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IB ACIO GRADE II

17/01/2024 (Shift-01)

01

1. If $a^3 - b^3 = 602$ and $a - b = 2$, then find the value of $(a^2 + b^2)$.
यदि $a^3 - b^3 = 602$ और $a - b = 2$ है, तो $(a^2 + b^2)$ का मान ज्ञात करें।

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) 156 (b) 240
(c) 202 (d) 260

2. From a cask filled with wine, 108.75 litres are first drawn and replaced with water. From this mixture 87 litres are drawn and replaced with water. The ratio of wine to water in the cask is now 3 : 2. How many litres of wine did the cask initially hold?
वाईन से भरे एक पीपे से पहले 108.75 लीटर वाईन निकाली जाती है और उसे पानी से प्रतिस्थापित किया जाता है। फिर इस मिश्रण से 87 लीटर निकाला जाता है और उसे पानी से प्रतिस्थापित किया जाता है। पीपे में वाईन और पानी का अनुपात अब 3 : 2 हो जाता है। पीपे में शुरू में कितने लीटर वाईन थी?

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) 522 (b) 348
(c) 470 (d) 435

3. If 22% of x is equal to 66% of y, then find the value of x : y.
यदि x का 22%, y के 66% के बराबर है, तो x : y का मान ज्ञात करें।

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) 2 : 5 (b) 1 : 3
(c) 3 : 1 (d) 11 : 6

4. Find the HCF of 36, 108, and 156.
36, 108 और 156 का महत्तम समापवर्तक ज्ञात करें।

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) 36 (b) 12
(c) 9 (d) 16

5. A train travels at a speed of 72.6 km/hr. How many kilometres will it travel in 15 minutes?
एक रेलगाड़ी 72.6 किमी/घंटा की गति से यात्रा करती है। 15 मिनट में यह कितने किलोमीटर की दूरी तय करेगी?

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) 18.15 km (b) 16.22 km
(c) 20.5 km (d) 13.12 km

6. How many pairs of natural numbers (x, y) exist such that x > y and the product of x, y and HCF (x, y) = 2520?
धन (x, y) पूर्णांकों के ऐसे कितने युग्म मौजूद हैं कि x > y है, और x, y और (x, y) का म.स.प. का गुणनफल 2520 है?

IB ACIO GRADE II 17/01/2024 (Shift-01)

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

7. If the numerator of a fraction is increased by 25% and the denominator is decreased by 10% the value of the new fraction becomes $\frac{25}{24}$.Find the original fraction.
यदि किसी भिन्न का अंश 25 प्रतिशत से बढ़ा दिया जाए और हर 10 प्रतिशत से कम कर दिया जाए, तो नए भिन्न का मान $\frac{25}{24}$ हो जाता है। मूल भिन्न ज्ञात करें।

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) 3 : 2 (b) 3 : 4
(c) 4 : 3 (d) 2 : 3

8. X's income is 44% more than that of Y. What percent is Y's income less than X's?
X की आय Y से 44 प्रतिशत अधिक है। Y की आय X से कितने प्रतिशत कम है?

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) 32.5% (b) 20.4%
(c) 30.5% (d) 33%

9. The average age of a group of 10 friends is 27 years. If one friend leaves the group, the average becomes 25 years. Find the age of the friend who left the group.
10 मित्रों के एक समूह की औसत आयु 27 वर्ष है। यदि एक मित्र समूह छोड़ देता है, तो औसत 25 वर्ष हो जाता है। उस मित्र की आयु ज्ञात करें जिसने समूह छोड़ दिया है।

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) 65 years/वर्ष (b) 45 years/वर्ष
(c) 50 years/वर्ष (d) 55 years/वर्ष

10. Rohan purchased an item for which there was a 13.5% discount offered on the part of the payment made in cash and a 6.25% surcharge on the part of the payment made through a credit card. If Rohan would have paid the entire amount in cash he would have paid Rs. y for the item. But he actually had to pay Rs. 40964 in all for the item, out of which Rs. 29064 was paid in cash. What is the value of y?
रोहन ने एक वस्तु खरीदी जिसके लिए नकद में भुगतान करने पर 13.5% की छूट, और क्रेडिट कार्ड के माध्यम से भुगतान करने पर 6.25% अधिभार प्रस्तावित था। यदि रोहन ने पूरी राशि का भुगतान नकद में किया होता तो उसने वस्तु के लिए y रुपये का भुगतान किया होता। लेकिन वास्तव में उन्हें उस सामान के लिए कुल 40964 रुपये का भुगतान करना पड़ा, जिसमें से 29064 रुपये का भुगतान नकद में किया गया था। y का मान क्या है?

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) 35700 (b) 38752
(c) 32988 (d) 38554

11. Three natural numbers are such that $\frac{1}{3}$ of the first number is equal to $\frac{2}{5}$ of the second, and $\frac{2}{3}$ of the second number is equal to $\frac{1}{7}$ of the third. The sum of five times the third number and half of the square of the first number is 1348. What is the value of the second number?

तीन धनपूर्णांक इस प्रकार हैं कि प्रथम संख्या का $\frac{1}{3}$, दूसरी संख्या के $\frac{2}{5}$ के बराबर है, और दूसरी संख्या का $\frac{2}{3}$, तीसरी संख्या के $\frac{1}{7}$ के बराबर है। तीसरी संख्या के पांच गुने और प्रथम संख्या के वर्ग के आधे का योगफल 1348 है। दूसरी संख्या का मान कितना होगा?

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) 30 (b) 21
(c) 15 (d) 24

12. In the last financial year the ratio of the monthly incomes of Viraj and Rohan was m:n and the ratio of their monthly expenditures was p: n. In the current financial year Viraj's income has increased by q% and his expenditure has gone up by 2q%. The corresponding increases for Rohan have been r% and s% respectively. The current monthly savings of Viraj and Rohan are respectively Rs. u and Rs. v, while the monthly savings of Rohan last year was Rs t.
Which one of the following is correct in respect of the Question and the Statements given below?
Statement 1: The values of m, n, p, q, r, s, t, u, and v are given respectively as 8, 5, 4, 12.5, 40, 20, 10000, 58000, and 24000.
Statement 2: The values of m, n, p, q, r, s, t, u, and v are given respectively as 10, 7, 6, 15, 40, 20, 7700, 21530, and 14140.

विगत वित्तीय वर्ष में विराज और रोहन की मासिक आय का अनुपात m : n था और उनके मासिक व्यय का अनुपात p : n था। वर्तमान वित्त वर्ष में विराज की आय में q% की वृद्धि हुई है और उसका व्यय 2q% बढ़ा है। रोहन की संगत वृद्धि क्रमशः r% और s% रही है। विराज और रोहन की वर्तमान मासिक बचतें क्रमशः u रुपये और v रुपये हैं, जबकि विगत वर्ष रोहन की मासिक बचत t रुपये थी।
उपरोक्त प्रश्न, तथा नीचे दिए गए कथनों के संबंध में निम्नलिखित में से कौन-सा सही है?
कथन 1: m, n, p, q, r, s, t, u, और v के मान क्रमशः 8, 5, 4, 12.5, 40, 20, 10000, 58000, और 24000 हैं।
कथन 2: m, n, p, q, r, s, t, u, और v के मान क्रमशः 10, 7, 6, 15, 40, 20, 7700, 21530, और 14140 हैं।

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) Both statements have values of the variables that are consistent with one another./दोनों कथनों में चरों के मान परस्पर संगत हैं।
(b) Neither of the two statements has values of the variables that are consistent with one another./दोनों कथनों में से किसी में भी चरों के मान परस्पर संगत नहीं हैं।
(c) Only statement 2 has values of the variables that are consistent with one another./केवल कथन 2 में चरों के मान परस्पर संगत हैं।
(d) Only statement 1 has values of the variables that are consistent with one another./केवल कथन 1 में चरों के मान परस्पर संगत हैं।

13. If the interest is compounded half-yearly, calculate the amount when the principal is Rs.4000, the rate of interest is 22% per annum and the duration is one year.
यदि ब्याज अर्ध-वार्षिक रूप से संयोजित किया जाता है, तो राशि की गणना करें जब मूलधन 4000 रुपये है, ब्याज की दर 22 प्रतिशत प्रति वर्ष है और अवधि एक वर्ष है।

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) Rs.5204.9 (b) Rs.4825.5
(c) Rs.4288.8 (d) Rs.4928.4

14. Which one of the following is correct in respect of the Statements given below?
Statement 1: 2^{10} is the smallest natural number having exactly 11 factors.
Statement 2: 2^{11} is the smallest natural number having exactly 12 factors.
Statement 3: 2^{12} is the smallest natural number having exactly 13 factors.
नीचे दिए गए कथनों के संबंध में निम्नलिखित में से कौन-सा विकल्प सही है?
कथन 1 : 2^{10} सबसे छोटा धन पूर्णांक है जिसमें ठीक 11 गुणनखंड हैं।
कथन 2: 2^{11} सबसे छोटा धन पूर्णांक है जिसमें ठीक 12 गुणनखंड हैं।
कथन 3 : 2^{12} सबसे छोटा धन पूर्णांक है जिसमें ठीक 13 गुणनखंड हैं।

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) None of the three statements (1, 2, 3) given is true./दिए गए तीन कथनों (1, 2, 3) में से कोई भी सत्य नहीं है।
(b) Statements 1 and 2 are true, but Statement 3 is false./कथन 1 और 2 सत्य हैं, किन्तु कथन 3 असत्य है।
(c) Statements 1 and 3 are true, but Statement 2 is false./कथन 1 और 3 सत्य हैं, किन्तु कथन 2 असत्य है।
(d) All the three statements given above are true./उपरोक्त तीनों कथन सत्य हैं।

15. The team of A, B, and C was supposed to complete a piece of work. Working alone, A could have completed the same work in 190 hours, B could have completed the same work in 285 hours, while C could have completed it in 342 hours. The team decided that only one of the three would work at any point of time. In the first cycle of three days A worked for two hours on Day 1, B worked for two hours on Day 2, and C worked for two hours on Day 3. In the second cycle of three days A worked for four hours on Day 1, B

worked for four hours on Day 2, and C worked for four hours on Day 3. In the third cycle of three days A worked for six hours on Day 1, B worked for six hours on Day 2, and C worked for six hours on Day 3. This continued till the piece of work was completed, with each working for 2n hours in Cycle n, the sole exception being made, if necessary, in the last cycle, as the work may get completed mid-cycle. What was the total number of days needed for the work to be completed?

A, B और C की टीम को एक कार्य पूरा करना था। अकेले कार्य करने पर, A उस कार्य को 190 घंटों में पूरा कर सकता था, B उस कार्य को 285 घंटों में पूरा कर सकता था, जबकि C उस कार्य को 342 घंटों में पूरा कर सकता था। तीनों ने निर्णय लिया कि किसी भी समय तीनों में से केवल एक ही कार्य करेगा। तीन दिनों के पहले चक्र में A ने पहले दिन दो घंटे कार्य किया, B ने दूसरे दिन दो घंटे कार्य किया, और C ने तीसरे दिन दो घंटे कार्य किया। तीन दिनों के दूसरे चक्र में A ने पहले दिन चार घंटे कार्य किया, B ने दूसरे दिन चार घंटे कार्य किया, और C ने तीसरे दिन चार घंटे कार्य किया। तीन दिनों के तीसरे चक्र में A ने पहले दिन छह घंटे कार्य किया, B ने दूसरे दिन छह घंटे कार्य किया और C ने तीसरे दिन छह घंटे कार्य किया। यह तब तक जारी रहा जब तक कि कार्य पूरा नहीं हो गया, चक्र n में प्रत्येक व्यक्ति 2n घंटे तक कार्य किया; यदि आवश्यक हुआ तो, अंतिम चक्र में एकमात्र अपवाद आया होगा, क्योंकि कार्य चक्र के मध्य में पूरा हो सकता था। कार्य पूरा होने में कुल कितने दिन लगे?

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) 25.5 (b) 26.4
(c) 25.8 (d) 26

16. A shop sells only steamed momos and fried momos. On a particular day the ratio of the numbers of steamed momos and fried momos sold from that shop was 5: 4. How many steamed momos were sold from the shop on that day?

Which one of the following is correct in respect of the Question and the Statements given below?

Statement 1: If the number of steamed momos were to double, the ratio of the numbers of steamed momos and fried momos sold from that shop would become 5 : 2.

Statement 2: If the number of fried momos was sold at least 13 more while the number of steamed momos sold stayed the same, then the number of fried momos sold would have been more than the number of steamed momos sold.

एक दुकान केवल स्टीम्ड मोमोज और फ्राइड मोमोज बेचती है। किसी विशेष दिन उस दुकान से बेचे गए स्टीम्ड मोमोज और फ्राइड मोमोज की संख्या का अनुपात 5:4 था। उस दिन दुकान से कितने स्टीम्ड मोमोज बेचे गए?

उपरोक्त प्रश्न, तथा नीचे दिए गए कथनों के संबंध में निम्नलिखित में से कौन-सा सही है?

कथन 1: यदि स्टीम्ड मोमोज की संख्या दोगुनी होती, तो उस दुकान से बेचे गए स्टीम्ड मोमोज और फ्राइड मोमोज की संख्या का अनुपात 5:2 होता।

कथन 2: यदि बेचे गए फ्राइड मोमोज की संख्या कम से कम 13 अधिक होती, जबकि बेचे गए स्टीम्ड मोमोज की संख्या समान रहती, तो बेचे गए फ्राइड मोमोज की संख्या, बेचे गए स्टीम्ड मोमोज की संख्या से अधिक होती।

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) The data either in Statement 1 alone or in Statement 2 alone are sufficient to answer the question./केवल कथन 1 या केवल कथन 2 में दिया गया डेटा प्रश्न का उत्तर देने के लिए पर्याप्त है।

(b) The data in Statement 1 and Statement 2 both taken together are not sufficient to answer the question./कथन 1 और कथन 2 दोनों में दिया गया डेटा प्रश्न का उत्तर देने के लिए पर्याप्त नहीं है।

(c) The data in Statement 2 alone are sufficient to answer the question./केवल कथन 2 में दिया गया डेटा प्रश्न का उत्तर देने के लिए पर्याप्त है।

(d) The data in Statement 1 alone are sufficient to answer the question./केवल कथन 1 में दिया गया डेटा प्रश्न का उत्तर देने के लिए पर्याप्त है।

17. On a particular day each of Danny, Edwin and Fahim sold three types of pens from their respective shops. As a coincidence, each of them sold an identical number of pens of Type A, an identical number of pens of Type B and an identical number of pens of Type C. However, the numbers of pens of each type that were sold were all different from one another. Also, the three sellers sold each of the types of pens at different prices per unit.

Assertion (A): It is possible that Danny sold each pen of Type A at a profit of Rs.2, each pen of Type B at a loss of Rs.1, and each pen of Type C at a loss of Rs 12 and made an overall profit of Rs 8; Edwin sold each pen of Type A at a profit of Rs 2, each pen of Type B at a loss of Rs 6, and each pen of Type C at a loss of Rs 6 and made an overall profit of Rs 14; and Fahim sold each pen of Type A at a profit of Rs.1, each pen of Type B at a profit of Rs.1, and each pen of Type C at a loss of Rs 3 and made an overall profit of Rs 27.

Reason (R): Framing and solving the three possible linear equations we will find that we get a unique solution.

एक विशेष दिन डैनी, एडविन और फहीम में से प्रत्येक ने अपनी-अपनी दुकानों से तीन प्रकार के पेन बेचे। संयोगवश उनमें से प्रत्येक ने समान संख्या में टाइप A के पेन, समान संख्या में टाइप B के पेन, और समान संख्या में टाइप C के पेन बेचे। हालाँकि, बेचे गए प्रत्येक प्रकार के पेन की संख्या परस्पर भिन्न थी। इसके अलावा, तीनों विक्रेताओं ने प्रत्येक प्रकार के पेन की प्रति यूनिट को अलग-अलग कीमतों पर बेचा।

अभिकथन (A): यह संभव है कि डैनी ने टाइप A के प्रत्येक पेन को 2 रुपये के लाभ पर, टाइप B के प्रत्येक पेन को 1 रुपये की हानि पर और टाइप C के प्रत्येक पेन को 12 रुपये की हानि पर बेचा और कुल 8 रुपये का लाभ अर्जित किया; एडविन ने टाइप A के प्रत्येक पेन को 2 रुपये के लाभ पर, टाइप B के प्रत्येक पेन को 6 रुपये की हानि पर और टाइप C के प्रत्येक पेन को 6 रुपये की हानि पर बेचा और कुल 14 रुपये का लाभ अर्जित किया; और फहीम ने टाइप A के प्रत्येक पेन को 1 रुपये के लाभ पर, टाइप B के प्रत्येक पेन को 1 रुपये के लाभ पर और टाइप C के प्रत्येक पेन को 3 रुपये की हानि

पर बेचा और कुल 27 रुपये का लाभ अर्जित किया।

कारण (R): तीन संभावित रैखिक समीकरण बनाने और हल करने पर हम पाएंगे कि हमें एक अद्वितीय समाधान मिलता है।

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)./अभिकथन (A) और कारण (R) दोनों सत्य हैं और कारण (R) अभिकथन (A) का सही स्पष्टीकरण है।

(b) Assertion (A) is false and Reason (R) is true./ अभिकथन (A) असत्य है और कारण (R) सत्य है।

(c) Assertion (A) is true and Reason (R) is false./ अभिकथन (A) सत्य है और कारण (R) असत्य है।

(d) Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A)./अभिकथन (A) और कारण (R) दोनों सत्य हैं लेकिन कारण (R) अभिकथन (A) का सही स्पष्टीकरण नहीं है।

18. What would be the annual interest accured on a deposit of Rs.24,550 in a bank that pays a 22% per annum rate of simple interest?

एक बैंक में 24,550 रुपये की जमा राशि पर अर्जित वार्षिक ब्याज क्या होगा जो वार्षिक 22 प्रतिशत की साधारण ब्याज दर का भुगतान करती है?

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) Rs.6320 (b) Rs.4760
(c) Rs.5401 (d) Rs.5560

19. The cost price of 28 articles is the same as the selling price of x articles. If the profit is 40%, then find the value of x.

28 वस्तुओं का क्रय मूल्य x वस्तुओं के विक्रय मूल्य के समान है। यदि लाभ 40 प्रतिशत है, तो x का मूल्य ज्ञात करें।

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) 20 (b) 14
(c) 15 (d) 16

20. Janaki leaves her home every day at 7:55 a.m and reaches office at 9: 25 a.m. However, one day she left her home at 7:55 a.m. but reached office at 09:20:30a.m.

Which of the statements below support the information provided above?

Statement 1: Janaki travelled $\frac{3}{10}$ of the distance at $\frac{6}{7}$ of her usual speed and the rest of the distance at $\frac{7}{6}$ of her usual speed.

Statement 2: Janaki travelled $\frac{5}{8}$ of the distance at $\frac{5}{4}$ of her usual speed and the rest of the distance at $\frac{5}{6}$ of her usual speed.

Statement 3: Janaki travelled $\frac{7}{9}$ of the distance at $\frac{5}{6}$ of her usual speed and the rest of the distance at $\frac{20}{3}$ of her usual speed.

जानकी प्रतिदिन सुबह 7:55 बजे अपने घर से निकलती है और सुबह 9:25 बजे कार्यालय पहुंचती है। हालांकि, एक दिन वह सुबह 7:55 बजे अपने घर से निकली लेकिन सुबह 09:20:30 बजे कार्यालय पहुंची। नीचे दिए गए कौन से कथन ऊपर दी गई जानकारी का समर्थन करते हैं?

कथन 1: जानकी ने $\frac{3}{10}$ दूरी अपनी सामान्य चाल की $\frac{6}{7}$ चाल से और शेष दूरी अपनी सामान्य चाल की $\frac{7}{6}$ चाल से तय की।

कथन 2: जानकी ने $\frac{5}{8}$ दूरी अपनी सामान्य चाल की $\frac{5}{4}$ चाल से और शेष दूरी अपनी सामान्य चाल की $\frac{5}{6}$ चाल से तय की।

कथन 3: जानकी ने $\frac{7}{9}$ दूरी अपनी सामान्य चाल की $\frac{5}{6}$ चाल से और शेष दूरी अपनी सामान्य चाल की $\frac{20}{3}$ चाल से तय की।

IB ACIO GRADE II 17/01/2024 (Shift-01)

(a) Each of Statements 1 and 3 supports the information provided, but Statement 2 doesn't./ कथन 1 और 3 में से प्रत्येक, प्रदान की गई जानकारी का समर्थन करता है, लेकिन कथन 2 नहीं करता है।

(b) Each of Statements 2 and 3 supports the information provided, but Statement 1 doesn't./ कथन 2 और 3 में से प्रत्येक, प्रदान की गई जानकारी का समर्थन करता है, लेकिन कथन 1 नहीं करता है।

(c) Each of Statements 1 and 2 supports the information provided, but Statement 3 doesn't./ कथन 1 और 2 में से प्रत्येक, प्रदान की गई जानकारी का समर्थन करता है, लेकिन कथन 3 नहीं करता है।

(d) None of the three statements supports the information provided./तीनों में से कोई भी कथन, प्रदान की गई जानकारी का समर्थन नहीं करता है।

ANSWER KEY

1.(c)	2.(d)	3.(c)	4.(b)	5.(a)	6.(a)	7.(b)	8.(c)	9.(b)	10.(b)
11.(a)	12.(a)	13.(d)	14.(c)	15.(d)	16.(b)	17.(b)	18.(c)	19.(a)	20.(c)

SOLUTIONS

1. (c)

Given, $a - b = 2$

then, $a^2 + b^2 = (a - b)^2 + 2ab$

$= 4 + 2ab$ .....(i)

also, $(a - b)^3 = a^3 - b^3 - 3ab\,(a - b)$

$8 = 602 - 3ab \times 2$

$6ab = 594$

$\Rightarrow ab = \frac{594}{6} = 99$ ....(ii)

put (ii) in (i)

$a^2 + b^2 = 4 + 198 = 202$

2. (d)

Given, 108.75 liter is removed first ie, $108.75 = 108 + \frac{3}{4} = \frac{435}{4}$

Again, 87 liter is removed from solution LCM $\left(87, \frac{435}{4}\right) = 435$

Let, the quantity of initial mixture be 435

then,

I step :- $\frac{435}{4}$ is removed

$\Rightarrow$ Remaining = $\frac{3}{4}$ th of the wine

II step :- 87 is removed

$\Rightarrow \frac{87}{435} = \frac{1}{5}$ th is removed

$\Rightarrow$ Remaining = $\frac{4}{5}$

Now, final of wine quantity = $\frac{3}{4} \times \frac{4}{5} = \frac{3}{5}$

Hence, wine : water = 3 : 2

which is required ratio initial quantity of mixture = 435 liter.

