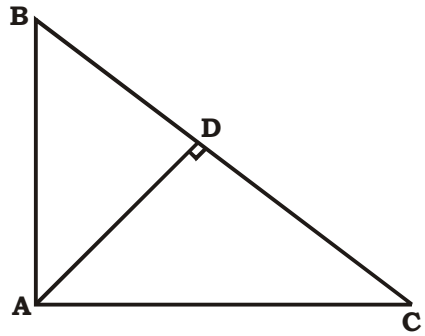
$60° + x + 15° + x + x = 180°$

$3x = 180° - 75°$

$$x = \frac{105°}{3} = 35°$$

$\therefore A = 60 + x = 95°$

19. (a)



Area $\Delta AB C = 80$

$$\Rightarrow \frac{1}{2} \times \text{base} \times \text{height} = 80$$

$$\Rightarrow \frac{1}{2} \times BC \times AD = 80$$

$$\Rightarrow \frac{1}{2} \times 16 \times AD = 80$$

$\Rightarrow AD = 10$ cm.

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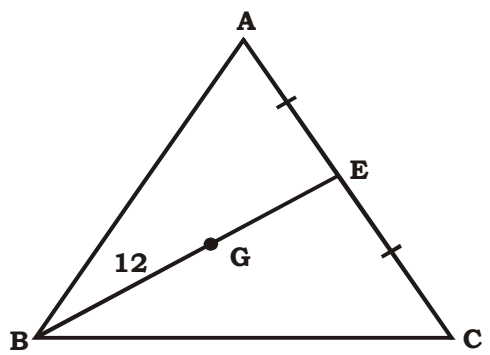
20. (b)



We know,

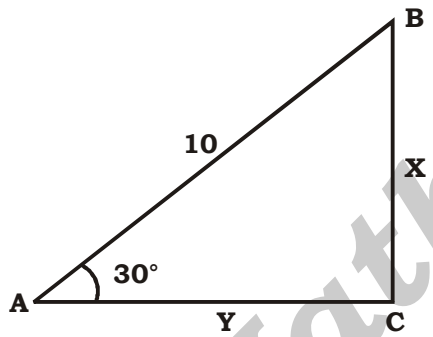
$$\frac{BG}{GE} = \frac{2}{1}$$

$$\Rightarrow \frac{12}{GE} = \frac{2}{1}$$

$\Rightarrow$ GE = 6

$\therefore$ BE = 12 + 6 = 18

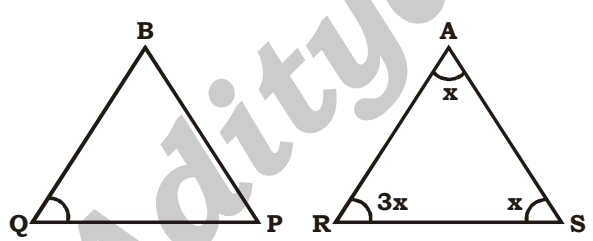
21. (c)



$$\text{Sin } 30 = \frac{BC}{AB} = \frac{x}{10}$$

$$\Rightarrow x = \frac{1}{2} \times 10 = 5$$

22. (a)



$\angle A = \frac{1}{3} \angle R = \angle S$

$\Delta BPQ \cong \Delta ASR$

$\Rightarrow \angle Q = \angle R$

In ΔASR:-

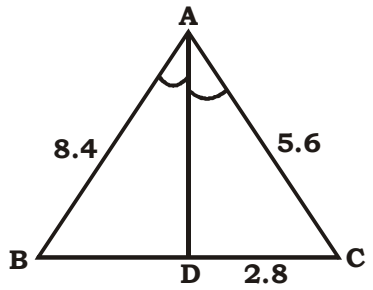
x + 3x + x = 180°.

5x = 180°

x = 36°

$\Rightarrow$ 3x =108°

23. (c)



By Angle Bisector theorem:-

$$\frac{AB}{AC} = \frac{BD}{CD}$$

$$\Rightarrow \frac{8.4}{5.6} = \frac{BD}{2.8} \Rightarrow BD = 4.2$$

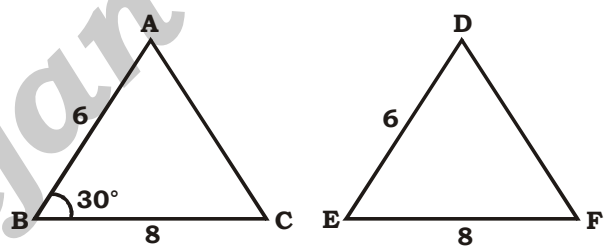
$\Rightarrow$ BC = 4.2 + 2.8

= 7 cm.

24. (*)

d

25. (d)



$\Delta ABC \cong \Delta DEF$

$\Rightarrow \angle B = \angle E$

$\angle A = \angle D$

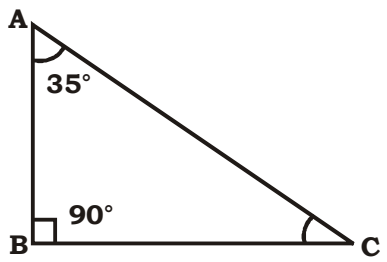
$\angle C = \angle F$

$\angle A + \angle B + \angle C = 180°$

$\angle A + \angle C = 150°$

$\Rightarrow \angle D + \angle C = 150°$

26. (c)



$\angle A + \angle B + \angle C = 180°$

35° + 90° + $\angle C$ = 180°

$\angle C$ = 55°

$\therefore$ 90° and 55°

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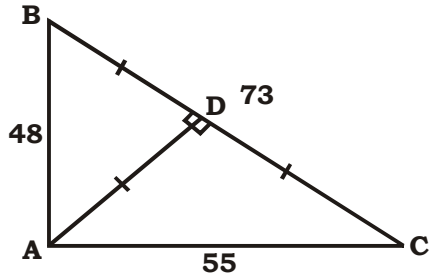
27. (d)



Given, sides are triplets of a right angle triangle

$\Rightarrow$ AD = $\frac{BC}{2} = \frac{73}{2} = 36.5$

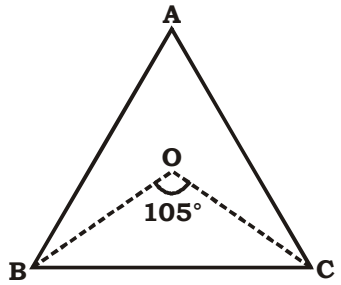
28. (a) a + b + c = 13

No. of possible Δs = $\frac{(P+3)^2}{18}$

$= \frac{16 \times 16}{48}$

≈ 5

29. (d)

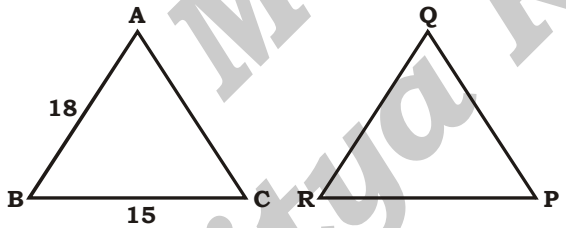


$\angle BOC = 90° + \frac{1}{2} \angle BAC$

$(105° - 90°) = \angle BAC$

$\Rightarrow$ $30° = \angle BAC$

30. (c)



$\frac{ar(\triangle ABC)}{ar(\triangle QRP)} = \left(\frac{AB}{QR}\right)^2 = \frac{9}{4} = \left(\frac{3}{2}\right)^2$

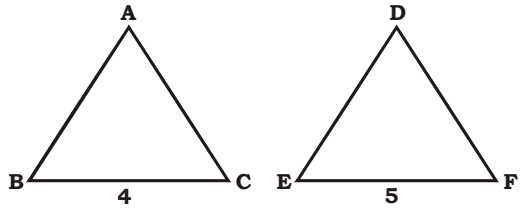
Also,

$\frac{AB}{QR} = \frac{BC}{PR} = \frac{3}{2}$

$\frac{15}{PR} = \frac{3}{2}$

$\Rightarrow$ PR = 10

31. (d)



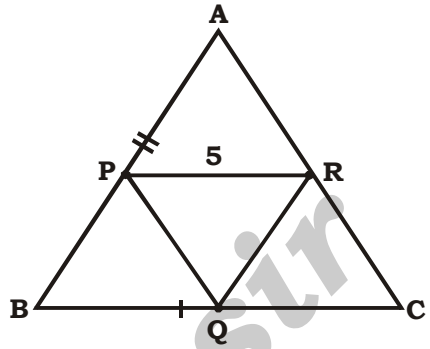
ar ΔABC = 80

$\frac{ar\triangle ABC}{ar\triangle DEF} = \left(\frac{BC}{EF}\right)^2 = \frac{16}{25}$

$\Rightarrow \frac{80}{ar\triangle DEF} = \frac{16}{25}$

$\Rightarrow$ ar ΔDEF = 125 cm²

32. (a)



In ΔPQR, ΔACB

$\frac{PQ}{AC} = \frac{QR}{AB} = \frac{PR}{BC} = \frac{1}{2}$

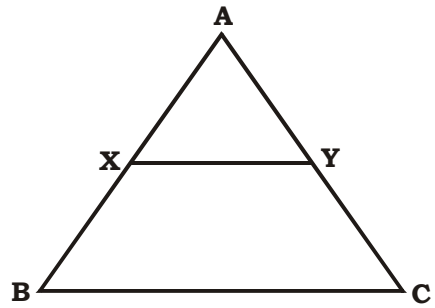
$\Rightarrow \Delta PQR \sim \Delta ACB$

$\frac{1}{2} = \frac{PR}{BC} = \frac{QR}{AB}$

$\Rightarrow$ BC = 10 = AB

$\Rightarrow$ QR = 5 cm.

33. (d)



BC + × y = 24

Also,

BC = $\frac{1}{2}$XY

[Since, X and Y are mid pts. of AB & AC By similarity, XY = $\frac{1}{2}$ BC]

$\frac{BC}{XY} = \frac{1}{2}$

$\Rightarrow$ 3 $\rightarrow$ 24

1 $\rightarrow$ 8

$\Rightarrow$ BC – XY = 8

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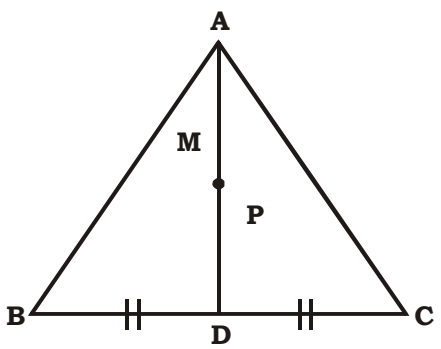
34. (d)

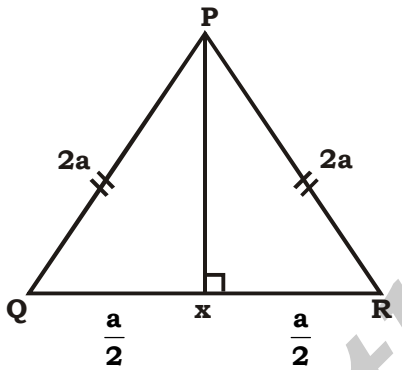


We know,

$$\frac{AP}{PD} = \frac{2}{1}$$

$\Rightarrow$ PD = 7cm

35. (d)



PQ = PR = 2a

In an is os cales Δ

mediam = perpendicular bisector

$\Rightarrow QX = \frac{a}{2}$

By Pythagoras theorem in ΔPXQ

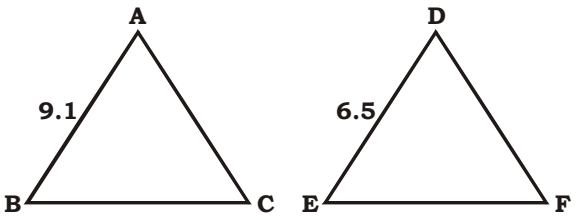
$\Rightarrow PQ^2 = QX^2 + PX^2$

$\Rightarrow PX^2 = -\frac{a^2}{4} + 4a^2$

$\Rightarrow \frac{15a^2}{4}$

$\Rightarrow PX = \frac{a\sqrt{15}}{2}$

36. (c)



$$\frac{\text{Perimeter of } \Delta DEF}{\text{Perimeter of } \Delta ABC} = \frac{DE}{AB}$$

$$\Rightarrow \frac{25}{\text{P of } \Delta ABC} = \frac{6.5}{9.1}$$

$\Rightarrow$ Perimeter of ΔABC = 35 cm.

37. (c) a = x b = 2x c = 3x

x + 2 x + 3x = 180°

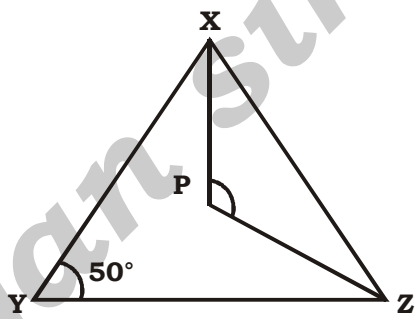
6x = 180°

x = 30°

$\Rightarrow$ a = 30°, b = 60°, c = 90°

$\Rightarrow$ Right angled Δ

38. (b)



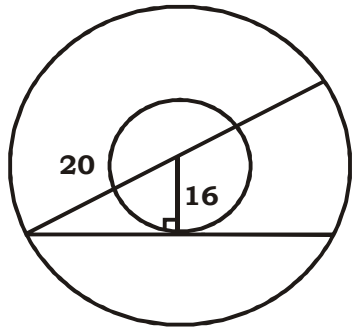
$\angle XYZ = 50°$

$\Rightarrow \angle XPZ = 90° + \frac{1}{2} \times XYZ$

$= 90° + 25°$

$= 115°$

39. (b)



Radius $\perp$ Tangent

$\Rightarrow (20)^2 = (16)^2 + \left(\frac{\text{Tangent}}{2}\right)^2$

$\Rightarrow \left(\frac{\text{Tangent}}{2}\right)^2 = (12)^2$

$\Rightarrow$ Tangent = 24 cm.

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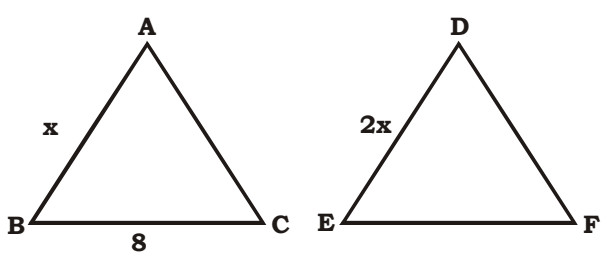
40. (a)

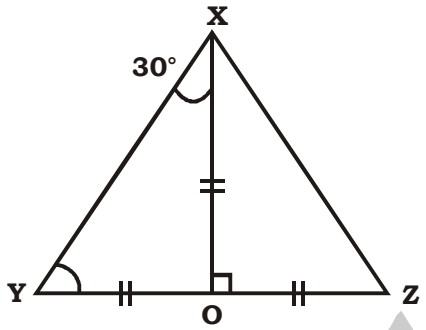


$\frac{AB}{BC} = \frac{DE}{EF}$

$\Rightarrow \frac{x}{8} = \frac{2x}{EF}$

$\Rightarrow$ EF = 16 cm.

41. (c)



In Δ XYO:-

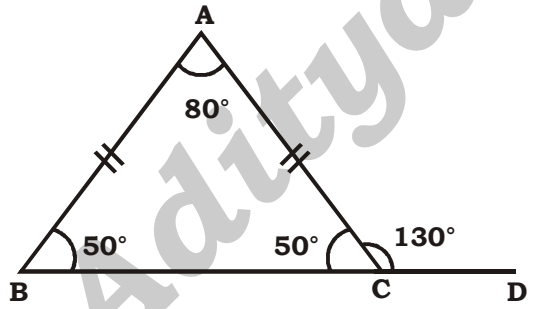
$OX = OY = \frac{1}{2}$ YZ

$\Rightarrow$ YXO = $\angle$XYO

[Angles opposite to equal sides are equal]

$\Rightarrow \angle XYO = 30°$

42. (d)



$\angle ACB = 180° - \angle ACD$

[Linear angles]

$\Rightarrow \angle ACB = 50° = \angle ABC$

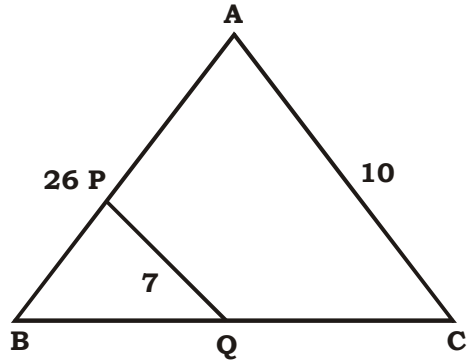
[Angles opp. to equal side]

$\Rightarrow \angle A + \angle B + \angle ACB = 180°$

[Angle sum property]

$\Rightarrow \angle A = 180° - 100° = 80°$

43. (b)



PQ || AC

$\Rightarrow \Delta BQP \sim \Delta BCA$

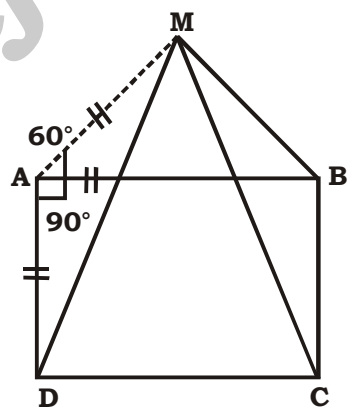
$\Rightarrow \frac{PQ}{AC} = \frac{PB}{AB} = \frac{7}{10}$

$\Rightarrow \frac{PB}{26} = \frac{7}{10}$

$\Rightarrow PB = \frac{91}{5}$

$AP = AB - PB = 26 - \frac{91}{5} = 7.8$ cm.

44. (d)



ABCD is a square

$\Rightarrow$ AB = AD, AB = AM

$\Rightarrow$ AD = AM

In ΔADM:-

$\angle ADM = \angle AMD$

$\angle DAB + \angle BAM + \angle ADM + \angle AMD = 180°$

$90° + 60° + 2\angle ADM = 180°$

$\angle ADM = 15°$

$\angle ADC = 90°$

$\Rightarrow \angle MDC = 90° - 15°$

$= 75°$

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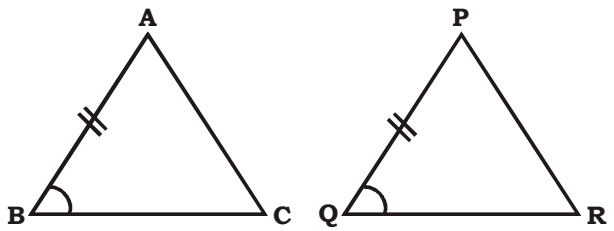
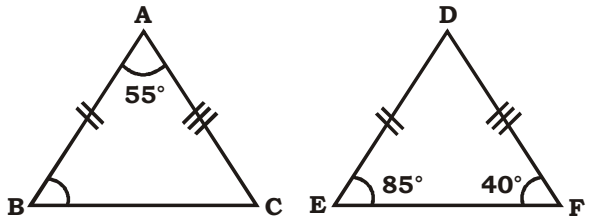
45. (a)



SAS $\Rightarrow$ Angle includes in 2 equal sides

$\Rightarrow$ BC = QR and AB = PQ

46. (a)



$\angle D = 180° - 85° - 40°$

$= 55° = \angle A$

AB = DE & AC = DF

$\angle\ \Delta ABC \cong \Delta DEF$

By SAS.

47. (d) $(x - 6) + (x + 26) + 8x = 180°$

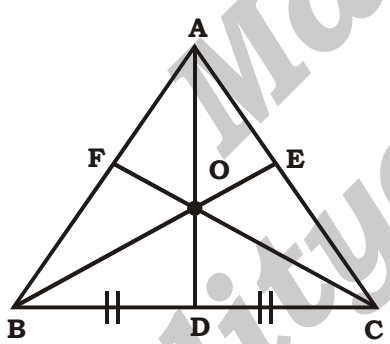
By Angle sum Property

$\Rightarrow 10x = 160°$

$x = 16°$

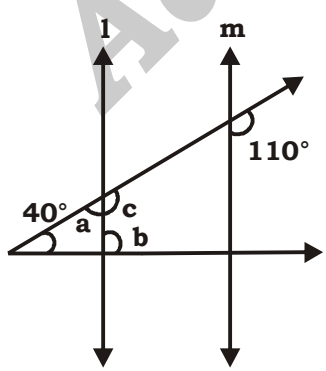
$2x = 32°$

48. (c)



The point 'O' is called 'Centroid' where all medians meet.

49. (c)



l 11 m

$\Rightarrow \angle C = 110°$

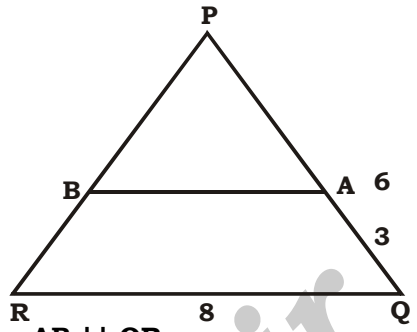
$\Rightarrow \angle a = 180° - 110°$ [Linear angle]

$\angle b = 40° + \angle a$ [Exterior angle]

$= 40° + 70°$

$= 110°$

50. (a)



AB || QR

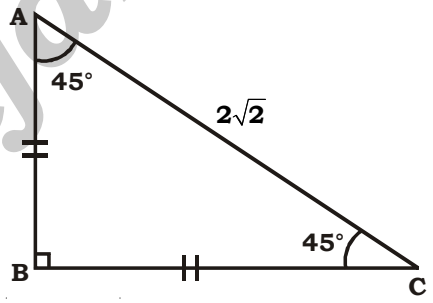
$\Rightarrow \Delta PBA \sim \Delta PRQ$

$\Rightarrow \frac{AB}{RQ} = \frac{PA}{PQ} = \frac{3}{6}$

$\Rightarrow \frac{AB}{8} = \frac{3}{6}$

$\Rightarrow$ AB = 4 cm.

51. (b)



$\angle BCA = \angle CAB$

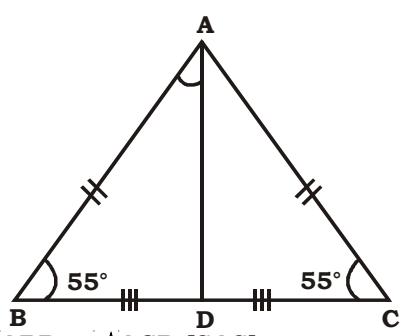
$\Rightarrow$ AB = BC = x, (say)

$\Rightarrow 2x^2 = \left(2\sqrt{2}\right)^2 = 8$

$\Rightarrow x^2 = 4$

$\Rightarrow x = 2 = BC$

52. (c)



$\Delta ABD \cong \Delta ACD$ [SAS]

$\Rightarrow \angle BAD = \angle CAD = \frac{1}{2} \angle BAC$

$\angle BAC = 180° - 110°$

$= 70°$

$\Rightarrow \angle BAD = 35°$

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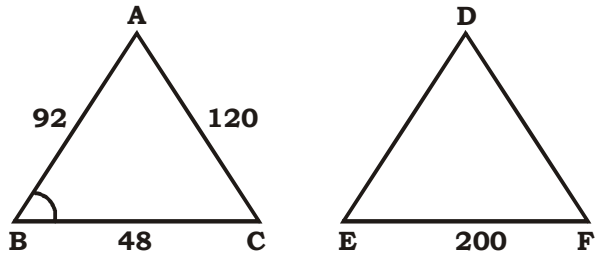
53. (d)



$\Delta ABC \sim \Delta DEF$

$\Rightarrow \frac{AC}{DF} = \frac{BC}{EF}$

$\Rightarrow \frac{120}{DF} = \frac{48}{200}$

$\Rightarrow$ DF = 500 $\rightarrow$ Longest side

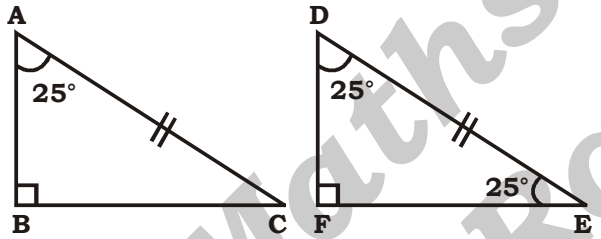
54. (b) Let, equal augles be x°

$\Rightarrow 2x° + 78 = 180°$

[Angle sum property]

$\Rightarrow x = 51°$

55. (c)



$\angle A = \angle E, \angle B = \angle F$

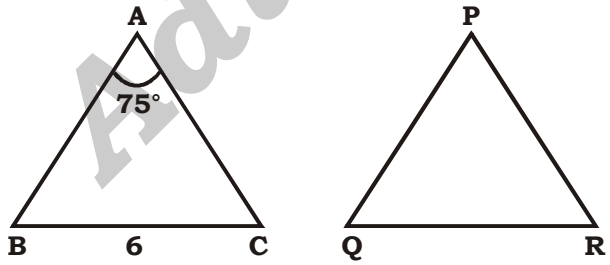
AC = DE

$\Rightarrow \Delta BAC \cong \Delta FED$

or

$\Delta ABC \cong EFD$

56. (c)

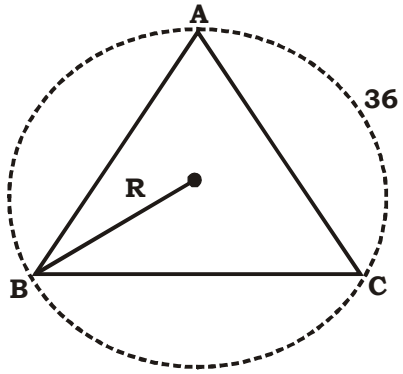


$\Delta ABC \cong \Delta PQR$

$\Rightarrow \angle A = \angle P = 75°$

BC = QR = 6

57. (c)

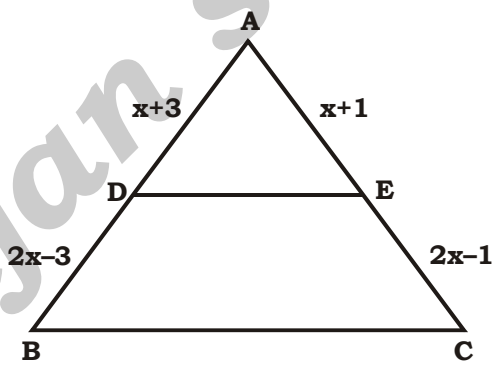


$R = \frac{Side}{\sqrt{3}} = \frac{36}{\sqrt{3}} = 12\sqrt{3}$

58. (d) Let $\Delta ABC \sim \Delta PQR$

$\Rightarrow \frac{ar\,ABC}{ar\,PQR} = \frac{(AB)^2}{(PQ)^2} = \frac{(\sqrt{5})^2}{(\sqrt{7})} = \frac{5}{7}$

59. (c)



DE || BC

$\Rightarrow \frac{AD}{AB} = \frac{AE}{AC}$

$\Rightarrow \frac{x+3}{3x} = \frac{x+1}{3x-1}$

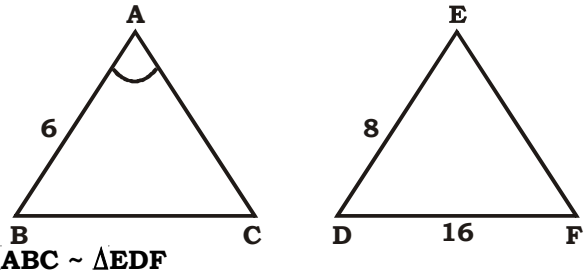
$\Rightarrow (x + 3)(3x - 1) = 3x(x + 1)$

$\Rightarrow 3x^2 + 8x - 3 = 3x^2 + 3x$

$\Rightarrow 5x = 3$

$x = \frac{3}{5}$

60. (a)



$\Delta ABC \sim \Delta EDF$

$\Rightarrow \frac{AB}{ED} = \frac{BC}{DF}$

$\Rightarrow \frac{6}{8} = \frac{BC}{16}$

$\Rightarrow$ BC = 12 cm.