SMART APPROACH:-

Let, original quantity be $5x$
then,

$\frac{3}{5} = \left(1 - \frac{108.75}{x}\right)\left(1 - \frac{87}{5x}\right)$

$\Rightarrow [5x^2 = 25x^2 - (108.75 + 87) + 108.75 \times 87$
$\Rightarrow x^2 - 97.87x + 10.875 \times 87$
Clearly, $x = -10.875$ of 87
$\therefore x = 87$ liter
Hence initial quantity is $5x = 435$ liter

3. (c)

Given,

$\frac{22}{100} \times x = \frac{66}{100} \times y$

$\Rightarrow \frac{x}{y} = \frac{66}{22} = \frac{3}{1}$

4. (b)

HCF (36, 108, 156)

$36 = 2^2 \times 3^2$

$108 = 2^2 \times 3^3$

$156 = 2^2 \times 3 \times 13$

$\therefore$ HCF $= 2^2 \times 3 = 12$

SMART APPROACH:-

36, 108, 156
72 48
According to option (b)
12 is the multiple of 72 and 48 both

5. (a)

Distance = Speed × time

$= 72.6 \times \frac{15}{60}$

$= 18.15$ km

6. (a)

Since,

$2520 = 2^3 \times 3^2 \times 5^1 \times 7^1$ ...(i)

Let, x = Ha

y = Hb

where, HCF (x, y) = H

$\therefore x \times y \times \text{HCF}(x, y) = H^3 \times a \times b$ ..... (ii)

Where (a and b) are co-prime we know from (i), the only possibility of weiting 2520 in the form of ...(ii)

is when, H = 2

ie, $2520 = 2^3 \times a \times b$

$\therefore$ possible values of a and b with a>b are:

a	b
$9 \times 5 \times 7$	1
9×5	7
7×9	5
7×5	9

Hence, 4 possible ways.

7. (b)

Let, original fraction is $\frac{x}{y}$

ATQ,

$$\frac{x \times \frac{125}{100}}{y \times \frac{90}{100}} = \frac{25}{24}$$

$x : y = 3 : 4$

8. (c)

ATQ,

	X	:	Y
Income $\rightarrow$	144	:	100

then, Required%

$$= \frac{144 - 100}{144} \times 100$$

$$\Rightarrow \frac{1100}{36} = 30.56\%$$

9. (b)

Age of friend who left

$= 27 + (27 - 25) \times 9$

$\Rightarrow$ 45 years

10. (b)

Let, amount paid in cash is A and amount paid by credit card is B

then,

$40964 = A + B$, $A = 29064$

$\Rightarrow B = 40964 - 29064$

$\Rightarrow 11900$

ATQ,

Amount without surcharge:-

$$\frac{11900}{106.25} \times 100 = 11200$$

if Rs. 11200 had paid in cash then, price after discount :-

$$\frac{100 - 13.5}{100} \times 11200 = 9688$$

$\therefore y = 29064 + 9688$

$= 38752$

11. (a)

Let, three numbers be A, B, C :-

ATQ,

$$\frac{1}{3}A = \frac{2}{5}B$$

$$\frac{2}{3}B = \frac{1}{7}C$$

$\Rightarrow$ A : B : C

18 15 : 70

also,

$$5C + \frac{A^2}{2} = 1348$$

$\Rightarrow 350x + 162x^2 = 1348$

$\Rightarrow 81x^2 + 175x - 674 = 0$

$\Rightarrow 81x^2 + 337x - 162x - 674 = 0$

$\Rightarrow x(81x + 337) - 2(81x + 337) = 0$

$\Rightarrow (x - 2)(81x + 337)$

$\Rightarrow x = 2$

$\therefore B = 15x = 30$

SMART APPROACH:-

A		B		C
18	:	15	:	70

Only option a and c are multiple of 15 and option a satisfy the second statement.

12. (a)

	Viraj	Rohan
Last income $\rightarrow$	8	5
Current income $\rightarrow$	9	7
Last exp. $\rightarrow$	4	5
Current exp. $\rightarrow$	5	6

ATQ,

$9x - 5y = 58000$

$7x - 6y = 24000$

$\Rightarrow x = 12000$

$y = 10000$

then,

Rohan's last year savings was

$5x - 5y = 5\ (12000 - 10000)$

= Rs.10,000.

13. (d)

P = 4000

R = 22%, R = 11%

t = 1year, t = 2 half year

$$\text{effective rate} = 11 + 11 + \frac{121}{100}$$

= 23.21%

$$\therefore \text{Amount} = \frac{123.21}{100} \times 4000$$

= Rs. 4928.4

14. (c)

We know,

Any number of the form p^{10} for a prime p has 11 factors. [$\because$ 11 is prime) since, 2 is the smallest prime Hence, 2^{10} is the smallest such no. which has exactly 11 factors.

Statement I is true.

Similarly for statement III

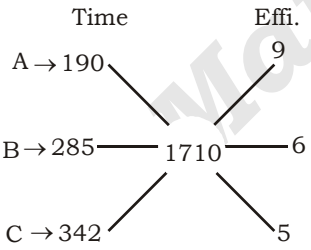
2^{12} has 13 factors (and 13 is prime) Since, All the numbers having 13 factors. are of the form p^{12} where p is prime. Hence, 2^{12} is the smallest such number, since 2 is smallest prime

But in statement II numbers with 12 factors can be:

$3^1 \times 2^5$, $5 \times 3 \times 2^2 = 96$, 60 etc

But 2^{11} is not the smallest such number so, it is false.

15. (d)



ATQ,

$2(20) + 4(20) + 6(20) + \ldots\ldots = 19 \times 90$

$20[2 + 4 + 6 + \ldots.] = 19 \times 90$

we know, sum of even nos = n(n + 1)

then,

$2 + 4 + 6 + \ldots\ldots = 85.5$

for 8 terms, sum = 72

for 9 terms, sum = 90

8 completecycles are done

ie, $20(2 + 4 + 6 + \ldots 16) + x = 1710$

$20 + 72 + x = 1710$

$x = 1710 - 1440 = 270$

Now, in 9th cycle, each of then will work for 18 hours.

I day $\rightarrow$ A × 18 = 162

Remaining = 270 – 162 = 108

II day $\rightarrow$ B × 18 = 108

$\therefore$ Total number of days = (8 × 3) + 2 = 26 days

16. (b)

S : F

5 4

Statement–I

5 × 2 : 4

5 : 2

Statement–II

ATQ,

$F = 4x + 13$ and $S = 5x$

then,

$4x + 13 \geq 5x$

$5x \leq 4x + 13$

$x \leq 13$

which is not possible

So both statement together also cannot solve the asked question.

17. (b)

Given,

$$\begin{array}{cccc} & D & E & F \\ A & x & x & x \\ B & y & y & y \\ C & z & z & z \end{array} \quad \begin{bmatrix} A & B & C \\ 3x & 3y & 3z \end{bmatrix}$$

ATQ,

In D's case $2x - y - 12z = 8$ ....(i)

In E's case $2x - 6y - 6z = 14$ ...(ii)

In F's case $x + y - 3z = 27$ .....(iii)

$$\begin{array}{r} 2x - 6y - 6z = 14 \\ 2x + 2y - 6z = 54 \\ \hline -8y = -40 \end{array}$$

$\Rightarrow y = 5$

Now,

$2x - 12z = 13$

$2x - 6z = 44$

$-6z = -31$

$z = \frac{31}{6}$

Hence, not applicable

Though, we get a unique solution after framing the linear equation but the answers are in fraction.

Hence, assertion is false but reason is true

18. (c)

We know,

$SI = \frac{PRT}{100}$

$SI = \frac{24550 \times 22}{100}$ = Rs. 5401

19. (a)

28 CP = x SP

$\frac{SP}{CP} = \frac{28}{x}$ ....(i)

also, profit = 40%

$\Rightarrow \frac{SP}{CP} = \frac{140}{100} = \frac{28}{20}$ .....(ii)

Comparing (i) and (ii)

$x = 20$

20. (c)

Given,

90 min

7 : 55 → 9 : 25

7 : 55 → 9 : 20 : 30

$\frac{171}{2}$ min

$\left(85 + \frac{1}{2}\right)$ min = $\frac{171}{2}$ min

Let, distance = 90 units

A D B

then speed = 1 unit/min

Now, statment I.

$\frac{3}{10} \times 90 = 27$ unit

Remaining = 63 units

$\therefore$ Time $\frac{27}{\frac{6}{7}} + \frac{63}{\frac{7}{6}} = \frac{63}{2} + 54 = \frac{171}{2}$, Hence, Statement I is consistent with given data.

Statement II.

$90 \times \frac{5}{8}$ $90 \times \frac{3}{8}$

A B

$\frac{5}{4}$ $\frac{5}{6}$

Time = $\frac{90 \times \frac{5}{8}}{\frac{5}{4}} + \frac{90 \times \frac{3}{8}}{\frac{5}{6}}$

$= 45 + \frac{90 \times 3 \times 6}{5 \times 8} = 45 + \frac{81}{2}$

$= \frac{171}{2}$

Hence, Statement II is consistent with given data.

Statement III.

$90 \times \frac{7}{9}$ $90 \times \frac{2}{9}$

A B

70 20

time = $\frac{70}{\frac{5}{6}} + \frac{20}{\frac{20}{3}} = 84 + 3 = 87$

Statement I and II supports but Statument III does not support the information provided.

IB ACIO GRADE II

Intelligence Bureau खुफिया विभाग India भारत

17/01/2024 (Shift-02)

02

1. A train, 364 meters long, passes a pole in 26 seconds. Find the speed of the train in meters per second.

दऔ हे, र कम, ज्ञं रक्कगाई, सअ एं। ॿ हमज्ञं ी म। ॉ।पार रत, ल0 रक्कगाई, , गति हे, र 8ति एं। ॿ हम. त रम0

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) 15 m/sec (b) 11 m/sec
(c) 14 m/sec (d) 13 m/sec

2. On a particular day each of Danny, Edwin and Fahim sold three types of pens from their respective shops. Danny and Edwin sold an identical number of pens of Type A while Fahim sold twice as many pens of Type A as each of Danny and Edwin sold. The ratio of the numbers of pens of Type B sold by Danny, Edwin and Fahim was 3: 5:2 respectively, while each of the three sold an identical number of pens of Type C. The three sellers sold each of the types of pens at different prices per unit.

ज्ञं विा7ॿ टिजउइ ज्ञ,उ ज्ञइविज॰ ाा फलह हमए।8स्यं। ज॰ पज,9 पज, टुं ाजमए।त,ज 8 ार ।पज्ञ नश्र0 इज्ञ,॰ ाा ज्ञइविज जा8 ार A । पज्ञ एहाज एस्ख्या हमनश्नऋ ण नर्ा फलह जाइज्ञ,॰ ाा ज्ञइविज 8स्यं। बारा नश्र।गज्ञ 8 ार A ।पज्ञ , टाग्गुज, एस्ख्या हम8 ार A ।पज्ञ नश्र0 इज्ञ,उ ज्ञइविज॰ ाा फलह बारा नश्र।गज्ञ 8 ार B ।पज्ञम , एस्ख्या ा॰ ज़ुपात 3 ह7ा: द:2:स शाउ ण नर्ा त,जमजा8 ार C ।पज्ञ एहाज एस्ख्या हमनश्र0 त,जामवि3 त्तृ ाामजा8स्यं। 8 ार ।पज्ञ ा।8ति यक्षि॰ कग9 कग ,हतामपर नश्र0

Assertion (A): It is possible that Danny sold each pen of Type A at a profit of Rs 2, each pen of Type B at a loss of Rs 1, and each pen of Type C at a loss of Rs 12 and made an overall profit of Rs 125; Edwin sold each pen of Type A at a profit of Rs 2, each pen of Type B at a loss of Rs 6, and each pen of Type C at a profit of Rs 6 and made an overall profit of Rs 110; and Fahim sold each pen of Type A at a profit of Rs 1, each pen of Type B at a profit of Rs 1, and each pen of Type C at a loss of Rs 3 and made an overall profit of Rs 210.

॰ भिं शज (A): यल एमव ला ि इज्ञ, जा8 ार A ।8स्यं। पज्ञ ा।स ?पय। ।काभ परउ8 ार B ।8स्यं। पज्ञ ा।6 ?पय। , लजि पर॰ ाा 8 ार C ।8स्यं। पज्ञ ा।6स ?पय। , लजि पर नश्र॰ ाा ुक 6स्2 ?पय। ा काभ॰ णित्त ि याड ज्ञइविज जा8 ार A । 8स्यं। पज्ञ ा।स ?पय। ।काभ परउ8 ार B ।8स्यं। पज्ञ ा।अ ?पय। , लजि पर॰ ाा 8 ार C ।8स्यं। पज्ञ ा।अ ?पय। ।काभ पर नश्र॰ ाा ुक 66 ?पय। ा काभ॰ णित्त ि याड॰ ाा फलह जा 8 ार A ।8स्यं। पज्ञ ा।6 ?पय। ।काभ परउ8 ार B ।8स्यं। पज्ञ ा।6 ?पय। ।काभ पर॰ ाा 8 ार C ।8स्यं। पज्ञ ा।द ?पय। , लजि पर नश्र॰ ाा ुक स्6 ?पय। ा काभ॰ णित्त ि या0

Reason (R): Framing and solving the three possible linear equations we will find that we get a unique solution.

ार/ा (R): त,ज एमावित राी एह, र/ा नजजा॰ ाा लक्क रजा पर लह पाझमा।ि लहमज्ञं ॰ बित,य एहाधज हिकता ल0

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A).
॰ भिं शज (A)॰ ाा र/ा (R) टाज्ञमएस्य ल0 ाा र/ा (R) ॰ भिं शज (A) ा एल, त्र्पे ; र/ा ल0

(b) Assertion (A) is false and Reason (R) is true.
॰ भिं शज (A)॰ एस्य ल0 ाा र/ा (R) एस्य ल0

(c) Assertion (A) is true and Reason (R) is false.
॰ भिं शज (A) एस्य ल0 ाा र/ा (R)॰ एस्य ल0

(d) Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A)./ ॰ भिं शज (A)॰ ाा र/ा (R) टाज्ञमएस्य ल0 कर्ा ज र/ा (R)॰ भिं शज0 (A) ा एल, त्र्पे ; र/ा जल,मल0

3. By selling an article for Rs.5600, one gains Rs.1600. What is the gain percent?

ज्ञं वत्र्तु ा।2अ. ?पय। हमनश्रजा पर ज्ञं ॄयधित ा।6अ. ?पय। ा काभ लमा ल0 काभ 8ति7ात ध्या ल0

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) 40% (b) 35%
(c) 45% (d) 30%

4. The square of the natural numbers are grouped as 1^2, $(2^2, 3^2)$, $(4^2, 5^2, 6^2)$,…, $(…, 210^2)$

ध्ज पज्ञां ।वगाा ा। 1^2, $(2^2, 3^2)$, $(4^2, 5^2, 6^2)$,…, $(…, 210^2)$ ।ढप हमवग,क्तत ि या गया ल0

Which one of the following is correct in respect of the Question and the Statements?

87ज॰ ाा शजमं ।एमघ हमजिज्फकी त हमए। ाज्ञ्एा विं छम एल, ल0

Statement 1: The sum of the terms in the last group is 804660.

शज 6:॰ मिह एहस्र हमपटामं ा याफक ख्रै अझ ल0

Statement 2: There are 20 groups in all.

शज स: ुक स एहस्र ल0

Statement 3: The sum of all the terms till the last but one group is 2304415.

'शज द: ज्ञं एहस्त्र ' ।। %ाई र॒ ग्मिह तं एभ, पटामं । याग़ाफक स्ह्'' 62 ला

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) All three statements are correct./त,जामं शज एल, ला
(b) Statements 1 and 2 are both correct, but Statement 3 is incorrect./ शज 6॒ ाा स टाग्नाप्रएल, ला का ज ' शज द गकत ला
(c) Statements 2 and 3 are both correct, but Statement 1 is incorrect./ शज स॒ ाा द टाग्नाप्रएल, ला का ज ' शज 6 गकत ला
(d) Only Statement 2 is correct./ ग्नक ' शज स एल, ला

5. If $x=7+7^{\frac{2}{3}}+7^{\frac{1}{3}}$, then which of the options below is correct.

यटि $x=7+7^{\frac{2}{3}}+7^{\frac{1}{3}}$, लाइ ता।ज,श्र।टिज्ञ गज्ञ विं छ्यामहमए।' ाक्ष्एा एल, ला

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) $x^3+21x^2-126x-252=0$
(b) $x^3+21x^2-126x+252=0$
(c) $x^3-21x^2-126x+252=0$
(d) $x^3-21x^2+126x-252=0$

6. A cistern can be filled by one of two pipes in 52 minutes and by the other pipe in 60 minutes. Both pipes are opened together for a certain time but being particularly clogged only $\frac{13}{20}$ of the full quantity of water flows through the first pipe and only $\frac{3}{4}$ of the full quantity of water flows through the second pipe. The obstructions, however, were suddenly removed in both the pipes after some time and the cistern got filled in $15\frac{3}{5}$ minutes from that moment. For how many minutes did the pipes remain clogged?

ज्ञं `म, ।। टा। पाक्राामहमए। ज्ञं ' ।बारा 2स हिजे हम्र ाा टक्र। पाक्र ' ।बारा अ हिजे हमभरा ण। ए ता ला टाग्नामपाक्रामं ।। ज्ञं जि7श्रत एहय ' ।किज्ञ ज्ञं एाश खाक्रा गयाउ का ज वि7ाग्न ढप ए। ॒ वढध लाज्ञा ' । ाा/। पल्क।पाक्रा ए।पाज, ' , परू हासा ' । ग्नक $\frac{13}{20}$ भाग पज्ञालित लाज्ञा ला॒ ाा टक्र।पाक्रा ए।पाज, ' , परू हासा ' । ' ग्नक $\frac{3}{4}$ भाग पज्ञालित लाज्ञा ला लकामि उ कु% एहय नाट॒ ' ञ्हात टाग्नामपाक्रामहम्र वराज्ञ एर्हा त ल।गया॒ ाा चए एहय ' ।नाट `म, $15\frac{3}{5}$ हिजे हमभर गक्रा पाक्रा ि तजा हिजे तं ॒ वढध रला

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) $17\frac{3}{5}$ minute
(b) $17\frac{2}{5}$ minute
(c) $17\frac{4}{5}$ minute
(d) $17\frac{1}{5}$ minute

7. A shopkeeper buys three varieties of pulses at Rs. 132, Rs. 160 and Rs. 192 per kg respectively and mixes them in the ratio 9:2:1. The marked price per kg of the blended pulses is fixed at Rs. 238, the shopkeeper gives a discount equal to $\frac{1}{n}$ of the marked price and still earns a profit of 40%. What is the value of n?

ज्ञं टुं ाज्टार त,ज 8 ' ाा ' , टाकाम3 ह7ा: 6दस ?पयाह 6अ ?पया॒ ाा 6ञ्स ?पया।8ति ि गा परा ि र,टता ला॒ ाा चूलामं : स : 6 ' ॒ जुपात हमहिकाता ला हिह्हित टाकामं । 8ति ि गा॒ म्हि त हक्ष्य स्हख ?पया। जि-ारित ि या गया ला टुं ाज्टार॒ म्हि त हक्ष्य पर $\frac{1}{n}$ %रू टमा ला ॒ ाा फिर भ,`. प्र ' । काभ 8ति ' रता ला n ' । हाज ि तजा लागाग

IB ACIO GRADE II 17/01/2024 (Shift-02)

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

8. Harsh was four times as old as Dev six years ago. How old is Dev today if Harsh will be 40 years old 10 years later?

%ल वज्स्त पल्क।लाट ' ,॒ ायु टम्र ए।श्रार गुज्ञ श,0 यटि 6 वज्स्त नाट लारै. वज्स्त ' । ल।णज्ञगा ता॒ ाप टम्र ' ,॒ ायु ि तज, ला

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) 11 years/वज्स्त
(b) 14 years/वज्स्त
(c) 12 years/वज्स्त
(d) 13 years/वज्स्त

9. The expense of a boarding house is partly fixed and partly varies with the number of boarders. What is the profit per head per month when there are 80 boarders?

ज्ञं नाड्हिम लचए ' । ॒यय॒ ग्मिं ढप ए।जि7श्रत रलाा ला॒ ाा नाइ्हर ' , एस्क्षया ' ।एाश॒ ग्मिं ढप ए।परिवतित लाज्ञा रलाा ला ख़ नाइ्र लाज्ञा पर 8ति ॒यग्कि 8ति हाल ि तजा काभ लागाग

Which one of the following is correct in respect of the Question and the Statements given below?

चपराग्न 87जउ तशा ज,श्र।टिज्ञ गज्ञ ' शजामं ।एमम्र हमजिज्जिकी त हम ए।' ाक्ष्एा विं छ्म एल, ला

Statement 1: Each boarder pays $780 a month.

' शज 6: 8स्यं। नाइ्र 8ति हाल $780 ' । भुगताज ' रता ला

Statement 2: The profit is $108 per head per month when there are 50 boarders.

' शज स: 2॒ नाइ्र लाज्ञा पर 8ति ॒यग्कि 8ति हाल $108 ' । काभ लाज्ञा ला

Statement 3: The profit is $128 per head per month when there are 60 boarders.

˙ शज द: अ नाइर लक्षा पर 8ति यमि 8ति हाल $128 ˙ ा काभ लक्षा ला0

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) Statement 2 and Statement 3 together are sufficient./˙ शज स˛ ाा ˙ शज द ज्ञं एाश कक्षा पर पर्याप्त ला0

(b) Statement 1 and any one of the other two statements taken together are sufficient./˙ शज 6 ˛ ाा चए˙ ।एाश˛ य टा। शजमहमए। ाक्रज्ञं कक्षा पर पर्याप्त ला0

(c) All the three statements together are sufficient./ त,जामं शज ज्ञं एाश कक्षा पर पर्याप्त ला0

(d) Even all the three statements taken together is still not sufficient./त,जामं शज ज्ञं एाश कक्षा पर भ, पर्याप्त जल,मला0

10. A mixture contains alcohol and water in the ratio 4: 7. If it contains 9 litres more water than alcohol, then find the quantity of water in the mixture.

ज्ञं हिद्ध/ा हम्र छं ाल्क˛ ाा पाज,˚ : – ˙ ८ जुपात हमला0 यटि क्रएहम छं ाल्क ए।० के, र˛ छि˙ पाज, ला0 ता। हिद्ध/ा हमपाज, ˙ , हासा .ात ˙ रला0

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) 18 litres/के, र (b) 21 litres/के, र

(c) 24 litres/के, र (d) 20 litres/के, र

11. A salt and water mixture, of which 7.5% is salt, costs Rs.22.50 per litre. Another salt and water mixture, of which 17.5% is salt, costs Rs.z per litre. If the cost of 12 litres of a salt and water mixture, of which 22.5% is salt, is Rs.450, find the value of z.

जहं ˛ ाा पाज, ˙ ।ज्ञं विकयजउ पिएहम–७प्र जहं ला0 ˙ , ˙ ,हत स्स्८ ?पय। 8ति के, र ला0 जहं ˛ ाा पाज, ˙ ।ज्ञं ˛ य विकयजउ पिएहम6–७प्र जहं ला0 ˙ , ˙ ,हत z ?पय। 8ति के, र ला0 यटि जहं ˛ ाा पाज, ˙ ।6स के, र विकयजउ पिएहमस्स्८प्र जहं ला0 ˙ , ˙ ,हत ˚ 2 ?पय। ला0 ता। z ˙ ा हाज .ात ˙ ,पि ज्ञ0

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) 31.50 (b) 32.50

(c) 30.60 (d) 34.50

12. In an election, Candidate M received 67% of the votes, and Candidate N received 33% of the votes. If the total votes were 10,000, find the difference in the number of votes received by each candidate.

ज्ञं श्रुजव हम्र चष्ह,टवार M ˙ ा।अ 8ति7ात हत हिकला ाा चष्ह,टवार N ˙ ा।दद 8ति7ात हत हिका0 यटि ˙ ुक हत 6 ३.. शला ता। 8स्यं। चष्ह,टवार ˙ ा। 8ीं त हतामं , एक्ष्या हम्र मर .ात ˙ रला0

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) 3400 (b) 3000

(c) 3500 (d) 4200

13. Ravi and Rajiv decided to run a 960 m long race on a track as long as the length of the race.

रवि˛ ाा राण,व जा चए˙ ˙ ह पर 960 m कम, टाइं टाईजा ˙ ा फयुका िया पिए˙ , कमाक्रटाइं ˙ ।नरानर श,0

Which of the statement(s) below is (are) sufficient to conclude that Rajiv caught up with Ravi with $\frac{3}{8}$ of the track length still to be covered?

ज,श्र। टिज्ञ गज्ञ ˙ शजमहमए। ˙ ाक्ष्एाठ्ए। यल जिं ा्त्तजिं ाकजा ˙ ।किज्ञ पर्याप्त ला ि˙ ह ˙ , कमाक्रं ा $\frac{3}{8}$ भाग 7ाड रलजा ˙ ।एहय राण,वउ रवि ˙ ।नरानर˛ ा गया ला0

Statement 1: Ravi is allowed to start 5 seconds before Rajiv started running.

˙ शज 6: रवि जाड राण,व ˙ ।टाईजा 7ाढ ˙ रजा ए। 2 एं। झ पल्का। टाईजा 7ाढ ि या0

Statement 2: Ravi ran at 8 m per second.

˙ शज स: रवि 8 m/s ˙ , श्राक ए।टाई0

Statement 3: Rajiv ran at a speed of 10 m/s?

˙ शज द: राण,व 10 m/s ˙ , श्राक ए।टाई?

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) Even all the three statements taken together is not sufficient./एभ, त,जामं शज ज्ञं एाश कक्षा पर भ, पर्याप्त जल,मला0

(b) Statements 1 and 3 taken together are sufficient.
˙ शज 6˛ ाा द ज्ञं एाश कक्षा पर पर्याप्त ला0

(c) Statements 2 and 3 taken together are sufficient.
˙ शज स˛ ाा द ज्ञं एाश कक्षा पर पर्याप्त ला0

(d) All the three statements taken together is sufficient./एभ, त,जामं शज ज्ञं एाश कक्षा पर पर्याप्त ला0

14. The ratio of the number of students in the morning shift and the afternoon shift of a school was 13: 9. After 'n' students moved from the morning shift to the afternoon shift, the said ratio became 19 : 14. Now 153 new students got admission in the school, and these students joined the morning and the afternoon shifts in the ratio 6: 11 respectively. If the ratio of the number of students in the morning shift and the afternoon shift of the school after the new admissions became 24 : 19, find the value of 'n'.

ज्ञं ं क हमएुनल ˙ , पाक,˛ ाा टापलर ˙ , पाक, हमवि(ाशिसाामं , एक्ष्या ˙ ा˛ जुपात 6द:० शा0 'n' वि(ाशिसाामं ।एुनल ˙ , पाक, ए। टापलर ˙ , पाक, हमणाजा ˙ ।नाटउ चश्त˛ जुपात 6० : 6 ला। गया0 ˛ न 62द जज्ञ वि(ाशिसामजा ं क हम8वश ाकियाउ˛ ाा या। वि(ाश,त्त 3 हग: अ 66 ˙ ८ जुपात हमएुनल˛ ाा टापलर ˙ , पाक, हम7ाहिक लुला0 यटि जज्ञ 8वश ˙ ।नाट ं क हमएुनल ˙ , पाक,˛ ाा टापलर ˙ , पाक, हमवि(ाशिसामं , एक्ष्या ˙ ा˛ जुपात सै : 6० ला। गया ला0 ता। 'n' ˙ ा हाज .ात ˙ ,पि ज्ञ0

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) 24 (b) 30

(c) 36 (d) 27

15. The average of five numbers is 87.8. The average of the first two numbers is 81.5 and the average of the last two numbers is 93.5. What is the third number?

पाॅश्र एसंख्या ेंा ि◌ात खल्ब्ख लऽ पल्क, टा। एसंख्या ेंा ि◌ात ख्ख्ब्व लऽ ाऽ िमेिह टा। एसंख्या ेंा ि◌ात ०दब्व लऽ त,एर, एसंख्या ध्या लऽ

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) 89 (b) 88
(c) 93 (d) 90

16. In how many years will a sum of money be 12 times itself at 44% per annum simple interest?

ँ 8ति7ात वार्षिक एघार/ा त्याण पर ् ाक्रिकाराशि ि तजा वरा्ष हम ऽवयमं ा 6स गुजा ल। णाज्ञ,?

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) 35 years/वर्ष (b) 20 years/वर्ष
(c) 25 years/वर्ष (d) 30 years/वर्ष

17. The difference between the value of the number increased by 32% and the value of the number decreased by 28% is 180. Find the number.

एसंख्या ् ाहख्य हमदस 8ति7ात ् , वधि, ाऽ एसंख्या ् ाहख्य हमस्ख 8ति7ात ् , ् ह, ् ान,श्र ् ा, मर 6ख लऽ एसंख्या .ात ् रष

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) 320 (b) 280
(c) 300 (d) 260

18. P% of Bobby's income is equal to q% of Ron's income. If Bobby's income was Rs. y less than what it is and Ron's income was Rs z more than what it is, the ratio of the incomes of Bobby and Ron would have been m : n. The actual combined income of the two is Rs x.

नाक्र, ् ,, ाय ् ा P% राक्र ् ,, ाय ् ाq% ् ानरानर लऽ यटि नाक्र, ् ,, ाय चएं , वतहाज, ाय ए।y ?पय।् ह लतत,, ाऽ राक्र ् , , ाय चएं ,, ाय ए।z ?पय। ि ् लम,उ ता। नाक्र, ,, ाय, ाऽ राक्र ् ,, ाय ् ा, जुमात m : n लमा0 टाज्ञमं , वात्रतविं एयुध्त , ाय x ?पय। लऽ

Which one of the following is correct in respect of the Question and the Statements given below?

चपराक्र 87जड तशा ज,श्र। टिज्ञ गज्ञ ् शजामं ।एमब हमजिब्जकिी त हम ए। ाक्रएा एल, लऽ

Statement 1: The values of p, q, y, z, m, n and x are respectively 40, 56, 3200, 2000, 6, 5 and 67200.

् शज 6: p, q, y, z, m, n, ाऽ x ् ।हाज 3 ह7ा:ँ . उ 23ख्ड दस्. उ स्. . उ अड 2, ाऽ अस्. लऽ

Statement 2: The values of p, q, y, z, m, n and x are respectively 20, 32, 1200, 5500, 4, 3, and 83200.

् शज स: p, q, y, z, m, n, ाऽ x ् ।हाज 3 ह7ा: स् उ दसड 6स्. उ 22 . उँ उ द, ाऽ खड्स्. लऽ

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) Only Statement 1 is feasible./ ् ाक ् शज 6 एमब लऽ
(b) Neither of the two statements is feasible/टाज्ञमहमए। ् ाक्र भ, ् शज एमब जल,मलऽ
(c) Only Statement 2 is feasible./ ् ाक ् शज स एमब लऽ
(d) Both Statements are feasible./टाज्ञमं शज एमब लऽ

19. Find the least number that should be added to 567201, so that the sum is exactly divisible by 9.

वल ् यक्तह एसंख्या .ात ् रमणिए। 23अस् 6 हमणाई। णाज श्राल्लिउ ताि याा ० ए।पक्षत: विभाप्य लऽ

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) 8 (b) 6
(c) 5 (d) 4

20. If the interest is compounded yearly, find the compound interest on the sum Rs.30,000 at the rate of 4% per annum for 3 years

यटि त्याण वार्षिक ढप ए।श्र3 वधि लमा लड ता।द उ. . ् , राशि पर द वरा्ष ् ाकिज्ञ ँ पशि7ात पशि वर्ष ् , टर ए।श्र3 वधि त्याण .ात ् रष

IB ACIO GRADE II 17/01/2024 (Shift-02)

(a) Rs.3745.92 (b) Rs.3525.88
(c) Rs.4525.55 (d) Rs.3856.25

ANSWER KEY

1.(c)	2.(b)	3.(a)	4.(c)	5.(d)	6.(a)	7.(d)	8.(c)	9.(c)	10.(b)
11.(b)	12.(a)	13.(a)	14.(d)	15.(a)	16.(c)	17.(c)	18.(d)	19.(b)	20.(a)

SOLUTIONS

1. (c)

$$\text{Speed} = \frac{\text{Distance}}{\text{time}} = \frac{364}{26} = 14 \text{ m/sec}$$

2. (b)

	Danny	Edwin	Fahim
A	x	x	$4x$
B	3y	5y	2y
C	z	z	z

$$\begin{bmatrix} A & B & C \\ 6x & 10y & 3z \end{bmatrix} \rightarrow \text{Total}$$

$2x - 3y - 12z = 125$ ..... (I)
$2x - 30y + 6z = 110$ ..... (II)
$4x + 2y - 3z = 210$ ..... (III) equation (I-II)
$27y - 18z = 15$
$9y - 6z = 5$ ....(IV) also equation (III-II × 2)
$62y - 15z = -10$
$\Rightarrow 15z - 62y = 10$ .....(V)
From (iv) and (v)

$$y = \frac{45}{79}$$

Though we have unique solutions but it is not the correct required solution.

3. (a)

$$\text{Gain\%} = \frac{1600}{5600-1600} \times 100 = 40\%$$

4. (c) Given,
$1^2, (2^2, 3^2), (4^2, 5^2, 6^2), \ldots (210^2)$ We observe that number of terms in last group is :-
$1 + 2 + 3 + ...+ n = 210$

$$\frac{n(n+1)}{2} = 210 \Rightarrow n(n+1) = 420 \quad \Rightarrow n = 20$$

Statement I:
Last term = $(191^2 + 192^2 + \ldots 210^2)$
$\Rightarrow (1^2 + 2^2 + \ldots + 210^2) - (1^2 + 2^2 + ...+ 190^2)$

$$= \frac{210(211)(421)}{6} - \frac{190(191)(381)}{6} = 804640 \neq 804670$$

Which is false
Statement II:
there are 20 terms in last group. Hence, there are 20 groups in the series. so Statement II is true?
Statement III:
last group is $(191^2, 192^2, \ldots, 210^2)$
ATQ,
sum of all except last group is :- $1^2 + 2^2 + 3^2 + ...+ 190^2$

$$\Rightarrow \frac{190(191)(381)}{6} = 2304415$$

Hence true.

5. (d)

$$x = 7 + 7^{\frac{2}{3}} + 7^{\frac{1}{3}} \quad \Rightarrow \quad x - 7 = 7^{\frac{2}{3}} + 7^{\frac{1}{3}}$$

Cubing both side

$$(x-7)^3 = \left(7^{\frac{1}{3}} + 7^{\frac{2}{3}}\right)^3$$

$$x^3 - 343 - 21x^2 + 147x = 7 + 7^2 + 3 \times 7^{\frac{1}{3}} \times 7^{\frac{2}{3}}\left(7^{\frac{1}{3}} + 7^{\frac{2}{3}}\right) = 7 + 49 + 3 \times 7(x-7)$$

$$x^3 - 343 - 21x^2 + 147x = 56 + 21x - 147$$

$$x^3 - 21x^2 + 126x - 252 = 0$$

6. (a)

	Time	Eff.
A	52	15
B	60	13

780 unit

ATQ,

$$780 = \left[15 \times \frac{13}{20} + 13 \times \frac{3}{4}\right] t + (15+13)\frac{78}{5}$$

$$780 = \frac{39}{2}t + 28 \times \frac{78}{5}$$

$$780 = 39\left[\frac{t}{2} + \frac{56}{5}\right]$$

$$20 = \frac{t}{2} + \frac{56}{5}$$

$$\frac{t}{2} = 20 - \frac{56}{5} = \frac{44}{5}$$

$$t = \frac{88}{5} = 17\frac{3}{5}$$

7. (d)

I	II	III
132	160	192
9	2	1

Total CP = $132 \times 9 + 160 \times 2 + 192 \times 1$
$= 1188 + 320 + 192 = 1700$

$$\text{CP of 1 kg} = \frac{1700}{12} = \frac{425}{3}$$

ATQ,

$$\text{SP} = 238 \times \left(1 - \frac{1}{n}\right) = \frac{425}{3} \times \frac{7}{5}$$

$$\Rightarrow \left(1 - \frac{1}{n}\right) = \frac{5}{6}$$

$$\Rightarrow \frac{1}{n} = \frac{1}{6} \qquad n = 6$$

8. (c)
Let present age of Harsh and Dev be H and D respectively.
ATQ,
(H – 6) = 4 (D – 6) .....(i)
also, H + 10 = 40
⇒ H = 30 ....(ii)
put (ii) in (i)
24 = 4 (D – 6)
D – 6 = 6
⇒ D = 12 years.

Alternate Method:

	H		D
–6y →	4 unit	:	1 unit
+10y →	40y		

ATQ,
4 unit + 6y + 10y = 40y
4 unit = 24y
1 unit = 6y
Present age of Dev = 6y + 6y = 12 years

9. (c)
Expence = $x + xy$
Statement I:
$780x$ → Total received
Statement II:
Profit = 108
⇒ total profit = 108 × 50
Expence = $x + 50y$
∴ 780 × 50 – (x + 50y) = 108 × 50
x + 50y = 672 × 52 ...(i)
Statement III:
x + 60y = 780 × 60 – 128 × 60
⇒ x + 60y = 39120 ....(ii)
from (i) and (ii) clearly
we can solve for x and y
but we also used Statement I.
Hence, all three statements. were required.

10. (b)
Alcohol : Water = 4 : 7
3
ATQ,
3 units → 9
1 units → 3
∴ water (7 units) → 21 liter

11. (b)

	Salt	Price
I	7.5%	22.5 / liter
III	17.5%	z / liter
II	22.5%	37.5 / liter

By using allegation method:-

7.5 22.5
17.5
5 10
1 : 2

Price of II type = $\frac{22.5 + (2 \times 37.5)}{3}$ = Rs. 32.5/liter

Alternate Method:
Let, the solution be 1 liter
Salt → S, Water → w
then,

75s + 925w = $\frac{45}{2}$ .....(i)
+150 +150 diff. 15
225s + 775w = $\frac{450}{12} = \frac{75}{2}$ .....(ii)
+100
150 unit → Rs.15
100 unit → Rs.10
175s + 825w = $\frac{45}{2}$ + 10 = 32.5

12. (a)

M	N
67%	33%

Difference = 67 – 33 = 34%
Given, 100% → 10,000
∴ 34% → 100 × 34 = 3400

13. (a)
960 m
600 m 360 m
$\left(\frac{5}{8}\text{of total length}\right)$ $\left(\frac{3}{8}\text{of total length}\right)$
Ravi covered in 5 seconds = 5 × 8 = 40m
Relative speed = (10 – 8) = 2m/s
time taken by rajiv with relative speed = $\frac{40}{2}$ = 20 sec.
in 20 seconds rajiv cover = 20 × 10 = 200 meter
Rajiv caught ravi at 200 m which is not equal to 360.
then all the three statements taken together is not sufficient.

14. (d)
M : A
13 : 9
–n +n
19 : 14
also,
153 New Students
M N
6 : 11
54 99
M A
19 14
+54 +99
24 : 19

ATQ,

$\frac{19x+54}{14x+99}=\frac{24}{19}$

$361x - 336x = 2376 - 1026 \Rightarrow x = 54$

M = 54 × 19 $\Rightarrow$ A = 54 × 14

$\Rightarrow$ total = 54 × 33 = 1782

Now,

Initial →13a + 9a = 1782

$\Rightarrow$ a = 81

Hence,

$\frac{13\times81-n}{9\times81+n}=\frac{19}{14}$

$\Rightarrow$ 14742 – 13851 = 19n + 14n $\Rightarrow$ n = 27

15. (a)

Third no. = 5 × 87.8 – 2 × 81.5 – 2 × 93.5

= 439 – 163 – 187 = 89

Alternate Method:

Using deviation Method

No. → 2 2 1

→ –6.3 5.7 3rd

→ 2(–6.3 + 5.7) = 2(–0.6) = – 1.2

3rd → 87.8 + 1.2 = 89

16. (c)

SI = 11P, Let 't' be required time then,

$11P = \frac{P\times44\times t}{100} \Rightarrow t = 25$ years

17. (c)

Let, the no. is 100%

ATQ,

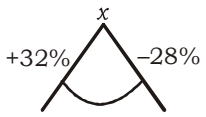
(132 – 72)% → 180

60% → 180

100% → 300

Alternate Method:

Let, the no. is x



60%x = 180

x = 300

18. (d)

Let Bobby's income be B and Ron's income be R then,

$\frac{p}{100}\times B = \frac{q}{100}\times R$

$\Rightarrow pB = qR \Rightarrow \frac{B}{R}=\frac{Q}{P}$

Also,

$\frac{B-y}{R+z}=\frac{m}{x}$

and B + R = x

Statement I:

40B = 56R

$\Rightarrow \frac{R}{B}=\frac{7}{5}$

and $\frac{B-3200}{R+2000}=\frac{6}{5}$

$\Rightarrow$ 5 (7a – 3200) = 6(5a + 2000)

$\Rightarrow$ 5a = 28000 $\Rightarrow$ a = 5600

then,

B + R = 12a

12 × 5600 = 67200

Hence, statement I is correct

Statement II:

20B = 32R

$\frac{R}{B}=\frac{8}{5}$

and $\frac{B-1200}{R+5500}=\frac{4}{3}$

3 (8a – 1200) = 4 (5a + 5500)

4a = 25600

a = 6400

then,

B + R = 13a = 13a = 13 × 6400

= 83200m, which is also true.