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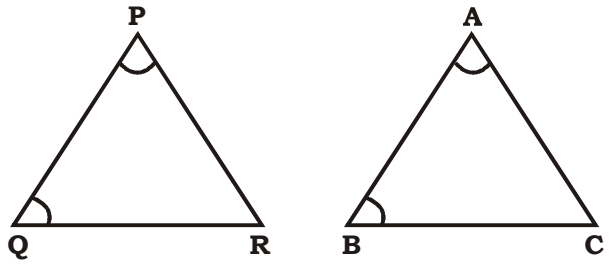
61. (b) ASA



When,

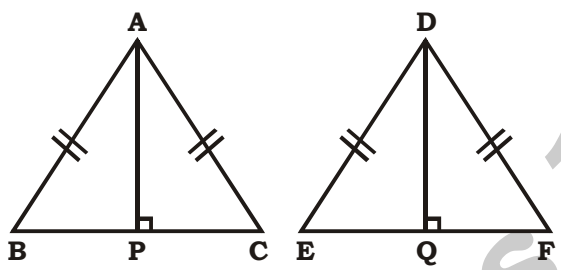
$\angle P = \angle A$

$\angle Q = \angle B$

$PQ = AB$

$\Rightarrow \Delta PQR \cong \Delta ABC$ (By ASA)

62. (a)



$$\frac{ar\ ABC}{ar\ DEF} = \frac{x^2}{y^2} = \left(\frac{AP}{DQ}\right)^2$$

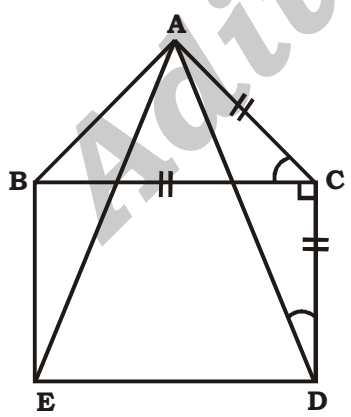
$$\Rightarrow \frac{AP}{DQ} = \frac{x}{y}$$

63. (a) $\frac{P(\triangle ABC)}{P(\triangle DEF)} = \frac{AB}{DE}$

$$\Rightarrow \frac{32}{12} = \frac{AB}{6}$$

$\Rightarrow AB = 16$ cm.

64. (d)



$BC = AC = CD$

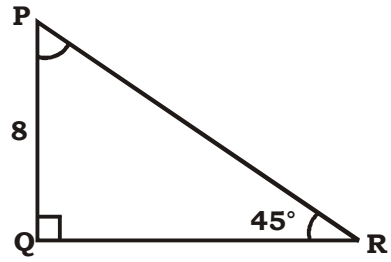
$\Rightarrow \angle CAD = \angle CDA = x$ (say)

$\Rightarrow 2x + 60° + 90° = 180°$

$\Rightarrow x = 15°$

[Refer question 44 for detailed solution]

65. (d)



$\angle QPR = 180 - 90 - 45$

$= 45°$

$\Rightarrow PQ = QR$

[Sides opp. to equal angles]

$\Rightarrow QR = 8$ cm.

66. (b) $\frac{ar\ (\triangle ABC)}{ar\ (\triangle DEF)} = \frac{49}{144} = \frac{(BC)^2}{(EF)^2}$

$$\Rightarrow \frac{BC}{EF} = \frac{7}{12}$$

$$\Rightarrow BC = \frac{7}{12} \times 16.8$$

$= 9.8$ cm.

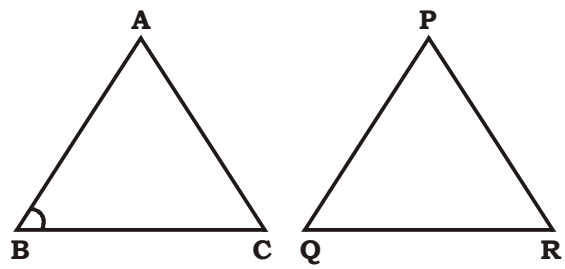
67. (d) Circumradius $= \frac{Side}{\sqrt{3}}$

$$= \frac{9}{\sqrt{3}} = 3\sqrt{3}$$

68. (d) $\frac{ar\ (ABC)}{ar\ (DEF)} = \frac{324}{289} = \frac{(AP)^2}{(DQ)^2}$

$$\Rightarrow \frac{AP}{DQ} = \frac{18}{17}$$

69. (d)



$\angle ABC = x + 60° = \angle PQR = 85° - 4x$

$\Rightarrow x + 60° = 85° - 4x$

$\Rightarrow 5x = 25°$

$x = 5°$

$\Rightarrow \angle ABC = x + 60°$

$= 65°$

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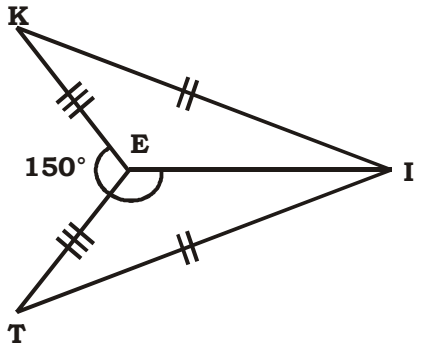
70. (c)



$\Delta KEI \cong \Delta TEI$

(By SSS)

$\Rightarrow \angle KEI = \angle IKT = x$ (say)

$\Rightarrow 2x + 150° = 360°$ (complete angle)

$\Rightarrow x = 105°$

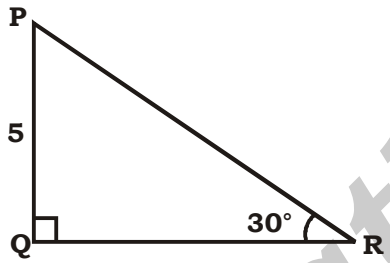
71. (b) $\angle A + \angle B + \angle C = 180°$

(Angle sum property)

$\angle A = 180° - 110°$

$\angle A = 70°$

72. (a)

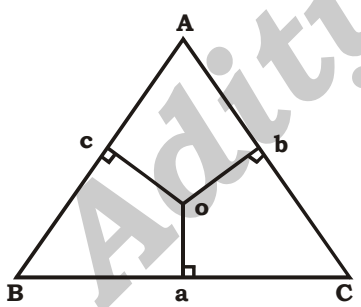


$\tan 30° = \frac{P}{B} = \frac{PQ}{QR}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{5}{QR}$

$\Rightarrow QR = 5\sqrt{3}$

73. (a)



Side $= \frac{2}{\sqrt{3}}(P_1 + P_2 + P_3)$

$= \frac{2}{\sqrt{3}}\left(\sqrt{3} + 2\sqrt{3} + 5\sqrt{3}\right)$

$\Rightarrow 16$

$\Rightarrow$ Perimeter = 3 × 16 = 48 cm.

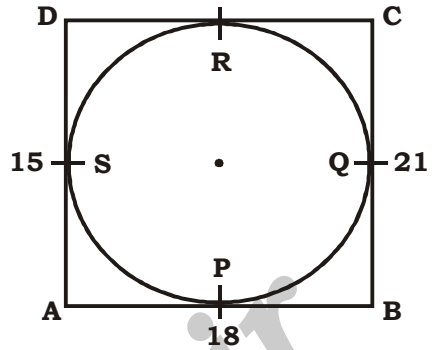
74. (b)

Number of circles passing through a given triangle is

Since, for formation of a Δ AB + BC > AC

Which is not true in given case.

75. (d)



We know, PA = AS, DS = DR_1 RC = CQ, QB = PB

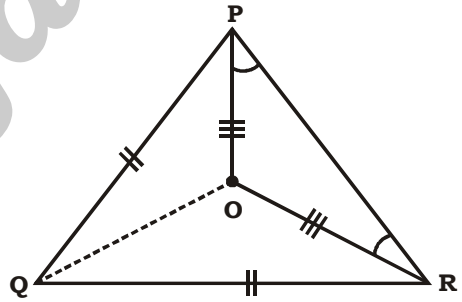
$\therefore$ DR + DS + SA + AP + PB + QB + CQ + CR = 15 + 18 + 21 + CD

$\Rightarrow$ 2 (DS + AS) + 2 (QB + CQ) = 54 + CD

$\Rightarrow$ 30 + 42 = 54 + CD

$\Rightarrow$ CD = 18

76. (b)



OP = OR

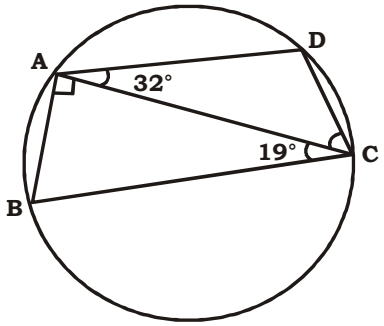
$\Rightarrow$ OPR is isoscelesΔ

I is true

$\Rightarrow$ O is not centroid but an in centre II is false

$\Rightarrow \Delta PQO \cong \Delta RQO$ (SAS) III is true

77. (d)



$\angle BAC = 90°$ [Angle formed by diameter]

$\angle A + \angle C = 180°$

$\Rightarrow 90 + 32 + 19 + \angle ACD = 180°$

$\Rightarrow \angle ACD = 39°$

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78. (c)

We know,

Each external angle $= \frac{180 \times 2}{x}$

$\Rightarrow \frac{360}{n} = 18$

$\Rightarrow n = 20$

$\Rightarrow$ No. of diagonals $= \frac{n(n-3)}{2}$

$= \frac{20 \times 17}{2} = 170$

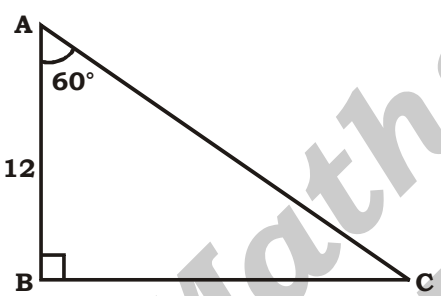
79. (a)

Let $\Delta ABC \sim \Delta PQR$

$\Rightarrow \frac{ar\,ABC}{ar\,PQR} = \frac{(AB)^2}{(PQ)^2} = \frac{196}{625}$

$\Rightarrow \frac{AB}{PQ} = \frac{14}{25}$

80. (c)

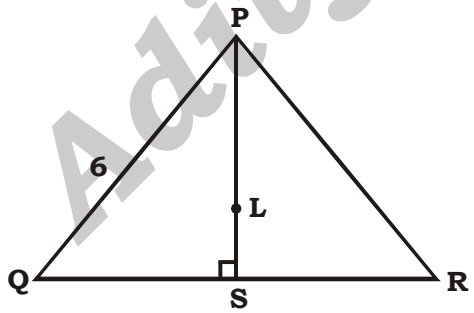


$\tan 60° = \frac{BC}{AB}$

$\sqrt{3} = \frac{BC}{12}$

$\Rightarrow AB = 12\sqrt{3}$

81. (d)



$PS = \frac{\sqrt{3}}{2} \times PQ = 3\sqrt{3}$

$PL = \frac{2}{3} \times PS = \frac{2}{3} \times 3\sqrt{3} = 2\sqrt{3}$

82. (c)

Sum of interior angles $= (x-2) \times 180$

$\Rightarrow 2700 = (x-2) \times 180$

$= x = 17$

$\Rightarrow$ No. of diagonals $= \frac{x(x-3)}{2}$

$= \frac{17 \times 14}{2} = 119$

83. (a)

Decagon = 10 sided polygon.

A.T.Q,

$\frac{(n-2)}{n} \times 180° = \frac{15}{16} \times \frac{8}{10} \times 180°$

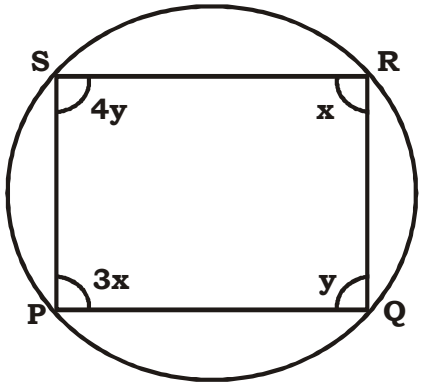
$\frac{n-2}{n} = \frac{3}{4}$

$\Rightarrow n = 8$

No. of diagonals $= \frac{n(n-3)}{2}$

$= \frac{8 \times 5}{2} = 20$

84. (d)



Let $\angle R = x°$

$\Rightarrow \angle P = 3x°$

Let, $\angle Q = y°$

$\Rightarrow \angle S = 4y°$

We know,

$\angle R + \angle P + \angle Q + \angle S = 4x + 5y = 360°$

$5y = 180°$ and $4x = 180°$

$y = 36°$ $\quad x = 45°$

$\angle R + \angle S = x + 4y = 45° + 144° = 189°$

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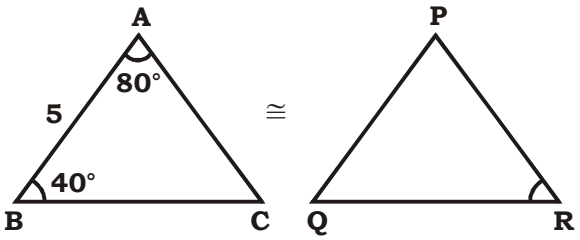
85. (a)



$\angle C = 180° - 80° - 40°$ (Angle sum prop.)

$= 60° = \angle R$

86. (a)

For infinite solutions

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$$

$a_1 = 17, \quad b_1 = m, \quad c_1 = -102$

$a_2 = 23, \quad b_2 = 299, \quad c_2 = -138$

$$\Rightarrow \frac{17}{23} = \frac{m}{299} \Rightarrow m = 221$$

87. (d)

For no. solution, $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

$$\therefore \frac{18}{7} = \frac{-72}{-m}$$

$\Rightarrow m = 28$

88. (c)

For coordinate a x is $\Rightarrow x = 0, y = 0$

Then, $57x - 19y = 399$ cut

coordinate a x is when $x = 0$

$-19y = 399$

$y = -21$

$\Rightarrow (0, -21)$

When, $y = 0$

$57x = 399$

$x = 7$

$(7, 0)$

Maths by Aditya Ranjan sir

CIRCLE

लहै

21

1. Two circles touch each other externally at P. AB is a direct common tangent to the two circles, A and B are points of contact, and ∠PAB = 40°. The measure of ∠ABP is:

है हिलायदे ं दहम हिं ै हिऔत यरदP ज दन यहिएक्रAB है बि हिलहै हिं ं चहै बमक्रद्र बअ्ज्ै% ड्र बि दएुक्रA श ै क्रदB अ्ज्ै% ड्र अ्ह्रद्रएुक्रश ै क्र∠PAB = 40° यै ि∠ABPदं ै दद्धैजद। क्ै दएै ि प

SSC CGL 01/12/2022 (Shift- 01)

(a) 45° (b) 55°
(c) 50° (d) 40°

2. Radius of a circle is 10 cm. Angle made by chord AB at the centre of this circle is 60 degree. What is the length of this chord?

ं ं दलहै दं ं द् ै क्ै द?स्द-द्धिं दएक्रट-दलहै दं हिं ि दज ०ं लै दAB ; ं दअबै क्ै द>क्ै दं ं ुि दधस्द् ३>ंस्एक्रट-द०ं लै ं ं दसमै टड्र ं यर्ब दएक

SSC CGL 01/12/2022 (Shift- 01)

(a) 40 cm (b) 20 cm
(c) 30 cm (d) 10 cm

3. The side of an equilateral triangle is 12 cm. What is the radius of the circle circumscribing this equilateral triangle?

ं ं द-द्धऔएद्र ै डै०दं ं दडै०ै द?प्द-द्धिं दएक्रट-द-द्धऔए: ै डै०दं ं हिज़ >यदं बहिलै सहिलहै दं ं द्र ै क्ै द। क्ै दएक

SSC CGL 01/12/2022 (Shift- 02)

(a) 6√3 cm (b) 4√3 cm
(c) 9√3 cm (d) 5√3 cm

4. O is the centre of this circle. Tangent drawn from a point P, touches the circle at Q. If PQ = 24 cm and OQ = 10 cm, then what is the value of OP?

O ट-दलहै दं ं दं ि दएक्र अ्ह्रद्रP -हिवै ं व दं >टड्र अ्ज्ै% ड्र बि लहै दं ं हिQ ज द अ्ज्ै% ड्र यर्ब दएक्रक्ष हदPQ = 24 -द्धिंदश ै क OQ = 10 -द्धिंदएुक्रयै हिOP ं ं दद्धैबद। क्ै दएक

SSC CGL 01/12/2022 (Shift- 02)

(a) 26 cm (b) 52 cm
(c) 13 cm (d) 15 cm

5. Two equal circles of radius 8 cm intersect each other in such a way that each passes through the centre of the other. The length of the common chord is:

8 cm. ै क्ै दलै सहिहै हि-द्धैबदलहै दे ं दहम हिं ै हिट-दजं2 ै ज्ट्यक्न हियदं यहिएक्रं दजक्ष्ं दे ं दहम हि हिं ि हिद-हिऐं ि ३० यै दएक्रचडै क्ष बमक्रद्र०ं लै दं ं दसमै टड्र। क्ै दएक

SSC CGL 01/12/2022 (Shift 04)

(a) 8√3 cm (b) √3 cm
(c) 2√3 cm (d) 4√3 cm

6. A chord of length 42 cm is drawn in a circle having diameter 58 cm. What is the minimum distance of other parallel chord of length 40 cm in the same circle from 42 cm long chord?

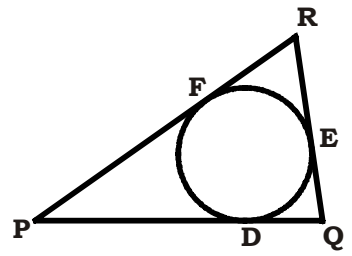
ं ं दध्ख्द-द्धिं दज्र्क्ै -दलै सहिलहै दद्धिउप्द-द्धिं दसम्अै टड्र ं ं द०ं लै दवै ं व०ै यर्ब दएक्रच्य ं दलहै दद्धिउप्द-द्धिं दसम्अै टड्र लै र्स द०ं लै द-हिं ं दश त्क्द-द्धैबै त्र द०ं लै द् ०-ं ं दसम्अै टड्र उस्द-द्धिं दएुक्रं ं दत्क्ष्बयद्धिहर्ग द् ं यर्ब दएक

SSC CGL 01/12/2022 (Shift- 04)

(a) 4 cm (b) 1 cm
(c) 3 cm (d) 2 cm

7. In the given figure, a circle is inscribed in ΔPQR, Such that it touches the sides PQ, OR and RP at points D, E, F, respectively. If the lengths of the sides PQ= 15 cm, OR = 11cm and RP = 13cm, then find the length of PD.

ह्र द>टड्रश ै 4. यदद्धिं ै डै०दΔPQR द्धि ं दश त्रदलहै दट-जं2 ै दवै व ै द>क्ै दएक्रं दडै०ै द्रPQ, QR श ै क्रद्रRP = द्धै%र D, E, F ज द अ्ज्ै% ड्र यर्ब दएक्रक्ष हदडै०ै दं ं दसमै टड्र ै द्रPQ = 15cm, QR = 11cm श ै क्रद्रRP = 13 cm एुक्रयै ि PD ं ं दसमै टड्र ै यदं ं ०ै ि



SSC CGL 02/12/2022 (Shift- 01)

(a) 9 cm (b) 8 cm
(c) 7.5 cm (d) 8.5 cm

Maths by Aditya Ranjan sir

8. The length of the tangent to a circle from a point P is 15 cm. Point P is 17 cm away from the centre. What is the radius of the circle?

` ` द अहद्रP - हि ` दलहै दं ` द8ज्ज्ञ्ज्ञ्ज्ञ

16. The number of parallel tangents of a circle with a given tangent is:

लहै दं हिं -ंद हे दे दअजै 5मैं दं हि-द्धैत्व दअजै ड मैं शै सि ं द-त्वक्षै द ं यर्ब दऐ मैं दएक

SSC CGL 06/12/2022 (Shift- 04)

(a) 1 (b) 2

(c) 3 (d) 4

17. A circle is inscribed in a ΔABC having sides AB = 16 cm, BC = 20 cm and AC = 24 cm, and side AB, BC and AC touches circle at D, E and F, respectively. The measure of AD is:

ं ं दलहै दDABC द्धिश त्वस्त्र एयदएक्ष वद्र है डे 0 दं ं दडे 0 7 Ab = 16 cm, BC= 20 cm शै वद्रAC = 24 cm एक यैं दडे 0 दAB,BC शै वद्रAC लहै दं ै हि- द्धै% रदD, E शै क F ज दअजै% ड ं र्य दएक्षAD ं ै दद्धैजद। क्षै दऐ ैं प

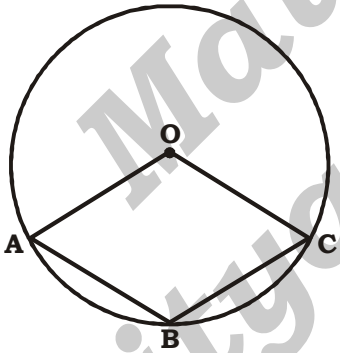
SSC CGL 07/12/2022 (Shift- 02)

(a) 10 cm (b) 20 cm

(c) 6 cm (d) 14 cm

18. In the given figure, O is the centre of the circle and ∠AOC = 140° find ∠ABC.

र्ह दे टड्डशै 4. यदद्धिहिO लहै दं ै दं लिदशै वद्र∠AOC = 140° एक्ष∠ABC ं ै दद्धैजदै यदं ं 0 ी



SSC CGL 07/12/2022 (Shift- 04)

(a) 95° (b) 110°

(c) 120° (d) 103°

19. AB is the diametr of a circle with center O. If P be point on the circle such that ∠AOP = 110°, then the measure of ∠OBP is:

AB, ं लिदO लै सहिलहै दं ै दज्ञै -दएक्षक्ष हदP लहै दज दे ं अहद्रएक्षै वद्र∠AOP = 110° एक्षयै हि∠OBP ं ै दद्धैज दै यदं ं 0 ी

SSC CGL 08/12/2022 (Shift- 01)

(a) 50° (b) 65°

(c) 60° (d) 55°

20. If two circles do not touch or intersect each other and one does not lie inside the other, then find the number of common tangents.

क्षै हदहै हिलहै दे ं दहम हिं ै हिअजै ड क्षै दज्ञ्यक्न हिदबर्ए दं यि एक्षै वद्रे ं दहम हिं हिश ह दबर्ए दएक्षयै हिचडे क्षै बम्फ्रद्र अजै 5 मैं शै हिं ं द-त्वक्षै दद्रै यदं ं 0 ी

SSC CGL 08/12/2022 (Shift- 02)

(a) 5 (b) 4

(c) 2 (d) 3

21. The radius of a circle is 5 cm. Calculate the length of a tangent drawn to this circle from a point at a distance of 10 cm from its centre.

ं ं दलहै दं ं द्रै क्षै दध्द-द्धिदएक्षट-दलहै दं हिं लिद-हि?स -द्धिदं ं दहर्ग दज द्र क्षै यदे ं द अहद्र-हिट-दज दवैं त्व दे टड्डे अजै ड मैं दं ं दसलैटड्ड ं दे ड्ड मैं दं लि

SSC CGL 08/12/2022 (Shift- 03)

(a) 5√5 cm (b) 5√2 cm

(c) 5 cm (d) 5√3 cm

22. There are two circles which touch each other externally. The radius of the first circle with centre O is 17 cm and radius of the second circle with centre A is 7 cm. BC is a direct common tangent to these two circles, where B and C are points on the circles with centres O and A, respectively. The length of BC is:

है हिलहै दएक्षै हिं ं दहम हिं ै हिअैत दप्र जद-हिअजै ड ं यहिएक्षि ं लिदO लै सहिजएसहिलहै दं ं द्रै क्षै द?ण्द-द्धिदएक्षै वद्रं लि A लै सहिहम हिलहै दं ं द्रै क्षै दण्द-द्धि दएक्षBC टबदहै हिलहैं लि ं दचडे क्षै बम्फ्रद्र श बअजै ड मैं दएक्ष 0 ऐ द्रB शै वद्रC र द्धै% र O शै वद्रA ं लि हिलै सहिलहैं हिज द्र -ै यद अहद्रएक्षBC ं ं सलैटड्ड ं यर्ब दएक

SSC CGL 08/12/2022 (Shift- 04)

(a) $2\sqrt{188}$ cm (b) $2\sqrt{119}$ cm

(c) $2\sqrt{113}$ cm (d) $2\sqrt{117}$ cm

23. If PT is a tangent at T to a circle whose centre is O and OP = 17 cm and OT = 8 cm, find the length of the tangent segment PT.

क्षै हदPT ं ं दलहै दं हि अहद्रT ज दे ं दअजै ड मैं दएक शै वद्रट-दलहै दं ै दं लिदO एक्षै वद्रOP = 17 cm यैं OT = 8 cm एक्षयै हिअजै 5मैं दवै त्वदद्र-हिद्धि(दPT ं ं सलैटड्डै यदं ं 0 ी

SSC CGL 09/12/2022 (Shift- 01)

(a) 13 cm (b) 14 cm

(c) 16 cm (d) 15 cm

Maths by Aditya Ranjan sir

24. In a circle of radius 3 cm, two chords of length 2 cm and 3 cm lie on the same side of a diameter. What is the perpendicular distance between the two chords?

ढद-द्विद्व है क्षै दलै सहि ं दलहै दब्बुहि प्द-द्विदशै वद्व ढद-द्वि सलैटइ ं दहै हि0 लै द्रे ं दज्ञहै -दं हिं दर्ए दशै दि 8ै यदएक है बैं हि0 लै शै हिं हिर्अ० दसक्लयदहर्ग द। क्षै दएक

SSC CGL 09/12/2022 (Shift- 02)

(a) $\frac{4\sqrt{3}-3\sqrt{2}}{2}$ cm (b) $\frac{4\sqrt{2}-3\sqrt{3}}{2}$ cm

(c) $\frac{4\sqrt{2}-3\sqrt{3}}{3}$ cm (d) $\frac{4\sqrt{2}-3\sqrt{3}}{4}$ cm

25. The perpendicular distance between the centre of a circle and the longest chord of that circle is _____.

` ं दलहै दं हिं लिदशै वद्वच-दलहै दं ं द-अ-हिसर्मद0 लै दं ं सक्लयदहर्ग द_____ एक

SSC CGL 09/12/2022 (Shift- 03)

(a) 1 (b) 0

(c) 2 (d) π

26. Radius of a circle is 5 cm. Length of chord AB in this circle is 6 cm. What is the distance of this chord from the centre of the circle?