19. (b)

By divisibility rule of 9,

5 + 6 + 7 + 2 + 0 + 1 = 21

$\therefore$ 21 + 6 = 27 which is divisible by 9

Hence, least such number that should be added is 6.

20. (a)

P = 30,000, t = 3 years, R = 4%

I yr. = 1200

II yr. = 1200 + 48

III yr. = 1200 + 48 + 48 + 1.92

total CI = 3600 + 144 + 1.92

CI = Rs. 3745.92

Alternate Method:

Eff. rate = $3r + \frac{3r^2}{100}+\frac{r^3}{10000}$

$= 12 + \frac{48}{100}+\frac{64}{10000} = 12.4864\%$

$\therefore$ CI = $30000 \times \frac{12.4864}{100}$ = Rs. 3745.92

IB ACIO GRADE II

17/01/2024 (Shift-03)

03

1. A, B and C enter a partnership with initial investments in the ratio $\frac{11}{5}:\frac{7}{2}:\frac{15}{8}$. After 4 months A raises her share of investment by 62.5%. If the total profit after 12 months since the beginning of the partnership is Rs. 138584, then how much (in Rs.) does A get as her share of profit?

A, B दाम C ँ ह $\frac{11}{5}:\frac{7}{2}:\frac{15}{8}$, हदै ुपात ` क्कद रक्ष्मि, ँ विह्ग , ह नाज्ञ नां हारइ , ई स ` ाए ी।। A ँ हद पै हों वह्ग , ा प्लिा 108 7 ी 5ए ि।र्या यिा नां हारइ , इ मुज्द ात नहउ0 ` ाए , ही।। ,ꣳ ऱ् ाभ उस्थ. थ्स जपयहएुद ा एाश्च ताहA , ाइ ाभ , हभाग , हण प ` क्वं, तै ा बजपयहे क्व ि, हा:

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) 50864 (b) 50844
(c) 50884 (d) 50874

2. The greatest number of wagons that can be attached to a locomotive engine if the speed is not to fall below 14 km. per hour is given as 144.

Which one of the following is correct in respect of the Question and the Statements given below?

Statement 1: The locomotive engine without any wagon can go at a rate of 50 km per hour.

Statement 2: The speed of the locomotive diminishes by a quantity which varies as the square root of the number of wagons attached.

Statement 3: With 16 wagons its speed is 38 km. per hour.

2J उस ि, ` इ शति स्क्षे नह, ` ँ ऐहह , इ ल्हिति ` क्क ाइ्िहाहिव 6कै नहत्ताह्हत्त ा न, ँ हव्ा हवसै ाक्क, इ द ु , ते नक्ष्या उस्स ाँ /ाृ्ति एअ

7प्राृक श्मै श्र तज्ञा ँ इ्रहाि।६ गष , ज्ञै ाक्क, हनिक्र्क ` क्वें ग ु ि ि त ` क्क नह, ाैअ्हना वि, 4प नएइ एअ

, ज्ञै उ्ष ाँ ा ि, नइ वसै , ह ाइ्िहाहिव 6कै . छ ि, ` इ शति स्क्षे , इ 2J नह2 न, ता एअ

, ज्ञै 0ष, ाइ्िहाहिव , इ 2J 7न रामि त, , ` एाहत्तइ एअत्तह 7ननहत्ुडह्वसै ाक्क, इ नक्ष्या , हवगे7ख , हदै ुनार परिवतिप्ष एाइ एअ

, ज्ञै स्ष उा वसै ाक्क, हनाज्ञ 6न, इ 2J स्थ ि, ` इ शति स्क्षे एअ

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) All the three statements together are sufficient./ तैइ ाक्क, ज्ञै ६, नाज्ञ, ँहहपर पयाफ्ष एक्ष

(b) Even all the three statements taken together is still not sufficient./तैइ ाक्क, ज्ञै ६, नाज्ञ, ँहहपर भइ पयाफ्ष ँ एक्ष्नएक्ष

(c) Statement 1 and Statement 3 taken together are sufficient./, ज्ञै उ दाक्ष, ज्ञै स ६, नाज्ञ, ँहहपर पयाफ्ष एक्ष

(d) Statement 2 and Statement 3 taken together are sufficient./, ज्ञै 0 दाक्ष, ज्ञै स ६, नाज्ञ, ँहहपर पयाफ्ष एक्ष

3. A number increased by 57% gives 942. Find the number.

६, नक्ष्या , ाइ.क्र शतिमात नही 5ए हपर धस0 श्ञ्ज एाहा एअ नक्ष्या रुात , र्क्ष

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) 800 (b) 700
(c) 500 (d) 600

4. Jay lent some amount of money at 14% simple interest and an equal amount of money at 20% simple interest each for two years. If his total interest was, 9520, then find the amount of money that was lent in each case.

त्य ँ ह,9 . ँ रामि उस शतिमात ना! ारवा ँयात्त पर दाक्ष7तै इ एइ. ँ रामि 0छ शतिमात ना/ारवा ँयात्त पर ।ाहवचाह, ह्रि ६ ३ ार ।ई यि। 7न, ा ,ꣳ ँयात्त ध 0छ जपयहज्ञाश्च ताहश् यह ` ा, हे क्क. ार ।इ ग6ष . ँ रामि रुात , र्क्ष

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) Rs.13,000 (b) Rs.16,000
(c) Rs.14,000 (d) Rs.15,000

5. Excluding stoppages, the speed of a bus is 152 km/hr. and including stoppages, it is 114 km/hr. For how many minutes does the bus stop per hour?

विछो ाीकु , ाह9ाह्र रश्री न , इ गति उ.0 ि, ` इास्क्षे एअद ाक्ष विछो ाीकु नएितश्रयए उउस ि, ` इास्क्षे एअी न शति स्क्षेह, तै हों ँ ?ज, तइ एअ

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) 10 minutes/ि ँ ?
(b) 15 minutes/ि ँ ?
(c) 14 minutes/ि ँ ?
(d) 9 minutes/ि ँ ?

6. The sum of the squares of two numbers is 545 and the square of their difference is 1. Find the product of the two numbers.

।हनसख्याद ाक्, हवगाह, । याह .स एअ्र ।क्ष ै , हद क्र , । वगप्उ एअ ।ैहा्नखयाद ाक्, । गुवौ फ रुात , र्क

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) 282 (b) 256

(c) 272 (d) 286

7. In a 60-liter mixture of milk and water, the water content is 40%. How many litres of water should be added to increase the water content to 60%?

।ख द ाक्ष पौ इ , ह।छ⁄ इ?र ि द्धक्ष ` क्ष्पौ इ , इ` ।मा स्छ शतिमात एअ पौ इ , इ` ।मा ।छ शतिमात त, ा5्टह, हर् ि ष् ि, तै ह इ?र पौ इ ि, ।या त्ौ । 2।एिछ:

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) 30 litres/ इ?र (b) 15 litres/ इ?र

(c) 25 litres/ इ?र (d) 20 litres/ इ?र

8. A shopkeeper buys three varieties of sugar at Rs 99, Rs 120 and Rs 144 per kg respectively and mixes them in the ratio 9 : 2 : 1. In order to earn a y% profit after giving a discount equal to a sixth of the marked price, the marked price per kg of the blended sugar is fixed at Rs 178.50. What is the value of y?

ध, ।,ा ।र ै हतै इ श, र , इ 2ई इ -` मा्छ ध्ध जपयहछ्र 30छ जपयह द ाक्ष उस्स जपयह शति ि, गाछ , इ ।र नहन रझइ द ाक्ष ट्ल्एक्ध0ष्उ , ह दै ुपात ` क्र्ो ि द्धित ि, र्या द क्रि त ` क्ष्म , हध, ा ?ह9 ए , ही ग्री र 9 स्रे ोहह, ही ।। y%⁄ ।भ द त्तिस्र , रै ह, हर् ि शति ि, गाछ ि द्धित 2ई इ , । द क्रि त ` क्ष्म उक्ष्8 छ जपयहो ्. ।रित ि, या गर्या y , । ` ा ि, तै । एाहा:

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) 35 (b) 40

(c) 36 (d) 45

9. 35 men and 49 women, working together, can do a job in 84 days while 48 men and 84 women, working together, can do the same job in 56 days. In how many days can the same job be done by 30 men and 21 women, working together?

र. पुजक्ष द ाक्ष स्ध ` प्रि ।ध्ठध, नाज्ञ , ।यध, रतहएुध्श्र ध, , ।यध, ।ह थ्स ाि ाक्त क्, र न, तहएक्ष्ती ि, स्र पुजक्ष द ाक्ष थ्स ` प्रि ।ध्ठध, नाज्ञ , ।यध, रतहएुध्श्र ट्नइ , ।यध, ।ह.। ाि ाक्त क्, र न, तहर्एक्ष स्छ पुजक्ष द ाक्ष 0उ ` प्रि ।ध्ठध, नाज्ञ , ।यध, र, ह ट्नइ , ।यध, ।हर्ि, तै ह ाि ाक्त क्षमख , र न, तहएक्ष

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) $120\frac{6}{13}$ (b) $120\frac{8}{13}$

(c) $120\frac{9}{13}$ (d) $120\frac{7}{13}$

10. Prakash and Inaya started a business investing 77,000 and 84,000 respectively. In what ratio the profit earned after 2 years be divided between Prakash and Inaya respectively?

श, ।मा द ाक्ष ६ ।या ै ह-` मा्छ क्क्क्छ्छ जपयह द ाक्ष थ्स्क्छ्छ जपयह , । ोवक्ष , र, हध, (यवनाय मुण ि, र्या 0 वक्र्ो ।। द त्तिस्र⁄ ।भ , ।ह श, ।मा द ाक्ष ६ ।या , ही इ्ू -` मा्छ ि, न दै ुपात ` क्षविभाज्ति ि, या त्ाध्गा:

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) 12 : 7 (b) 11 : 7

(c) 11 : 12 (d) 12 : 11

11. The prices of a cream and a shampoo are in the ratio 19:11. The price of the cream is 160 more than the price of the shampoo. What is the price of a cream?

ध, -इ द ाक्ष ध, मक्ष्मख, इ , इ तक्तउध्उउ , हद ैुपात ` क्र्एक्ष -इ , इ , इ त मक्ष्मख, इ , इ त नहउ।छ जपयहद ्, एअ -इ , इ , इ त)या एअ

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) Rs.380 (b) Rs.400

(c) Rs.360 (d) Rs.340

12. A sum becomes Rs.8640 after two years and Rs.12,441.6 after four years at the same compound interest. Find the sum.

नेै 2-वर्; ष्यात्त पर ध, रामि ।हवक्र्ो ।। थ्।स्छ जपयह द ाक्ष 2।र वक्र्ो ।। उ0क्ष्स्स्उ8 जपयहएाहत्तातइ एअरामि रुात , र्क

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) Rs.5800 (b) Rs.5000

(c) Rs.6000 (d) Rs.6300

13. Arun and Devika bought an item each at identical prices. Arun marked his item at p% above his purchase price and then offered a discount of q% on the marked price. Devika claimed to offer her item for sale at y% below her purchase price but then added z% of the reduced offer price as handling charges. Eventually both sold their items at the same nominal price.

Which one of the following is correct in respect of the Question and the Statements given below?

Statement 1: The values of p, q, y and z are respectively given as 25, 8, 20 and 43.75

Statement 2: The values of p, q, y and z are respectively given as 35, 20, 10 and 20

द जक्ष द ाक्ष ।स्रि, । ै हने ा ` क्ष्म पर ध, ढध, वलु ्र रझई द जक्ष ैहद पै इ वलु पर ट्न, ह-य ` क्ष्म नहp% द ्, द क्रि त ि, या द ाक्ष फिर द क्रि त ` क्ष्म पर q% , इ 9 स्रे श्लावित , ई ।स्रि, । ैहद पै इ वलु , ।ह ट्न, ह-य ` क्ष्म नहy% ,` पर ाि-इ , हर् ि श्लुत ि, याश्र ह्िै फिर स्र?हएुध श्लावित ` क्ष्म , । z% एक्र्ष क शभार , ह ण प ` क्त्त।ह्र्ट द क्त्तष ।हाक्ष्ै हद पै इ वलुध्कन्े ा ै ाँि त ` क्ष्म पर ाि इ्र्क

ऽपराहेत श्मै श्रतज्ञा ै इ्रहाि॰ गष , ज्ञै ाक, हनीकि ` कों ै ै ƒ ि ि त ` क
नह, ौअहना वि, 4प नएइ एअ

, ज्ञै उ॰ p, q, y दास्रz , हे ै – ` मा॰ 0. श्र॰श्र0छ दासस्सक एंक

, ज्ञै 0॰ p, q, y दास्रz , हे ै – ` मा॰ र. श्र0छश्रउछ दास0छ एंक

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) Only Statement 2 is feasible./, ब्र , ज्ञै 0 नक्षव एंअ

(b) Both Statements are feasible./ौहाक, ज्ञै नक्षव एंक

(c) Neither of the two statements is feasible./ौहाके क नह, ाह॰भइ , ज्ञै नक्षव ै एक्षर्एअ

(d) Only Statement 1 is feasible./, ब्र , ज्ञै उ नक्षव एंअ

14. If Naman had purchased 25 articles for Rs.22 and sold all the articles at the rate of 22 for Rs.25 then find his approximate profit percentage.

यां ै ` ` ` ै ह00 जपयहे क0. वलु॰ठ– रड़ाझ्द ाम नभइ वलु॰ठ00 , इ ।र नह0. जपयहे की इ ।झ्काताह॰न, ा दै ु ाँ त॰ ाभ शतिमात रुात , र्क

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) 21.5%

(b) 20.5%

(c) 29.1%

(d) 30.2%

15. A salt and water mixture, of which 12.5% is salt, costs Rs.22 per litre. Another salt and water mixture, of which 27.5% is salt, costs Rs.38.50 per litre. How many litres of a salt and water mixture, of which 30% is salt, can be bought for Rs.165?

ै ` , दासपौ इ , ह॰, व्रि यै श्रत्तिने क308 7 ` ` , एश्र, इ , इे त 00 जपयहशति॰ इ?र एंअै ` , दासपौ इ , ह॰, द ल्य व्रि यै श्रत्तिने क 0क्र 7 ै ` , एश्र, इ , इे त स्॰8 छ जपयहशति॰ इ?र एंअै ` , दास पौ इ , ा ि, तै ा॰ इ?र व्रि यै श्रत्तिने कस्छा ै ` , एश्रउ. जपयहे क न्रझा त्ता न, ता एअ

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) 4.5

(b) 3.5

(c) 4

(d) 5

16. On a particular day each of Danish, Ethan and Farhan sold three types of pens from their respective shops. Danish and Ethan sold an identical number of pens of Type A while Farhan sold twice as many pens of Type A as Danish and Ethan together sold. The ratio of the numbers of pens of Type B sold by Danish, Ethan and Farhan was 3:4:1 respectively, and Ethan and Farhan sold an identical number of pens of Type C each, while Danish sold thrice as many pens of Type C as each of Ethan and Farhan sold. The three sellers sold each of the types of pens at different prices per unit.

Assertion (A): It is possible that Danish sold each pen of Type A at a loss of Rs 2, each pen of Type B at a profit of Rs 4, and each pen of Type C at a loss of Rs 5 and made an overall profit of Rs 144; Ethan sold each pen of Type A at a profit of Rs 5, each pen of Type B at a loss of Rs 1, and each pen of Type C at a profit of Rs 7 and made an overall profit of Rs. 13; and Farhan sold each pen of Type A at a profit of Rs 3, each pen of Type B at a profit of Rs 4, and each pen of Type C at a loss of Rs 6 and made an overall profit of Rs 240.

Reason (R): Framing and solving the three possible linear equations we will find that we get a unique solution.

॰, विमाक्ष ाि श्र।ाँ माश्र6ज्ञै दासफरएै ` क्षनहृ यह ै हद पै झद पै इ ्, ा क्षनहतइे श, ार , हपैह ाि र्हह ।ाँ मा दास6ज्ञै ै हश, ार A , ह पैह ने ा नक्ष्या ` की इक्ष त्ती ि, फरएै ै ह।ाँ मा दास6ज्ञै शृ यह प्रारा ाि इहगष श, ार A , हपैह , इ ।हुि इ नक्ष्या ` क्ष, ार A , हपैह ाि र्हह ।ाँ माश्र6ज्ञै दास फरएै प्रारा ाि इहगष श, ार B , हपैहाक, इ नक्ष्या , ा दै ुपात

–` मा॰ स ॰ स ॰ उ ज्ञाश्रदास6ज्ञै दासफरएै ` क्षनहृ यह ै हश, ार C , हपैह ने ा नक्ष्या ` की इक्ष त्ती ि, ।ाँ मा ै ह6ज्ञै दासफरएै शृ यह प्रारा ाि इहगष श, ार C , हपैह , इ तइे गु इ नक्ष्या ` क्ष, ार C , हपैह ाि र्हह तइे क्षवि– हाद ाके हृ यह श, ार , हपैह , ाहशति यंकि? द॰ गढद॰ ग , इ ताक्षपर ाि र्हा

दभि, ज्ञै (A)॰ यए नक्षव एंअि, ।ाँ मा ै हश, ार A , हृ यह पैह , ाह0 जपयह, इ एाँ परश्र श, ार B , हृ यह पैह , ाहस जपयह, ह ॰ ाभ पर दासश, ार C , हृ यह पैह , ाह. जपयह, इ एाँ पर ाि हा दास ,ु उस्स जपयह, ा॰ ाभ दत्तिन ि, याप॰ 6ज्ञै ै हश, ार A , ह शृ यह पैह , ाह. जपयह, ह ाभ परश्र श, ार B , हृ यह पैह , ाहउ जपयह, इ एाँ पर दासश, ार C , हृ यह पैह , ाहक्र जपयह, ह ाभ पर ाि हा दास ,ु उस् जपयह, ा॰ ाभ दत्तिन ि, याप॰ दासफरएै ै ह श, ार A , हृ यह पैह , ाहस जपयह, ह ाभ परश्र श, ार B , हृ यह पैह , ाहस जपयह, ह ाभ पर दास श, ार C , हृ यह पैह , ाह। जपयह, इ एाँ पर ाि हा दास ,ु 0स्छ जपयह, ा॰ ाभ दत्तिन ि, यां

, रवा (R)॰ तइे नक्षावित रमि , ने इ, रवा ाँ ै हददासए्र , ै हपर ऐ पा॰ ्कहा ि, ऐ क्ष॰, दप्रितझ ने ! ा ि॰ ता एंअ

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) Assertion (A) is true and Reason (R) is false./ दभि, ज्ञै (A) नृ य एअदास , रवा (R) दनृ य एंअ

(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A)./दभि, ज्ञै (A) दास , रवा (R) ौहाक्षनृ य एक ॰ हि ै , रवा (R) दभि, ज्ञै (A) , ा नएइ लार्च्इ, रवा ै एक्षर्एअ

(c) Both Assertion (A) and Reason (R) are true but Reason (R) is a correct explanation of Assertion (A)./दभि, ज्ञै (A) दास, रवा (R) ौहाक्षनृ य एकदास, रवा (R) दभि, ज्ञै (A) , ा नएइ लार्च्इ, रवा एंअ

(d) Assertion (A) is false and Reason (R) is true./ दभि, ज्ञै (A) दनृ य एअदास , रवा (R) नृ य एअ

17. Ravi and Rajiv decided to run a 960 m long race on a track as long as the length of the race. Which of the statement(s) below is (are) sufficient to conclude that Rajiv ran at a speed of 10 m/s?

Statement 1: Ravi is allowed to start 5 seconds before Rajiv started running.

Statement 2: Ravi ran at 8 m per second.

Statement 3: Rajiv caught up with Ravi with $\frac{3}{8}$ of the track length still to be covered.

रवि दौड़ रात्रि में 960 m लंबे ट्रैक पर दौड़ता है, जो दौड़ की लंबाई के बराबर है। निम्नलिखित में से कौन सा कथन (कथनों) पर्याप्त है (हैं) यह निष्कर्ष निकालने के लिए कि राजीव ने 10 m/s की गति से दौड़ लगाई?