` ं दलहै दं ं द्रै क्षै दध्द-द्विदएक्रट-दलहै दब्बुहि0 लै दAB ं सलैटइ धद-द्विदएक्रट-द0 लै दं ं दलहै दं हिं लिद-हि ं यर्ब हर्ग दएक

SSC CGL 12/12/2022 (Shift- 01)

(a) 4 cm (b) 5 cm

(c) 6 cm (d) 8 cm

27. If C_1, C_2 be the centres of two circles and r_1,r_2 be the respective radii such that the distance between the centres is equal to the sum of the radii of the two circles, find the number of common tangents.

क्षै हदC$_1$, C$_2$ है हिलहै हिं हिं लिदऐ हिशै वद्वr_1, r_2 -वृत्तकृय .है क्षै द्रट-दज्ज2 दऐ हि ं दं लि हिं हिर्अ० दं ं दहर्ग दहै हि लहै हिं ं द्रै क्षै शै हिं हिक्षै हिदं हिअै अ दऐ दियै हिचडै क्ष बम्फ 8ज्ज्ञ्ज हैं शै हिं ं द-वक्षै दध्ै यदं ं 0 ै

SSC CGL 12/12/2022 (Shift- 02)

(a) 4 (b) 2

(c) 1 (d) 3

28. If two circles of radii 18 cm and 8 cm touch externally, then the length of a direct common tangent is:

क्षै हद?ख्द-द्विदशै दिख्द-द्विद्रै क्षै दलै सहिहै हिलहै दऐ त दप्र ज -हि8ज्ज्ञ्ज यहिएक्वयै हि ं दचडै क्ष बम्फ्रद्र श ब8ज्ज्ञ्ज हैं दं ं सलैटइध्ै यदं ं 0 ै

SSC CGL 12/12/2022 (Shift- 03)

(a) 24 cm (b) 14 cm

(c) 16 cm (d) 12 cm

29. The diameters of two circles are 12 cm and 20 cm, respectively and the distance between their centres is 16 cm. Find the number of common tangents to the circles.

है हिलहैं हिं हिज्ञहै -दन ज्ञ्ज्ञ्ज रद?प्द-द्विदशै वद्व प्स्द-द्विदएक्वशै क चबं हि लै हिं ं दर्अ० दं ं दहर्ग द?धद-द्विदएक्रलहै हिज दचडै क्ष बम्फ 8ज्ज्ञ्ज हैं शै हिं ं द-वक्षै दध्ै यदं ं 0 ै

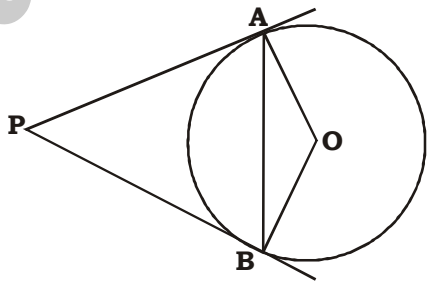
SSC CGL 12/12/2022 (Shift- 03)

(a) 2 (b) 3

(c) 1 (d) 4

30. In the given figure, if PA and PB are tangents to the circle with centre O such that ∠APB = 54°, then ∠OBA = _____.

हं द> टइशै 4 यदब्बुहिक्ष हदPA शै वद्वPB ं लिदO लै सहिलहै ज दट-दज्ज2 दै 8ज्ज्ञ्ज एक्व ं द∠APB = 54°, यै हि∠OBA = ____ै



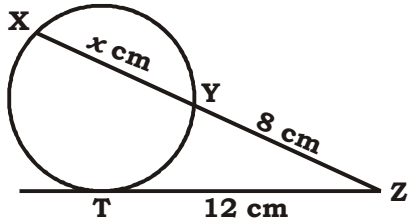
SSC CGL 12/12/2022 (Shift- 04)

(a) 27° (b) 40°

(c) 30° (d) 35°

31. In the figure, XYZ is a secant and ZT is a tangent to the circle at T. If TZ = 12 cm and YZ = 8cm, then find the length of XY.

शै 4 यदब्बुहिXYZ ` ं दनहिं द हैं दएक्वशै वद्वZT, . अहद्रT ज दलहै दं ं द8ज्ज्ञ्ज हैं दएक्रक्ष हदTZ = 12cm शै वद्वYZ = 8 cm एक्वयै हिXY ं ं दसलैटइध्ै यदं ं 0 ै



SSC CGL 12/12/2022 (Shift- 04)

(a) 8 cm (b) 9 cm

(c) 6 cm (d) 10 cm

Maths by Aditya Ranjan sir

32. The length of the chord of a circle is 24 cm, and the perpendicular distance between the centre and the chord is 5 cm. The radius of the circle is:

` ` दलहै दं ` द0 ैलै दं ` दसलै टइप उद- द्धिदएुकश् वक्र तिदश् क 0 ैलै दं हिअं० दं ` दसलयदहर्ग दध्द- द्धिदएिलहै दं ` द्रै क्षै एक

SSC CGL 13/12/2022 (Shift- 02)

(a) 10 cm (b) 13 cm

(c) 12 cm (d) 24 cm

33. Select the INCORRECT statement with respect to the properties of a circle.

` ` दलहै दं हि्रु ैं हि हि- लकृदद्धिं सयदं ै बदं ` द० क्ष बदं ैं

SSC CGL 13/12/2022 (Shift- 02)

(a) **Two tangents drawn at the end of the diameter of a circle are parallel.**

` ` दलहै दं हिज्ञै - दं हिश लदद्धिं ` र्व द> टइ है हि 8ज्ञै% 5 ैं ` द्र- द्धिबै ल दऐ ैं दएक

(b) **The radius drawn perpendicular to a chord bisects the chord.**

. ` - ` द0 ैलै द ज दसलदं ` र्व द> टइ् ै क्षै द0 ैलै दं ` ि - द्ध, डै. 0 यदं र्य दएक

(c) **The diameter of a circle is the longest chord of a circle.**

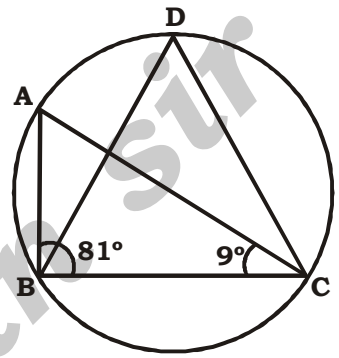
लहै दं ` दज्ञै - दलहै दं ` द- अ- हिसर्म द0 ैलै दऐ ैं दएक

(d) **The perpendicular distance from the centre of a circle increases when the length of a chord increases.**

0 ैलै दं ` दसलै टइ अ् बहिज दलहै दं हि तिद- हिसलयदहर्ग अ् ब0 ैं र्य दएक

34. In the given figure, ∠ABC = 81° and ∠ACB = 9°. What is the value of ∠BDC ?

र्ह द> टइ श् 4. यदद्धिं ∠ABC = 81° श् वक्र ∠ACB = 9° दएक यै हि ∠BDC ` ` दद्धिबद। क्षै दएक



SSC CGL 13/12/2022 (Shift- 04)

(a) 80° (b) 90°

(c) 70° (d) 60°

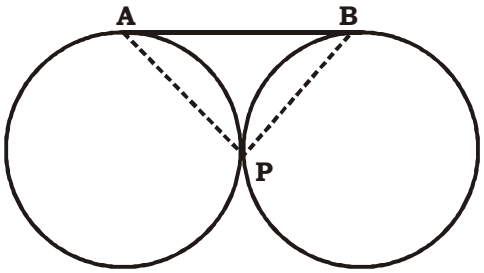
Aditya Ranjan Maths by Sir

ANSWER KEY

1.(c)	**2.**(d)	**3.**(b)	**4.**(a)	**5.**(a)	**6.**(b)	**7.**(d)	**8.**(c)	**9.**(c)	**10.**(c)
11.(c)	**12.**(a)	**13.**(c)	**14.**(b)	**15.**(a)	**16.**(a)	**17.**(a)	**18.**(b)	**19.**(d)	**20.**(c)
21.(d)	**22.**(b)	**23.**(d)	**24.**(b)	**25.**(b)	**26.**(a)	**27.**(d)	**28.**(a)	**29.**(b)	**30.**(a)
31.(d)	**32.**(b)	**33.**(d)	**34.**(b)						

SOLUTIONS

1. (c)



$\angle PAB = 40°$ (given)

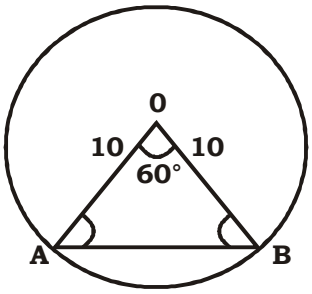
We know,

$\angle APB = 90°$

$\Rightarrow \angle APB + \angle ABP + \angle BAP = 180$ (Angle sum property)

$\Rightarrow$ PBA = 50°

2. (d)



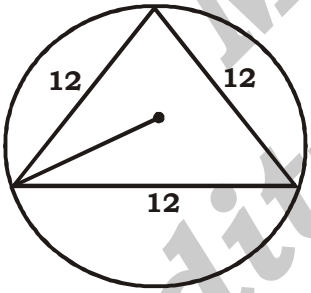
$\angle OAB = \angle OBA = 60°$

[Angeles opp. to equal sides]

$\Rightarrow$ AOB is an equilateral triangle

$\Rightarrow$ AB = 10

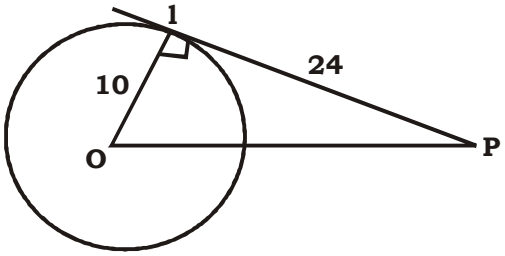
3. (b)



$r = \frac{\text{Side}}{\sqrt{3}}$

$= \frac{12}{\sqrt{3}} = 4\sqrt{3}$

4. (a)



$\angle OQP = 90°$ (Radius $\perp$ Tangent)

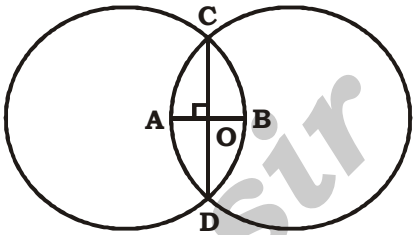
$\Rightarrow OP^2 = 10^2 + 24^2$

$= 100 + 576$

$= 676$

OP = 26

5. (a)



AB = 8 cm.

$\Rightarrow$ AO = 4 cm.

AC = 8 cm.

$\therefore$ In ΔAOC

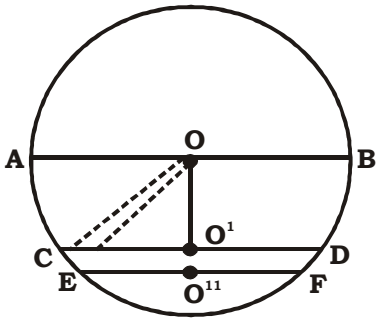
$OC^2 = 8^2 - 4^2$

$= 64 - 16 = 48$

$OC = 4\sqrt{3}$

$\Rightarrow CD = 2.OC = 8\sqrt{3}$

6. (b)



$OC = \frac{58}{2} = 29$ cm

$O^1C = \frac{42}{2} = 21$ cm.

$OO^1 = \sqrt{29^2 - 21^2}$

$OO^1 = 20$

OE = 29 cm.

$O^{11}E = 20$ cm.

$\Rightarrow OO^{11} = \sqrt{29^2 - 20^2}$

$OO^{11} = 21$

$\Rightarrow$ Distance = 1 cm.

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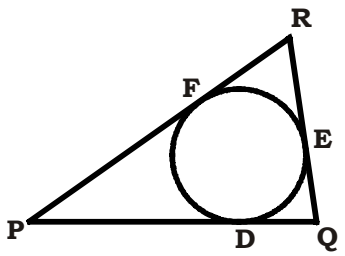
7. (d)



PQ = 15

QR = 11

RP = 13

PQ + QR + RP = PD + PF + FR + RE + EQ + DQ

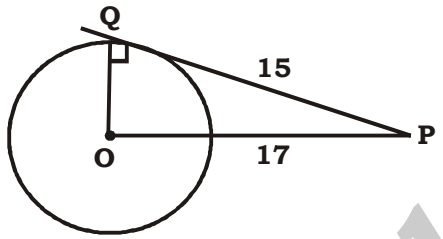
15 + 11 + 13 = 2PD + 2RE + 2EQ

39 = 2PD + 2 (RE + EQ)

⇒ 2PD = 39 – 22

⇒ PD = 8.5

8. (c)

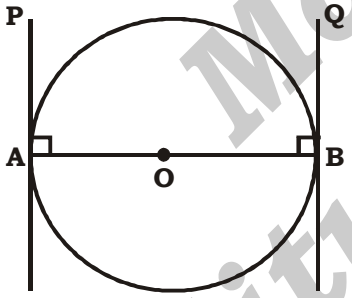


∠OQP = 90°

⇒ $OQ^2 = 17^2 - 15^2 = (17 - 15)(17 + 15)$

OQ = 8

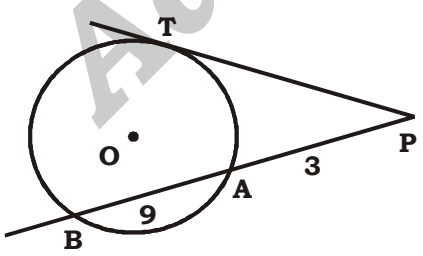
9. (c)



∠OAP = ∠OBQ = 90°

⇒ PA||BQ

10. (c)



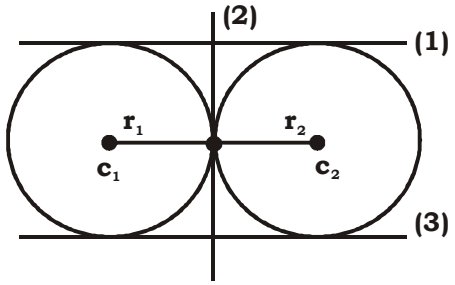
We know,

$PT^2 = PA \times PB$

$= 3 \times 12$

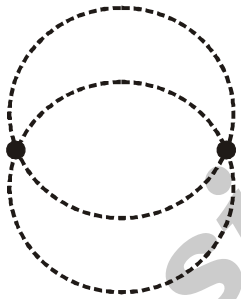
⇒ PT = 6

11. (c)



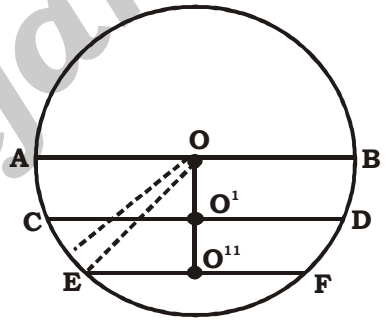
Total 3 tavgents

12. (a)



There can be infinite circle drawn from 2 fixed points. (with different radii)

13. (c)



$O^1 O^{11} = OO^{11} - 00^1$

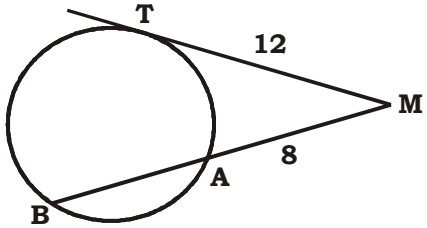
$O^1 O^{11} = \sqrt{OE^2 - (EO^{11})^2} - \sqrt{OC^2 - O^1 C^2}$

$O^1 O^{11} = \sqrt{625 - 225} - \sqrt{625 - 400}$

$O^1 O^{11} = 20 - 15$

$O^1 O^{11} = 5$ cm.

14. (b)



$MT^2 = MA \times MB$

$144 = 8 \times (8 + AB)$

$18 = 8 + AB$

⇒ AB = 10

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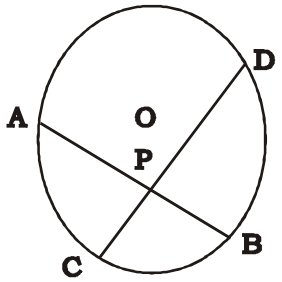
15. (a)



AP = AB – PB

= 20 – 12 = 8

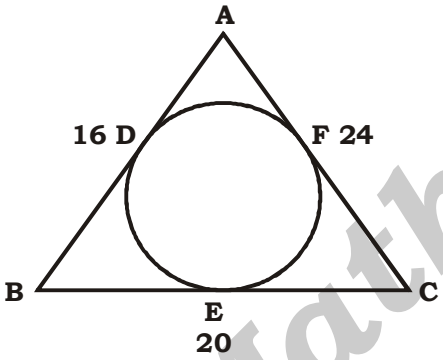
AP × PB = CP × PD

8 × 12 = 8 × PD

PD = 12 cm.

16. (a) There will always be only one tangent parallel to a given tangent.

17. (a)



AB + BC + AC = AD + AF + FC + EC + BE + DB

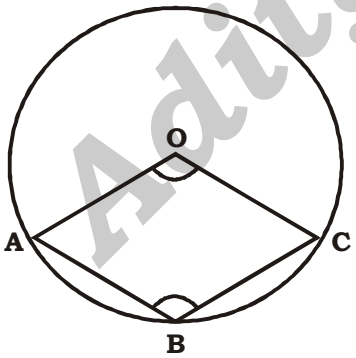
= 2AD + 2EC + 2BE

16 + 20 + 24 = 2AD + 2 (EC + BE)

60 = 2AD + 40

AD = 10 cm.

18. (b)

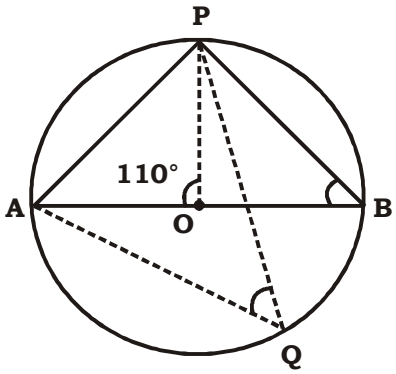


$\angle ABC = 180 - \frac{1}{2}\angle AOC$

= 180 – 70

= 110°

19. (d)



$\angle AOP = 110°$

$\angle AQP = \frac{110}{2} = 55$

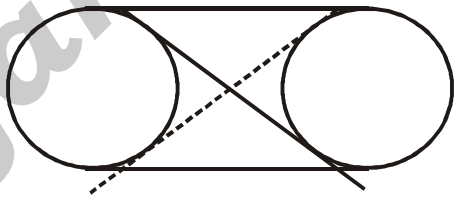
(Angle formed at circumference is half the angle at centre)

Now,

$\angle AQP = \angle ABP = 55°$

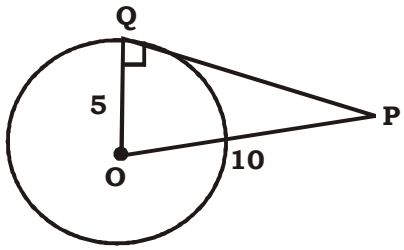
(Angle formed by same are.)

20. (b)



No. of common tangents = 4

21. (d)

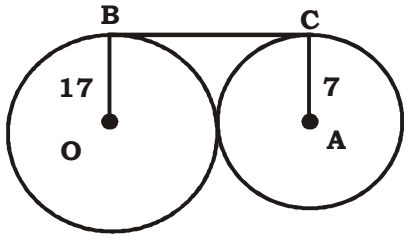


$\angle OQP = 90°$

$\Rightarrow QP^2 = 10^2 - 5^2$

$QP = 5\sqrt{3}$

22. (b)



$BC = 2\sqrt{r_1 r_2}$

$= 2\sqrt{7 \times 17}$

$= 2\sqrt{119}$

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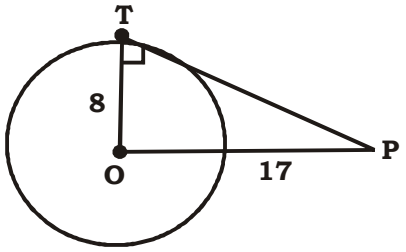
23. (d)



$\angle OTP = 90°$

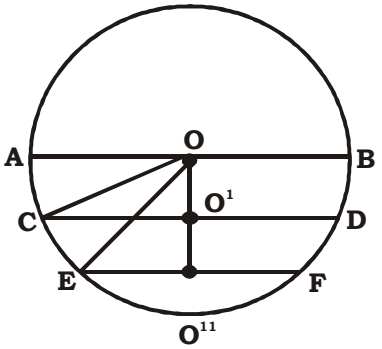
$PT^2 = 17^2 - 8^2$

$= 9 \times 25$

$PT = \sqrt{225}$

$= 15$

24. (b)



$O^1 O^{11} = \sqrt{r^2 - O^{11} E^2} - \sqrt{r^2 - O^1 C^2}$

$= \sqrt{9-1} - \sqrt{9 - \frac{9}{4}}$

$= 2\sqrt{2} - \frac{3\sqrt{3}}{2}$

$\Rightarrow \frac{4\sqrt{2} - 3\sqrt{3}}{2}$

25. (b)

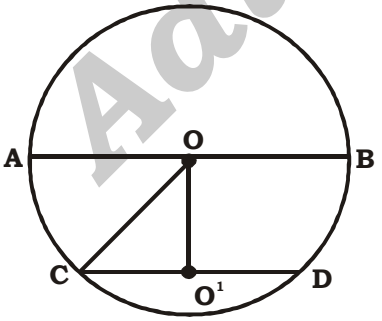
Zero

(The biggest chords of the circle is the diameter)

Now the perpendicular distance between the biggest chord diameter and the centre of the circle is 0.

Since the chord passes through the centre.

26. (a)

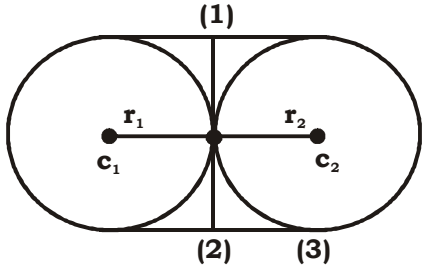


$O O^1 = \sqrt{OC^2 - O^1 C^2}$

$= \sqrt{5^2 - 3^2}$

$O O^1 = 4$

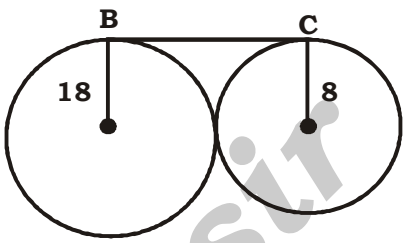
27. (d)



$c_1 c_2 = r_1 + r_2$

Common tangents = 3

28. (a)



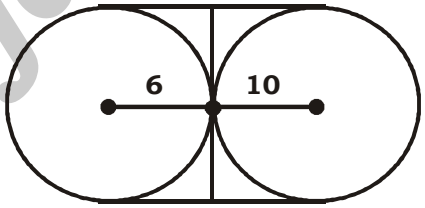
$BC = 2\sqrt{r_1 r_2}$

$= 2\sqrt{18 \times 8}$

$= 2 \times 3 \times 4$

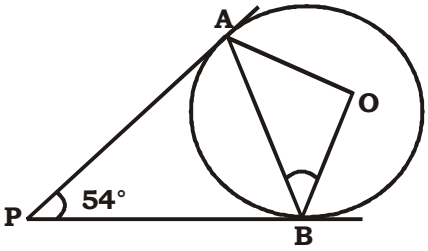
$BC = 24$

29. (b)



No. of common tangents = 3

30. (a)



We can directly say that:-

$\angle OBA = \frac{1}{2} \angle APB$

$= \frac{1}{2} \times 54 = 27°$

'OR'

$\angle AOB = \angle OBA$ [$\angle OA = OB$]

$\Rightarrow \angle OBA = \frac{180 - 126}{2} = 27°$

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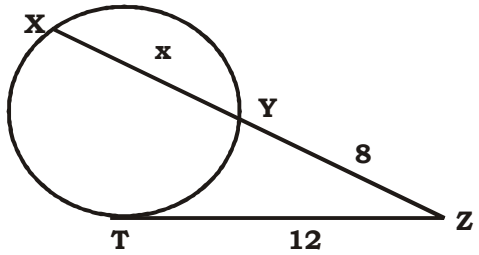
31. (d)



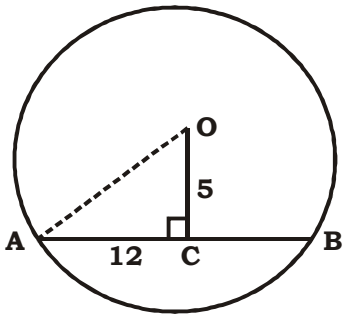
$ZT^2 = (zy) \times (ZX)$

$12^2 = 8 \times (8 + x)$

$\frac{144}{8} = 8 + x$

$x = 10$

32. (b)



$AC = \frac{24}{2} = 12$

$OC = 5$

$\Rightarrow OA^2 = 12^2 + 5^2$

$= \sqrt{144 + 25} = \sqrt{169} = 13$

33. (d) Is incorrect

because, length of chord decreases with increase in perpendicular distance

34. (b) In ΔABC

$\angle BAC = 180° - (81 + a)$

$= 90°$ (Angle sum prop.) and $\angle BAC = \angle BDC = 90°$

[Angles formed by same arc]

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MENSURATION-2D

ैंजर्ं प्र2D

22

1. The circumference of the two circles is 198 cm and 352 cm respectively. What is the difference between their radii?

है दिलायैं दिं गद- अत दर जनै एदक्ती दबहिजगहर्द चै दड़ मदबहिजगह व्रक्रद8% गद ैवृ ैद्धैं दिं दिजा दद्धर्ध अस्ट ैदव्रम

SSC CGL 01/12/2022 (Shift- 01)

(a) 45 cm (b) 16.5 cm
(c) 49.5 cm (d) 24.5 cm

2. The area of a triangle is 480 cm² and the ratio of its sides is 10 : 24 : 26. What is the perimeter of the triangle?

ग ं द ैं ैदं ैदू ैं-ग्रदी 0दबहिजगहर्द व्रक्रर्द चै द,बं गद ैं ैद्धैं ि ैं दद्ध%?ं दव0दएम1दएमु दव्रक्रद ैं ैदं ैद- अै-दृ ैदव्रम

SSC CGL 01/12/2022 (Shift- 04)

(a) 120 cm (b) 30 cm
(c) 150 cm (d) 60 cm

3. In the side of an equilateral triangle is 24 cm, then what is its area?

हक ं दबजधै व्रद्दे ैं ैदं गद ैं ैदम1दबहिजगहर्द व्रक्रर्द दि8बं ैं ैं-ग्रदृ ैदव्रम

SSC CGL 02/12/2022 (Shift- 02)

(a) 169√3 cm² (b) 125√3 cm²
(c) 256√3 cm² (d) 144√3 cm²

4. If the ratio of corresponding sides of two similar triangles is √3 : √2 then what is the ratio of the area of the two triangles?