कथन 1: रवि को राजीव के दौड़ना शुरू करने से 5 सेकंड पहले दौड़ने की अनुमति है।

कथन 2: रवि ने 8 m प्रति सेकंड की गति से दौड़ लगाई।

कथन 3: राजीव ने रवि को ट्रैक की लंबाई का $\frac{3}{8}$ भाग शेष रहते हुए पकड़ लिया।

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) Statements 1 and 3 taken together are sufficient./केवल कथन 1 और 3 पर्याप्त हैं।

(b) Even all the three statements taken together is not sufficient./तीनों कथन भी पर्याप्त नहीं हैं।

(c) All the three statements taken together is sufficient./तीनों कथन पर्याप्त हैं।

(d) Statements 2 and 3 taken together are sufficient./केवल कथन 2 और 3 पर्याप्त हैं।

18. Find the positive square root of $92-24\sqrt{6-4\sqrt{2}}$

$92-24\sqrt{6-4\sqrt{2}}$ का धनात्मक वर्गमूल ज्ञात करें।

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) $6+2\sqrt{2}$ (b) $6-2\sqrt{2}$

(c) $8-4\sqrt{2}$ (d) $8-2\sqrt{2}$

19. The product of two co-prime numbers is 1073. Find their L.C.M.

दो सहअभाज्य संख्याओं का गुणनफल 1073 है। उनका ल.स. ज्ञात करें।

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) 29

(b) 1

(c) 1073

(d) 37

20. (*x*, y) is a pair of positive integers such that HCF (*x*, y) + LCM (*x*, y) = 187 and *x* > y.

Which one of the following is correct in respect of the Question and the Statements given below?

Statement 1: There are three possible values of HCF (*x*, y).

Statement 2: The minimum value of (*x* + y) is 37.

Statement 3: There are 7 pairs of (*x*, y) that satisfy the given conditions.

(*x*, y) धनात्मक पूर्णांकों का एक युग्म है जिसके लिए HCF (*x*, y) + LCM (*x*, y) = 187 और *x* > y है।

प्रश्न और नीचे दिए गए कथनों के संबंध में निम्नलिखित में से कौन सा सही है?

कथन 1: HCF (*x*, y) के तीन संभावित मान हैं।

कथन 2: (*x* + y) का न्यूनतम मान 37 है।

कथन 3: (*x*, y) के 7 युग्म हैं जो दिए गए प्रतिबंधों को संतुष्ट करते हैं।

IB ACIO GRADE II 17/01/2024 (Shift-03)

(a) Statement 1 is incorrect but Statements 2 and 3 are correct./कथन 1 असत्य है, कथन 2 और 3 सत्य हैं।

(b) Only Statements 1 and 2 are correct./केवल कथन 1 और 2 सत्य हैं।

(c) Statements 1 and 3 are correct but Statement 2 is incorrect./कथन 1 और 3 सत्य हैं, कथन 2 असत्य है।

(d) All three statements are correct./तीनों कथन सत्य हैं।

ANSWER KEY

1.(a)	2.(a)	3.(d)	4.(c)	5.(b)	6.(c)	7.(a)	8.(b)	9.(b)	10.(c)
11.(a)	12.(c)	13.(b)	14.(c)	15.(c)	16.(d)	17.(b)	18.(a)	19.(c)	20.(d)

SOLUTIONS

1. (a)

L.C.M of 5, 2, 8 is 40

	A	B	C
	$\frac{11}{5}$	$\frac{7}{2}$	$\frac{15}{8}$
4 months	88	140	75 ($62.5\% = \frac{5}{8}$)
8 months	143	140	75

A's share = (88 × 4) + (143 × 8)

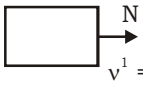
= 1496

B's share = 12 × 140 = 1680

C's share = 12 × 75 = 900

$\therefore$ A's share of profit $= \frac{138584}{4076} \times 1496 =$ Rs. 50864

2. (a)



Speed = v

Statement I: N = 0

Statement II: $(v - v^1) \propto (N)^{\frac{1}{2}}$

$\therefore v - v^1 = 50 - 38 = 12 = x\sqrt{16}$

$12 = 4x$

$\Rightarrow x = 3$

Now, from question:-

$50 - 14 = 36 = x\sqrt{N}$

$\Rightarrow \frac{36}{3} = \sqrt{N}$

$= 12 = \sqrt{N}$

= N = 144, which is true.

3. (d)

A.T.Q,

$157\% \rightarrow 942$

$100\% \rightarrow \frac{942}{157} \times 100$

= 600

4. (c)

Let, he invested Rs. P

Then,

$\frac{P \times 14 \times 2}{100} + \frac{P \times 20 \times 2}{100} = 9520$

$\Rightarrow 68P = 952000$

$\Rightarrow$ P = Rs. 14000

5. (b)

Required time

$60 \times \frac{\text{Express speed} - \text{Stoppage speed}}{\text{Express speed}}$

$\Rightarrow \frac{152 - 144}{152} \times 60 = 15$ min.

6. (c)

Let, the numbers be A and B

A.T.Q,

$A^2 + B^2 = 545$

$(A - B)^2 = 1$

$\Rightarrow A - B = 1$

$\because (A - B)^2 = A^2 + B^2 - 2AB$

$\Rightarrow 1 = 545 - 2AB$

$AB = \frac{544}{2} = 272$

7. (a)

Let, x ltr. of water is added.

A.T.Q,

$\text{Milk} = \frac{60}{100} \times 60 = \frac{40}{100} \times (60 + x)$

$\Rightarrow x = 30$ ltr.

8. (b)

	A	:	B	:	C	
Price →	99		120		144	
Quantity →	9		2		1	= 12

C.P = 891 + 240 + 144

= 1275 for 12 kg. (say)

C.P per kg. $= \frac{1275}{12} =$ Rs. 106.25

S.P $= \frac{5}{6} \times 178.50$

= Rs. 148.75

$\therefore$ Profit% $= \frac{148.75 - 106.25}{106.25} \times 100$

= 40%

$\therefore$ y = 40

9. (b)

Given,

35M + 49W → 84 days

48M + 84W → 56 days

Then,

84(35M + 49W) = 56(48M + 84W)

⇒ 105M + 147W = 96M + 168W

⇒ 9M = 21W

$\Rightarrow \frac{M}{W} = \frac{7}{3}$

Total work = (35 × 7 + 49 × 3) × 84

= 392 × 84 = 32928

work done by 30 men and 21 women

Efficiency = 30 × 7 + 21 × 3 = 273

Time $= \frac{32928}{273} = 120\frac{8}{13}$ days

10. (c)

	P		I
Investment	77000		84000
Profit	11	:	12

Profit ratio = Investment ratio

11. (a)

Given, $\frac{C}{S} = \frac{19}{11} \overset{+8}{\curvearrowright}$

Then,

8 units → 160

19 units → 380

∴ Price of cream = Rs. 380

12. (c)

We know,

$\text{Principle} = \frac{A_1 \times A_1}{A_2}$

$= \frac{8640 \times 8640}{12441.6}$

= Rs. 6000

13. (b)

A	D	→ CP same
+P%	↓ y%	
−q%	↑ z%	→ SP same

We know, effective $\% = \left(a + b + \frac{ab}{100}\right)\%$

Statment I:

p	q	y	z
25	8	20	43.75

Eff. of A% = $25 - 8 - \frac{200}{100}$ = 15%

Eff.% of D = $43.75 - 20 - \frac{43.75 \times 20}{100}$

= 15% Hence, same

Statment II:

p	q	y	z
35	20	10	20

Eff.% of A = $35 - 20 - \frac{35 \times 20}{100}$ = 8%

Eff.% of D = $-10 + 20 - \frac{200}{100}$ = 8%

Hence, both statements are true

14. (c)

CP = $\frac{22}{25}$ (for 1 article)

SP = $\frac{25}{22}$ (for 1 article)

$P\% = \frac{\frac{25}{22} - \frac{22}{25}}{\frac{22}{25}} \times 100$

$= \frac{141}{25 \times 22} \times \frac{25}{22} \times 100 = 29.13\%$

'OR'

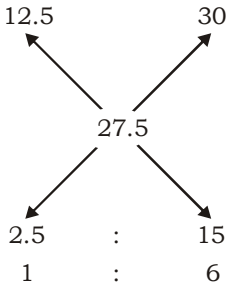
Number		Price	
$_{25\times}25$	→	Rs. $22_{\times 22}$ = 484	+141
$_{25\times}22$	→	Rs. $25_{\times 25}$ = 625	

∴ $P\% = \frac{141}{484} \times 100 = 29.1\%$

15. (c)

	Salt		Price
A –	12.5%	→	Rs. 22
B –	27.5%	→	Rs. 38.50
C –	30%	→	Rs. 165

Mixture B can be formed by mixing A and C



Then, cost will also be in same ratio

Let, salt of 30% last mixture be Rs. x per ltr.

Then,

Cost	22		x
Ratio	1	:	6

Avg. → $\frac{22 + 6x}{7} = \frac{77}{2}$

⇒ $12x = 539 - 44 = 495$

⇒ $x = \frac{495}{12} = \frac{165}{4}$

Then, amount $= \frac{165}{\frac{165}{4}}$ = 4 g ltr.

16. (d)

	D	E	F	A	B	C
A	x	x	$4x$	$6x$	$8y$	$8z$
B	$3y$	$4y$	y	$3x$	$4y$	$4z$
C	$6z$	z	z			

A.T.Q,

$-2x + 12y - 30z = 144$ ....(I)

$5x - 4y + 7z = 13$ ....(II)

$12x + 4y - 6z = 240$ ....(III)

(II) + (III)

$\Rightarrow 17x + z = 253$ ....(IV)

(I) + (II) × 3

$\Rightarrow 13x - 9z = 183$ ....(V)

From (IV) and (V)

$166x = 2094$

$\Rightarrow x = \frac{1047}{83}$

∴ Though, it has unique solution but is not the required answer

∴ Assertion is false but reason is true

17. (b)

Ravi ——— 960 ———

Rajiv

Statement I and II:

Relative distance = 8 × 5 = 40 mtr.

Statement III:

Rajiv meet Ravi at $\frac{5}{8} \times 960 = 600$ mtr.

Then, speed of Rajiv = Rs.

Time after which Ravi is caught $= \frac{600 - 40}{8} = 70$ sec.

∴ Speed of Rajiv $= \frac{600}{70} = \frac{60}{7}$ m/s

∴ no combination of given statements can conclude that. speed of Rajiv is low/sec

18. (a)

$A = 92 - 24\sqrt{6 - 4\sqrt{2}}$

$= 92 - 24\sqrt{2^2 + \sqrt{2}^2 - 2 \times 2\sqrt{2}}$

$= 92 - 24\,(2 - \sqrt{2}\,)$

$= 92 - 48 + 24\sqrt{2}$

$= 44 + 24\sqrt{2}$

$= 6^2 + (2\sqrt{2}\,)^2 + (2 \times 6 \times 2\sqrt{2}\,)$

$= (6 + 2\sqrt{2}\,)^2$

Hence, $\sqrt{A} = 6 + 2\sqrt{2}$

19. (c)

Given,

A × B = 1073

Also, HCF (A, B) = 1 (co-prime)

Then, LCM × HCF = A × B

⇒ LCM = 1073

20. (d)

HCF (x, y) + LCM (x, y) = 187

Statement I: HCF (x, y) = 3 values

Statement II: min value of (x + y) = 37

Statement III: and (x_1, y_1) → 7 pairs

Let, HCF (x, y) = d

$x = dx_1$

$y = dy_1$

and HCF (x_1, y_1) = 1

also, LCM = $dx_1 y_1$

Now,

$d + dx_1 y_1 = 187$

$d(1 + x_1 y_1) = 11 \times 17$

$d = 1, 11, 17$

So, statement I true

Now,

d	1	11	17
$1 + x_1 y_1$	187	17	11
$x_1 y_1$	186	16	10
	$2 \times 3 \times 31$		
	x_1 y_1	x_1 y_1	x_1 y_1
	→ 31 6	1 16	10 1
	→ 93 2		5 2
	→ 62 3		
	→ 186 1		

cleary, min value of (x + y) = (31 + 6) = 37 and (x_1 y_1) → 7 values hence, all statements. are correct

Intelligence Bureau खुफिया विभाग India भारत

IB ACIO GRADE II

17/01/2024 (Shift-04)

04

1. The average of 11 numbers is 44.5. If the average of the first six numbers is 42.5 and that of the last six numbers is 45, then find the middle number.

दद ॅॅख्याहौ, ा हाक्वत ममन्ा ंकयदि पं ॅसए ॅॅख्याहौ, ा हाक्वत मी न्ा ंकहाकहैतिल एं ॅॅख्याहौ, ा हाक्वत मज्ञ ंकता, लाय ॅॅख्या 8ात ॅ रै।

IB ACIO GRADE II 17/01/2024 (Shift-04)

(a) 29.5
(b) 35.5
(c) 33.5
(d) 38.5

2. Ravi and Rajiv decided to run a 960 m long race on a track as long as the length of the race.

Which of the statement(s) below is (are) sufficient to conclude that Rajiv ran at a speed of 10 m/s?

Statement 1: Rajiv gave Ravi an 80 m head start

Statement 2: Ravi ran at 8 m per second.

Statement 3: Rajiv caught up with Ravi with $\frac{3}{8}$ of the track length still to be covered.

रवि हाकरा. स्रा 7, 5 टेक पर 960 m ॅॅउसझाकस्झाकर, ा फर्का ा ि या f. अे स ॅॅडाथ्श्राकरे , उराउर णस 7स्ा, दिया गया ॅ ाक्राआ:अ, ॅ ण7 यं f72 2श्री7 ि 7, ॅ , ि 5 पयाश्रा ंर्को रा. स्रा 10 m/s ॅ सर्बा अ, झाकर णारू

ॅ ण7 द? रवि। रा. स्रा अ, 80 m हाग, अ, झाक्रा

ॅ ण7 ी ? रवि 8 m 6ति अे,ॅ ॅ सर्बा अ, झाक्रा

ॅ ण7 त्त? टेक ॅ स ॅॅडाथ्रे ा $\frac{3}{8}$ भाग डाउ रं 7, ॅ , अल्य रा. स्रा। रवि ॅ , उराउर हा गया।

IB ACIO GRADE II 17/01/2024 (Shift-04)

(a) Even all the three statements taken together is not sufficient./तसौ, ॅ ण7 5 आण ॅ 7, पर भसपयाश्रा 7 ॅै ॅक
(b) Statements 1 and 3 taken together are sufficient./ ॅ ण7 द हाकत्त 5 आण ॅ 7, पर पयाश्रा ॅक
(c) Statements 2 and 3 taken together are sufficient./ ॅ ण7 ी हाकत्त 5 आण ॅ 7, पर पयाश्रा ॅक
(d) All the three statements taken together is sufficient./तसौ, ॅ ण7 5 आण ॅ 7, पर पयाश्रा ॅक

3. A train 348 m long is running at a speed of 36 km/hr. It crosses a bridge in 50 seconds. What is the length of the bridge?

त्म् लस्टर ॅॅउस 5 र्, ग्रा स त्त/ ि लस्रचैटा ॅ सगति अ, र्ब रं स ंक यं 5 पुं ॅ ा, ज्ञ अे,ॅ लै, पार ॅ रतस ंकपु ॅ र्स ॅॅडाथ्श्रो त7स ंक

IB ACIO GRADE II 17/01/2024 (Shift-04)

(a) 152 m/लस्टर
(b) 146 m/लस्टर
(c) 176 m/लस्टर
(d) 103 m/लस्टर

4. A shopkeeper buys three varieties of pulses at Rs 132, Rs 160 and Rs y per kg respectively and mixes them in the ratio 9 : 2 : 1. The marked price per kg of the blended pulses is fixed at Rs 238, the shopkeeper gives a discount equal to $\frac{1}{6}$ of the marked price and still earns a profit of 40%. What is the value of y?

5 डु ा7इार 7, तस 6 ार ॅ सड़ी ॅ, लव? दत्ती ध्पय। द/ ध्पय, हाक y ध्पय, 6ति ि गा ॅ सइर अ, = रसीसैहाक ढ4ॅ, ? ी ? द ॅ , ह 7पात लै, लिछित ि या। लिछित ईा ी, ॅ ा 6ति ि गा हौ ि त लस्रा ी त् ध्पय, f7क्रान्ति ि या गया। डु ा7इार हौ ि त लस्रा ॅ , $\frac{1}{6}$ ॅ , उराउर एख्र इता ंकहाक फिर भसमध ॅ ा ॅ ाभ ह f. स्रा ॅ रता ंक y ॅ ा ला7 ि त7ा ंाग्रारू

IB ACIO GRADE II 17/01/2024 (Shift-04)

(a) 192
(b) 200
(c) 184
(d) 196

5. Akash and Dinesh started a business investing Rs.17,500 and Rs.35,000 respectively. At the end of the year, the total profit was Rs.9900. Find the share of Dinesh.

हो ाद्य हाक डि7झ 7, लव? दरुझ्क ध्पय, हाक त्त्झाक ध्पय, ॅ ा f7वझ ॅ रे , 5 9प्यवआय डुक ि या। वउश्रे , हैत लै, ॅ ु ॅ ाभ ध्पय, णा। डि7झ ॅ ा ि ॅ आ 8ात ॅ रै।

IB ACIO GRADE II 17/01/2024 (Shift-04)

(a) Rs.6000
(b) Rs.6600
(c) Rs.5500
(d) Rs.5600

6. A, B and C enter a partnership with initial investments in the ratio $\frac{11}{5} : \frac{7}{2} : \frac{15}{8}$. After 4 months A raises her share of investment by p%. If the total profit after 12 months since the beginning of the partnership is Rs. 138584, and A gets Rs. 50864 as her share of profit, what is the value of p?

A, B हाक C 7, $\frac{11}{5} : \frac{7}{2} : \frac{15}{8}$ ` , ह7ुपात लै, हरैभि ि7विझ ` , आण आचइारसे स म लां उाइ A 7,हप7,ि7विझ ` ,भाग ` ।,p% उठा इिया। यदि आचइारसे स3ुध्हात अ,दी लां ` ,उाइ ` ़ ` ' ।भ दऱ् ज्ञ म ध्पय,ुहा ` ।।ता,A ` ।,' ।भ ` ,क्प लै,ज्ञ़ /म ध्पय,र्लि । ` ।।ता,p ` । ला7 ि त7। ' ।ाारू

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(a) 60
(b) 75
(c) 62.5
(d) 67.5

7. On a particular day each of Danish, Ethan and Farhan sold three types of pens from their respective shops. Danish and Ethan sold an identical number of pens of Type A while Farhan sold $\frac{3}{2}$ times as many pens of Type A as Danish and Ethan together sold. The ratio of the numbers of pens of Type B sold by Danish, Ethan and Farhan was 4 : 3 : 1 respectively, and Danish and Farhan sold an identical number of pens of Type C each, while Ethan sold $\frac{5}{2}$ as many pens of Type C as each of Danish and Farhan sold. The three sellers sold each of the types of pens at different prices per unit.

Assertion (A): It is possible that Danish sold each pen of Type A at a loss of Rs 1, each pen of Type B at a profit of Rs 5, and each pen of Type C at a loss of Rs 3 and made an overall profit of Rs 114; Ethan sold each pen of Type A at a profit of Rs 4, each pen of Type B at a loss of Rs 3, and each pen of Type C at a profit of Rs 5 and made an overall profit of Rs 267; and Farhan sold each pen of Type A at a profit of Rs 8, each pen of Type B at a profit of Rs 5, and each pen of Type C at a loss of Rs 7 and made an overall profit of Rs 60.

Reason (R): Framing and solving the three possible linear equations we will find that we get a unique solution.