हदहै दिबज2 -द ैं ैं दिं गदबेर्स द ैं ैद्धैं दिं ैं दद्ध%?ं √3 : √2दव्रक्रर्द दिहै ैं दि ैं ैं दिं दि ैं-ग्रदं ैं दद्ध%?ं दृ ैदव्रम

SSC CGL 02/12/2022 (Shift- 03)

(a) 3 : 2 (b) 9 : 4
(c) √3 : √2 (d) 27 : 8

5. How far will the tip of a 2cm-long minute hand of a clock move in 45 minutes?

ै ठ व्रक गद मदबहिजगहर्द ले धगद ज%6दं गद ब?दं गद %ं ि द(tip) है अैद1 द ज%6दजेदिं ं %गहखर्द दं गद सै ग सगप

SSC CGL 02/12/2022 (Shift- 03)

(a) π cm (b) 3π cm
(c) 4π cm (d) 2π cm

6. In the given figure, a square ABCD is inscribed in a quadrant APCQ. If AB = 16 cm, find the area of the shaded region (take π = 3.14) correct to two places of decimal.

ह गद स,व्रद्दे उ ं दजेदिं दग ं चै ैद APCQ दजेदिं दलसव्रद ABCD 84 गद ैं दव्रक्रदृ हद AB = 16 cm दव्रक्रर्द ैं दिं ैं ं ं दू ैं ैं ं ैं दू ैं ैं-ठै दशै ं दं गस्ट द(π = 3.14 ले दिद्वहनै जल लदं ि है दि(चै % दिं दबव्रक्रस8यै अस्ट ह गस्ट)

SSC CGL 02/12/2022 (Shift- 04)

(a) 155.98 cm² (b) 179.68 cm²
(c) 163.85 cm² (d) 145.92 cm²

7. If the side of an equilateral triangle is 20 cm, then what is its area?

हक ं दबजधै व्रद्दे ैं ैदं गद ैं ैदम0दबहिजगहर्द व्रक्रर्द दि8बं ैं ैं-ठै दृ ैदव्रम

SSC CGL 02/12/2022 (Shift- 04)

(a) 110√3 cm² (b) 125√3 cm²
(c) 200√3 cm² (d) 100√3 cm²

8. The area of a sector of a circle is 66cm2 and the angle of the sector is 60°. Find the radius of the circle.

लायैं दं कि ं द ैवृ ैं ठ दं ैदू ैं-ग्रद66 cm² दव्रक्रद्धै अस8ब ैवृ ैं ठ दं दिं ैं दं ैदजै-द60° दव्रक्रद8बदलायैं दं गद ैवृ ैं ैं दं गस्ट :

SSC CGL 03/12/2022 (Shift- 01)

(a) 5√15 cm (b) 6√14 cm
(c) 7√19 cm (d) 3√14 cm

9. Two identical circles each of radius 30 cm intersect each other such that the circumference of each one passes through the centre of the other. What is the area of the intersecting region?

है कि ं बजै %दलायैं द स %जेदिबदि-ढ ि दं गद ैवृ ैं दड0दबहिजगह व्रक्रर्द ं दहखअदिं ैं दि,बद-ढै अस-ढ स्ट हिदं अै दिव्रक्रर्द ं द8%जेि बदि-ढ ि दं गद- अत दहखअदं दिं हि दबदिक्रैं अस स्ट अै गद व्रक्र -ढ स्ट हिं दू ैं दं ैदू ैं-ठै दृ ैदव्रम

SSC CGL 03/12/2022 (Shift- 04)

(a) 400π – 250√3 cm² (b) 300π – 150√3 cm²
(c) 500π – 350√3 cm² (d) 600π – 450√3 cm²

Maths by Aditya Ranjan sir

10. The area of a sector of a circle is 308cm², with the central angle measuring 45°. The radius of the circle is:

ग दलयैदं हि ेवृ .ेठदं ेदू ेहै-कन्द308 cm²दक्रश्दं चै ,बं ेदं हिह्ल दं ेहै द45°दक्रश्दलयैदं गद ेवृ ेदृ ेदक्रैसिग्म

SSC CGL 03/12/2022 (Shift- 04)

(a) 14 cm (b) 21 cm
(c) 7 cm (d) 28 cm

11. Three circles of radius 6 cm are kept touching each other. The string is tightly tied around these three circles. What is the length of the string?

6 cmद ेवृ दलैल हिं ग%दलयैं हिं ेहिद्धै -बदजेहि(-नैह्ल अं ि क्र?दअैं दसृ ेदक्रश्द,%दं ग%दलयैं हिं हिम् अैहिद्धै ठिक्र दं सै बं अश्धै ेदसृ ेदक्रश्दं सहि गद्ल कौ ,ह्लदृ ेदक्रश्

SSC CGL 03/12/2022 (Shift- 02)

(a) 36 + 12π cm (b) 36 + 18π cm
(c) 24 + 36π cm (d) 36 + 20π cm

12. If the ratio of area of two similar triangles is √3 : √2 then what is the ratio of the corresponding sides of the two triangles?

हदहै हिबज2 -द ेऽ ेहिं हिं ेहै-कन्द ेदद्ध%?ं द√3 : √2 क्रश्दं हिहै %हि ेऽ ेहि गद्बेर्स द्र ेहै द्धै हि ेदद्ध%?ं दृ ेदक्रश्

SSC CGL 05/12/2022 (Shift- 02)

(a) 9 : 4 (b) 3 : 2
(c) $\sqrt[3]{3} : \sqrt[3]{2}$ (d) $\sqrt[4]{3} : \sqrt[4]{2}$

13. Three circles of radius 4 cm are kept touching each other. The string is tightly tied around these three circles. What is the length of the string?

1दबहिजग्ह्र ेवृ दलैल हिं ग%दलयैं हिं ेहिद्धै -बदजेहि(-नैह्ल अं ि क्र?दअैं दसृ ेदक्रश्द,%दं ग%दलयैं हिं हिम् अैहिद्धै ठिक्र दं सै बं अश्धै ेदसृ ेदक्रश्दं सहि गद्ल कौ ,ह्लदृ ेदक्रश्

SSC CGL 05/12/2022 (Shift- 04)

(a) 24 + 8p cm (b) 24p + 16 cm
(c) 32 + 16p cm (d) 24 + 18p cm

14. If the length of certain rectangle is decreased by 4 cm and breadth is increased by 2 cm, it would result in a square of the same area. What is the perimeter of the original rectangle?

हद बग्द्धै ेदं गद्ल धै ,ह्ल4 cmदं जदं अह गद्र ेगद्क्रश्द्धै श्रम् ेहै क,ह्ल2 cmदधं ेकह गद्र ेगद्क्रश्दं हि8 %हिक्रग्ह्र ेहै-कन्द ेदलसह्लधै%दर ेदक्रश्दजख दद्धै ेदं ेद- अैं-दथैं दं अैं

SSC CGL 06/12/2022 (Shift- 01)

(a) 15 cm (b) 24 cm
(c) 20 cm (d) 10 cm

15. A wire is in the form of square with side 11 cm. It is bent to form a circle. What is the radius of the circle?

ग दं ेअक्क्रद्बहिजग्ह्र ेहै दलैल हिलसह्लं हिद्धै ेअजेहिक्रश्द,बहि ग दलयैदधै% %हिं हि ल्न दजैहै कर ेदक्रश्दलयैदं गद ेवृ ेदृ ेदक्रश्

SSC CGL 06/12/2022 (Shift- 01)

(a) 11 cm (b) 5 cm
(c) 9 cm (d) 7 cm

16. Find the area of the sector of a circle with radius 4 cm and angle 30°.

बग्द्धलयैदं कि हिहि ेवृ .ेठदं ेदू ेहै-कन्दथैं दं अैहि स्बं ग ेवृ ेद1दबहिजग्ह्रद्धै श्रम् ेहै द30°दक्रश्

SSC CGL 06/12/2022 (Shift- 01)

(a) 7.186 cm² (b) 6.186 cm²
(c) 4.186 cm² (d) 5.186 cm²

17. The height of an equilateral triangle is 7√3 cm. What is the area of this equilateral triangle?

ग दबजधै क्रद्दै ेऽ ेदं गद्र ेणै ,ह्ल7√3दबहिजग्ह्रद्दक्रश्द,बदबजधै क्र? ेऽ ेदं ेदू ेहै-कन्दृ ेदक्रश्

SSC CGL 06/12/2022 (Shift- 02)

(a) 36√3 cm² (b) 25√3 cm²
(c) 49√3 cm² (d) 32√3 cm²

18. Calculate the area of a sector of a circle with radius 10 metres and angle of 90 degrees at the centre.

क0दजग6अश ेवृ ेदद्धै श्रम् हि दजेहि0द ठसह्लं हिं ेहै दलैल लयैदं कि दऽवृ .ेठदं हिू ेहै-कन्दं गद्सन्ै %दं गस्न :

SSC CGL 06/12/2022 (Shift- 03)

(a) 79.3 m² (b) 79.5 m²
(c) 78.5 m² (d) 75 m²

19. The ratio of the outer and the inner circumference of a circular path is 5 : 4. If path is 50 metres wide, then what is the radius of the inner circle?

ग दलयैं ेअ-चैदं गद्धै क्रअई चै दद्धैं अं द- अ ेहिं ेद्ध%?ं द दए1दक्रश्द हद-चैद 0दजग6अश ेहै कक्रैहिं हिद्धैं अं लयैदं गद ेवृ ेदृ ेदक्रश्

SSC CGL 06/12/2022 (Shift- 03)

(a) 250 metres (b) 300 metres
(c) 200 metres (d) 210 metres

Maths by Aditya Ranjan sir

20. The diagonal of the square is 8√2 cm. Find the diagonal of another square whose area is triple that of the first square.

लसह्न ं ै द लं ै ह्न 8√2 cmदक्रश्वदन ं दहरुअ्रिन ्रिहि लसह्न ं ै लं ै ह्नथै ं दं गस्न द स्ब ं ै दू ै ई-कन द-क्रन्द्रिलसह्न ं हिू ै ई-कन ं ै द ं सश्रै दक्रश्व

SSC CGL 06/12/2022 (Shift- 04)

(a) 8√5 cm (b) 8√3 cm
(c) 8√2 cm (d) 8√6 cm

21. The height of an equilateral triangle is 9√3 cm. What is the area of this equilateral triangle?

न ं दबजधै क्रद्दे ै ै दं गह्न ण ै ,ह्न9√3दबह्निजग्रह्नक्रश्वद,ब ं ै दबजधै क्र? ै ै दं ै दू ै ई-कन दृ ै दक्रश्व

SSC CGL 07/12/2022 (Shift- 01)

(a) 92√3 cm² (b) 67√3 cm²
(c) 49√3 cm² (d) 81√3 cm²

22. If the circumference of a circle is 220 cm, then what is its radius?

हक ं दलयैदं गह्न- औ दमम0दबह्निजग्रह्नक्रश्वर्द ै हि8ब ं गह्न ै ै वृ ै ृ ै दक्रश्व

SSC CGL 07/12/2022 (Shift- 01)

(a) 26 cm (b) 25 cm
(c) 35 cm (d) 40 cm

23. The perimeter of a square is 124 metres. What is its area?

न ं दलसह्न ं ै द- औ -दक्रश्व1दजग6अक्रश्वद8ब ं ै दू ै ई-कन दथै ं गस्न :

SSC CGL 07/12/2022 (Shift- 02)

(a) 448 m² (b) 884 m²
(c) 764 m² (d) 961 m²

24. The circumference of the two circles is 308 cm and 440 cm respectively. What is the difference between their radii?

है हिलयैं हिं गह्न- अत दर जनै एड0ी दबह्निजग्रह्नर्द चै द110दबह्निजग्रह्न क्रश्वद8% गह्न ै ै वृ ै द्धै हिं हिजृ दद्धर्ष्ट अक्रश्व ै दक्रश्व

SSC CGL 07/12/2022 (Shift- 02)

(a) 21 cm (b) 49 cm
(c) 35 cm (d) 14 cm

25. The length of the altitude of an equilateral triangle is 6√3 m. The perimeter of the equilateral triangle (in m) is:

न ं दबजधै क्रद्दे ै ै दं गह्न ण ै ,ह्नद्वनै गै-ह्नेध)द6√3 mदक्रश्व बजधै क्रद्दे ै ै दं ै द- औ -द(m जेदिृ ै दक्रश्व

SSC CGL 07/12/2022 (Shift- 03)

(a) 12√2 (b) 36√2
(c) 36 (d) 24√3

26. If the side of an equilateral triangle is 8cm, then find the area of the triangle (correct to two decimal places).

हक ं दबजधै क्रद्दे ै ै दं गह्न ै ै द8 cmदक्रश्वर्द ै हि ै ै ं ै दू ै ई-कन दद्वहै हिहनै जल लद(चै % हिं द-खै ै ज्ञं) दथै ं गस्न :

SSC CGL 07/12/2022 (Shift- 04)

(a) 27.17 cm² (b) 27.27 cm²
(c) 27.71 cm² (d) 27.72 cm²

27. The radius of a circle with centre at O is 6 cm and the central angle of a sector is 40°. Find the area of the sector.

हिद्ध Oदलैल हिं दलयैदं गह्न ै वृ ै द6 cmदक्रश्वद्धै श्रक्रश्व ै वृ ं ै ०दं ै दं हिह्नृ दं ै हि द40°दक्रश्वद ै वृ ं ै ०दं ै दू ै ई-कन थै ं दं गस्न :

SSC CGL 08/12/2022 (Shift- 04)

(a) 6π cm² (b) 5π cm²
(c) 4π cm² (d) 8π cm²

28. Three circles of radius 7 cm are kept touching each other. The string is tightly tied around these three circles. What is the length of the string?

हिदबह्निजग्रह्न ै वृ ै दलैल हिं ग%दलयैं हिं ै हिद्धै -बदजेहि(-नै ह्नं अं हि क्र? दअ ै दसृ ै दक्रश्वद,%र्द ग%दलयैं हिं हिम ै अैहिद्धै हिक्रु दतै सै ब ं अक्रधै सै दसृ ै दक्रश्वदतै सहि गह्नल कृौ ,ह्नृ ै दक्रश्व

SSC CGL 08/12/2022 (Shift- 01)

(a) 42 + 7p cm (b) 21p + 14 cm
(c) 42 + 14p cm (d) 7 + 14p cm

29. The circumference of the two circles is 264 cm and 396 cm respectively. What is the difference between their radii?

है हिलयैं हिं गह्न- अत दर जनै एड्मु 1दबह्निजग्रह्नर्द चै दडतु दबह्निजग क्रश्वद8% गह्न ै वृ ै द्धै हिं हिजृ दद्धर्ष्ट अक्रश्व ै दक्रश्व

SSC CGL 09/12/2022 (Shift- 01)

(a) 25 cm (b) 32 cm
(c) 16 cm (d) 21 cm

30. The area of a sector of a circle is 88 sq. cm., and the angle of the sector is 45°. Find the radius of the circle $\left(\text{Use } \pi = \frac{22}{7}\right)$

न ं दलयैदं गह्न ै वृ ै ०दं ै दू ै ई-कन दी दलसह्न बह्निजग्रह्न क्रश्व द्धै श्रक्रश्व ै वृ ै ०दं ै हि द45°दक्रश्वदलयैदं गह्न ै वृ ै दथै ं दं गस्न

$\left(\pi = \frac{22}{7} \cdot ै \text{ ृढै सि दं गस्न}\right)$

SSC CGL 09/12/2022 (Shift- 04)

(a) 3√11 cm (b) 4√14 cm
(c) 6√13 cm (d) 5√14 cm

Maths by Aditya Ranjan sir

31. The minute hand of a clock is 20 cm long. Find the area on the face of the clock swept by the minute hand between 8 a.m. and 8:45 a.m.

ग ं दघ ै ठ क्ष्ं गद्र ज%6दं गद्रब?ब्र20 cmदले धगद्रक्ष्दब थ्रक्रद8 a.m.दबद्रिब थ्रक्रद8:45 a.m.दं द्रिधग द ज%6दं गद्रब?ब्रध ै अै ै खद्रिस्क दघ ै ठ क्ष्ं द्रि-ब्र9दं ै दू ै ई-ब्रु दथ ै दं गस्न :

SSC CGL 12/12/2022 (Shift- 01)

(a) $\frac{6600}{7}$ cm² (b) $\frac{6600}{9}$ cm²

(c) $\frac{6600}{18}$ cm² (d) $\frac{6600}{14}$ cm²

32. The area of a triangle is 96 cm² and the ratio of its sides is 6 : 8 : 10. What is the perimeter of the triangle?

ग ं द ै5 ै ै दं ै दू ै ई-ब्रु दतु दबद्रिजग्द्रदब्रक्ष्द ै ै द,बं गद्र ै ै द्धै ि ं ै दद्ध%?ं दु दए्ही दए्स्क0दब्रक्ष्द ै5 ै ै दं ै द- अै -दब्रु ै दब्रक्ष्

SSC CGL 12/12/2022 (Shift- 02)

(a) 48 cm (b) 56 cm

(c) 64 cm (d) 44 cm

33. A coconut tree swings with the wind in such a manner that the angle covered by its trunk is 18 degrees. If the topmost portion of the tree covers a distance of 44 metres, find the length of the tree.

ग ं द% अ ल दं ै द-ई क्रलै दं द्रिबै चैदग ं द अ्रद छ्र्ख ै दब्रक्ष्ं द8बं द्रि %द्रिबद्रि ं ै दं ै ई दकी द ठ सक्ष्क्रैं दब्रक्ष्दृ हद-ई क ं ै दबधबद्रि -अद्र ै सद44 metresदं गद्रह ख्र्द्र ् दं अै ब्रक्ष्द ै द्रि-ई कं गद्रल ै धै ,ब्रध ै दं गस्न :

SSC CGL 12/12/2022 (Shift- 02)

(a) 120 metres (b) 210 metres

(c) 140 metres (d) 70 metres

34. If the side of an equilateral triangle is 16 cm, then what is its area?

् हक ं दबजधै ब्रद्रि ै5 ै ै दं गद्र ै ै दकु दबजिग्द्रक्ष्द ै द्रि,बं ै ् ै ई-ब्रु दब्रु ै दब्रक्ष्

SSC CGL 12/12/2022 (Shift- 03)

(a) 81√3 cm² (b) 48√3 cm²

(c) 32√3 cm (d) 64√3 cm²

35. The circumference of the two circles is 110 cm and 330 cm respectively. What is the difference between their radii?

है द्रिलथै ै द्रिं गद्र- अ त दर जनै एस्क्स0दबद्रिजग्द्रक्ष्द ै चै दडड0दबद्रिजग्द्रक्ष्द8% गद्र ै5वृ ै द्धै द्रिं द्रिजृ दद्धर्द्र अ्रदृ ै दब्रक्ष्

SSC CGL 13/12/2022 (Shift- 01)

(a) 70 cm (b) 15 cm

(c) 46 cm (d) 35 cm

36. The hour hand moves through 4 hours and has a length of 6 cm. Find the area (in cm², rounded off to two decimal places) of the sector covered by the hour hand.

ै 6द्रिं गद्रब?ब्र1दै ै 6द्रिम ल ं गद्रक्ष्द्धै झ्र्स,बं गद्रल ै धै ,ब्रु दबद्रिजग्द्रक्ष्द ै 6द्रिं गद्रब?ब्रबद्रिं लअ्र ं ठ दर्स %द्रिलै ल द्रि5वृ .ै ठ दं ै ् ै ई-ब्रु दद्धबद्रिजग्द्रदजेद्रिह नै जल लदं द्रिहै द्रि(चै %द्रिं द-ख्ै ै ज्ञं) थ्र्ं दं गस्न :

SSC CGL 13/12/2022 (Shift- 01)

(a) 32.69 (b) 30.67

(c) 37.71 (d) 35.75

37. A triangle and a parallelogram have the same base 28 cm and the same area. If the height of the parallelogram is 12 cm, then find the length of the altitude of the triangle.

ग ं द ै5 ै ै दद्धै झ्र्स ं दबजैं अ्रम्ं ?ब्रै दं ै दद्धै ै अ्रबजै % मी दबजिग्द्रद्धै झ्र्स ै ई-ब्रु दबजै %दब्रक्ष्दृ हदबजैं अ्रम्ं ?ब्रै दं ग ् ण ै ,ब्रक्ष्मदबजिग्द्रक्ष्द्र्द ै द्रि5 ै ै दं गद्र ् ण ै ,ब्रं गद्रल ै धै ,ब्रथ्र्ं ् गस्न :

SSC CGL 13/12/2022 (Shift- 02)

(a) 28 cm (b) 23 cm

(c) 24 cm (d) 21 cm

38. A horse is grazing in a field. It is tied to a pole with a rope of length 6 m. The horse moves from point A to point B making an arch with an angle of 70°. Find the area of the sector grazed by the horse.

ग ं दघ ै ई क्ष्जहै %दजेद्रिम अ्रअ्रै दब्रक्ष्द,बद्रिु दजग्ठ अ्रल ै धगद्र अ्र(बग बद्रिं दत्र ै द्रिबद्रिधै ै दसृ ै दब्रक्ष्दघ ै ई क्ष्ध ेहद्रदA दबद्रि ध ेहद्रदB ् ं द70°दं द्रिं ै ई दं द्रिबै चैदम ै -दधै% ै दब्रक्ष्द्धै दम ल ै दब्रक्ष्ै ई द्रिथै अैदम अ्रस्क द5वृ त्र्न्ठ दं ै दू ै ई-ब्रु दथ ै दं गस्न :

SSC CGL 13/12/2022 (Shift- 02)

(a) 22 m (b) 21 m

(c) 23 m (d) 20 m

Maths by Aditya Ranjan sir

39. A rectangular park is 120 m long and 104 m wide. A 1-m wide path runs along the boundary of the park, remaining completely inside the park area. Thus, the outside edges of the path run along the boundary wall of the park. The inside edges of the path are marked with a white line of negligible thickness. If it costs Rs. 2.50 to mark each metre with the white line, then how much would it cost (in Rs.) to fully mark the inside edges of the path?

ः दद्धै ''ै ः ै अद ै ः ब्रक्म0दमदल्ले धै दद्धै श्रमक01दमदम ै ह्रैक व्रश्रद ै ः ब्रं गद्रबगमै दं दिबै चैप्रबै चैदक ः दक्मप्रमदम ै ह्रैक्रअ(ै म ल्ं ै दव्रश्रदस ै दि ै ः ब्रं दिू ै ठैदं दि-स्वार्द अम्रदबदि ै ग अस्र्ऊै व्रश्रद,बदऊं ै अब्रदअ(दि दिधै व्रश्रद ः % अब्दि ै ः ब्रं गद्रम ै अह्गलै आ ः दिबै चैदम ल्ं दिव्रेश्रदअ(दिं दिद्धेहअं दि ः % अैदिं ै दि%सन् जैद6 ,ब्रं गद्रक ः दब-ठ्दिदअ्रै द ै ं ि गद्रस ै %गद्रव्रश्रदृ हदउ्ऋ ं ि जग6अ-अब-ठ्दिदअ्रै द ै ं ि%दि-अRs. 2.50दं ै दत्त म ब्रद्धै ै व्रश्रर्द ै दिअ(दिं दिद्धेहअं दि ः % अैदिं ै दि-स्वार्द अम्रदबदि ै ं ि%ि ः दि ल्न द ं ः % दत्त म ब्रद्धै न सै दद्ध Rs.दजे)प

SSC CGL TIER - II 02/03/2023

(a) 1090 (b) 1080
(c) 1120 (d) 1100

40. What is the perimeter of the square inscribed in a circle of radius 5 cm?

5 cm ै 5वृ ै दलै ल्कि ः दलौ दं दिद्धेहअ्रध%दिलसब्रं ै द- अै - ठ्ै दव्रश्र

SSC CGL TIER- II 06/03/2023

(a) $20\sqrt{2}$ cm (b) $10\sqrt{2}$ cm
(c) $30\sqrt{2}$ cm (d) $40\sqrt{2}$ cm

41. The difference between the lengths of two parallel sides of a trapezium is 12 cm. The perpendicular distance between these two parallel sides is 60 cm. If the area of the trapezium is 1380 cm², then find the length (in cm) of each parallel side.

ः दबजल्ले धदं गद्रहै दिबजै % अ्रै ै द्धै दिं गद्रल्वृै ,ब्रं दिधग ः ै दर्द्धे अ्र12 cm. व्रश्रद,%दहै % दिबजै % अ्रै ै द्धै दिं दिधग ः गद्रल्ले धर्ल दहस्वार्द60 cm. व्रश्रदृ हदबजल्ले धदं ै दू ै ठ्ै-द्र द1380 cm²दव्रश्रर्द ै दि-ठ्ृ ं ि दबजैं अ्रै ै द्धै दं गद्रल्ले धै ,ब्रं(cm. जे)दिथै ः गस्न :

SSC CGL TIER- II 06/03/2023

(a) 31, 19
(b) 24, 12
(c) 27, 15
(d) 29, 17

42. In a trapezium ABCD, AB and DC are parallel to each other with a perpendicular distance of 8 m between them. Also, (AD) = (BC) = 10 m, and (AB) = 15 m < (DC). What is the perimeter (in m) of the trapezium ABCD?

ः दबजल्ले धदम ् ? ब्रैदABCDदजेदिAB द्धै श्रमDCक ः दहस्वार्द ि बजै % अ्रव्रेर्द चैद8% दिधग दं गद्रल्ले धर्ल दहस्वार्द8 m व्रश्रदबै चै व्रश्रद(AD) = (BC) = 10 m,दद्धै श्रम(AB) = 15 m < (DC) व्रश्रदबजल्ले धदम ् ? ब्रैदABCDदं ै द- अै -द(m जे)दिृ ै दव्रैसि प

SSC CGL TIER- II 07/03/2023

(a) 50
(b) 66
(c) 62
(d) 58

ANSWER KEY

1.(d)	2.(a)	3.(d)	4.(a)	5.(b)	6.(d)	7.(d)	8.(d)	9.(d)	10.(d)
11.(a)	12.(d)	13.(a)	14.(c)	15.(d)	16.(c)	17.(c)	18.(c)	19.(c)	20.(d)
21.(d)	22.(c)	23.(d)	24.(a)	25.(c)	26.(c)	27.(c)	28.(c)	29.(d)	30.(b)
31.(a)	32.(a)	33.(c)	34.(d)	35.(d)	36.(c)	37.(c)	38.(a)	39.(d)	40.(a)
41.(d)	42.(c)								

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SOLUTIONS

1. (d) Given,

$2\pi (r_1 - r_2) = 352 - 198$

$2\pi (r_1 - r_2) = 154$

$= \frac{154 \times 7}{2 \times 22}$

$= \frac{49}{2}$

$= 24.5$

2 (a) From ratio of sides it is clear that the triangle is a right angle triangle having triplets in the ratio (10 : 24 : 26)

$\Rightarrow$ Area $= \frac{1}{2} \times 10x \times 24x$

$480 = 120x^2$

$\Rightarrow$ $x = 2$

$\therefore$ Perimeter $= (10 + 24 + 26) \times 2$

$= 120$ cm.