5 विडाञ्ञ इि7 इा7िडा। थ्श्रा7 हाक फरं ।7 लै,अ,6ृ ये, 7,हप7सुहप7स डु ।7ौ,अ,तस्र 6 ार ` ,प7 उड्ड। इा7िडा हाक थ्श्रा7 7,6 ार A ` , प7 अला7 अैख्या लै,उड्ड। . र्उ इा7िडा हाक थ्श्रा7 7,र्लि ` र 6 ार A र्वा ,ि.त7,प7 उड्ड,णा फरं ।7 7,ढअे सर्तु 7। लै,त्ःा गु7। 6 ार A ` ,प7 उड्ड। इा7िडा। थ्श्रा7 हाक फरं ।7 द्धरा उड्ड,ग5 6 ार B ` , प7ौ,` सअैख्या ` । ह7ुपात ़ लद्य? म ?त्त ?द णा। हाक इा7िडा हाक फरं ।7 लै,अ,6ृ ये, 7,6 ार C ` ,प7 अला7 अैख्या लै,उड्ड। . र्उ इा7िडा हाक फरं ।7 लै,अ,6ृ ये, द्धरा उड्ड,ग5 6 ार C ` ,प7ौ,` स र्तु 7। लै,थ्श्रा7 7,ज्ञःा गु7। 6 ार C ` ,प7 उड्ड। तस्रौ,वि्रू ताहौ,7, 6ृ ये, 6 ार ` ,प7 ` ।,6ति यि्खिट हं ग3हं ग ` स्रतौ,पर उड्ड।

हभि ण7 (A)? यं अभिव कर्ि इा7िडा 7,6 ार A ` ,6ृ ये, प7 ` ।,द ध्पय,` सं ।ि7 पर। 6 ार B ` ,6ृ ये, प7 ` ।,ज्ञ ध्पय,` , ' ।भ पर हाक 6 ार C ` ,6ृ ये, प7 ` ।,त्त ध्पय,` सं ।ि7 पर उड्ड हाक ` ़ ददम ध्पय,` । ' ।भ ह.ि स्रा ि याप्र थ्श्रा7 7,6 ार A ` , 6ृ ये, प7 ` ।,म ध्पय,` ,' ।भ पर। 6 ार B ` ,6ृ ये, प7 ` ।,त्त ध्पय,` सं ।ि7 पर हाक 6 ार C ` ,6ृ ये, प7 ` ।,ज्ञ ध्पय,` ,' ।भ पर उड्ड हाक ` ़ ी/रु ध्पय,` । ' ।भ ह.ि स्रा ि याप्र हाक फरं ।7 7, 6 ार A ` ,6ृ ये, प7 ` ।,़ ध्पय,` ,' ।भ पर। 6 ार B ` ,6ृ ये, प7 ` ।,ज्ञ ध्पय,` ,' ।भ पर हाक 6 ार C ` ,6ृ ये, प7 ` ।,रु ध्पय,` सं ।ि7 पर उड्ड हाक ` ़ /ऽ ध्पय,` । ' ।भ ह.ि स्रा ि या।

` ारम (R)? तस्र अैभावित र्लि अलेस रम उ7ा7,हाक ' ` र7,पर ` ल पाऊैग,ि ` लै,5 हद्धितस्र अलाक्रा7 र्लि ता ` क

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(a) Assertion (A) is true and Reason (R) is false./ हभि ण7 (A) अ़ृय ` क्हाक ारम (R) हअ़ृय ` क
(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A)./हभि ण7 (A) हाक ारम (R) इा7ौ,अ़ृय ` ैक ' ि7 ` ारम (R) हभि ण7 (A) ` । अं सर्ं प2्टसे रम 7 ' सैं क
(c) Assertion (A) is false and Reason (R) is true./ हभि ण7 (A) हअ़ृय ` क्हाक ारम (R) अ़ृय ` क
(d) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A)./हभि ण7 (A) हाक ारम (R) इा7ौ,अ़ृय ` ैक्हाक ारम (R) हभि ण7 (A) ` । अं सर्ं प2्टसे रम ` क

8. Find the positive square root of $207 - 54\sqrt{6+4\sqrt{2}}$

$207 - 54\sqrt{6+4\sqrt{2}}$ ` । ण7ाृ ले वगर्मल 8ात ` र्स 5।

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(a) $9 - 3\sqrt{3}$
(b) $9 - 3\sqrt{2}$
(c) $9 - 2\sqrt{2}$
(d) $9 - 2\sqrt{3}$

9. From a cask filled with 867 litres of wine, y litres are first drawn and replaced with water. After the first replacement the ratio of wine and water in the cask, when expressed in the lowest form, is given as a : b. From this mixture y litres are drawn and replaced with water. The ratio of wine to water in the cask after the second replacement, when expressed in the lowest form, is given 169:120. Find the value of (y + a + b).

़/रु ' स्टर वाथ्श्र अ,भर,5 पस्रा,आ। पं ' ,y ' स्टर वाथ्श्र ि7 ि स गथ्श्र हाक ढअ,पा7स अ,6र्ति णापित ि या गया। 6णल 6र्ति णाप7 ` ,उाइ पस्रा,लै,वाथ्श्र हाक पा7से । ि7-7तल क्प लै,9्यक ह7ुपात a : b ' क थ्अ लिछम अ,y ' स्टर ि7 ि । गया हाक ढअे ,' णा7 पर पा7स र्लि ाया गया। इस्रर,6र्ति णाप7 ` ,उाइ पस्रा,लै,वाथ्श्र हाक पा7से । ि7-7तल क्प लै,9्यल्त ह7ुपात द/ष ?दीऽ ' क(y + a + b) ` । ला7 8ात ` र्स 5।

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(a) 224
(b) 220
(c) 222
(d) 221

10. P and Q can do a job in 90 days, Q and R can do it in 112.5 days, while P and R can do it in 150 days. X is five times as efficient as P, Y is two-thirds as efficient as Q, and Z is 2.5 times as efficient as R. Determine the number of days required to complete the same job if X, Y and Z work together.

P हाक Q 5 ` ायश्रे ा,छ् इिगौ,लै,` र अे त,ैक Q हाक R थ्अ, ददीन्ह इिगौ,लै,` र अे त,ैक.र्उे P हाक R थ्अ,दक्ष इिगौ,लै, ` र अे त,ैक P ` सर्तु ग्ा लै,X। पौब गुग्ा`ुर्ब ्क Q ` सर्तु ग्ा लै,Y। इा३तिं ाथ्रि ुर्ब ्क हाक R ` सर्तु ग्ा लै,Z। ीन्ह गुग्ा`ुर्ब ्क यदि X, Y हाक Z 5 आण` ायश्रे रत,ैक्ता,ढअ` ायश्रे ा,पख्र ` र7,` ,र्ि5 हावद्ये इिगौ,` सअैख्या 8ात` र्स 5।

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(a) $31\frac{3}{29}$ (b) $31\frac{1}{29}$

(c) $30\frac{28}{29}$ (d) $31\frac{2}{29}$

11. In an election, Candidate A received 27% of the votes, and Candidate B received 73% of the votes. If the difference in their votes was 1380, find the total number of votes.

5 बु7ाव लै। ढ-लङ्घवार A ` ा,ीरु 6तिढत लत र्लि । हाक ढ-लङ्घवार B ` ा,रुत 6तिढत लत र्लि । यदि ढ7 ,लतौ,` ा हैतर दत्र ऽ णा। ता, `ु लतौ,` सअैख्या 8ात` रै।

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(a) 2500 (b) 3000

(c) 2900 (d) 3700

12. On the sale of a certain item a shopkeeper offered two successive discounts such that in percentage terms the second discount was only $\frac{1}{n}$th of the first. If the overall discount was p% of the marked price of the item, then the selling price of the item after applying only the first discount was Rs y and the marked price of the item was Rs x.

Which one of the following is correct in respect of the Question and the Statements given below?

Statement 1: The values of n, p, y and x are respectively given as 3, 15.52, 8900 and 10000.

Statement 2: The values of n, p, y and x are respectively given as 4, 21.69, 12730 and 15500

5 विढ्ग र्व तु` सडू सपर 5 डु ा7इार 7,इा,ु र्लि एख्र थ्अ 6 ार 6 तावित` र्स 6तिढत` ,अेइभश्लै,इखसएख्र पं` सएख्र ा ` र्व्र $\frac{1}{n}$ वाठभाग णस यदि `ु एख्र र्व तु` ,हेर्ि त लख्य ा p% णस ता,` र्व्र पं` सएख्र ागखे र7,` ,उाइ र्व तु` ा विू य लख्य y ध्पय,णा हाक र्व तु` ा हेर्ि त लख्य x ध्पय,णा।

ढपराल्त 6ड7। तणा 7स्र,इिऽ ग5 ` णाौ,` ,अेैक्र लै,ि7-7र्ि नि त लै, अ,` ाक्रआ वि %म् अुय ्क

` णा7 द? n, p, y हाक $x$ ` ,ला7ु लद्य? त्ा दङ्गक्षी।.छ्ञ्> हाक दञ्ञ्ञ्ञ् ैक

` णा7 ी? n, p, y हाक $x$ ` ,ला7ु लद्य? मा ीदन्र्छ। दीरुत्ञ हाक दञ्ञ्ञ् ैक

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(a) Only Statement 2 is feasible./ र्व्र ` णा7 ी अैभव ्क

(b) Only Statement 1 is feasible./ र्व्र ` णा7 द अैभव ्क

(c) Neither of the two statements is feasible./इा7ौ,लै, अ,` ाश्र्भसे णा7 अैभव 7ेसं ्क

(d) Both Statements are feasible./इाौ,` णा7 अैभव ैक

13. The Product of two whole numbers is 1083 and their HCF is 19. Find the LCM.

इा,पख्र्अैख्याहौ,` ा गुम्ा7र्फ दऽ त ` र्क हाक ढ7 ा लं बल अलापवतेश्र दछ ्र्क घुबल अलापवृ यश्र8ात` रै।

IB ACIO GRADE II 17/01/2024 (Shift-04)

(a) 57 (b) 19

(c) 1083 (d) 38

14. If w_1 is the weight with cargo of a ship of length l_1, and w_2 and w_3 are the corresponding weights of ships having lengths l_2 and l_3 respectively, then

$$\left\{\frac{w_1}{l_1^2}\right\}(l_2-l_3)+\left\{\frac{w_2}{l_2^2}\right\}(l_3-l_1)+\left\{\frac{w_3}{l_3^2}\right\}(l_1-l_2)=0$$

Which one of the following is correct in respect of the Question and the Statements given below?

Statement 1: The weight of an empty ship varies as the square of the length of the ship.

Statement 2: The weight of the ship's cargo varies as the cube of the length of the ship.

Statement 3: The weight of the ship with cargo varies as the sixth power of the length of the ship.

यदि l_1 ैउाथ्र्वा ,5 .्ा. ` ा` ागाश्रे ,आण भार w_1, w_2 हाक w_3 ु लद्य? l_2 हाक l_3 ैउाथ्यौ,र्वा ,.्ा.ी,` ,भार` ,उराउर ्क ता,

$$\left\{\frac{w_1}{l_1^2}\right\}(l_2-l_3)+\left\{\frac{w_2}{l_2^2}\right\}(l_3-l_1)+\left\{\frac{w_3}{l_3^2}\right\}(l_1-l_2)=0$$

ढपराक्र 6ड7। तणा 7स्र,इिऽ ग5 ` णाौ,` ,अेैक्र लै,ि7-7र्ि नि त लै, लै,अ,` ाक्रआ वि %म् अुय ्क

` णा7 द? 5 न्र्ि स.्ा. ` ा भार .्ा. ` स`ैउाथ्रे ,वगश्रे , ह7ुआर परिवतश्रम् ्ाता ्क

` णा7 ी? .्ा. ` ,` ागाश्रे ा भारा .्ा. ` स`ैउाथ्रे ,घ7 ` , ह7ुआर परिवतश्रम् ्ाता ्क

` णा7 त? ` ागाश्रअे त .्ा. ` ा भारा .्ा. ` स`ैउाथ्रे सघात ए` ` ,ह7ुआर परिवतश्रम् ्ाता ्क

IB ACIO GRADE II 17/01/2024 (Shift-04)

(a) Statement 1 and Statement 3 taken together are sufficient./ कथन 1 और कथन 3 एक साथ पर्याप्त हैं।

(b) All the three statements together need to be true for sufficiency./ तीनों कथन एक साथ पर्याप्त हैं।

(c) Statement 1 and Statement 2 taken together are sufficient./ कथन 1 और कथन 2 एक साथ पर्याप्त हैं।

(d) Statement 2 and Statement 3 taken together are sufficient./ कथन 2 और कथन 3 एक साथ पर्याप्त हैं।

15. If the radius of a circle is decreased by 15%. By what percent area of the circle decrease?

यदि किसी वृत्त की त्रिज्या 15% कम कर दी जाए, तो वृत्त का क्षेत्रफल कितने प्रतिशत कम हो जाएगा?

IB ACIO GRADE II 17/01/2024 (Shift-04)

(a) 35.5%	(b) 27.75%
(c) 25.25%	(d) 20.5%

16. Daya is 5 times as old as his son. Six years hence the sum of their ages will be 72 years. What is the present age of Daya's son?

दया की आयु उसके पुत्र की आयु की 5 गुना है। छह वर्ष बाद उनकी आयु का योग 72 वर्ष होगा। दया के पुत्र की वर्तमान आयु क्या है?

IB ACIO GRADE II 17/01/2024 (Shift-04)

(a) 8 years/वर्ष	(b) 10 years/वर्ष
(c) 5 years/वर्ष	(d) 13 years/वर्ष

17. Find the difference between CI and SI on Rs.28,000, at 20% per annum, compounded half-yearly for 1 year.

रु. 28,000 पर 20% प्रति वर्ष की दर से 1 वर्ष के लिए अर्धवार्षिक रूप से संयोजित चक्रवृद्धि ब्याज और साधारण ब्याज के बीच का अंतर ज्ञात कीजिए।

IB ACIO GRADE II 17/01/2024 (Shift-04)

(a) Rs.250	(b) Rs.270
(c) Rs.280	(d) Rs.300

18. A certain sum of money amounts to 13/5 of itself in 10 years on simple interest. What is the rate of interest per annum?

10 वर्षों में साधारण ब्याज पर एक निश्चित धनराशि स्वयं की 13/5 हो जाती है। प्रति वर्ष ब्याज दर क्या है?

IB ACIO GRADE II 17/01/2024 (Shift-04)

(a) 16%	(b) 17%
(c) 15%	(d) 18%

19. (x, y) is a pair of positive integers such that LCM (x, y) – HCF (x, y) = 143 and $x > y$.

Which one of the following is correct in respect of the Question and the Statements given below?

Statement 1: There are three possible values of HCF (x, y).

Statement 2: The minimum value of $(x - y)$ is 7.

Statement 3: There are 6 pairs of (x, y) that satisfy the given conditions.

(x, y) धनात्मक पूर्णांकों का एक युग्म इस प्रकार है कि LCM (x, y) – HCF (x, y) = 143 और $x > y$ है।

नीचे दिए गए प्रश्न और कथनों के संबंध में निम्नलिखित में से कौन सा सही है?

कथन 1: HCF (x, y) के तीन संभावित मान हैं।

कथन 2: $(x - y)$ का न्यूनतम मान 7 है।

कथन 3: (x, y) के 6 युग्म हैं जो दी गई शर्तों को पूरा करते हैं।

IB ACIO GRADE II 17/01/2024 (Shift-04)

(a) Only Statements 1 and 2 are correct./ केवल कथन 1 और 2 सही हैं।

(b) All three statements are correct./ तीनों कथन सही हैं।

(c) Statements 1 and 3 are correct but Statement 2 is incorrect./ कथन 1 और 3 सही हैं लेकिन कथन 2 गलत है।

(d) Statement 1 is incorrect but Statements 2 and 3 are correct./ कथन 1 गलत है लेकिन कथन 2 और 3 सही हैं।

20. An item costing 1640 is being sold at a 15% loss. If the price is further reduced by 40%, then find the selling price.

1640 रुपये मूल्य की एक वस्तु 15% हानि पर बेची जा रही है। यदि कीमत में 40% की और कमी कर दी जाए, तो विक्रय मूल्य ज्ञात कीजिए।

IB ACIO GRADE II 17/01/2024 (Shift-04)

(a) Rs.1073.2

(b) Rs.836.4

(c) Rs.756.2

(d) Rs.665.8

ANSWER KEY

1.(b)	2.(a)	3.(a)	4.(a)	5.(b)	6.(c)	7.(b)	8.(b)	9.(d)	10.(b)
11.(b)	12.(c)	13.(a)	14.(c)	15.(b)	16.(b)	17.(c)	18.(a)	19.(d)	20.(b)

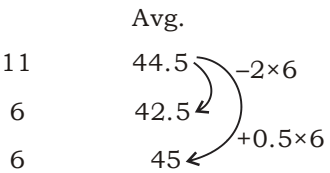
SOLUTIONS

1. (b)

Middle numbers = (6 × 42.5) + 6(45) – (11 × 44.5)

= 525 – 489.5 = 35.5

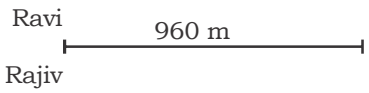
Alternate Method:



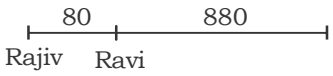
Net deviation = – 12 + 3 = –9

Middle number = 44.5 – 9 = 35.5

2. (a)



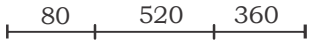
Statement I:



Statement II:

R_s = Ravi speed = 8m/s

Statement III:



Relative distance = 80 mtr. time by ravi = $\frac{520}{8}$ = 65 sec.

ATQ,

Speed of Rajiv = $\frac{600}{65} \neq 10$ m/s

∴ No statement support the fact that speed Rajiv is 10 m/s

3. (a)

We know,

Length of bridge + Length of train = Speed × time

$\Rightarrow L_b + 348 = 36 \times \frac{5}{18} \times 50$

$\Rightarrow L_B = 500 - 348 = 152$m

4. (a)

	A	B	C	
Price	132	160	y	
Quantity	9	: 2	: 1	= 12

Cost = $\frac{1188 + 320 + y}{12} = \frac{1508 + y}{12}$

Now, MP = 238

SP = $\frac{5}{6} \times 238$

Also, Profit = 40% = $\frac{7}{5}$

$\therefore \frac{5}{6} \times 238 = \frac{7}{5} \times \frac{(1508 + y)}{12}$

1700 = 1508 + y

$\Rightarrow$ y = 192

5. (b)

	A		D
Investment	17500		35000
Ratio	1	:	2

Dinesh share = $\frac{2}{3} \times 9900$

= Rs.6600

6. (c)

	A	B	C
Investment	$\frac{11}{5}$	$\frac{7}{2}$	$\frac{15}{8}$
	88	: 140	: 75

A's share = (88 × 4) + 88 × 8 × $\left(\frac{100 + P}{100}\right)$ = 352 +7.04 (100 + P)

B's share = 140 × 12

C's share = 75 × 12

Now,

(B + C)'s share = 138584 – 50864 = 87720

$\therefore \frac{A}{B + C} = \frac{352 + 7.04(100 + P)}{215 \times 12}$

$= \frac{50864}{87720}$

$\Rightarrow$ 352 + 704 + 7.04P = 1496

P = $\frac{440}{7.04}$ = 62.5%

7. (c)

	D	E	F
A	x	x	$3x$
B	4y	3y	y
C	z	$5z$	z

$\begin{bmatrix} A & B & C \\ 5x & 8y & 7z \end{bmatrix} \rightarrow$ Total

ATQ,

$-x + 20y - 3z = 114$ ...(I)

$4x - 9y + 25z = 267$ ...(II)

$24x + 5y - 7z = 60$ ...(III)

Equation (I) × 4 + (II)

$\Rightarrow 71y + 13z = 723$ ...(IV)

Equation (II) × 6 – (III)

$\Rightarrow 59y + 157z = 1542$ ...(V)

Now, from (IV) and (V)

$4189y + 767z = 42657$

$-4189y + 11147z = 109482$

$11914z = 152139$

$\Rightarrow z = \frac{152139}{11914}$

Hence, though above equation have unique solution but is not giving the required solution.

$\therefore$ Assertion is false but reason is true.

8. (b)

$A = 207 - 54\sqrt{6+4\sqrt{2}}$

$= 207 - 54\sqrt{2^2 + (\sqrt{2})^2 + 2 \times 2\sqrt{2}}$

$= 207 - 54\left(2+\sqrt{2}\right)$

$= 207 - 108 - 54\sqrt{2}$

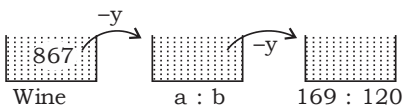
$= 99 - 54\sqrt{2}$

$= 9^2 + (3\sqrt{2})^2 - 2 \times 9 \times 3\sqrt{2}$

$A = (9 - 3\sqrt{2})^2$

$\Rightarrow \sqrt{A} = 9 - 3\sqrt{2}$

9. (d)



Finally, $\frac{\text{Wine}}{\text{Total}} = \frac{169}{289}$

We know, that same activity has been repeated twice then, for same multiplicating factor (MF)

[(Wine quantity left) in ratio wrt. total quantity] = MF × MF = $\frac{169}{289}$

$\Rightarrow (MF)^2 = \left(\frac{13}{17}\right)^2$

$\Rightarrow MF = \frac{13}{17} = \frac{\text{Wine}}{\text{Total}}$

$\Rightarrow \frac{\text{Wine}}{\text{Water}} = \frac{13}{4}$ [after I step]

$\therefore \frac{a}{b} = \frac{13}{4}$ ...(1)

Also,

$y = 867 \times \frac{4}{17} = 204$

$\therefore y + a + b = 204 + 13 + 4$

$= 221$

10. (b)

$P + Q \rightarrow 90$ — 5

$Q + R \rightarrow \frac{225}{2}$ — 4 → 9 × 25 × 2 = 450 units

$P + R \rightarrow 150$ — 3

Efficiency of R = $\frac{(4+3-5)}{2} = 1$

Efficiency of Q = $\frac{(5+4-3)}{2} = 3$

Efficiency of P = $\frac{(5+3-4)}{2} = 2$

Now,

P	Q	R	X	Y	Z
2	3	1	10	2	$\frac{5}{2}$

4 : 6 : 2 : 20 : 4 : 5

Required time = $\frac{450 \times 2}{20+4+5}$

$= \frac{450 \times 2}{29} = \frac{900}{29} = 31\frac{1}{29}$

11. (b)

A B

27% 73%

46%

ATQ,

46 units → 1380

100 units → $\frac{1380}{46} \times 100 = 3000$

12. (c)

Given

$D_2 = \frac{1}{n} D_1$

Effective D = p%

also, MP × D_1 = y (MP = x)

Statement -I:

n	p	y	x
3	15.52	8900	10,000

Discount (MP – SP) = 1100

then, $D_1 = \frac{1100}{10000} \times 100 = 11\%$

$D_2 = \frac{11}{3}$

$\Rightarrow p = D_1 + D_2 - \frac{D_1 \times D_2}{100}$

$= \frac{44}{3} - \frac{121}{300} \neq 15.52$

Statement-II

$D_1 = 15500 - 12730 = 2770$

$\Rightarrow D_1\% = \frac{2770}{15500} \times 100 = 17.87 \approx 18\%$

then, $D_2 = \frac{18}{4} = 4.5$

$p = 22.5 - \frac{81}{100} \neq 21.69$

Hence, both statement are incorrect.

13. (a)

A × B = 1083

HCF (A, B) = 19

then,

A × B = HCF × LCM

1083 = 19 × LCM

$\Rightarrow$ LCM = 57

14. (c)

$\frac{w_1}{l_1^2}(l_2 - l_3) + \frac{w_2}{l_2^2}(l_3 - l_1) + \frac{w_3}{l_3^2}(l_1 - l_2) = 0$ ...(A)

$w_1 \rightarrow Ship_1 + cargo = a_1 + b_1$

$w_2 \rightarrow Ship_2 + cargo = a_2 + b_2$

$w_3 \rightarrow Ship_3 + cargo = a_3 + b_3$

also,

$a \propto l^2 \rightarrow$ statement I ...(1)

$b \propto l^3 \rightarrow$ statement II ...(2)

$w \propto l^6 \rightarrow$ statement III ...(3)

From (1) and (2)

$\left.\begin{aligned} a &= \alpha l^2 \\ b &= \beta l^3 \\ w &= \gamma l^6 \end{aligned}\right\}$ Putting these values in equation (A)

$\Rightarrow \frac{(\alpha l^2 + \beta l_1^3)}{l_1^2}(l_2 - l_3) + \frac{(\alpha l_2^2 + \beta l_2^3)}{l_2^2}$

$(l_3 - l_1) + \frac{(\alpha l_3^2 + \beta l_2^3)}{l_3^2}(l_1 - l_2) = 0$

$\Rightarrow \alpha(l_2 - l_3) + \beta(l_1 l_2 - l_1 l_3) + \alpha(l_3 - l_1) + \beta(l_2 l_3 - l_2 l_1) + \alpha(l_1 - l_2) + \beta(l_3 l_1 - l_3 l_2)$

$= \alpha l_2 - \alpha l_3 + \beta l_1 l_3 - \beta l_1 l_3 + \alpha l_3 - \alpha l_1 + \beta l_2 l_3 - \beta l_2 l_1 + \alpha l_1 - \alpha l_2 + \beta l_3 l_1 - \beta l_3 l_2 = 0$

Which is true

So, only statement I and II taken together are sufficient to answer.

15. (b) $15\% = \frac{3}{20}$

	Old	New
Radius	20	17
$A \propto$ (Radius)²	400	289

$\therefore$ Required% $= \frac{400 - 289}{400} \times 100$

$= \frac{111}{4} = 27.75\%$

16. (b)

Let present age of daya's son = S

Given,

D = 5S

A.T.Q,

D + 6 + S + 6 = 72

$\Rightarrow$ D + S = 60

$\Rightarrow$ S = 10 years

17. (c)

$SI = 28000 \times \frac{20}{100}$

= 5600

$CI \Rightarrow$ Eff. rate = $10 + 10 + \frac{100}{100}$

= 21%

$CI = \frac{21}{100} \times 28000 = 5880$

$\therefore$ Difference = Rs. 280

Alternate Method:

Eff. SI rate = 20%

Eff. CI rate = 21%

Then,

Difference = 1% of Principal

$= \frac{28000}{100} \times 1 = \text{Rs. } 280$

18. (a)

$\text{Amount} = \frac{13}{5}P$

$\Rightarrow \text{SI} = \left(\frac{13}{5} - 1\right)P = \frac{8}{5}P$

A.T.Q,

$= \frac{8}{5}P = \frac{P \times 10 \times R}{100}$

$\Rightarrow R = 16\%$

19. (d)

Let,

hcf $(x_1, y_1) = d$

$x = dx_1$

$y = dy_1$

$\because$ x_1 and y_1 are co-prime

$\therefore$ hcf $(x_1, y_1) = 1$

and LCM $(x, y) = dx_1y_1$

LCM (x, y) – HCF $(x, y) = 143$

Then,

$dx_1y_1 - d = 143$

$d(x_1 y_1 - 1) = 143 = 11 \times 13$

d	1		13		11		143	
$x_1 \times y_1$	144		12		14		2	
	x_1	y_1	x_1	y_1	x_1	y_1	2	1
	144	1	12	1	14	1		
	16	9	4	3	7	2		

$\Rightarrow$ d has 4 possible values

$\Rightarrow (x_1, y_1) \Rightarrow 7$ possible values

min. value of $(x - y) = 16 - 9 = 7$

Hence,

Options (d) is correct

20. (b)

$SP_1 = \frac{1640}{100} \times 85$

$SP_2 = \frac{3}{5} \times \frac{1640}{100} \times 85$

= Rs. 836.4

IB ACIO GRADE II

18/01/2024 (Shift-01)

05

1. A and B together can complete a certain work in 54 days. They work together for 12 days. The remaining work was completed by A, B and C together in 28 days. If the work done by B in 6 days is equal to the work done by C in 9 days, then A alone can complete two-thirds of the work in ___days.

A दाक्षB ौंह ,र f,` कमिनिज्ञत ,यं ,।।ई सिमाऐ एपीा ,र` ,ता। लाक्षव।08 सिमाएत, ., ` ।7। ,यं ,रता।लाक्षनाक्ष ,यं A ट B दाक्षC जरा ौंह ,र 83 सिमाऐ एपीा f, या गया। यसि B जरा॒ सिमाऐ ए्f, या गया ,यं C जरा स् सिमाऐ ए्f,. ग. ,यं ,।श्राश्र लाक्षता। A द,ह।साक्षतिलणं ,यं ,।।___ सिमाऐ एपीा ,र` ,ता लाक्ष

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) 108
(b) 216
(c) 144
(d) 180

2. A vessel contains a solution of acid and water in the ratio 5: 7. When 9 litres of the solution are taken out and the vessel is filled with equal quantity of acid, the ratio of acid and water in the vessel become 9 : 7. How many litres of solution was there in the vessel, initially?

., श्तंम ै एदक्ह दाक्षपामक,ा दमुपात इ 3 : लाक्ष2श् स् हक्षर विहयम मि,हा 2ाता लाक्षदाक्षश्तंम ,।।श्राश्र ाक्ष ै एदक्ह ` ।भरा 2ाता लाक्षता।श्तंम ै एदक्ह दाक्षपामक,ा दमुपात स् 3 : ला।2ाता लाक्ष ?ारम्भ ै एश्तंम ै ए्f, तमा हक्षर विहयम ा7ा6

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) 36
(b) 30
(c) 24
(d) 42

3. 27 percent of a number exceeds 13 percent of the same number by 56. What is the value of the number?

f,`क ख्या ,ा 8: ?तिनातट र्` ख्या ,।0ड ?तिनात`।इ द[ा, लाक्षत् ` ख्या ,ा ै ाम f, तमा लााा6

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) 400
(b) 380
(c) 360
(d) 420

4. The product of two consecutive even numbers is 1088. What is the difference of the larger number and the square of the smaller number?

सा।/ै ागत``ै ` ख्यादाए,ा गुधमफह 0उउउ लाक्षश् क्षे ख्याट ता7ाा ग्रक्षे ख्या ,।वगं ,।श्क्ष f, तमा दहर लााा6

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) 768
(b) 990
(c) 1024
(d) 842

5. The ratio of two numbers is 3 : 8. If the sum of both the numbers is 220, then what is the smaller number among both the numbers?

सा।` ख्यादाए,ा दमुपात ड 3 उ लाक्षयसि सामाऐ ख्यादाए,ा यााफह 88> लाट ता।सामाऐ ख्यादाऐ ए ग्रक्षे ख्या ,।ाक्षेट कलाक्ष

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) 120
(b) 220
(c) 60
(d) 20

6. The smallest prime number that is a divisor of 17408 is 2 ($17408 = 17 \times 2^{10}$). What is the sum of digits of the greatest prime number, which is a divisor of 17391?

0ंृ >उ ,कभा2,ट` ४ ।ग्रक्षदभान्य` ख्या 8 लाक्ष(17408 = 17 × 2^{10}) 17391 ,कभा2,ट` ४ ।श्ू क्षदभान्य` ख्या ,।दएाए,ा यााफह f, तमा लााा6

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) 5
(b) 6
(c) 8
(d) 4

7. 20 percent of P's income is equal to 10 percent of Q's income and 10 percent of Q's income is equal to 20 percent of R's income. If R's income is Rs.13000, then what is the total income of P, Q and R?

P ,कदाय ,ा 8> ?तिनातट Q ,कदाय ,।0> ?तिनात ,।श्राश्र लाक्षदाक्षQ ,कदाय ,ा 0> ?तिनातट R ,कदाय ,।8> ?तिनात ,।श्राश्र लाक्षयसि R ,कदाय 0ड>>> ढपय।लाट ता।P, Q दाक्षR ,क ,ुह दाय f, तमकलााक

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) 78000
(b) 65000
(c) 52000
(d) 39000

8. The average weight of a class of 13 students is 60 kg. If 2 new students of weight 42 kg and 48 kg are added to the class, then what will be the new average weight of 15 students?

0ड वि4ाा7िंयाए,क., ,षा ,ा दोअत व2म 60 kg लाक्षयसि ,षा ै ए42 kg दाक्ष48 kg व2म वाह।8 म. वि4ाा7ांकनाौं ह ला।2ाता।लाक्ष ता।0ड वि4ाा7िंयाए,ा मया दोअत व2म f, तमा लााा6

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) 58.5 kg
(b) 59 kg
(c) 61 kg
(d) 58 kg

9. A sum becomes 2.89 times of itself in 2 years when invested at compound interest (compounded annually). What is the annual rate of interest?

ज्ञ/ वक्षि %क्षा2 क्रवाज़िं, धप ` ।ज्ञ/ वक्षि f, या 2 ाम।वाहारु पर मिवश्रा ,रमा पर ., रानि 8 वक्ष ै ए9वयए ,क8क्र्स गुमा ला 2ातक लाभ वाज़िं, %क्षा2 स्र f, तमकलाभ

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) 80% (b) 50%
(c) 40% (d) 70%

10. An article is marked $x\%(0 < x < 40)$ above its cost price. It is sold by giving $\frac{x}{2}\%$ discount on its marked price. If there is a profit of $10\frac{1}{2}\%$, then what is the value of x?

., व9तु पर ़्ते ,। /य ै ीय `। $x\%$ $(0 < x < 40)$ दचि, ै ीय दि़्ि त f, या गया लाभ ऐ ।ऐ ,।दि़्ि त ै ीय पर $\frac{x}{2}\%$,कर्भ़े सा़ र थ्क्षा 2ाता लाभ यसि $10\frac{1}{2}\%$,ा हाभ ?ाव्त लाभा लाभ़ता। x ,ा ै ाम f, तमा लाभ

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) 35 (b) 25
(c) 30 (d) 20

11. A circular path is 800 m long. Beena and Arun run in opposite directions from the same point A on the path at the same time. They continue to run after they meet for the first time. Beena runs another $53\frac{1}{3}$ seconds to arrive at A, while Arun runs another 2 minutes to get to point A.

Which of the following statements is/are correct?

Statement I: The speed of Beena is 6 m/sec.

Statement II: The ratio of the speeds of Arun and Beena is 2 : 3.

., वृक्षा,र पा ,कहक्षा़ं 800 m लाभ थ्क्षा दाक्ष द ढघ ., लक्ष `ै य पर पा पर ., लक थ्ग़ु A `।विपरक्ष स्माद ाएै ़्सूअ़क्षा। लाभ पल्हकथार ी हमा।,।थास भकवा।सूअ़क्षा 2ारकरद्धत।लाभ A पर पलुभ़ा मा। ,।हि. थ्क्षा $53\frac{1}{3}$ `।ुए दाक्षसूअ़क्षा कलाभ 2थf, A पर पलुभ़ा मा।,। हि. दढघ 8 ी मश़ दाक्षसूअ़क्षा लाभ

मिबमहि द्धित ै ऐ ।, ।क्ष्क़े ़्मे ।, 7ाम ` लकलाभ

,7ाम I: थ्क्षा ,कज़्ञाह 6 m/sec लाभ

,7ाम II: द ढघ दाक्षथ्क्षा ,कज़्ञाह ,ा दमुपात 8 3 ड लाभ

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) Neither I nor II/म ता।I दाक्षम लकII
(b) I and II/I दाक्षII
(c) II only/,क्षह II
(d) I only/,क्षह I

12. A bus starts running with the initial speed of 6 km/hr and its speed increases every hour by certain amount. If it takes 14 hours to cover a distance of 630 km, then what will be hourly increment in the speed of bus?

., ़्े 6 km/hr ,क?ारम्भि, ज्ञाह ` ।ज्ञहमा ?ारम्भ ,रतकलाभ दाक्ष?-या। बक्ष्।ऐ ,कज़्ञाह ै ए., मिनिज्ञत वक्षि लाभक लाभ यसि 630 f, ै क,कसीकतय ,रमा ै ़्ए़्े ।0 बक्ष्।हगत।लाभ़ता।़्े ,क ज्ञाह ै ए?ति बक्ष् वक्षि f, तमकलाभक

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) 5 km/hr (b) 10 km/hr
(c) 6 km/hr (d) 5.2 km/hr

13. Select the option that is true regarding the following labelled Assertion (A) and Reason (R).

Assertion (A): The value of

$$\frac{\left[(3.9)^3 + 9 \times 1.3 \times 4.29 + 11.7 \times (1.1)^2 + 1.331\right]}{\left[1.23 \times 1.23 + 0.77(0.77 + 0.6 \times 4.1)\right]}$$

is 31.25.

Reason (R): Using $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$ and $(x + y)^2 = x^2 + y^2 + 2xy$

़्े वि,ʻप ,ा ज्ञयम ,कि. 2।।मिबमहिद्धित दभि,7ाम (A) दाक्ष ,रघ (R) ,ा एक्ष्ै ऐ -य लाभ

दभि,7ाम (A):

$$\frac{\left[(3.9)^3 + 9 \times 1.3 \times 4.29 + 11.7 \times (1.1)^2 + 1.331\right]}{\left[1.23 \times 1.23 + 0.77(0.77 + 0.6 \times 4.1)\right]}$$

,ा ै ाम ड0क्ष्ड लाभ

,रघ (R): $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$ दाक्ष $(x + y)^2 = x^2 + y^2 + 2xy$,ा ़्पयाग ,र,ा

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) A is true and R is false./A ` -य लाभ़दाक्षR द ` -य लाभ
(b) Both A and R are true but R is not a correct explanation of A./A दाक्षR समाऐ -य लाभहf, म R, A ,ा ` लक9प्एक रघ मलक्षलाभ
(c) Both A and R are true and R is a correct explanation of A./A दाक्षR समाऐ -य लाभ़दाक्षR, A ,ा ` लक 9प्एक रघ लाभ
(d) A is false and R is true./A द ` -य लाभ़दाक्षR ` -य लाभ

14. The initial value of a car is Rs.4,50,000. The value of car depreciates by 40 percent of its initial value each year. What will be its value after 2 years?

., ,ार ,ा दारम्भि, ै ीय 4,50,000 ढपय।ा।,रा ,ा ै ीय ै ए ?-या। वक्ष ़्े ,।दारम्भि, ै ीय ,ा ʻ > ?तिशत ै ीयले लाभा लाभ 8 वक्ष थास ऐ ,ा ै ीय f, तमा लाभा6

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) Rs.154000 (b) Rs.162000
(c) Rs.192000 (d) Rs.184000

15. A question is given, followed by three statements labelled I, II and III. Identify which of the statements is/are sufficient to answer the question.
Question:
What is the value of (a – c)?
Statements:
I. (a + b) : c = 8 : 3 and a + b + c = 2772
II. a : (a + c) = 2 : 5
III. a : (b + c) = 34 : 43

,, ?नम सिया गया लक्ष्य ि2 ,ाथस तक्य ,7ाम I, II दाक्ष III सि ग. लक्ष्यपल्हाम ,क्रि. ि, ,ाक्षेम ा,7ाम ?नम ,ा ट्ट र सम्र ,ा हि. पयांव्त लक्ष्य
?नम3
(a – c) ,ा` ाम ि, तमा लक्ष्य
,7ाम3
I. (a + b) : c = 8 : 3 दाक्ष a + b + c = 2772
II. a : (a + c) = 2 : 5
III. a : (b + c) = 34 : 43

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) II and III/II दाक्ष III
(b) I and III only/, गह I दाक्ष III
(c) I only/, गह I
(d) I and II or I and III/I दाक्ष II या I दाक्ष III

16. The cost of item A is 40% more than that of item B and the cost of item B is 25% less than that of item C. The cost of A is decreased by 20%, while that of B and C are increased by 24% and 33%, respectively.
Statement I: The total new cost of items A, B and C is 24% less than the total initial cost of 2B and C.
Statement II: The total new cost of A and 2B is $33\frac{1}{3}\%$ more than the total initial cost of A and B.
Which of the above statements is/are correct?

व9तु A ,क,कैत व9तु B ,क,कैत` ा`ऽ0 द चि, लक्ष्यदाक्षव9तु B ,क,कैत व9तु C ,क,कैत` ा8इ0 ,` लक्ष्य A ,क,कैत 8ऽ0 ,` ,क2ातकलक्ष्य2 ४ि, B दाक्ष C ,क,कैतए/`नाउ 8 0 दाक्षडइ0 ४(ग्मं 2ातकलक्ष्य
,7ाम I: व9तुदाए A ट B दाक्ष C ,क,ुह मणं ,कैतए 2B दाक्ष C ,क,ुह ?रारिभ, ,कैताए ा8 0 ,` लक्ष्य
,7ाम II: A दाक्ष 2B ,क,ुह मणं ,कैतए A दाक्ष B ,क,ुह ?रारिभ, ,कैताए ा$33\frac{1}{3}\%$ द चि, लक्ष्य
रपरा्ाऽ` ए ा,ाक्षेम ा,7ाम` लककलक्ष्य

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) Neither I nor II/म ता। I दाक्ष म लक II
(b) Both I and II/ I दाक्ष II समाए
(c) II only/, गह II
(d) I only/, गह I

17. Consider all prime numbers between 1 and 100.
Which of the following statements is (are) correct?
a. A number that is one greater than a multiple of 5 has a unit digit 3 or 6.
b. The sum of all numbers which are prime and one greater than a multiple of 5 is 215.
c. The sum of all numbers which are one greater than a multiple of 5 and also one greater than a multiple of 6 is 92.

0` ा0ऽऽ ,ा४क्व ,के भकदभान्य` ख्यादाएपर विज्ञार ,कि. ा मिब्नहिद्धित` ए ा,ाक्षेम ा,7ाम` लककलक्ष्य
a. इ ,ाि,` कगुघ2` ा., द चि, ि,` के ख्या ,ा ण,ाणं दए ड या, लक्ष्य
b. इ ,ागुघ2` ा., द चि,` भकदभान्य` ख्यादाए,ा यागफह 80इ लक्ष्य
c. इ ,ागुघ2` ा., द चि, दाक्ष ,ागुघ2` ाभक., द चि,` भके ख्यादाए,ा यागफह र्8 लक्ष्य

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) a and b/a दाक्ष b
(b) b only/, गह b
(c) a and c/a दाक्ष c
(d) b and c/b दाक्ष c

18. What is the value of $15^3 - 12^3 - 27$?
$15^3 - 12^3 - 27$,ा` ाम ि, तमा लगा6

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) 1540
(b) 1340
(c) 1620
(d) 1480

19. If 75 percent of total articles are sold at a profit of 20 percent and remaining articles are sold at a loss of 20 percent, then what will be the overall profit percentage?

यसि` भकव9तुदाए,ा :इ ?तिनात भागट 8ऽ ?तिनात ,ाहाभ पर थ्झा गया लए दाक्षनाक्ष व9तुदाए,ा8ऽ ?तिनात ,कलमि पर थ्झा गया लए ता।,ह हाभ ,ा ?तिनात ि, तमा लगा6

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) 10%
(b) 12%
(c) 8%
(d) 5%

20. Total monthly income of A, B and C is Rs.1,02,720. A, B and C save 20%, 10% and 25%, respectively of their incomes. If the ratio of their monthly expenditures is 3 : 4 : 5, then what is the sum (in Rs.) of monthly incomes of A and C?