3. (d) $= \frac{\sqrt{3}}{4}(\text{side})^2$

$= \frac{\sqrt{3}}{4} \times 24 \times 24$

$= 144\sqrt{3}\ \text{cm}^2$

4. (a) $\frac{\text{Area}\ \Delta_1}{\text{Area}\ \Delta_2} = \frac{(\sqrt{3})^2}{(\sqrt{2})^2} = \frac{3}{2}$

5. (b) Angle formed in 45 minutes

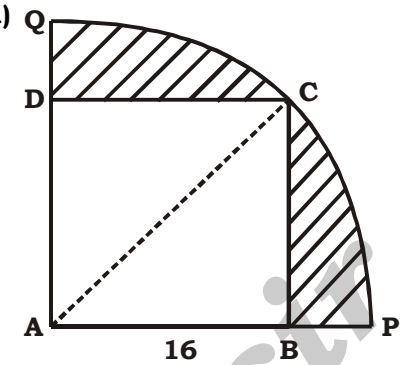
$\Rightarrow \frac{45}{60} \times 360 = 270°$

$\Rightarrow$ Area $= \frac{Q}{360} \times \pi r^2$

$= \frac{270}{360} \times \frac{22}{7} \times 2 \times 2$

$= 3\pi$

6. (d)



Radius of quadrant = diagonal of square

$\Rightarrow r = 16\sqrt{2}$

Area of shaded region = (Area of quadrant – Area of square)

$\Rightarrow \frac{1}{4}\pi(16\sqrt{2})^2 - (16)^2$

$\Rightarrow (16)^2 \left[\frac{1}{4} \times \frac{22}{7} \times 2 - 1\right]$

$= 256\left[\frac{4}{7}\right] = 145.92\ \text{cm}^2$

7. (d) Area $= \frac{\sqrt{3}}{4}(\text{side})^2$

$= \frac{\sqrt{3}}{4} \times 20 \times 20$

$= 100\sqrt{3}\ \text{cm}^2$

8. (d) $\frac{\theta}{360} \times \pi r^2 = 66$

$\Rightarrow \frac{1}{6} \times \frac{22}{7} \times r^2 = 66$

$\Rightarrow r = 3\sqrt{14}$ cm

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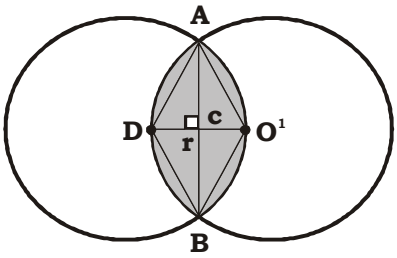
9. (d)



$OA = O^1A = OO^1$

$\Rightarrow AOD^1$ is an equilateral Δ

$\angle AOO^1 = 60^\circ$

$\angle AOB = 120^\circ$

Now,

$AC = \sqrt{OA^2 - OC^2} = \sqrt{30^2 - 15^2} = \sqrt{900 - 225}$

$AC = \sqrt{675} = 15\sqrt{3}$

$AB = 30\sqrt{3}$

ar. AO^1BA = ar. secta OAO^1B – ar of ΔAOB

$= \frac{120}{360} \times \pi 30^2 - \frac{1}{2} \times 30\sqrt{3} \times 15$

$= (300\pi - 225\sqrt{3})\ cm^2$

Now,

ar. of shaded region = 2 × ar. AO^1BA

$= (600\pi - 450\sqrt{3})\ cm^2$

10. (d) Given,

$\frac{45}{360} \times \pi r^2 = 308$

$r^2 = \frac{308 \times 8}{22} \times 7$

r = 28 cm

11. (a) length of string = $2\pi r + n(2r)$

$= (12\pi + 36)$ cm

12 (d) $\frac{\text{area}\,\Delta_1}{\text{are}\,\Delta_2} = \frac{(\sqrt{3})}{(\sqrt{2})} = \left(\frac{(3)^{\frac{1}{4}}}{(2)^{\frac{1}{4}}}\right)^2$

$\Rightarrow \frac{\text{Side of}\,\Delta_1}{\text{Side of}\,\Delta_2} = \left(\frac{3}{2}\right)^{\frac{1}{4}}$

13. (a) Lenth of string = 2hr + 2nr.

$= (8\pi + 24)$ cm

14. (c) Let, L = length

B = breadth of rectangle

ATQ,

$(L - 4) = (B + 2)$

$L - B = 6$ .....(1)

Also,

$LB = (L - 4)(B + 2)$

$LB = LB - 4B + 2L - 8$

After solving (i) and (ii)

$4B - 2L = -8$ .....(2)

$L + B = 10$

$\Rightarrow 2(L + B) = 2(10) = 20$ cm.

15. (d) ATQ,

$4 \times 11 = 22\pi r$

$4 \times 11 = 2 \times \frac{22}{7} \times r$

r = 7 cm.

16. (c) Area = $\frac{Q}{360} \times \pi r^2$

$= \frac{30}{360} \times \frac{22}{7} \times 4 \times 4$

$= \frac{88}{21} = 4.186\ cm^2$

17. (c) height = $\frac{\sqrt{3}}{2} \times$ side

$\Rightarrow$ side = $\frac{7\sqrt{3} \times 2}{\sqrt{3}}$

= 14 cm.

$\Rightarrow$ Area = $\frac{\sqrt{3}}{4} \times 14 \times 14$

$= 49\sqrt{3}\ cm^2$

18. (c) Area = $\frac{Q}{360} \times \pi r^2$

$= \frac{90}{360} \times \frac{22}{7} \times 10 \times 10$

$= 78.5\ m^2$

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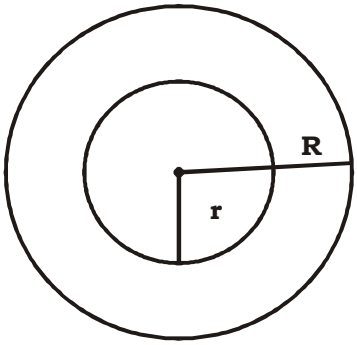
19. (c) ATQ,

$R - r = 50$



$\frac{2\pi R}{2\pi r} = \frac{5}{4}$

$\Rightarrow \frac{R}{r} = \frac{5}{4}$

$1 \rightarrow 50$

$4 \rightarrow 200$ mtr.

20. (d) Side $= \frac{\text{Diagonal}}{\sqrt{2}} = \frac{8\sqrt{2}}{\sqrt{2}} = 8$

ATQ,

$3 \times 8 \times 8 = a^2$

$a = 8\sqrt{3}$

$d = \sqrt{2}\, a$

$\Rightarrow$ Diagonal $= 8\sqrt{6}$ cm.

21. (d) Side $\times \frac{\sqrt{3}}{2}$ = height

$\Rightarrow$ Side $= \frac{9\sqrt{3} \times 2}{\sqrt{3}} = 18$ cm.

area $= \frac{\sqrt{3}}{4} \times 18 \times 18 = 81\sqrt{3}$ cm²

22. (c) $2\pi r = 220$

$r = 35$

23. (d) Area $= \left[\frac{\text{Perimeter}}{4}\right]^2$

$= \left(\frac{124}{4}\right)^2 = 961$ cm²

24. (a) $2\pi (R - r) = 440 - 308$

$= \frac{132 \times 7}{22 \times 2}$

$(R - r) = 21$ cm.

25. (c) Perimeter $= 3 \times \frac{\text{height}}{\sqrt{3}} \times 2$

$= 3 \times \frac{6\sqrt{3}}{\sqrt{3}} \times 2$

$= 36$ m.

26. (c) Area $= \frac{\sqrt{3}}{4} \times 8 \times 8 = 16\sqrt{3}$

$= 16 \times 1.732$

$= 27.71$ cm²

27. (c) Area $= \frac{40}{360} \times \pi(6)^2$

$= 4\pi$ cm²

28. (c) length of string $= 2\pi r + 2nr$

$\Rightarrow (14\pi + 42)$ cm.

29. (d) $2\pi (R - r) = 396 - 264$

$(R - r) = \frac{132 \times 7}{22 \times 2}$

$= 21$ cm.

30. (b) $\frac{45}{360} \times \pi r^2 = 88$

$r^2 = \frac{88 \times 8 \times 7}{22}$

$r = 4\sqrt{14}$ cm.

31. (a)

Angle formed in 45 minutes:-

$\frac{45}{60} \times 360° = 270°$

$\Rightarrow$ Area $= \frac{270}{360} \times 20 \times 20 \times \frac{22}{7}$

$= \frac{6600}{7}$ cm²

32. (a) Given ratio of sides, form a triplet of right angle triangle.

$\Rightarrow \frac{1}{2} \times 6x \times 8x = 96$

$\Rightarrow x^2 = 4$

$\Rightarrow x = 2$

Perimeter $= (6 + 8 + 10) \times 2$

$= 48$ cm.

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33. (c) length of arc $= \frac{2\pi r\theta}{360°}$

$\Rightarrow \frac{2\pi r \times 18}{360} = 44$

$\Rightarrow r = \frac{44 \times 360 \times 7}{2 \times 22 \times 18} = 140$ mtr.

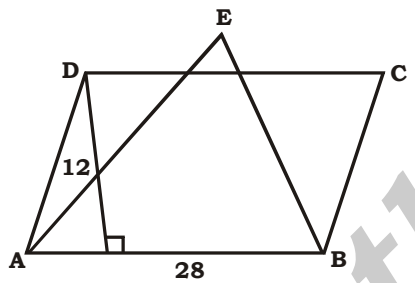
34. (d) Area $= \frac{\sqrt{3}}{4}(\text{side})^2 = \frac{\sqrt{3}}{4} \times 16 \times 16 = 64\sqrt{3}$ cm²

35. (d) $2\pi (r_1 - r_2) = 330 - 110 = 220$
$(r_1 - r_2) = 35$ cm.

36. (c) Angle in 4 hrs. $= \frac{4}{12} \times 360 = 120.$

Area of sector $= \frac{120}{360} \times \frac{22}{7} \times 6 \times 6 = 37.71$ cm²

37. (c)



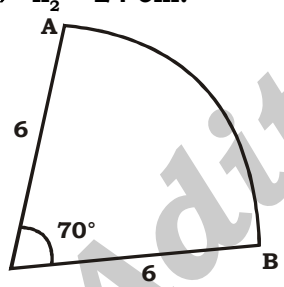
Area of parallelogram = ar. of triangle

$\Rightarrow$ base × height$_1$ $= \frac{1}{2}$ × base × height$_2$

$28 \times 12 = \frac{1}{2} \times 28 \times h_2$

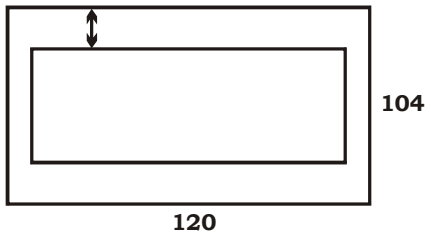
$\Rightarrow h_2 = 24$ cm.

38. (a)



Area of sector $= \frac{70}{360} \times \frac{22}{7} \times 6 \times 6 = 22$ m²

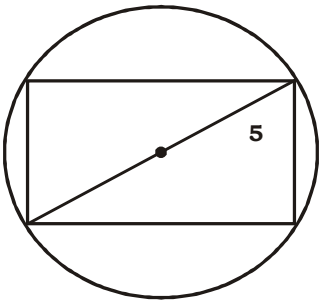
39. (d)



Perimeter of inner boundary of path = 2 (118 + 102)
= 440 m.

Total cost = 440 × 2.50 = 1100

40. (a)

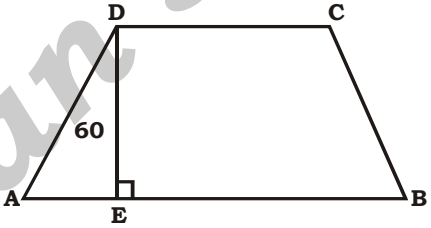


d = 5 + 5 = 10

$8 = \frac{d}{\sqrt{2}} = 5\sqrt{2}$

$\Rightarrow$ Perimeter $= 20\sqrt{2}$

41. (d)



Given,

AB – CD = 12, DE = 60 .....(1)

Area $= \frac{1}{2}$ × DE (DC + AB)

$1380 = \frac{1}{2} \times 60$ (AB + CD)

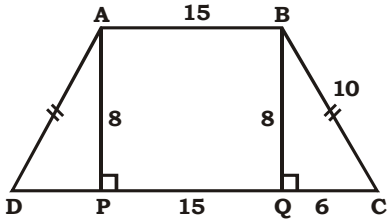
46 = AB + CD .....(2)

From (1) and (2)

AB = 29

CD = 17

42. (c)



BQ = AP = 8

AD = BD = 10

∴ By pythagorean triplet:-

QC = DP = 6

$\Rightarrow$ DC = 6 + 6 + 15 = 27

∴ Perimeter of ABCD = 15 + 10 + 27 + 10 = 62

Maths by Aditya Ranjan sir

MENSURATION-3D

न्यंयम्न दृ ध3D

23

1. How many spherical lead shots each of diameter 8.4 cm can be obtained from a rectangular solid of lead with dimension 88 cm, 63 cm, 42 cm $\left(\text{take } \pi = \frac{22}{7}\right)$?

88 cm, 63 cm, 42 cmहै हिक्ला ये यंहलय ह ि है ं
अै हे य रयै यकहनयं ह ह8.4 cmहए य है ह ि है हंदै रकं
तयं ये यही यह्ह्र्ह यह हंदै अह यह ै रंहमह्ह $\left(\pi = \frac{22}{7} - ग\right)$

SSC CGL 01/12/2022 (Shift- 01)

(a) 920 (b) 750
(c) 650 (d) 860

2. A hemisphere of lead of radius 4 cm is cast into a right circular cone of height 72 cm. What is the radius of the base of the cone?

4 cmहदयक्त यहलय ह ि है हअै हे %तयं है यंहवृ ह ह्रद्धि
। ध्र यह्हलय हअै ह-ऊ हलर्य्ति ही यै ा हा सटय यह य यहमह्ही यै ा
ै हे य%यकहै हिदयक्त यह1त यहमह्क

SSC CGL 01/12/2022 (Shift- 02)

(a) 1.63 cm (b) 1.35 cm
(c) 1.33 cm (d) 1.45 cm

3. A copper sphere of diameter 18 cm is drawn into a wire of diameter 6 mm. Find the length of the wire.

18 cmहए य हलय हंदै हिरय्ह्है हअै हतयं ह ह6 mm
ए य हलय हअै ह रयकहै यहक्ला यकहंदै त यह य यहमह्क्का र
रयकहै हि-ऊ गयह्ह्ह यह है दि अ-

SSC CGL 01/12/2022 (Shift- 03)

(a) 143 m (b) 108 m
(c) 324 m (d) 234 m

4. A solid metallic sphere of radius 13 cm is melted and recast into a cone having diameter of the base as 13 cm. What is the height of the cone?

अै हध3ह ह्रद्धिदयक्त यहलय हनयं ह%यह्लै हतयं है यंहद सम यै ज
अै ही यै ा है यहे यै यकहक्त यह य यहमह्क्द ै हे य%यकहं ज
ए य हध3ह ह्रद्धिमह्ही यै ा है हि। ध्र यह1त यहमह्क

SSC CGL 01/12/2022 (Shift- 03)

(a) 246 cm (b) 152 cm
(c) 174 cm (d) 208 cm

5. What is the edge of a cube whose volume is equal to the sum of the volumes of the cubes of edge 6 cm, 8 cm and 10 cm?

ठ हसमहै हि यंहु य है दि अहद ै यहे य रकहक ह्रद्धि
ध्र ह्रद्धि यह्ह ध्र ह्रद्धि यंहलय हसमंहै हे य रकंहै
तयं ज्ञ है ह ज्ञ यहमह्क

SSC CGL 01/12/2022 (Shift- 04)

(a) 5 cm (b) 3 cm
(c) 6 cm (d) 12 cm

6. Which of the following two will provide more valume?

क्क क्क दउय हा ह है यह्हे ठ% हे य रकहं चय्ह्है जंतय

I. A cuboid of edges 6 cm, 7 cm and 8 cm

वह ह्रद्धि वह ह्रद्धि यह्ह ध्र ह्रद्धि लय हंदै क्क्ह्है यहअै
समयय

II. A cube of edge 7 cm

वह ह्रद्धि दै क्क्ह्है यहअै हसमक

SSC CGL 02/12/2022 (Shift- 01)

(a) Cube will have more volume
(b) Both will have equal volume
(c) Cuboid will have more volume
(d) Cannot be determined

7. If the diameter of a sphere is 63 cm, then what is the total surface area of the sphere?

त क हअै हतयं है यहए य हक3ह ह्रद्धिमह्र यंहतयं है यहे ू-
ै नति हन्यंय ज्ञ ह1त यहमह्क

SSC CGL 02/12/2022 (Shift- 01)

(a) 11824 cm² (b) 12836 cm²
(c) 12474 cm² (d) 11248 cm²

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8. A hemispherical bowl made of iron has inner diameter 84 cm. Find the cost of tin plating it on the inside at the rate of Rs.21 per 100 cm^2 $\left(\text{take } \pi = \frac{22}{7}\right)$ correct to two places of decimal.

-यंमह ंह वंहअै हे %ब्रयं ति है इयंहै यंहे यावैज हए्य हध्ष ंा हिमक्र धहर्थ त ंहद्वव्र हधख्व्ह ंा हि $\left(\pi = \frac{22}{7} - \text{ग}\right)$ है हिप्ज ंहपीय -लहै ंहप्यंह( )ब्रयंमंहरै हे यजहै हि यंहव्ह वहत्र टय्रंक ै हि- यारहु यहै दि अन्

SSC CGL 02/12/2022 (Shift- 01)

(a) Rs.2,328.48 (b) Rs.2,425.48

(c) Rs.2,425.60 (d) Rs.2,355.48

9. If the diameter of a hemisphere is 28 cm, then what is the volume of hemisphere?

त व्ह अै हे %ब्रयं है यहए्य ह् ध्ह ंद्धह्मिमक्र रयंहे %ब्रयं ै यंहे य रवहा1त यहमक्र

SSC CGL 02/12/2022 (Shift- 02)

(a) 5749.33 cm^3 (b) 6349.22 cm^3

(c) 6728.11 cm^3 (d) 5124.44 cm^3

10. The surface area of a cube is 864 cm2. The volume of the cube is _____.

अै हसमहै यंहे ैनति हन्यंर्य ज्ञ ह864 cm^2 हमक्र० हसमहै य ै य रवहमक्र

SSC CGL 02/12/2022 (Shift- 02)

(a) 1728 cm^3 (b) 2197 cm^3

(c) 1331 cm^3 (d) 729 cm^3

11. The radius of a right circular cylinder is five times of its height. If the height of the cylinder is 3.5 cm, then what is the volume of cylinder?

अै ह-्गहलर्थ्यै यह ंा-वहै हिदयत यह० ै हि। ध्यहै हिं य ध् तूक्ह मक्र त व्ह ंा-वहै हि। ध्यह3द्धह ंद्धह्मिमक्र रयंह ंा-वहै य ै य रवहा1त यहमक्र

SSC CGL 02/12/2022 (Shift- 03)

(a) 3368.75 cm^3 (b) 3872.75 cm^3

(c) 3146.75 cm^3 (d) 3524.25 cm^3

12. A cuboid of length 36 m, breadth 18 m and height 9 m is melted and recast into a cube. Find the length of the diagonal of the cube.

36 मह-्गयाह्ह 18 मह-्य्रयाहे यह 9 मह। ध्यह लय ंअै हसमयंहै यंहर्द सम यै जहअै हसमहा ंह प-हव्त यह यय मक्रसमहै ंहवै 0यंहै हि-्गयाहु यहै दि अन्

SSC CGL 02/12/2022 (Shift- 01)

(a) 18√3 m (b) 15√3 m

(c) 12√3 m (d) 17√3 m

13. If the volume of a sphere is 24,416.64 cm^3, find its surface area (take π =3.14) correct to two places of decimal.

त व्ह हतयं है यंहे य रवह24,416.64 cm^3 हमक्र रयंह प ै य ैनति हन्यंर्य ज्ञ हु यहै दि अह यंह पीय -लहै ंहप्यंह( )ब्रयंमंहरै ह महिमयंह(π = 3.14 - दि अ)

SSC CGL 03/12/2022 (Shift- 01)

(a) 3069.55 cm^2 (b) 4069.44 cm^2

(c) 5069.66 cm^2 (d) 6069.67 cm^2

14. If the diameter of a sphere is 3.5 cm, then what is the total surface area of the sphere?

त व्ह अै हतयं है यहए्य ह3द्धह ंद्धह्मिमक्र रयंहतयं है यंहै ू- ै नति हन्यंर्य ज्ञ ह1त यहमक्र

SSC CGL 03/12/2022 (Shift- 01)

(a) 45.75 cm^2 (b) 42.6 cm^2

(c) 38.5 cm^2 (d) 34.25 cm^2

15. The radii of two cylinders are in the ratio 1 : 4 and their heights are in the ratio 4 : 3. Their volumes will be in the ratio _____.

प यंह ंा-वंहै हिदयत यह ध्ह प्रह ष्है हे कूं य हा ंह मक्रे यह व०कै हि। ध्यह यह ष्ह प्रह3है हे कूं य हा ंह मक्र व०कै हे य रवंया ै यंहे कूं य हमयंयन्

SSC CGL 03/12/2022 (Shift- 02)

(a) 1 : 12 (b) 2 : 9

(c) 3 : 10 (d) 1 : 9

16. The radius of a right circular cylinder is thrice of its height. If the height of the cylinder is 2.1 cm, then what is the volume of cylinder?

अै ह-्गहलर्थ्यै यह ंा-वहै हिदयत यह० ै हि। ध्यहै हिर कि तूक्ह मक्र त व्ह ंा-वहै हि। ध्यह ह्ह ंद्धह्मिमक्र रयंह ंा-वहै य ै य रवहा1त यहमक्र

SSC CGL 03/12/2022 (Shift- 03)

(a) 224.65 cm^3 (b) 194.72 cm^3

(c) 324.86 cm^3 (d) 261.95 cm^3

Maths by Aditya Ranjan sir

17. A solid copper sphere of radius 9 cm is hammered and moulded into a wire of radius 2 cm. What is the length of this wire?

9 cmहदयक्त कलय हर्रयहै हनयं हतयं है कम)यह हं ड्रिर्ड ड्रि ै जह2 cmहदयक्त कलय कर यकहक्का रहदै त यह य यकमक्रप क्का रहर यकहै हि-> गयाहदै रकहिमक्र

SSC CGL 03/12/2022 (Shift- 03)

(a) 224 cm (b) 183 cm
(c) 198 cm (d) 243 cm

18. If the length of the diagonal of a cube is 7√3 cm, then the surface area of the cube is.

त कहदै हिसमहै हक्लै 0यहै हि-> गयाह7√3 cmहमक्र यंह० समहै यहं ैनति हन्यंर्य ज्ञ्यहु यहै दि अ

SSC CGL 03/12/2022 (Shift- 03)

(a) 216 cm² (b) 256 cm²
(c) 284 cm² (d) 294 cm²

19. The length of the side of a cube is 5.6 cm. What is the volume of the largest sphere that can be taken out of the cube?

अै हसमहै हि4यू यहै हि-> गयाहढ्ढह ढ्ढह्लिमक्रसमहै ह यज कै य ह यह ै कंहलय ह, ह रुंहतयं है यहे य रकह1त यमक्र

SSC CGL 05/12/2022 (Shift- 01)

(a) 91.98 cm³ (b) 99.96 cm³
(c) 96.98 cm³ (d) 90.69 cm³

20. The curved surface area of the sphere is 154 cm². Find the volume of the sphere (rounded off to one digit after decimal).

अै हतयं है यहलर्कृ ैनति हन्यंर्य ज्ञ ह154 cm²हमक्रहतयं है य ै य रकहँ पीय -लहै ह य हअै हे ैगहरै हं 0यहै रभ्हु य ै दि अ

SSC CGL 05/12/2022 (Shift- 01)

(a) 156.9 cm³ (b) 179.7 cm³
(c) 161.1 cm³ (d) 147.8 cm³

21. The total surface area of a cube is 1536 m². Find its volume.

अै हसमहै यहै ्-हं ैनति हन्यंर्य ज्ञ ह1536 m²हमक्रप ै य ै य रकहु यहै दि अ

SSC CGL 05/12/2022 (Shift- 02)

(a) 216 m³ (b) 125 m³
(c) 4096 m³ (d) 729 m³

22. The length of the side of a cube is 4.2 cm. What is the volume of the largest sphere that can be taken out of the cube?

अै हसमहै हि4यू यहै हि-> गयाहष्ढ्ढह ढ्ढह्लिमक्रसमहै ह यज कै य ह यह ै कंहलय ह, ह रुंहतयं है यहे य रकह1त यमक्र

SSC CGL 05/12/2022 (Shift- 02)

(a) 26.40 cm³ (b) 20.50 cm³
(c) 38.80 cm³ (d) 48.60 cm³

23. A hollow sphere has an outer radius of 4 cm and inner radius of 1 cm. What is the volume of this hollow sphere?

अै हउयंछय हतयं है हि यजहिदयक्त यहष्ह ढ्ढह्लिर)यहे यादैज दयक्त यहधह ढ्ढह्लिमक्रप हउयंछय हतयं है यहे य रकह1त यमक्र

SSC CGL 05/12/2022 (Shift- 03)

(a) 84p cm³ (b) 68p cm³
(c) 48p cm³ (d) 92p cm³

24. The volume of the hemisphere is 19,404 cm³. The radius of the hemisphere is _____.

अै हतयं र्यं है यहे य रकह19,404 cm³ मक्र० हतयं र्यं 5 ै हिदयक्त यहमक्र

SSC CGL 05/12/2022 (Shift- 03)

(a) 14 cm (b) 19 cm
(c) 21 cm (d) 17 cm

25. Three cubes of equal volume are joined end to end. Find the surface area of the resulting cuboid if the diagonal of the cube is 6√3 cm.

, ज्ञ जहे य रकहलय ह र कि हसमयंहै यहद जंह हद जंह इयै ज ै य हा ह यंक्र यह यहमक्रत कहसमहै यहलै 0यह6√3 cm मक्रहर यहं दज0या हिसमयायहै यहं ैनति हन्यंर्य ज्ञ हु यहै दि अ

SSC CGL 05/12/2022 (Shift- 04)

(a) 509 cm² (b) 504 cm²
(c) 516 cm² (d) 512 cm²

26. A solid hemisphere has radius 21 cm. It is melted to form a cylinder such that the ratio of its curved surface area to total surface area is 2 : 5. What is the radius (in cm) of its base $\left(\text{take } \pi = \frac{22}{7}\right)$?

अै हनयं हे %ह्यं है हिदयक्त यह21 cmहमक्रप हर्द सम यै ज अै हअं यह ं-वह कम यह य यहमक्रहदै हप ै हलर्कृ ैनति न्यंर्य ज्ञ है यह र्ं 0यह-न्यंर्य ज्ञ्यह हे र्कू य ह हप्रहढहमयंह य य मक्रप ै हे य%यहै हिदयक्त यह(cm ा)हा1त यहमक्र $\left(\pi = \frac{22}{7} - \text{गे}\right)$

SSC CGL 06/12/2022 (Shift- 01)

(a) 23 (b) 21
(c) 17 (d) 19

Maths by Aditya Ranjan sir

27. The external diameter of an iron pipe is 20 cm and its length is 12 cm. If the thickness of the pipe is 1 cm, find the surface area of the pipe $\left(\text{take } \pi = \frac{22}{7}\right)$ correct to two places of decimal.

-यंहै ं र्य है यह यजहिए य हृ ख्ह ंद्धद्धिमक्ले यक्ष्ह्प ि
->गयाह्धृ ह ंद्धद्धिमक्ष्ह्त व र्ह र्य है हा यंह यह्धह ंद्धद्धिमक्ष्हर यं
ं र्य है यह ैनति हन्यंर्य ज्ञ हु य है ज्ह यंह ीय - लहै ंह य
( )यक्ष्हरै ह महिमयंह $\left(\pi = \frac{22}{7} - ग\right)$

SSC CGL 06/12/2022 (Shift- 02)

(a) 1,662.67 cm² (b) 1,552.57 cm²
(c) 1,442.48 cm² (d) 1,772.76 cm²

28. If the volume of a sphere is $179\frac{2}{3}$ m³, what is its surface area?

त व हदै हितयं है यहे य र वह $179\frac{2}{3}$ ह m³ ह मक्ष्ह्र र यंह ० ं य
ं ैनति हन्यंर्य ज्ञ हु य है दि अ

SSC CGL 06/12/2022 (Shift- 03)

(a) 221 m² (b) 154 m²
(c) 144 m² (d) 151 m²

29. The radius of a hemisphere is 6.3 cm. What will be its volume?

अतहे %तयं है हिदय्ह त यह 6.3 ंद्धद्धिमक्ष्प ं यहे य र वह 1 त य
मयंय

SSC CGL 06/12/2022 (Shift- 04)

(a) 572.80 cm³ (b) 643.50 cm³
(c) 523.90 cm³ (d) 353.38 cm³

30. If the diameter of a hemisphere is 35 cm, then what is the volume of hemisphere?

त व ह अै हे %तयं है यह य ह 3 ढह ंद्धद्धिमक्ष्हर यंहे %तयं
ं यहे य र वह 1 त यह मक्ष्

SSC CGL 07/12/2022 (Shift- 01)

(a) 11229.17 cm³ (b) 15248.46 cm³
(c) 17428.33 cm³ (d) 9478.26 cm³

31. Steel is used to make a hemispherical bowl that is 0.37 cm thick. The bow's inner radius is 6 cm. Find the bowl's outside curved surface $\left(\text{Take } \pi = \frac{22}{7}\right)$.

(इ- है यह ० त यंह अै हतयं र्य है इयंह्ह क्यह्है ंह व अहदै त य
. य यह मक्ष यंह 0.37 cm हा यंह यह मयं यह मक्ष्है इयंह्है हि 4 यरि ज
दय्ह त यह 6 cm ह मक्ष्है इयंह्है यह य यजहिलकृर्ह ैनति हन्यंर्य ज्ञ
ु य है दि अ ह $\left(\pi = \frac{22}{7} - दि त\right)$.

SSC CGL 07/12/2022 (Shift- 01)

(a) 532 cm² (b) 255.0548 cm²
(c) 484 cm² (d) 523.4107 cm²

32. A copper sphere of diameter 18 metre is drawn into a cylindrical wire of length 12 metre. What is the radius of the wire?

धध्हा इि ज्हए य हलय ंहअै हर य्हाहै ंहतयं है यंहअै हधृ हा इि ज
->गयाह ं - कैय यह र यह हा ह उयम्रि यह तत यह मक्ष्हर यह है हि दय्ह त य
1 त यह मक्ष

SSC CGL 07/12/2022 (Shift- 03)

(a) 5 metre (b) 9 metre
(c) 3 metre (d) 12 metre

33. What is the total surface area of a cone, if the slant height and radius of a cone is 30 cm and 14 cm, respectively?

त व ह अै ही यै ा ूहै हि व त ै 5 ह। ह य्ह हे यह दय्ह त यह का ी यह 30
cm हे यह 14 cm ह मक्ष्हर यंही यै ा ूहै यहै ू - र्ह ैनति हन्यंर्य ज्ञ
दै र वह मक्ष

SSC CGL 07/12/2022 (Shift- 03)

(a) 1980 cm³ (b) 1963 cm³
(c) 1908 cm³ (d) 1936 cm³

34. The volume of the sphere is 38,808 cm³. What is the surface area of the sphere?

अै हतयं है यहे य र वह 38,808 cm³ ह मक्ष्ह अै हतयं है य
ं ैनति हन्यंर्य ज्ञ हु य है दि अ

SSC CGL 07/12/2022 (Shift- 04)

(a) 4455. cm² (b) 4433 cm²
(c) 5544 cm² (d) 3344 cm²

35. The radius of a hemisphere is 5.6 cm. What will be its volume?

अै हे %तयं है हिदय्ह त यह 5.6 cm मक्ष्प ं यहे य र वह 1 त य
मयंय

SSC CGL 07/12/2022 (Shift- 04)

(a) 367.95 cm³ (b) 195.95 cm²
(c) 380 cm³ (d) 265.65 cm³

Maths by Aditya Ranjan sir

36. What is the area of the curved surface of a right circular cone with height 8 m and slant height 10 m?

8 mह ब्म याहे यह 10 mह वर्त 5 ह। ध्य याह लय हैअ ह-> ग लस्यि ही यॉ है हलकृ ैनिह न्यंय ज्ञ ह 1त यमक्र

SSC CGL 08/12/2022 (Shift- 01)

(a) 60 m²
(b) 60π m²
(c) 40 m²
(d) 40π m²

37. An iron rod with diameter 4 cm and length 12 cm is drawn into a wire of length 12 m of uniform thickness. Determine the thickness of the wire.

ष्ह ो हिए य हे यह धृ ह ो हि -> गयाह लय हिअ ह- यंहै ि 9 रुहै यं ह ा यहा यं याहै ह धृ हा ड़िज ह -> गंह र यहा ह छ म्रि य . य यमक्र र यहै हा यं याहु य है दि अ

SSC CGL 08/12/2022 (Shift- 02)

(a) 0.6 cm
(b) 0.7 cm
(c) 0.3 cm
(d) 0.4 cm

38. Find the total surface area of cube whose volume is 343 m³.

सयहै यै ू-र्ह ैनति न्यंय ज्ञ हु य है दि अह द ै यं य र क 343 m³हा ड़िज मक्र

SSC CGL 08/12/2022 (Shift- 03)

(a) 186 m²
(b) 294 m²
(c) 196 m²
(d) 210 m²

39. A hollow sphere has an outer radius of 6 cm and inner radius of 3 cm. What is the volume of this hollow sphere?

अै ह छ यंछ - ंहतयं है हि यजहिदयत यक ह ो हि यह यादजै दयत य3ह ो हिमक्रप ह छ यंछ - ंहतयं है यं य र क 1त यमक्र

SSC CGL 08/12/2022 (Shift- 03)

(a) 252p cm³
(b) 356p cm³
(c) 144p cm³
(d) 175p cm³

40. A cuboid of sides 12 cm, 18 cm and 27 cm is melted to form a cube. What is the ratio of the total surface area of the cuboid to that of the cube?

12 cm, 18 cmहे यह 27 cmह 4यू ये यंहलय हैअ ह सयमाय ै यंहद सम ये ज्हअै ह सयह क्य य यमक्र सयमाय है ह ग्0य ै ैनति ह न्यंय ज्ञ है य ह सयहै ह र्ं 0य ैनति ह न्यंय ज्ञ ह ै कू य ह दै र क मक्र

SSC CGL 08/12/2022 (Shift- 04)

(a) 18 : 17
(b) 17 : 19
(c) 19 : 18
(d) 17 : 23

41. A solid cone of height 42 cm with diameter of its base 42 cm is cut out from a wooden solid sphere of radius 24 cm. Find the percentage of wood wasted correct to two places of decimal.

42 cmह। ध्य याहै यह अै ह नयं ही यॉ ह द ै हे य%यहै य ए य ह 42 cmह मक्र 24 cmह दयत यहै ह- ै रुहि ह नयं तयं ह है यह य यमक्र , य ह मूपह- ै रुहि यं ह ी य ु य है दि अह यं ह ी य - लहै ह प यं ह(य यमक्र र ै ह महिमयं

SSC CGL 09/12/2022 (Shift- 01)

(a) 75.56%
(b) 56.65%
(c) 66.50%
(d) 67.50%

42. The length of the side of a cube is 2.8 cm. What is the volume of the largest sphere that can be taken out of the cube?

अै ह सयहै हि 4यू यै हि -> गयाह ह्ह ह्ह्हि मक्र सयह ह याज कै य ह यं ै वंहलय ह , ह रुहतयं है यं य र क 1त यमक्र

SSC CGL 09/12/2022 (Shift- 02)

(a) 11.50 cm³
(b) 1.15 cm³
(c) 11.55 cm³
(d) 115 cm³

43. A conical vessel (solid) is made of iron. Its base radius is 7 cm and height is 15 cm. If the weight of the iron per cubic centimetre is 15 g, what is the weight of the vessel?

अै ही यॉ य यहँ यहँ नयं भ्ह- यंहै यह क ह मक्र प ै हे य%य ै हिदयत यह 7 cmहे यह। ध्य याह 15 cmह मक्र त क ह- यंहै य 4य यहँ य ह सयह ड़ी ड़िज ह 15 gह मक्र र यहँ य यहै यह 4य यह ह य ै दि अ

SSC CGL 09/12/2022 (Shift- 02)

(a) 13.55 kg
(b) 12.55 kg
(c) 14.55 kg
(d) 11.55 kg

44. The curved surface area of a right circular cone of base radius 21 cm is 594 sq. cm. What is the slant height of the cone?

अै ह -> ह लस्यि ही यॉ ह द ै हि य%यहै हिदयत यह ध ह ह ा ह्हि मक्र है यह लकृ ैनति ह न्यंय ज्ञ ह ढ त्ष ह लत ह cm मक्र ही यॉ ै हिवर्त 5 ह। ध्य याह दै र क ह मक्र

SSC CGL 09/12/2022 (Shift- 03)

(a) 15 cm
(b) 11 cm
(c) 9 cm
(d) 6 cm

Maths by Aditya Ranjan sir

45. The number of solid spheres, each of diameter 6 cm, that could be moulded to form a solid metal cylinder of height 90cm and diameter 4 cm is:

ठोस गोलों की संख्या जिनमें प्रत्येक का व्यास 6 cm है, को एक ठोस धातु के बेलन का निर्माण करने के लिए ढाला जा सकता है जिसकी ऊंचाई 90 m है। बेलन का व्यास 4 cm है, ज्ञात कीजिए

SSC CGL 09/12/2022 (Shift- 04)

(a) 10 (b) 14

(c) 16 (d) 13

46. The length of the side of a cube is 1.4 cm. What is the volume of the largest sphere that can be taken out of the cube?

एक घन की भुजा की लंबाई 1.4 cm है। घन से निकाले जा सकने वाले सबसे बड़े गोले का आयतन ज्ञात कीजिए

SSC CGL 09/12/2022 (Shift- 04)

(a) 1.44 cm³ (b) 3.26 cm³

(c) 2.66 cm³ (d) 5.64 cm³

47. How many metres of 2-m-wide cloth will be required to make a conical tent with the diameter of the base as 14 m and slant height as 9 m ignore wastage?

14 m व्यास वाले एक शंकु के आकार के तंबू को बनाने के लिए 9 m की तिरछी ऊंचाई के साथ 2m चौड़े कपड़े की कितने मीटर आवश्यकता होगी? अपव्यय को नगण्य मानें

SSC CGL 12/12/2022 (Shift- 01)

(a) 66 m (b) 88 m

(c) 99 m (d) 77 m

48. The radius of a right circular cylinder is four times of its height. If the height of the cylinder is 14 cm, then what is the volume of cylinder?

एक लम्बवृत्तीय बेलन की त्रिज्या उसकी ऊंचाई की चार गुनी है। बेलन की ऊंचाई 14 cm है, तो बेलन का आयतन क्या है?

SSC CGL 12/12/2022 (Shift- 02)

(a) 15468 cm³ (b) 14262 cm³

(c) 137984 cm³ (d) 11296 cm³

49. The radii of the ends of a frustum of a cone 7 cm height are 5 cm and 3 cm. Find its volume correct to one decimal place.

$\left(\text{Use } \pi = \frac{22}{7}\right)$

7 cm ऊंचाई वाले एक शंकु के छिन्नक के सिरों की त्रिज्याएं 5 cm और 3 cm हैं। आयतन ज्ञात कीजिए, सही उत्तर को एक दशमलव स्थान तक लिखिए

$\left(\pi = \frac{22}{7} \text{ का प्रयोग करें}\right)$

SSC CGL 12/12/2022 (Shift- 02)

(a) 345.6 cm³ (b) 359.3 cm³

(c) 379.3 cm³ (d) 369.3 cm³

50. Area of the floor of a cubical room is 64 m². The length of the longest rod that can be kept in the room is:

एक घनाकार कमरे के फर्श का क्षेत्रफल 64 m² है। कमरे में रखी जा सकने वाली सबसे लंबी छड़ की लंबाई है:

SSC CGL 12/12/2022 (Shift- 03)

(a) $16\sqrt{3}$ m (b) $4\sqrt{3}$ m

(c) $12\sqrt{3}$ m (d) $8\sqrt{3}$ m

51. A conical vessel, whose internal radius is 20 cm and height is 27 cm, is full of water. If this water is poured into a cylindrical vessel with internal radius 15cm, what will be the height to which the water rises in it?

एक शंकु के आकार का बर्तन जिसकी आंतरिक त्रिज्या 20 cm है और ऊंचाई 27 cm है, पानी से भरा हुआ है। यदि इस पानी को एक बेलनाकार बर्तन में जिसकी आंतरिक त्रिज्या 15 cm है, डाला जाता है तो पानी उसमें कितनी ऊंचाई तक बढ़ेगा?

SSC CGL 12/12/2022 (Shift- 04)

(a) 16 cm (b) 10 cm

(c) 12 cm (d) 14 cm

52. A solid metallic sphere of radius 12 cm is melted and recast into a cone having diameter of the base as 12 cm. What is the height of the cone?

12 cm त्रिज्या वाले एक ठोस धातु के गोले को पिघलाकर एक शंकु का निर्माण किया जाता है जिसके आधार का व्यास 12 cm है। शंकु की ऊंचाई ज्ञात कीजिए

SSC CGL 12/12/2022 (Shift- 04)

(a) 258 cm (b) 192 cm

(c) 166 cm (d) 224 cm

Maths by Aditya Ranjan sir

53. If the numerical value of twice the curved surface area of a right circular cylinder is equal to the numerical value of its volume, then what is the numerical value of the radius of the base of the cylinder?

त्र्य हऐ ह-्गलस्थिति ह ं-क्है ंहलर्कृ ैनति हन्र्यंय ज्ञ है ंह्प्यंूकं ैं यह सत्य्यौ हा यक्ह० ैं हे य रक्है ं ह सत्य्यौ हा यक्है ं ज्ञ जहमक्ह रयंह ं-क्है ंहे य%यक्है हिदय्ष्ट है यह सत्य्यौ ा यक्हु य है दि अ

SSC CGL 13/12/2022 (Shift- 01)

(a) 2 (b) 3

(c) 5 (d) 4

54. If the diameter of a solid hemisphere is 12.6 cm, then its volume is $\left(\text{take } \pi = \frac{22}{7}\right)$:

त्र्य हऐ हनयं हे %त्रयं है यह्ए य ह12.6 cmहमक्ह रयंह्प ैं य ैं य रक्हमक्ह $\left(\pi = \frac{22}{7} - \text{दि अ}\right)$:

SSC CGL 13/12/2022 (Shift- 3)

(a) 1,259 cm³

(b) 987 cm³

(c) 523.908 cm³

(d) 1,235.621 cm³

55. The area of two similar triangles are 324 cm² and 289 cm², respectively. What is the ratio of their corresponding altitudes?

दै म हिप्यंह ा ऊं हदय्यू यंै ंहन्र्यंय ज्ञ हकृा ी यह324 cm² ैं यक्ह289 cm²ह मक्ह०कै ंह सरही य्यि/ग यंै यहे कूं य ु य है दि अ

SSC CGL 13/12/2022 (Shift- 3)

(a) $\frac{17}{18}$ (b) $\frac{17}{19}$

(c) $\frac{19}{17}$ (d) $\frac{18}{17}$

56. What is the volume of the largest sphere that can be carved out of a wooden cube of sides 21 cm? $\left(\pi = \frac{22}{7}\right)$

ैं रुहि ंह धहcmहै हि4यू यहलय ंहसक्ह है यह ंह यह ैं कं लय ंह, ंह रुंहतयं है यहे य रक्है द रक्हमक्ह $\left(\pi = \frac{22}{7}\right)$

SSC CGL TIER - II 02/03/2023

(a) 3851cm³ (b) 6858cm³

(c) 4851cm³ (d) 5821cm³

57. A hemispherical bowl of internal radius 18 cm is full of liquid. This liquid is to be filled in cylindrical bottles each of radius 3 cm and height 6 cm. How many bottles are required to empty the bowl?

18 cmहै हि यादैज हदय्ष्ट है यहऐ हे ि ंत्रयं ति है इयंक्ह/ल ंह4यक्ह मू यहमक्ह प ह/लहै ंह3 cmहदय्ष्ट है यक्ह6 cm । ंह्यक्हलय हि ं-कैम यक्ह य-यंा ह4यक्ह यक्हमक्ह ड य यहछ य ि ैं जहै ंहव अहैद रक्हि यं-यै हि यनी है रक्हमयंाशि

SSC CGL TIER- II 03/03/2023

(a) 72 (b) 70

(c) 68 (d) 66

58. What is the total surface area of a pyramid whose base is a square with side 8 cm and height of the pyramid is 3 cm?

ऐ हर्द जम रुहै यह ंग्0यंै ैनति हन्र्यंय ज्ञ ह1त्र्य मक्ह्द ैं है य यक्ह 8 cmह4यू यहलय यहऐ हलतह मक्है यक्ह र्द जम रुहै हि। ंह्यक्ह3 cmहमक्ह

SSC CGL TIER- II 03/03/2023

(a) 169 cm² (b) 121 cm²

(c) 144 cm² (d) 184 cm²

59. The breadth 'b' of a room is twice its height and half of its length. Find the length of the longest diagonal of the room.

ऐ है ा जहै हि> यक्त्यक्ह 'b'ह० ैं हि। ंह्यक्है हिप्यंूकहि यक्ह० ैं हि-्गयक्है हि य%हिमक्है ा जहै ंह, ंह-्गंहवैन 0यंै ि -्गयक्हु य है दि अ

SSC CGL TIER- II 03/03/2023

(a) $\frac{\sqrt{20}b}{2}$

(b) $\frac{b}{2}$

(c) $\frac{\sqrt{21}b}{2}$

(d) $\frac{\sqrt{19}b}{2}$

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60. If the curved surface area of a cylinder is 126π cm² and its height is 14 cm. then, what is the volume of the cylinder?

त क्र हअै ह ं - वहै ष्कलकृर्ह ैनति हन्र्यंय ज्ञ ह126π cm² मह्के य्क्र प ै हिव्ज्ञ य्ह14 cm मह्हर्यंक्ष ं - वहै ष्के य र वह1त क्रमंयंय

SSC CGL TIER- II 06/03/2023

(a) $283\frac{1}{2}\pi$ cm³ (b) $128\frac{1}{2}\pi$ cm³

(c) $137\frac{1}{2}\pi$ cm³ (d) $125\frac{1}{2}\pi$ cm³

61. The base of a pyramid is an equilateral triangle whose each side is 8 cm. Is. Its (slant edge) is 24 cm. What is the total surface area (in cm²) of the pyramid?

अै ह र्द जम रुहै ष्के य्क्र ह अै ह ट यूह दय्यू ह मह्क्र द ै ि ं ह्यूं ह्यू ष्के हि-ज य्ह8 cm. मह्क्र प ै ष्क्र व ट 5 है य्क्र ह(Slant edge)ह24 cm. मह्र्द जम रुहै ष्क र्ं 0र्ष्के नति हन्र्यंय ज्ञ ह(cm² ा ज्ह्दै र वह्क्र मह्क्र

SSC CGL TIER- II 06/03/2023

(a) $\left(24\sqrt{3}+36\sqrt{35}\right)$ (b) $\left(16\sqrt{3}+48\sqrt{35}\right)$

(c) $\left(24\sqrt{3}+24\sqrt{35}\right)$ (d) $\left(12\sqrt{3}+24\sqrt{35}\right)$

62. A prism and a pyramid have the same base and the same height. Find the ratio of the volumes of the prism and the pyramid.

अै ह द्ध ष्ठ हे य्क्र अै ह र्द जम रुहै ष्क ा य्क्र हे य्क्र य्क्र हे य्क्र ा य्क्र । म य्क्र मह्क्र द्ध ष्ठ हे य्क्र र्द जम रुहै हे य र वह्क्र है ष्के कूं य हु य ै दि अ

SSC CGL TIER- II 07/03/2023

(a) 2 : 3 (b) 3 : 1

(c) 1 : 3 (d) 3 : 2

63. What is the volume of a cylinder if the radius of the cylinder is 10 cm and height is 20 cm? (Take π = 3.14)

ं - वहै ष्के य र वह1त क्रमंयंय्क्र त क्र ह ं - वहै हिदय्क्र त य्ह10 cm य्क्र। ह य्ह20 cmहमंय्ह(π = 3.14 - ंा

SSC CGL TIER- II 07/03/2023

(a) 6280 cm³

(b) 5306 cm³

(c) 6260 cm³

(d) 5280 cm³

ANSWER KEY

1.(b)	2.(c)	3.(b)	4.(d)	5.(d)	6.(a)	7.(c)	8.(a)	9.(a)	10.(a)
11.(a)	12.(a)	13.(b)	14.(c)	15.(a)	16.(d)	17.(d)	18.(d)	19.(a)	20.(b)
21.(c)	22.(c)	23.(a)	24.(c)	25.(b)	26.(b)	27.(b)	28.(b)	29.(c)	30.(a)
31.(b)	32.(b)	33.(d)	34.(c)	35.(a)	36.(b)	37.(d)	38.(b)	39.(a)	40.(c)
41.(c)	42.(a)	43.(d)	44.(c)	45.(a)	46.(a)	47.(c)	48.(c)	49.(b)	50.(d)
51.(a)	52.(b)	53.(d)	54.(c)	55.(d)	56.(c)	57.(a)	58.(c)	59.(c)	60.(a)
61.(b)	62.(b)	63.(a)							

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SOLUTIONS

1. (b) Volume of cuboid = volume of spheres

$\Rightarrow 88 \times 63 \times 42 = x \times \frac{4}{3} \times \frac{22}{7} \times \left(\frac{8.4}{2}\right)^3$

$\Rightarrow x = \frac{88 \times 63 \times 42 \times 3 \times 7 \times 1000}{4 \times 22 \times 4.2 \times 4.2 \times 4.2}$

$\Rightarrow x = 750$

2. (c) ATQ,

$\frac{2}{3} \times \frac{22}{7} \times 4^3 = \frac{1}{3} \times \frac{22}{7} \times r^2 \times 72$

$\Rightarrow \frac{2 \times 4 \times 4 \times 4}{72} = r^2$

$= \frac{4}{3} = r$

$\Rightarrow r = 1.33$ cm.

3. (b) $\frac{4}{3} \times \pi (9)^3 = \pi (3)^2 \times$ length

$\Rightarrow l = \frac{4}{3} \times \frac{9 \times 9 \times 9}{3 \times 3}$

$= 108$ m

4. (d) $\frac{4}{3} \times \pi \times (13)^3 = \frac{1}{3} \pi \left(\frac{13}{2}\right)^2 \times h$

$4 \times 13 \times 4 = h$

$\Rightarrow h = 208$ cm.

5. (d) $a^3 = 6^3 + 8^3 + 10^3$

$a^3 = 1728$

$\Rightarrow a = 12$

6. (a) I. Culoid volume = $6 \times 7 \times 8$

$= 336$

II. Cube volume = $7 \times 7 \times 7$

$= 343$

7. (c) T.S.A = $4\pi r^2 = 4 \times \frac{22}{7} \times \frac{63}{2} \times \frac{63}{2}$

$= 12474$ cm²

8. (a) T.S.A = $4\pi r^2 = 2 \times \frac{22}{7} \times 42 \times 42$

$= 11088$ cm²

Rate = 21 per 100 cm²

T. Price = 110.88×21

= Rs. 2328.48

9. (a) Volume = $\frac{2}{3} \times \frac{22}{7} \times 14 \times 14 \times 14$

$= 5749.33$ cm²

10. (a) $6a^2 = 864$

$a = \sqrt{\frac{864}{6}} = \sqrt{144} = 12$

$\Rightarrow$ Volume = $a^3 = 1728$ cm³

11. (a) $r = 5h$

$= 5 \times 3.5$

$v = \frac{22}{7} \times 5 \times 5 \times 3.5 \times 3.5 \times 3.5$

$= 22 \times 125 \times 1225 \times 10^{-3}$

$= 3368.75$ cm³

12. (a) ATQ,

$18 \times 36 \times 9 = a^3$

$a = 9 \times 2 = 18$ m.

Diagonal $= 18\sqrt{3}$ m.

13. (b) $\frac{4}{3} \times 3.14 \times r^3 = 24416.64$

$r^3 = \frac{7776 \times 3}{4}$

$r^3 = 1944 \times 3 = 216 \times 27$

$\Rightarrow r = 18$

Surface area = $4\pi r^2$

$= 4 \times 3.14 \times 18 \times 18$

$= 4069.44$ cm²

14. (c) T.S.A = $4 \times \frac{22}{7} \times \frac{3.5}{2} \times \frac{3.5}{2}$

$= 38.5$ cm²

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15. (a) $\frac{r_1}{r_2} = \frac{1}{4}; \frac{h_1}{h_2} = \frac{4}{3}$

$$\frac{v_1}{v_2} = \frac{\pi r_1^2 h_1}{\pi r_2^2 h_2} = \frac{1 \times 4}{16 \times 3}$$

$$= \frac{1}{12}$$

16. (d) r = 3h = 3 × 2.1

$$v = \pi r^2 h = \frac{22}{7} \times 3 \times 2.1 \times 2.1 \times 2.1 \times 3$$

$$= \frac{66 \times 3 \times 21 \times 21 \times 3}{1000}$$

$$= \frac{198 \times 441 \times 3}{1000}$$

$= 261.95 \text{ cm}^3$

17. (d) ATQ,

$$\frac{4}{3} \times \frac{22}{7} \times 9 \times 9 \times 9 = \frac{22}{7} \times (2)^2 \times l$$

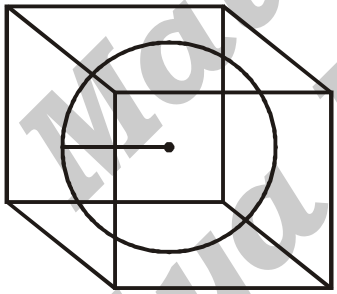
$\Rightarrow$ l = 81 × 3 = 243 cm

18. (d) Side = $\frac{\text{Diagonal}}{\sqrt{3}} = 7$

$\Rightarrow$ S.A = $6a^2 = 6 \times 49 = 294 \text{ cm}^2$

19. (a) a = 5.6

$r = \frac{5.6}{2}$



$$\text{Volume} = \frac{4}{3} \times \frac{22}{7} \times \frac{5.6}{2} \times \frac{5.6}{2} \times \frac{5.6}{2}$$

$= 91.98 \text{ cm}^3$

20. (b) C.S.A = 154

$\Rightarrow 4 \times \frac{22}{7} \times r^2 = 154$

$\Rightarrow r = \frac{7}{2}$

$$\text{Volume} = \frac{22}{7} \times \frac{4}{3} \times \frac{7}{2} \times \frac{7}{2} \times \frac{7}{2}$$

$$= \frac{11 \times 49}{3} = \frac{539}{3}$$

$= 179.7 \text{ cm}^3$

21. (c) $6a^2 = 1536$

$a = \sqrt{256} = 16$

$\Rightarrow a^3 = 16^3$

$= 4096$

22. (c) a = 4.2

r = 2.1

$$\text{Volume} = \frac{4}{3} \times \frac{22}{7} \times 2.1 \times 2.1 \times 2.1$$

$$= \frac{88 \times 441}{1000}$$

$= 38.808 \text{ cm}^3$

23. (a) $V = \frac{4}{3} \times \frac{22}{7}(4^3 - 1^3)$

$$= \frac{4}{3} \times \frac{22}{7} \times 63$$

$= 264$ or $84p \text{ cm}^3$

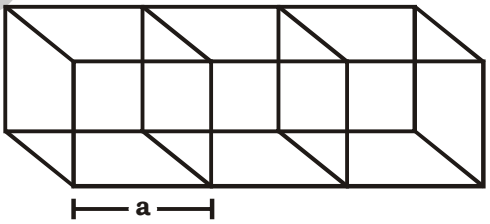
24. (c) $\frac{2}{3} \times \frac{22}{7} \times r^3 = 19404$

$r^3 = 441 \times 21$

r = 21

25. (b) Diagonal = $6\sqrt{3}$

Side = 6 cm.



Surface area of visible faces:-

$\Rightarrow 14a^2 = 14 \times 6^2 = 504 \text{ cm}^2$

26. (b) r = 21

$$\Rightarrow \frac{2}{3}\pi r^3 = \pi r_1^2 h$$

$$\frac{2}{3} \times (21)^3 = r_1^2 h \quad \text{.....(1)}$$

$$\frac{\text{C.S.A}}{\text{T.S.A}} = \frac{2\pi r_1 h}{2\pi r_1 (h + r_1)} = \frac{h}{h + r_1} = \frac{2}{5}$$

$h = 2x \Rightarrow r_1 = 3x$ .....(2)

Put (2) in (1)

$$\frac{2}{3} \times 21 \times 21 \times 21 = 9x^2 \times 2x$$

$\Rightarrow x^3 = 7 \times 7 \times 7$

$\Rightarrow x = 7$

$r = 3 \times 7 = 21$

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27. (b) R = 10 m.

t = 1 cm.

inner radius, r = 10 – 1 = 9 cm.

S.A = 2π Rh + 2π rh + 2π ($R^2 - r^2$)

= 2π [Rh + rh + $R^2 - r^2$]

= 2π [(r + R) (h + R – r)]

$= 2 \times \frac{22}{7}[19(13)]$

= 1552.57 cm^2

28. (b) $\frac{4}{3} \times \frac{22}{7} \times r^3 = \frac{539}{3}$

$\Rightarrow r = \frac{7}{2}$ m

S.A = $4\pi r^2$

$= 4 \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2}$

= 154 m^2

29. (c) Volume $= \frac{2}{3} \times \frac{22}{7} \times 6.3 \times 6.3 \times 6.3$

= 523.90 cm^3

30. (a) Volume $= \frac{2}{3} \times \frac{22}{7} \times \frac{35}{2} \times \frac{35}{2} \times \frac{35}{2}$

= 11229.17 cm^3

31. (b) t = 0.37 = R – r

r = 6

$\Rightarrow$ R = 6.37

C.S.A = $2\pi R^2$

$= 2 \times \frac{22}{7} \times 6.37 \times 6.37$

= 255.0548 cm^2

32. (b) $\frac{4}{3} \times \pi \times \left(\frac{18}{2}\right)^3 = \pi r^2 \times 12$

$\Rightarrow r^2 = \frac{4}{3} \times \frac{9 \times 9 \times 9}{12}$

r = 9 mtr.

33. (d) l = 30, r = 14

T.S.A = πr (l + r)

$= \frac{22}{7} \times 14(30 + 14)$

= 1936 cm^3

34. (c) $\frac{4}{3} \times \frac{22}{7} \times r^3 = 38808$

$r^3 = \frac{38808 \times 3 \times 7}{4 \times 22}$

r = 21

$\therefore$ $4\pi r^2 = 4 \times \frac{22}{7} \times 21 \times 21$

= 5544 cm^2

35. (a) $V = \frac{2}{3} \times \frac{22}{7} \times (5.6)^3$

= 367.95 cm^3

36. (b)

l = 10, h = 8

$\Rightarrow r = \sqrt{100 - 64}$

r = 6

$\Rightarrow \pi rl = \pi \times 6 \times 10$

= 60π m^2

37. (b) $\pi \times 4 \times 12 = \pi \times r^2 \times \frac{12}{100}$

$\Rightarrow$ r = 20 cm.

$\therefore$ Thickness = 40 cm.

= 0.4 cm.

38. (b) v = a^3 = 343

$\Rightarrow$ a = 7

T.S.A = 6 × 7^2

= 294 m^2

39. (a) $v = \frac{4}{3} \times \frac{22}{7}(R^3 - r^3)$

$= \frac{4}{3} \times \frac{22}{7}(6^3 - 3^3)$

= 252π cm^3

40. (c) 12 × 18 × 27 = a^3

$\Rightarrow$ a = 18

$\therefore \frac{\text{T.S.A of cuboid}}{\text{T.S.A of cube}} = \frac{2(lb + bh + lh)}{6a^2}$

$\Rightarrow \frac{2(12 \times 18 + 18 \times 27 + 27 \times 12)}{6 \times 18 \times 18}$

$= \frac{19}{18}$

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41. (c) Wood wasted:-

Consides:- Total

Volume of wood : Volume of cone

$\frac{4}{3}\pi(24)^3$: $\frac{1}{3}\pi(21)^2 \times 42$

1024 : 343

Required% $= \frac{1024-343}{1024} \times 100$

$= \frac{681}{1024} \times 100$

= 66.50%

42. (a) Radius of sphere $= \frac{2.8}{2} = 1.4$

$\Rightarrow$ volume $= \frac{4}{3} \times \frac{22}{7} \times 1.4 \times 1.4 \times 1.4$

= 11.50 cm³

43. (d) Volume $= \frac{1}{3} \times \frac{22}{7} \times 7 \times 7 \times 15$

= 770 cm³

Weight of vessel = 770 × 15

= 11550 g.

= 11.55 kg.

44. (c) $\pi rl = 594$

$\Rightarrow \frac{22}{7} \times 21 \times l = 594$

l = 9

45. (a) $\pi r_1^2 h = n \times \frac{4}{3}\pi r_2^3$

$\pi \times 2 \times 2 \times 90 = n \times \frac{4}{3} \times \pi \times (3)^3$

$\Rightarrow n = \frac{4 \times 90 \times 3}{4 \times 9 \times 3} = 10$

46. (a) Radius $= \frac{\text{Side}}{2}$

$\Rightarrow \frac{4}{3}\pi r^3 = \frac{4}{3} \times \frac{22}{7} \times (0.7)^3$

$= \frac{4}{3} \times \frac{22}{7} \times \frac{7 \times 7 \times 7}{1000}$

= 1.44 cm³

47. (c) $\pi rl = \frac{22}{7} \times 7 \times 9 = 198$

Let, length of cloath be l mtr.

$\Rightarrow 2 \times l = 198$

l = 99m

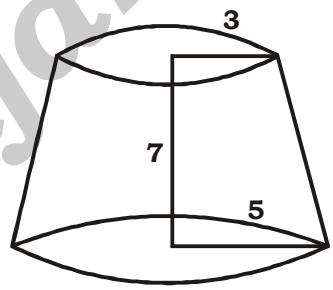
48. (c) r = 4h = 4 × 14

Volume = $\pi r^2 h$

$= \frac{22}{7} \times 4 \times 14 \times 4 \times 14 \times 14$

= 137984 cm³

49. (b)



Volume of frustum $= \frac{1}{3}\pi(R^2 + r^2 + Rr)h$

$\Rightarrow \frac{1}{3} \times \frac{22}{7}[25+9+15]\,7$

$\Rightarrow \frac{22}{3}[49] = 359.3$ cm³

50. (d) Given,

L × B = 64 m²

$\Rightarrow$ L = L = 64

$\Rightarrow$ L = B = H = 8

$\Rightarrow$ Length of lougest rod $= 8\sqrt{3}$

= Diagonal of cube

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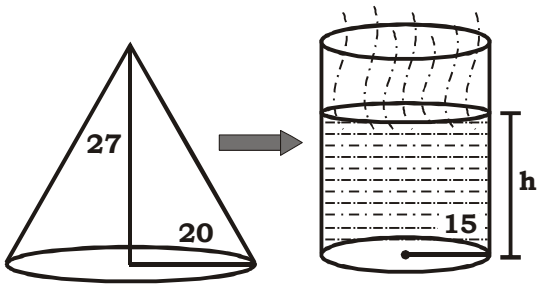
51. (a)



$\Rightarrow \frac{1}{3} \times \lambda r^2 h = \lambda r_1^2 h^1$

$\Rightarrow \frac{1}{3} \times \lambda \times (20)^2 \times 27 = \lambda \times (15)^2 \times h^1$

$\Rightarrow h^1 = 16$ cm.

52. (b) Let height of cone be h

$\Rightarrow \frac{4}{3} \times \frac{22}{7} \times 12 \times 12 \times 12 = \frac{1}{3} \times \frac{22}{7} \times 6 \times 6 \times h$

$\Rightarrow h = 192$ cm.

53. (d) ATQ,

$2(2\lambda rh) = \lambda r^2 h$

$\Rightarrow 4 = r$

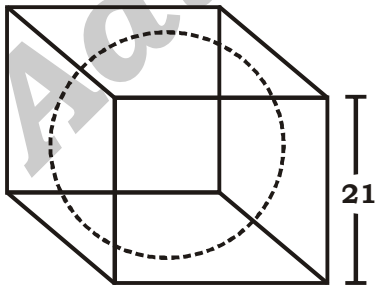
54. (c) Volume $= \frac{2}{3} \times \frac{22}{7} \times 6.3 \times 6.3 \times 6.3$

$= 523.908$ cm³

55. (d) $\frac{Ar.\Delta_1}{Ar.\Delta_2} = \frac{324}{289} = \frac{(18)^2}{(17)^2}$

$\Rightarrow \frac{\text{Side of } \Delta_1}{\text{Side of } \Delta_2} = \frac{18}{17}$

56. (c)



We know,

Diagonal $= 2\sqrt{3}$ Radius

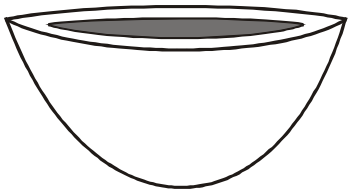
$21\sqrt{3} = 2\sqrt{3} \times$ Radius

$\therefore$ Volume $= \frac{4}{3}\lambda R^3$

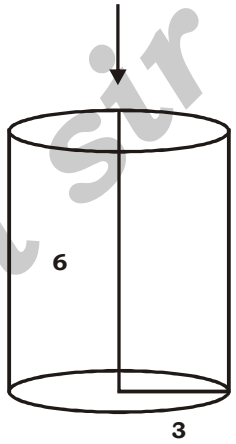
$= \frac{4}{3} \times \frac{22}{7} \times \frac{21}{2} \times \frac{21}{2} \times \frac{21}{2}$

$= 4851$ cm³

57. (a)



R = 18 cm.

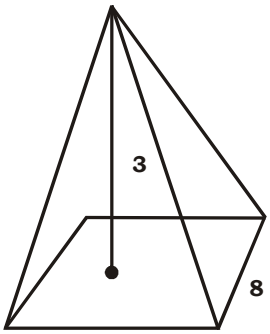


$\frac{2}{3}\lambda R^3 = n \times \lambda r^2 h$

$\frac{2}{3} \times 18^3 = n \times 3^2 \times 6$

$\Rightarrow n = 4 \times 18 = 72$

58. (c)



h = 3 cm, s = 8 cm.

T.S.A $= \frac{1}{2} \times 4 \times s \times l + s^2$

Also,

$l^2 = h^2 + \left(\frac{s}{2}\right)^2 = 9 + 16$

$l = 5$

Maths by Aditya Ranjan sir

$\therefore$ T.S.A $= \frac{1}{2} \times 4 \times 8 \times 5 + 64$

$= 80 + 64$

$= 144$

59. (c)

$b = 2h = \frac{1}{2}l$

Diagonal $= \sqrt{l^2 + b^2 + h^2}$

$= \sqrt{4b^2 + b^2 + \frac{b^2}{4}}$

$= \sqrt{\frac{21}{4}b^2}$

$= \frac{b}{2}\sqrt{21}$

60. (a)

Given,

$2\pi rh = 126\pi$

$\Rightarrow 2 \times \pi \times r \times 14 = 126\pi$

$r = \frac{9}{2}$

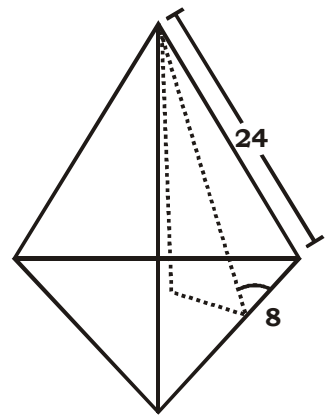
Volume $= \pi r^2 h$

$= \pi \frac{81}{4} \times 14$

$= \frac{567}{2}\pi$

$= 283\frac{1}{2}\pi \text{ cm}^3$

61. (b)



T.S.A $= \frac{1}{2} \times 3 \times 8 \times l \; \frac{\sqrt{3}}{4}(8)^2$

$= 12\,l + 16\sqrt{3}$

$l = \sqrt{(24)^2 - 4^2} = \sqrt{560}$

$= 4\sqrt{35}$

$\Rightarrow$ T.S.A $= 48\sqrt{35} + 16\sqrt{3}$

62. (b)

Volume of pyramid $= \frac{1}{3} \times$ ar. of base $\times$ h

prism = Area of base $\times$ h

$\Rightarrow$ Requaired ratio $= \frac{Ar \times h}{\frac{1}{3} \times ar \times h} = \frac{3}{1}$

63. (a)

$r = 10$ cm, $h = 20$ cm.

$V = \pi r^2 h$

$\Rightarrow 3.14 \times 100 \times 20$

$\Rightarrow 314 \times 20 = 6280 \text{ cm}^3$.

Maths by Aditya Ranjan sir

DATA INTERPRETATION

8ो ए वहै क्रै

24

1. **The following table shows the number of pages printed by 3 printers during 3 days.**

है ैं दलह्ये दं दहौ दे दगाभै दं दहर चतादएतादक्हाल रीछ्हादे ंदचड़ दगमार्क्रदश्अ

Printers Days	X	Y	Z
Monday	130	140	210
Tuesday	110	145	160
Wednesday	180	90	218

What is the average number of pages printed by printer Z during the 3 days?

ंदहौ दे दगाभै दहर चतदZदएतादक्हालदरीछ्हादे ंद8 अल चड़ दहे लैंदश्अ

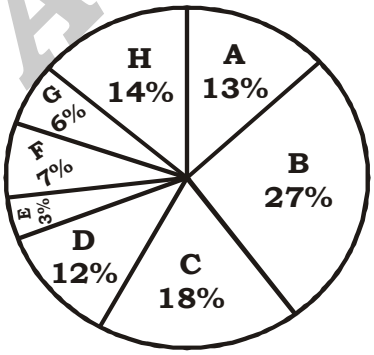
SSC CGL 01/12/2022 (Shift- 01)

(a) 196 (b) 194

(c) 192 (d) 190

2. **The pie chart given below shows the number of truck sold by 8 different companies. The total number of truck sold by all these 8 companies are 4000. Number of truck sold by a particular company is shown as a percent of total number of truck sold by all these 8 companies.**

ैं ंद5 वहा दव दृ ि्रदह ादक्ष्दहृ ह्रौप दे रहै. दएतादक 5 - व्र दने? दे ंदचड़ दे दगमार्क्रदश्अरै दचर्ा दक्ष्दे रहै. ा- एतादक 5 वव्र दने? दे ंदे वदचड़ दू टटदश्अ ` दहृ हमाब ` रै ंदएतादक 5 वव्र दने? दे ंदचड़ दे वरै दचर्ा दक्ष्दे रहै. ा- एतादक 5 वव्र दने? दे ंदे वदचड़ दे दर ह्मालदे दल रदक- गमार्क्रदव दश्अ



The number of trucks sold by B, C, F and H is how much percent less than the number of trucks sold by all these 8 companies?

B, C, F लाादH एतादक 5 वव्र दने? दे ंदचड़ दरै दचर्ा क्ष्दे रहै. दएतादक 5 वव्र दने? दे ंदचड़ दचवहे लै दर ह्मालं ` वदश्अ

SSC CGL 01/12/2022 (Shift- 01)

(a) 46 percent

(b) 22 percent

(c) 34 percent

(d) 14 percent

3. **The table given below shows the number of spoon manufactured by five factories.**

ैं ंद5 दर्ग दवस्क्रलह्ये दरा8 दर ह्मन्? दएतादधरागै दे ंदवस्क्र 5 कि दे ंदचड़ दे दगमार्क्रदश्अ

Factory	Spoon
P	100
Q	200
R	150
S	50
T	250

What are the ratio of number of spoon manufactured by P to the number of spoon manufactured by R?

Pदएतादहै 2क्रलद5 कि दे ंदचड़ दे दRदएतादहै 2क्रलद5 कि ` ंदचड़ दचव8ै लाल्हु. दश्अ

SSC CGL 01/12/2022 (Shift- 01)

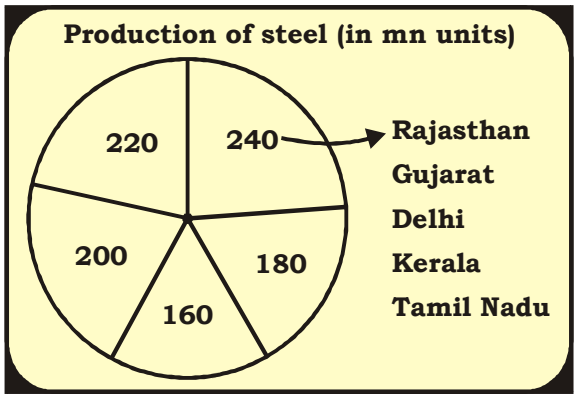
(a) 3 : 2 (b) 2 : 3

(c) 14 : 1 (d) 1 : 3

4. **Study the given chart and answer the following question.**

ह्य दव्र द5 नक्रे दद8 स. ैं दे त्द8 अहै ैं ह्यहडालदर ै ` दधक्रुत्दग÷

Maths by Aditya Ranjan sir



What is the central angle corresponding to the production steel by Kerala?

` त्यदएतादर्क यदे दधअगै दे द8 तरदे र्पाज़दे ।6।
७. ादश्अ

SSC CGL 01/12/2022 (Shift- 02)

(a) 82° (b) 65.8°
(c) 75.2° (d) 72°

5. **The following table shows the number of different items in different shops and their respective selling prices per unit.**

है ैं दलाह्ये ादहू ह्रापै दगेतै ादकदहू ह्रापै दृ क्लत ादे ` चड़ ाद8 ।अर ह्रनदरे ास्क्रधै` दक ह्रलदहू ख् दक्ल दे ।-गमार्क्रादश्अ

Shops	Total No. of Items	AC : Cooler : Fan	Selling Price per unit		
			Cooler	AC	Fan
A	5000	4 : 5 : 1	8000	25000	8500
B	1800	3 : 2 : 4	10000	20000	16000
C	3400	6 : 4 : 7	6000	42000	15000
D	3600	4 : 2 : 3	12000	32000	8000
E	4000	5 : 1 : 4	8000	26500	12200
F	1210	2 : 4 : 5	11000	28000	11100

Find the percentage of total revenue which comes from Cooler from shop E, considering all given items are being sold from shop E and from all the given shops only given three items are being sold. (Rounded off to three decimal places)

` त्वदताम् वृ दे ादर ह्रनमालद4ालदे त7दम् ादगेतै दEदचवे ।अत ` ंदह र्ख दचद8 ालादश्अ गमाक्यृ दे क ागदलै दक्मौ ादले रह्राक्रे लद7द् श्दक्मै दयदहे दगेतै दEदचद चर्त्रा दृ क्लत न 5 ंदम् ादर्श दश्अ8 ।अर्ग दवस्क्रचर्त्रा दगेतै ादचवे ्-यदलै ्क्लत ादे ंदह र्ख दे ंदम् ादर्श दश्अ

SSC CGL 01/12/2022 (Shift- 02)

(a) 4.226% (b) 3.516%
(c) 10.45% (d) 8.910%

6. **The following table shows the marks (in percentages) obtained by six students in four different subjects in an examination. Maximum marks in each subject are 100.**

ह्र्यौं ह्यहडालद्दलाह्ये दे ंदर्र्त षादक्क5 ात्द8 यव्र्थ8 यवदहू ब् ।-क्दद्व श्दद्व ।।।।दएतादर ह्रलद8` दे ादन्र ह्रनमालद क्क दगमार्क्र श्अर ज़े-दहू ब् दे दह्य द8 ह्रे लक्द8` द)टटदश्अ

Student	SUBJECT			
	SST	PHYSICS	CHEMISTRY	MATHS
A	92	90	90	80
B	90	80	85	85
C	80	80	65	70
D	85	80	82	75
E	80	75	75	85
F	90	90	90	85

Answer the following question based on the table:

लाह्ये दे द8 ।ध ात्दर त्दहै ैं ह्यहडालद्दर ैं दे ादधक्क्त्दग-

What is the number of students whose overall percentage obtained is 80% and above?

धै दद्व ।।।।दे ंदचड़ ादहे लै ंदश्अह्र ैं` दे त्वदर ह्रलद्दर ह्रनमाल 8` द80%द8 ।अधचचद8 ह्रे दश्अ

SSC CGL 01/12/2022 (Shift- 02)

(a) 4 (b) 5
(c) 2 (d) 3

7. **The table given below shows the number of persons participating in a survey from 6 different states.**

` ंदर्ग दवस्क्रलाह्ये ादढदहू ह्रापै दतारु ादचव्र` दचृ श्र6ादक-त्रावदयै-दृ ायदप्र हु ल ादे ंदचड़ ादे ादगमार्क्रादश्अ

States	Persons
S1	100
S2	200
S3	400
S4	500
S5	600
S6	800

What is the ratio of number of person participating in a survey from state S3 to the number of person participating in a survey from state S4?

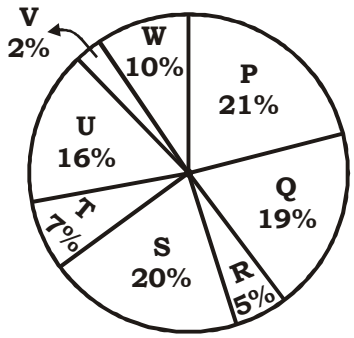
तारु दS3 चदचृ श्र6ादक्क त्रावदयै-दृ ायदप्र हु ल ादे ंदचड़ ।` ादतारु दS4 चदचृ श्र6ादक्क त्रावदयै-दृ ायदप्र हु ल ादे ंदचड़ ादचद8 ैं ।ालद्दु. ादश्अ

SSC CGL 01/12/2022 (Shift- 02)

(a) 3 : 5 (b) 5 : 4
(c) 4 : 3 (d) 4 : 5

Aditya Ranjan sir Maths by

8. The pie chart given below shows the number of bike sold by 8 different companies. The total number of bike sold by all these 8 companies are 2000. Number of bikes sold by a particular company is shown as a percent of total number of bike sold by all these 8 companies.



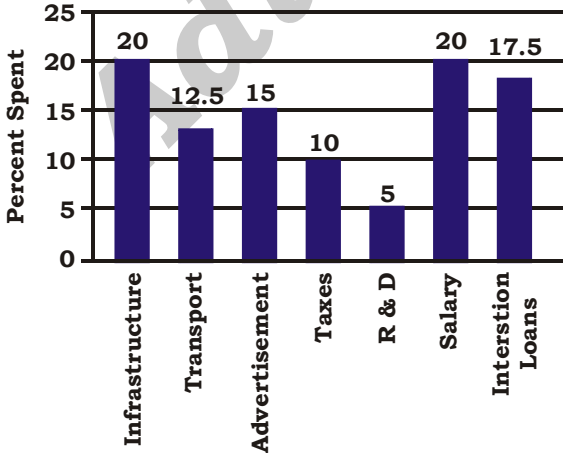
What is the difference between the average number of bikes sold by P, Q, R and S and the average number of bikes sold by T, U, V and W?

P, Q, R दलाा दSदएाक 5 दवस्क्र ासे दे 'द8 ाअलदचड़ ा 8 ाअT, U, Vदउाा दWदएाक 5 दवस्क्र ासे दे 'द8 ाअलचड़ ादे क 5 दे ाद8 लदु. ादश्अ

SSC CGL 01/12/2022 (Shift- 03)

(a) 150 (b) 200
(c) 175 (d) 125

9. The bar graph shows the percentage distribution of the expenditure of a company under various expense heads during 2003.



If the interest on loans amounted to Rs.3.15 crores, then the total amount of expenditure on salary, taxes and infrastructure is:

SSC CGL 01/12/2022 (Shift- 03)

(a) 9 crores (b) 7.8 crores
(c) 5.5 crores (d) 8.5 crores

10. The table given below shows the income of two companies C1 and C2 in 6 years.

	Company	
Year	C1	C2
P	750	850
Q	200	250
R	330	350
S	550	650
T	530	270
U	370	390

Which of the following statement is NOT correct?

I. The income of C1 in year P is 33.33 percent of the income of C2 in year Q.

II. The average income of C1 and C2 in year T is 400.

SSC CGL 01/12/2022 (Shift- 03)

(a) Only I (b) Both I and II
(c) Neither I nor II (d) Only II

11. Study of the following table and answer the question below.

School Name	Total number of students enrolled	Percentage of enrolled students, opted Biology	Ratio of male to female students who opted Biology
A	900	30	7 : 8
B	400	36	5 : 7
C	1000	24	5 : 19
D	800	18	3 : 9

Find the ratio of the number of female students who opted biology in school B and school D.

SSC CGL 01/12/2022 (Shift- 03)

(a) 7 : 9 (b) 9 : 7
(c) 3 : 5 (d) 5 : 3

Maths by Aditya Ranjan sir

12. The table given below shows the number of bicycle sold by six companies.

" ' 5 दर्ग दवस्क्रलाह्ये ादद्व.दे रहै. ादएाताक 5' दवस्क्रचास्हे य ` ' दचड़ दे ादगमार्क्रदश्अ

Companies	Bicycle
A	60
B	90
C	120
D	165
E	180
F	120

What are the ratio of number of bicycle sold by B to the number of bicycle sold by D?

Bदएाताक 5' दवस्क्रचास्हे यदे ' दचड़ दे ा7दD एाताक 5' वस्क्रचास्हे यदे ' दचड़ दचव8' ालद्रु. दश्अ

SSC CGL 01/12/2022 (Shift- 04)

(a) 11 : 5 (b) 11 : 6

(c) 5 : 13 (d) 6 : 11

13. The following table gives the subscription of different schemes of a Mutual Fund Company over th months.

है ै ह्यहडालदलाह्ये ादह्र हाँप दक्क्ष ादक्क्ष ` दृ ञ्ज ष यदर ,ष ` रै ' दे ' दह्र हाँप द ा8 ादे ' दचगक्र लादगमार्क्रदश्अ

(Rupees in crores)

Months	Schemes					
	V	W	X	Y	Z	Total
September	200	70	30	290	10	600
October	120	130	70	150	290	760
November	45	35	25	125	160	390
December	160	110	40	115	130	555
January	80	90	70	100	140	480
February	130	150	30	40	390	740

What is the different in the subscription of scheme X between December and February?

हाक्र त्द8 ाअर ह्र ै दे क्र ' 5 द ा8 ादX दे ' दचगक्र लादक्र हे लै ाद8 लदश्अ

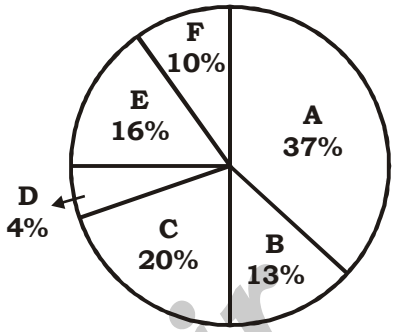
SSC CGL 01/12/2022 (Shift- 04)

(a) 10 crores (b) 18 crores

(c) 8 crores (d) 25 crores

14. The pie chart given below shows the production of 6 different factories. The total production of all these 6 factories are 22000. The production of a particular factory is shown as a percent of total production of all these 6 factories.

" ' 5 दहा ादव ादृ ाद्धदह ाददद्धह हाँप दर ह्रुन?ादे ादधश्रागै ` ादगमार्क्रदश्अ है दर्चा ददर ह्रुन?ादे ादे स्वदधश्रागै ण्ण्टटटदश्अ ` दह्र हमाबादर ुअर्न?दे दधश्रागै दे ादै दर्चा ददर ह्रुन?ादे दे स्वदधश्रागै दे दर ह्रुनमालदे दल्र दक्कदगमार्क्रव ादश्अ



P1 = The value of average production of A, C, D and F.

P1 = A, C, D लाादF ` द8 ाअलदधश्रागै दे ादक्रै :

P2 = The difference between the production of B and E.

P2 = B लाादE ` दधश्रागै दे क्र ' 5 दे ाद8 लद:

What is the value of (P1 + P2)?

(P1 + P2) ` ादक्रै दु. ादश्अ

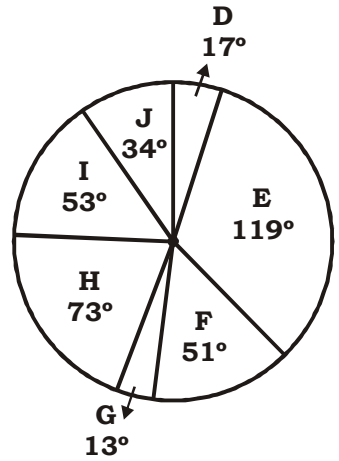
SSC CGL 01/12/2022 (Shift- 04)

(a) 2525 (b) 6456

(c) 3525 (d) 4565

15. The pie chart given below shows the sales of 7 different companies. The total sales of all these 7 companies are 2880. The sale of a particular company is shown in terms of degree with respect to the total sales of all these 7 companies.

" ' 5 दहा ादव ादृ ाद्धदह ाददद्धह हाँप दे रहै! दे ' दह र्ख दे ा- गमार्क्रदश्अ है दर्चा ददद्धे रहै. ादे ' दे स्वदह र्ख दण्क्ष्क्ष्टदश्अ ` दह्र हमाबादे रै ' दे ' दह र्ख दे ादै दर्चा ददद्धे रहै. ादे ' ` स्वदह र्ख दे दचगत्रक्रक्रह र्वजे दल्र दक्कदगमार्क्रादव ादश्अ



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The average sales of G and H is how much percent more than the average sales of D and I?

Gदलाादहदे ंद8 ाअलदह र्ं 7दDदलाादIदे ंद8 ाअलदह र्ं चवहे लैं दर ह्लनमालद8 ह्ले दश्अ

SSC CGL 01/12/2022 (Shift- 04)

(a) 18.86 percent (b) 24.25 percent
(c) 56.21 percent (d) 22.86 percent

16. The table given below shows the production of beauty products by five different companies.

ैं ंं 5 दर्ग दवस्त्रलाह्ये ादरा8 दहू ह्रापै दे रहै. ादएतादचाअ़ क्र धअ़ गादे दधअ़ गै दे ादगमार्क्रादश्अ

Companies	Production
P	80
Q	120
R	84
S	50
T	70

The production of beauty product by T is what percent of the production of beauty product by S?

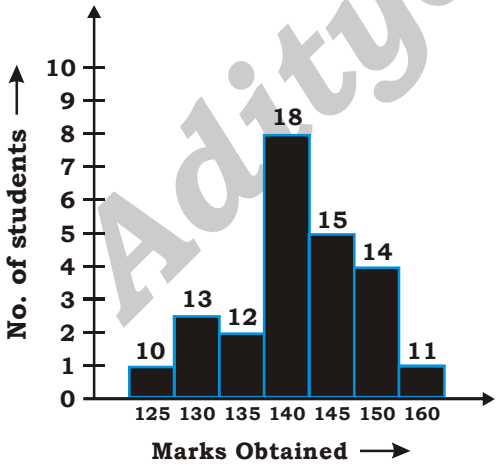
Tदएतादचाअ़ क्रधअ़ गादे ादधअ़ गै 7दSदएत्दचाअ़ क्रधअ़ ग ` दधअ़ गै दे ादहे लै ादर ह्लनमालदश्अ

SSC CGL 02/12/2022 (Shift- 01)

(a) 40 percent (b) 140 percent
(c) 240 percent (d) 120 percent

17. Observe the given graph and answer the following question.

ह्य दत्र दवाज़ दे ादस़ै दचदगहड़ा द8 ाअस5ं 5 दह्य दत्र रखै दे ादधद्धत्दर्ग ह्र :



How many students obtained more than 135 marks?

हे लै बद्धा ाादै द) भ्दचद8 ह्ले द8 ` दर ह्लल्हे, दश्अ

SSC CGL 02/12/2022 (Shift- 01)

(a) 56 (b) 55
(c) 57 (d) 58

18. The table given below shows the number of pencils sold by 7 shops.

ैं ंं 5 दर्ग दवस्त्रलाह्ये ादछ्दगेत ौ ादएतादक 5ं दवस्त्र ह्चयादे ंं चड़ ादगमार्क्रादश्अ

Shops	Pencils
S1	54
S2	68
S3	70
S4	120
S5	84
S6	130
S7	36

What is the ratio of number of pencils sold by S3 to the number of pencils sold by S6?

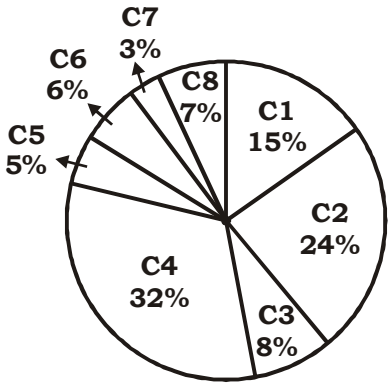
S3दएतादक 5ं दवस्त्र ह्चयादे ंदचड़ ादे ादS6दएतादक 5ं वस्त्र ह्चयादे ंदचड़ ादचद8ै ह्लालदु. ादश्अ

SSC CGL 02/12/2022 (Shift- 01)

(a) 8 : 15 (b) 13 : 7
(c) 15 : 7 (d) 7 : 13

19. The pie chart given below shows the population of 8 cities in a year. Total population of all the 8 cities is 30,000. Population in a particular city is shown as a percent of total population in all these 8 cities.

ैं ंं 5 दह्य ादवा दृ ह्लदह ाद्र ` दृ बक्रक्रक्षदमाश्तादे ंदमै चड़ ा ` ादगमाक्रादश्अ ैं दर्चा दक्षदमाश्तादे ंदे ह्लादमै चड़ ादं टटटट श्ंद्र ` दह्य हमाबादमाश्तदक्दमै चड़ ादे ादै दर्चा दक्षदमाश्त-क्दे ह्लादमै चड़ ादे दर ह्लनमालदे दल्र दक्दगमाक्रादव ादश्अ



What is the average population (approximately) of cities C3, C5 and C7?

C3, C5द8 ाअC7दमाश्तादे ंद8 ाअलमै चड़ ादन्यक्रावध्दु. ादश्अ

SSC CGL 02/12/2022 (Shift- 01)

(a) 1200 (b) 1800
(c) 1600 (d) 2000

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ANSWER KEY

1.(a)	2.(c)	3.(b)	5.(d)	6.(a)	7.(a)	8.(d)	9.(a)	10.(a)	10.(a)
11.(a)	12.(d)	13.(a)	14.(d)	15.(d)	16.(b)	17.(d)	18.(d)	19.(c)	

SOLUTIONS

1. (a)

$$\text{Avg.} = \frac{\text{Total pages by z}}{3}$$

$$= \frac{210+160+218}{3}$$

$$= \frac{588}{3} = 196$$

2. (c)

Total trucks sold by B, C, F, H

= 27 + 18 + 7 + 14 = 66%

Total trucks = 100%

Required% = 100 – 66 = 34%

3. (b)

$$\text{Required ratio} = \frac{100}{150} = \frac{2}{3}$$

4. (d)

Total production

= 220 + 240 + 200 + 180 + 160

= 1000

$\therefore$ 1000 $\rightarrow$ 360°

$$200 \rightarrow \frac{360}{1000} \times 200$$

= 72

(Question incomplete)

5. (a)

Let total items be 40

$$\text{Fan} = \frac{4}{10} \times 40 = 16$$

AC = 20

Cooler = 4

$$\Rightarrow \frac{4 \times 8000}{(4 \times 8000) + (20 \times 26500) + (16 \times 12200)}$$

$$= \frac{32000}{32000 + 530000 + 195200}$$

$$= \frac{320}{320 + 5300 + 1950}$$

$$= \frac{320}{7572} = 4.226\%$$

6. (a)

$$\text{\% of A} = \frac{92+90+90+80}{400} \times 100 > 80\%$$

% of B > 80%

% of C < 80%

% of D > 80%

% of E < 80%

% of F > 80%

$\Rightarrow$ Required number = 4

7. (d)

$$\text{Required Ratio} = \frac{400}{500} = \frac{4}{5}$$

8. (a)

No. of Bikes by P, Q, R, S = 21 + 19 + 5 + 20 = 65%

$$\Rightarrow \text{Avg.} = \frac{65}{4}\% \text{ of } 2000$$

No. of Bikes by T, U, V, W = 7 + 16 + 2 + 10 = 35

$$\text{Avg.} = \frac{35}{4}\% \text{ of } 2000$$

$$\Rightarrow \text{Difference} = \frac{(65-35)}{4}\% \text{ of } 2000$$

$$= \frac{30}{400} \times 2000$$

= 150

Maths by Aditya Ranjan sir

9. (a)

Salary + Taxes + Infra = 20 + 10 + 20 = 50%

17.5 → 3.15

$50 \rightarrow \frac{3.15}{17.5} \times 50 = 9$ cr.

10. (d)

I. C1 in P = 750

C2 in Q = 250

⇒ Required% = 300%

⇒ Not True

II. $\frac{CI + C2}{2} = \frac{530 + 270}{2}$

= 400

⇒ True.

11. (a)

Biology Female in school B

$= \frac{7}{12} \times \frac{36}{100} \times 400$

= 84

Biology Female in school D

$= \frac{9}{12} \times \frac{18}{100} \times 800$

= 108

Required ratio $= \frac{84}{108} = \frac{7}{9}$

12. (d)

Required ratio $= \frac{90}{165} = \frac{18}{33} = \frac{6}{11}$

13. (a)

Scheme X in December = 40 Cr.

Scheme X in February = 30 Cr.

⇒ Difference = 40 – 30 = 10 Cr.

14. (d)

$P1 = \frac{37 + 20 + 4 + 10}{4} = \frac{71}{4}\%$

P2 = 16 – 13 = 3%

$P_1 + P_2 = \left(\frac{71}{4} + 3\right) \times 22000$

$= \frac{83}{4} \times \frac{22000}{100} = 4565$

15. (d)

Avg. of G and H $= \frac{73 + 13}{2}$

= 43°

Avg. of D and I $= \frac{53 + 17}{2}$

= 35°

Required% $= \frac{43 - 35}{35} \times 100$

$= \frac{800}{35} = 22.86\%$

16. (b)

Required% $= \frac{70}{50} \times 100$

= 140%

17. (d)

From graph, number of students with marks > 135 = 18 + 15 + 14 + 11 = 58

18. (d)

Required ratio $= \frac{70}{130} = \frac{7}{13}$

19. (c)

Avg. $= \frac{8 + 5 + 3}{3} = \frac{16}{3}\%$

⇒ $\frac{16}{3}\%$ of 30,000

⇒ 1600

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STATISTICS

%गह्वृ ं ज

25

1. Find the mode for the given distribution (rounded off to two decimal places).

Class Interval	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35
Frequency	8	7	6	9	11	10

है दिलदिया ये दं गहा -अं दत गदं ज्ञन दिएै गहै तगी अब ई गो दरं दच़डगहं रक्रश

वर्ग अंतराल	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35
बारंबारता	8	7	6	9	11	10

(a) 35.25 (b) 40.25
(c) 30.33 (d) 28.33

2. The arithmetic mean of the following data is _____.
23, 17,20,19,21
हे : हअह्व रद%ह्व गद्धगं गद्धंड ल्ह गज। %ी गकक्षदी गृ द____दद-गगाश
23, 17,20,19,21

SSC CGL TIER - II 02/03/2023

(a) 20 (b) 19
(c) 23 (d) 21

3. Find the standard deviation of the following data (rounded off to two decimal places).
हे : हअह्व रदद्धगं पगकं गदी गं दहा अे दत गदं ज्ञन दिएै गहा ं तगी अबदई गो दरं दच़डगहं रक्रश

SSC CGL TIER- II 03/03/2023

(a) 1.48 (b) 3.21
(c) 4.12 (d) 2.45

4. The median of the following data will be _____.
32, 25,33,27, 35, 29 and 30
हे : हअह्व रद%ह्व गद्धगं जी गृ ं गह?????????द-गगाश
32, 25,33,27, 35, 29 द्धगह 30

SSC CGL TIER- II 03/03/2023

(a) 32 (b) 27
(c) 30 (d) 29

5. Mean of a sample data = 60 and median = 48. Find the mode of this distribution.
ि दे ि डगहद्धगं पगकं गदी गृ द= 60 द्धगहदी गृ ं गह= 48 -ग ू %दा ब्रे दं गहा -अं दत गदं ज्ञन शि

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(a) 36 (b) 18
(c) 24 (d) 48

6. What will be the mode of the following data?
13, 15, 31, 12, 27, 13, 27, 30, 27, 28 and 16
हे : हअह्व रद्धगं पगकं गहा -अं दट्ट गह-गगाश
10 ,द1 ,द01 ,द1ध,दध3 ,द10 ,दध3 ,द02 ,दध3 ,दधगहद्धगहद1ध

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(a) 28 (b) 31
(c) 30 (d) 27

7. The median of a set of 11 distinct observations is 73.2. If each of the largest five observations of the set is increased by 3, then the median of the new set:
11दह्वक्रगेद6ध्ना गक्रं वं दं%ी ख्ह दं जी गृ ं गह30?ध्द-ग ह है द%ी ख्ह दं व%ा %वा पचक्रग्रह द6ध्ना गक्री क्र%व6ज्ञ कंदी क्र0 ं जबक्र दं ज्ञन गज-स्दर गक्रू %दे दि%ी ख्ह दं जी गृ ं गह4

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(a) Is 3 times that of the original set
ी डाद%वदं गह0दले गह-स
(b) Is increased by 3/0दं जबक्र द-ू ब-स
(c) Remains the same as that of the original set
ी डाद%वदं कीं गे द-जक्ष-र गह-स
(d) Is decreased by 3/0द%वगग्रगह-स

8. What is the mode of the given data?
5, 7, 9, 7, 3, 7, 5, 7, 8, 6, 7
है दिलदिपकदं गहा -अं दत गदं ज्ञन शि
5, 7, 9, 7, 3, 7, 5, 7, 8, 6, 7

SSC CGL TIER- II 07/03/2023

(a) 7 (b) 6
(c) 5 (d) 3

ANSWER KEY

1.(d)	2.(a)	3.(a)	4.(c)	5.(c)	6.(d)	7.(c)	8.(a)		

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SOLUTIONS

1. (d)

Modal class = max. frequency group.

Here, modal class = 25 – 30

$$\text{Mode} = l + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right) \times h$$

l = lower limit of modal class = 25

h = size of interval = 5

f_1 = frequency of modal class = 11

f_0 = rrequency of class preceeding modal class = 9

f_2 = frequency of class suceeding modal class = 10

$$\Rightarrow \text{Mode} = 25 + \left(\frac{11-9}{22-9-10}\right) \times 5$$

$$= \frac{85}{3} = 28.33$$

2. (a)

$$\text{Arithmetic mean} = \frac{23+17+20+19+21}{5}$$

$$= 20$$

3. (a)

Standard deviation of 5, 3, 4, 7

Step:- 1

$$\text{Mean of data} \rightarrow \frac{19}{4}$$

Step:- 2

$$\left(5 - \frac{19}{4}\right)^2, \left(\frac{19}{4} - 3\right)^2, \left(\frac{19}{4} - 4\right)^2, \left(7 - \frac{19}{4}\right)^2$$

$$\Rightarrow \frac{1}{16}, \frac{49}{16}, \frac{9}{16}, \frac{81}{16}$$

Step:- 3

$$\frac{\frac{1}{16} + \frac{49}{16} + \frac{9}{16} + \frac{81}{16}}{4} = \frac{140}{64}$$

Step:- 4

$$\text{Standard deviation} = \sqrt{\frac{140}{64}} \approx 1.48$$

4. (c)

Median = middle term

arranging data increasing order:-

25, 27, 29, 30, 32, 33, 35

$\Rightarrow$ Median = 30

5. (c)

We know,

3 × Median = Mode + 2 Mean

$\Rightarrow$ 3 × 48 = Mode + (2 × 60)

$\Rightarrow$ Mode = 24

6. (d)

From given data

27 appears maximum no. of times.

$\therefore$ Mode = 27

7. (c)

Since, median is the middle term, increase in largest five observation does not affect the median.

$\therefore$ It will remain same

8. (a)

Maximum repetition = 7

$\therefore$ Mode = 7

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PROBABILITY

` क्रमै ८ द

26

1. A glass jar contains 6 white, 8 black, 4 red and 3 blue marbles. If a single marble is chosen at random from the jar, what is the probability that it is black or blue?

है ि वनाँ मैं दंवगसि-ि अत्यजिनाँ वए मेंजिकिए वए ति वेंडि ` च्य मैं लमेंड़ीलिमिक्रों दंवगसि मेंहै ि लवमिवक्ष्क्रै ि% ि य ा 5 वि वृद वेंडीजृ वेंद्धै मैं वए मेंमवँ च्य मेंबनाडिर्व्यमैं चीक्ष्मद ` क्रमै ८ वेंडीम

SSC CGL TIER - II 02/03/2023

(a) $\frac{8}{21}$ (b) $\frac{11}{21}$

(c) $\frac{5}{21}$ (d) $\frac{1}{7}$

2. A speaks the truth 5 out of 7 times and B speaks truth 8 out of 9 times. What is the probability that they contradict each other in stating the same fact?

A, 7 गिसि कि ि क्व ा ि व्यू वेंडीति वेंB, 9 गिसि मेंनि क्व ा ि व्यू वेंड़ीद्धै चीक्ष्मवँ ?क्रमै ८ वेंडव्यचीक्रै ि स्मेंहै ि डिच ८ ू मों वेंडी ड मेंगसिहै ि रिटक्वमैं वेंल्सों ि व्यमय

SSC CGL TIER- II 03/03/2023

(a) $\frac{1}{7}$ (b) $\frac{1}{9}$

(c) $\frac{1}{4}$ (d) $\frac{1}{3}$

3. The probability that three students A, B and C solve a problem are $\frac{3}{7}, \frac{5}{9}$ and $\frac{1}{5}$ respectively. What is the probability that the problem is solved?

८ चि 8 दंवसि A, B ति वेंC 0 क्व है ि ग,मवँ वेंडएि बेंमैं च ` क्रमै ८ वेंु गधस्र्ी $\frac{3}{7}, \frac{5}{9}$ ति वेंि $\frac{1}{5}$ ड़ीि ग,मवँ मेंडएि र्डव्यय ` चीं क्रमै ८ वेंक्ष्मवँ डव्यमय

SSC CGL TIER- II 06/03/2023

(a) $\frac{64}{315}$ (b) $\frac{32}{315}$

(c) $\frac{251}{315}$ (d) $\frac{155}{315}$

4. A person can hit a target 5 times out of 8 shots. If he fires 10 shots, what is the probability that he will hit the target twice?

है ि 2 मव्र्ू निधिसमिगसि कि ि क्वक्रिधर्स वेंए। वेंि ८ वेंड़ीमिक्र स्डि क्वधिसमों त्मबों ब्र वेंडीजृ वेंद्धै चीक्ष्मवँ ?क्रमै ८ वेंडव्यमच क्रै ि स्डरि व्यक्वक्रिधर्स वेंए। वेंए मव्य

SSC CGL TIER- II 07/03/2023

(a) $\frac{1135 \times 3^8}{8^{10}}$ (b) $\frac{1165 \times 3^8}{8^{10}}$

(c) $\frac{1175 \times 3^8}{8^{10}}$ (d) $\frac{1125 \times 3^8}{8^{10}}$

ANSWER KEY

1.(b)	2.(d)	3.(c)	4.(d)						

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SOLUTIONS

1. (b)

Black = 8, Blue = 3, total = 21

P (Black or Blue) $= \frac{8}{21} + \frac{3}{21} = \frac{11}{21}$

2. (d)

Probability that A speaks truth $= P(A) = \frac{5}{7}$

and B speaks truth $= P(B) = \frac{8}{9}$

P (A lies) $= 1 - \frac{5}{7} = \frac{2}{7}$, P (B lies) $= 1 - \frac{8}{9} = \frac{1}{9}$

Required probability

$= [P(A) \times P(B^1)] + [P(A^1) \times P(B)]$

$= \left(\frac{5}{7} \times \frac{1}{9}\right) + \left(\frac{2}{7} \times \frac{8}{9}\right)$

$= \frac{5}{63} + \frac{16}{63} = \frac{21}{63} = \frac{1}{3}$

3. (c)

$P(A) = \frac{3}{7}$

$P(B) = \frac{5}{9}$

$P(C) = \frac{1}{5}$

$P(A^1) = \frac{4}{7}$, $P(B^1) = \frac{4}{9}$

$P(C^1) = \frac{4}{5}$

$\Rightarrow$ P (question not solved)

$P(A^1) \times P(B^1) \times P(C^1)$

$= \frac{4}{7} \times \frac{4}{9} \times \frac{4}{5} = \frac{64}{315}$

$\Rightarrow$ P (question solved) $= 1 - \frac{64}{315}$

$= \frac{251}{315}$

4. (d)

P (A hits target) $= P(A) = \frac{5}{8}$

P (A does not hit target) $= P(A^1) = \frac{3}{8}$,

P (does not hit in 10 shots) $= \left(\frac{3}{8}\right)^{10}$

P (hit the target twice in 10 shots)

$= {}^{10}C_2 \times \left(\frac{5}{8}\right)^2 \times \left(\frac{3}{8}\right)^8$

$= \frac{10 \times 9}{2} \times \frac{25 \times 3^8}{8^{10}} = \frac{1125 \times 3^8}{8^{10}}$

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ABOUT ADITYA RANJAN SIR

Aditya Ranjan Sir is a renowned Maths Faculty, who has taught lakhs of students through Rankers Gurukul You Tube Channel and its offline centre. His free maths & guidance videos have millions of views on you tube. He has a unique approach of solving new TCS questions. He always focusses on relevant and updated content. His innovative idea of completing entire maths syllabus for any govt. exam on you tube through "60 Days 60 Marathon" is a landmark in online education. He has got selection at his very early age and his words "SELECTED है SELECTION दिलायेंगे" are very popular among students.

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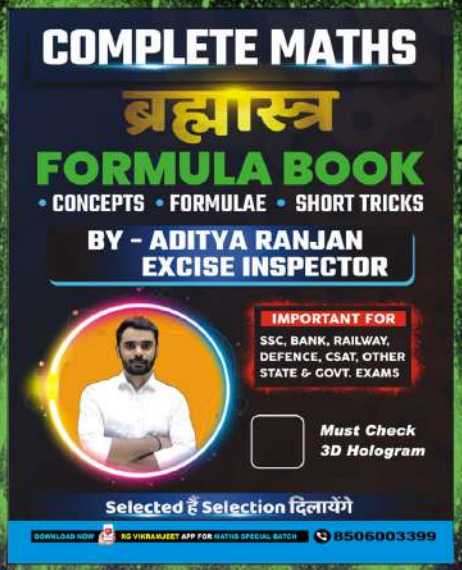

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