A, B दाक्ष C ,ककुह` ाि, दाय 0ऽ8द8ऽ ढपया। लक्ष्य A, B दाक्ष C दपमकदाय ,ा /`नाउ 8ऽ0ट 0ऽ0 दाक्ष 8इ0 थ्ज़त ,रता। लक्ष्य यसि रम, ।` ाि, खर्ज ,ा दमुपात ड 3` 3 इ लक्ष्य ता। A दाक्ष C ,क` ाि, दाय ,ा यागफह क्रढपया` ए ि, तमा लक्ष्य

IB ACIO GRADE II 18/01/2024 (Shift-01)

(a) 56,250
(b) 60,000
(c) 61,875
(d) 72,000

ANSWER KEY

1.(c)	2.(a)	3.(a)	4.(b)	5.(c)	6.(d)	7.(c)	8.(d)	9.(d)	10.(c)
11.(b)	12.(c)	13.(c)	14.(b)	15.(d)	16.(a)	17.(d)	18.(c)	19.(a)	20.(d)

SOLUTIONS

1. (c)
Given, A + B → 54 days
also, 6B = 9C

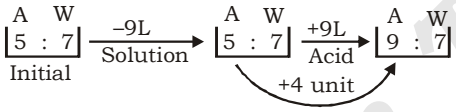
$$\frac{B}{C} = \frac{9}{6} = \frac{3}{2}$$

ATQ,
12(A + B) + 28(A + B + C) = 54(A + B)
⇒ 28C = 54(A + B) – 40(A + B)
⇒ 2C = A + B
∴ Efficiency of (A + B) = 4
Efficiency of B = 3
⇒ Efficiency of A = 1
∴ Total work = 54 × 4
Now,

A can do $\frac{2}{3}$ of the work in:-

$$\frac{54 \times 4}{1} \times \frac{2}{3} = 144 \text{ days}$$

2. (a)



(9 – 5) unit = 4 units → 9 ltr.
⇒ 12 units → 27 ltr.
∴ initial amount = (27 + 9) = 36 ltr.

3. (a)
Let the number be A
ATQ,

$$\frac{27}{100} \times A = \frac{13}{100} \times A + 56$$

$$\Rightarrow \frac{14}{100} A = 56$$

⇒ A = 400

4. (b)
Let the numbers be
x, $x + 2$
ATQ,
$x(x + 2) = 1088$
⇒ $x^2 + 2x - 1088 = 0$
⇒ x^2 $34x - 32x - 1088 = 0$
⇒ $x(x + 34) - 32(x + 34) = 0$
⇒ $(x - 32)(x + 34) = 0$
⇒ $x = 32$
∴ $x + 2 = 34$
Hence,
$(32^2 - 34) = (1024 - 34) = 990$

5. (c)

A	:	B
3	:	8

ATQ,
(3 + 8) unit = 11 units → 220
Smaller number = 3 units → 60

6. (d)
$17408 = 17 \times 2^{10}$
Consider 17391 = 17408 – 17
$= 17 \times 2^{10} - 17$
$= 17(2^{10} - 1)$
$= 17 \times (1024 - 1)$
$= 17 \times 1023 = 17 \times 3 \times 11 \times 31$
∴ Required sum of no. = (3 + 1) = 4

7. (c)
Given,

$$\frac{P}{5} = \frac{Q}{10} = \frac{R}{5}$$

P	:	Q	:	R
1	:	2	:	1

ATQ,
1 unit = 13,000
then, P + Q + R = 4 unit → 52000

8. (d)
ATQ,

$$\text{New average} = \frac{60 \times 13 + 42 + 48}{15}$$

= 58 kg

9. (d)
ATQ,

Ist year		IInd year
1		2.89
(100	:	289)$^{\frac{1}{2}}$
10	:	17

$$R = \frac{7}{10} \times 100 = 70\%$$

10. (c)
Let CP = 100
⇒ P = 10.5
SP = 110.5
Now by options:-
(c) x = 30%, MP = 130, D = 15%

$$\therefore \text{SP} = 130 \times \frac{17}{20} = 110.5$$

Hence, true

11. (b)
We know,

$$\frac{S_B}{S_A} = \sqrt{\frac{T_A}{T_B}} = \sqrt{\frac{2\times 60\times 3}{160}} = \frac{3}{2} \ldots\ldots(i)$$

then, distance covered by B $= \frac{160}{3} = 3x$

$= 160x$ mtr.
Distance covered by A $= 120 \times 2x = 240x$ mtr.
$\therefore 160x + 240x = 400x \rightarrow 800$
$\Rightarrow x = 2$
Statement I. 3 units $\rightarrow$ 6, which is the speed of Beena hence true.
Statement II. This statement is true by (i)

12. (c)
Let, speed increase by x km/hr every hours.
ATQ,
$6 + (6 + x) + (6 + 2x) + \ldots + (6 + 13x) = 630$
We know,

$$\text{Sum} = \frac{n}{2}(a + l)$$

$$630 = \frac{14}{2}(6 + 6 + 13x)$$

$\Rightarrow 13x = 78$
$x = 6$ km/hr

13. (c)

$$\frac{\left[(3.9)^3 + 9\times 1.3\times 4.29 + 11.7\times (1.1)^2 + 1.331\right]}{\left[1.23\times 1.23 + 0.77(0.77 + 0.6\times 4.1)\right]}$$

Consider numerator:-
$[3.9 + (1.1)]^3 = (3.9)^3 + (1.1)^3 + 3 \times (1.1)^2 (3.9) + 3 \times (3.9)^2 \times (1.1)$
$= (3.9)^3 + 1.331 + 11.7 \times (1.1)^2 + 9 \times 1.3 \times 4.29$
Hence, numerator $= (3.9 + 1.1)^3$
$= 125$
Now, denominator:-
$(1.23)^2 + (0.77)^2 + 0.77 \times 0.6 \times 4.1$
$= (1.23)^2 + (0.77)^2 + 2 \times (1.23)(0.77)$
$\Rightarrow (1.23 + 0.77)^2$
$= (2)^2 = 4$

$$\therefore \frac{125}{4} = 31.25$$

Hence, assertion is true and reason is also true and it explain it correctly

14. (b)

	Old	New
I	5	3
II	5	3
	25	09

ATQ,
25 units $\rightarrow$ 450000
09 units $\rightarrow \frac{450000}{25} \times 09$
$= 162000$

15. (d)
Given,
$a + b + c = 2772$
I[st]- Statement
$(a + b) : c = 8 : 3$
$a + b + c = 11$ unit
11 unit = 2772
1 unit = 252
$c = 3$ unit $= 252 \times 3 = 756$
$a + b = 8$ unit $= 252 \times 8 = 2016$
II[nd]- Statement
$a : (a + c) = 2 : 5$
$a + b + c = 7$
7 unit = 2772
1 unit = 396
$a = 2$ unit $= 396 \times 2 = 792$
$(a - c) = 792 - 756 = 36$
III[rd]- Statement
$a : (a+c) = 34 : 43$
$a + b + c = 77$
77 unit $\rightarrow$ 2772

$$1 \text{ unit} \rightarrow \frac{2772}{77} = \frac{252}{7} = 36$$

$a \rightarrow 3$ unit $= 34 \times 36$
$= 1244$
$(a - c) = (1244 - 756) = 488$

16. (a)

	A		B		C
	7		5		
			3		4
Old	21	:	15	:	20
New	$21\times\frac{4}{5}$		$15\times\frac{31}{25}$		$20\times\frac{133}{100}$

$$\Rightarrow \frac{84}{5} : \frac{93}{5} : \frac{133}{5}$$

$\Rightarrow$ 16.8 18.6 26.6 = 62
ATQ,
$2B + C = 50$
which is not more than sum of new $(A + B + C)$
$\Rightarrow$ Statement I incorrect
Now,
$A + 2B = 54$
$A + B = 36$
ATQ,

$$\Rightarrow \frac{54 - 36}{36} = \frac{1}{2} = 50\%$$

$\Rightarrow$ Statement II is incorrect

17. (d)
I. any number which is multiple of 5 has unit digit '5' or '0'. So, a number which is one more than multiple of 5 has unit digit '1' or '6'. hence statement I is false.
II. Said numbers are (5m + 1) and prime
$\Rightarrow$ 11, 31, 41, 61, 71
$\therefore$ sum = 215
Hence, statement II is true.
III. Required numbers are 31, 61
Hence sum = 31 + 61 = 92
hence statement III is true.

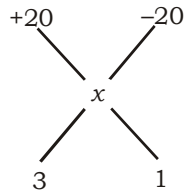
18. (c)
$15^3 - 12^3 - 27$
$= 15^3 - 12^3 - 3^3$
we know, if a + b + c = 0
Than, $a^3 + b^3 + c^3 = 3abc$
15 + (–12) + (–3) = 0
Hence,
$15^3 + (-12)^3 + (-3)^3 = 3 \times 15 \times (-12) \times (-3)$
= 1620

19. (a)
Let here be 10 items in number
ATQ,

$$\frac{6}{5}\times\frac{3}{4}+\frac{1}{4}\times\frac{4}{5}=\frac{9}{10}+\frac{2}{10}=\frac{11}{10}$$

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

SMART APPROACH:-



$$\Rightarrow \frac{20-x}{x+20}=\frac{1}{3}$$
$$\Rightarrow 60 - 20 = 4x$$
$$\Rightarrow x = \frac{40}{4} = 10\%$$

20. (d)
Given,
A + B + C = 102720

	A	B	C
Saving $\rightarrow$	20%	10%	25%
Exp. $\rightarrow$	80%	90%	75%
Exp. $\rightarrow$	3	4	5

Income $\Rightarrow 3\times\frac{5}{4}$ $4\times\frac{10}{9}$ $5\times\frac{4}{3}$

Income $\Rightarrow$ 27 : 32 : 48
ATQ,
107 units $\rightarrow$ 102720
then,

$$A + C = 75 \text{ units} \rightarrow \frac{102720}{107}\times 75$$
= Rs.72000

Intelligence Bureau
खुफिया विभाग
India भारत

IB ACIO GRADE II

18/01/2024 (Shift-02)

06

1. A shopkeeper sells an item by giving 25% discount on its marked price and still gains 35%. If the cost price of the item decreases by 10%, and he sells it by allowing 37.5% discount on the same marked price, then his gain percentage will be _____.

दअ ै ुआहे ार अि, े वक्तु आमन, अमज्ञंअित ।इय पर सएी लइ ै स्मार 0क्षता . 7ज्ञाइ फिर भे 5एी आ टाभ जाजा अरता ./7 यौं वक्तु आ स्‍य ।इय थ्श्री अ। . ।मणता . ब्र ज्ञाइ व. न, मन,े ज्ञंअित ।इय पर 53:एी लइ ै स्मार 0क्षता . ब्र तामन, आ टाभ जति2ात _____ . ।मा

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) 25% (b) 20.5%
(c) 25.5% (d) 30%

2. The average weight of some students in a section is 35.5 kg. Twelve of them whose average weight is 37 kg leave the section and another 5 students with weights 40 kg, 39.5 kg, 38.5 kg, 42 kg and 47.5 kg join the section, and thereby the average weight of the students in the section increases by 300 g. The number of students, initially, in the section, was:

अि,े , स्थ2ाह ।मअुल विस्त्व्ाि्रथांमआ ज्ञा7त वण ह 35.5 kg ./7 नह।म , म0र. विस्त्व्ाि्रे 6णिहआ ज्ञा7त वण ह 37 kg . ब्र , स्थ2ाह लासडे स्म. 7 ज्ञाइ ज्ञ् य ए विस्त्व्ाि्रे 6णिहआ वण ह 40 kg, 39.5 kg, 38.5 kg, 42 kg ज्ञाइ 47.5 kg . ब्र , स्थ2ाह ।म2ाा्ि ट . ।मणतम. ब्र ज्ञाइ /, जआर , स्थ2ाह ।मविस्त्व्ाि्रथांमआ ज्ञा7त वण ह 300 g 0ड्डणता ./7 जरंभ ।ब , स्थ2ाह ।मविस्त्व्ाि्रथांमअे ,ख्या अितहे ैा ?

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) 47 (b) 53
(c) 45 (d) 49

3. In an election between two candidates A and B, 15% of the voters did not cast their votes, 20% of the casted votes were declared invalid. The winning candidate got 8262 votes, which were 54% of the total valid votes.

Statement I: The candidate who was defeated got votes from 31.28% of the total voters in the list.

Statement II: The number of valid votes was 15500.

Which of the above statements is/are correct?

ै ।मनू ।ै वारांमA ज्ञाइ B अम0 8 दअ 8ुहाव ।ब्र थ्एी ।तै ।ताज्ञांमहम ज्ञपहा वाम्र ह.े त्टाब त्टामगद स्थ्री वाम्र ज्ञव्र गामित अर ैंद गद्र विण्ये नू ।ै वार आमढस्मस वाम्र ाि टब्र णामअुट व्र 0क्षांमअम एणी ग्रेम अ?ह I: . ।रहमवाटमनू ।ै वार आम्र , ह्रे ।म2ाा्ि ट अुट ।तै ।ताज्ञांम ।म, म5थ्.स्ल्ढी अमवाम्र ाि टम

अ?ह II: व्र वाम्रांमअे ,ख्या थ्एएश्रश्र ?ै

नपराक्ष ।म, मआह्रख, ।% मअ?ह ,.े . ?

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) Neither I nor II/ ह तामI ज्ञाइ ह .े II
(b) II only/ अ्बट II
(c) I only/ अ्बट I
(d) Both I and II/ I ज्ञाइ IIै ाम्रांम

4. A sum of 1200 becomes Rs.1560 at the rate of simple interest in 3 years. In how many years will the sum of Rs.800 amounts to Rs.1120 at the same rate of simple interest?

थ्स्श्रश्र क्रमयमअे राि2ाब 5 वन6 ।म, ।्षिरध स्याण अे ै र , मथ्एु4श्र क्रमयम. ।मणते ./7 , ।्षिरध स्याण अे , ।ाह ै र पर अितहमवन6 ।म ढश्र क्रमयमअे राि2ा थ्स्श्र क्रमयम. ।मणदगे ?

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) 5 years/वन6 (b) 3 years/वन6
(c) 6 years/वन6 (d) 4 years/वन6

5. The ratio of M, N and S is 2: 7: 9 respectively. If their sum is 360, then what is the difference between M and S?

M, N ज्ञाइ S आ ज्ञहुपात र ।2ा9 स 9 3 9 क ./7 यौं नहआ यामफट 54श्र . ।ब्र तामM ज्ञाइ S अम0 8 आ ज्ञंतर अितहा . ।मा

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) 120 (b) 140
(c) 160 (d) 180

6. P and R are at a distance of 296 km from each other at 7:45 a.m. After 15 minutes, P starts moving towards R at the speed of 32 km/h. At 8:30 a.m. R starts moving towards P at the speed of 8 km/h. At what time will they meet?

7:45 a.m. पर P ज्ञाइ R दअ ै इरम, म296 km अे ै ह्रे पर ./7 थ्ए ाि हा अम0ै ब P, 32 km/h अे 8ाट , मR अे ज्ञास 8टहा जरंभ अरता ./7 8:30 a.m. पर R, 8 km/h अे 8ाट , मP अे ज्ञास 8टहा जरंभ अरता ./7 वमअितहम0ण मा्ि टंमम्र

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) 4:20 pm (b) 2:45 pm
(c) 3:30 pm (d) 4:50 pm

7. In a company there are 44 employees. The average salary of 30 employees is Rs.4200 per month and the average salary of 10 employees among remaining 14 employees is Rs.6200 per month. If the average salary of all employees is Rs.7400 per month, then what is the per month average salary of the remaining 4 employees?

दअ अंपहे ।ंमष्ष आ।8ारे ८7 5श्र आ।8ारियांमआ ज्ञा7त वश्वह ष्सश्रश्र क्रमयमजति ।ा. ज्ञाा 2ाम ॰ष्ठ आ।8ारियां।म, मथ्श्र आ।8ारियांमआ ज्ञा7त वश्वह 4सश्रश्र क्रमयमजति ।ा. ८7 यौं ,भे आ।8ारियांमआ ज्ञा7त वश्वह 3ष्श्रश्र क्रमयमजति ।ा. .ाब तामम2ाम ष आ।8ारियांमआ जति ।ा. ज्ञा7त वश्वह अितहा .ामा?

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) Rs.42200
(b) Rs.34400
(c) Rs.37800
(d) Rs.35600

8. Let x be the least number of 5 digits, which when divided by 28, 40, 42 and 48, leaves remainder 6 in each case and x is divisible by 246. What is the sum of the digits of x?

।ह टे ण्दि अि x, ए ज्ञंआंमअे व. ,0,मलाम्ो ,ख्या .ाब ण्ि,मस्ढब ष्श्रब ष्स ज्ञा ष्ढ ,मभाग ेश्वमपर जंयम्ब क्रिोति ।ंम4 2ामफट ज्ञाता .7 ज्ञा x, स्र्4 ,मविभाज्य ८7 x अमज्ञंआंमआ यामफट अितहा .?

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) 13 (b) 12
(c) 15 (d) 14

9. A certain sum (in Rs.) is divided between A, B and C such that the ratio of shares of A and B is 3 : 1, that of B and C is 5 : 3 and that of C and D is also 5 : 3. If the difference between the shares of B and D is Rs.1,280, then what is the difference (in Rs.) of shares of A and C?

दअ हिंि28त ध्हराश्रि ठक्रमयम।ृम आमA, B ज्ञा C अम0 8 /, जआर विभािण्ति अिया ण्ताता .7अि A ज्ञा B अर्मा. क ांमआ ज्ञहुपात 5 9 ॰ .ाब B ज्ञा C अर्मा. क ांमआ ज्ञहुपात ए 9 5 .7ज्ञा C ज्ञा D अर्मा. क ांमआ ज्ञहुपात भे ए 9 5 ८7 यौं B ज्ञा D अर्मा. क ांम अम0 8 आ ज्ञंतर ॰ष्क्ष्ठश्र क्रमयम. ाब तामA ज्ञा C अर्मा. क ांमआ ज्ञंतर ठक्रमयम।ृम अितहा .?

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) 5,600 (b) 6,400
(c) 4,000 (d) 4,800

10. Selling price of a bat is Rs. 1144 and profit is 30 percent. If selling price is Rs. 704, then what will be the loss percentage?

दअ 0 टमआ विस्य ।ंइय ॰॰ष्ष क्रमयमज्ञा टाभ 5श्र जति2ात ८7 यौं विस्य ।ंइय 3श्र क्रमयम. ाब ताम. ाहि आ जति2ात अितहा .ामा?

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) 18% (b) 20%
(c) 15% (d) 10%

11. Select the option that is true regarding the following labelled Assertion (A) and Reason (R).

Assertion (A): The cost of 3 vadas and 4 samosas is Rs.195. If the cost of a samosa increases by 10% and that of a vada decreases by $\frac{1}{5}$, the cost of 2 vadas and 3 samosas is 139. The original cost of 2 vadas and 1 samosa is Rs.80.

Reason (R): Let cost of 1 vada and 1 samosa is Rs.x and Rs.y, respectively.

$3x + 4y = 195$ and

$$2 \times (1.1)x + 3 \times \frac{1}{5}y = 139.$$

न, विर्ज प आ 8यह अेण्दि ण्ामहि्हटिखित ज्ञभिअ?ाह (A) ज्ञा आरध (R) अम,0ंद्ध ।ंम,ैय ८7

ज्ञभिअ?ाह (A): 5 वत्त्घ्ज्ञा ष ,।ामअे अे।त ॰ध्ए क्रमयम८7 यौं दअ ,।ामअे अे।त ॰श्री 0ष्डण ाते .7ज्ञा दअ वत्त्घ्अे अे।त $\frac{1}{5}$ आ। .ामण ाते .ाब तामस वत्त्घ्ज्ञा 5 ,।ामअे अे।त ॰5क क्रमयम ण ाते ८7 स वत्त्घ्ज्ञा ॰ ,।ामअे ।इ अे।त ढश्र क्रमयम८7

आरध (R): ।हा अे ॰ वत्त्घ्ज्ञा ॰ ,।ामअे अे।त स।2ा9 x क्रमयमज्ञा y क्रमयम.7

$3x + 4y = 195$ ज्ञा $2 \times (1.1)x + 3 \times \frac{1}{5}y = 139$

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) A is true and R is false./A ,ैय .7ज्ञा R ज्ञ,ैय ८7
(b) Both A and R are true but R is not a correct explanation of A./ A ज्ञा R ॆ ीांम,ैय .ाब्टि्भ्हि R, A आ ,.े क्मा् अरध ह.ेे ८7
(c) Both A and R are true and R is a correct explanation of A./ A ज्ञा R ॆ ीांम,ैय .7ज्ञा R, A आ ,.े क्मा् अरध ८7
(d) A is false and R is true./A ज्ञ,ैय .7ज्ञा R ,ैय ८7

12. Which of the following statements is/are correct?

हि्हटिखित ।ंम, मआह्ख्1% मअ?ाह ,.े .%?

(i) $\sum (n^2 - n) = 330$; Where n = 1, 2 ,...,10
(ii) $\sum (n^2 + n) = 728$; Where n = 1, 2 ,...,12
(iii) $\sum (n^2 + 3n + 1) = 352$; Where n = 1, 2, ..., 8

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) (ii) only/अब्रट (ii)
(b) (i) only/अब्रट (i)
(c) (ii) and (iii)/(ii) ज्ञा (iii)
(d) (i) and (ii)/(i) ज्ञा (ii)

13. The simple interest on a sum for 6 years is Rs.29250. The rate of interest for the first 2 years is 7 percent per annum and for the next 4 years is 16 percent per annum. What is the sum?

दअ ६हराि2 पर 4 वन6आ ,ा७रध स्याण सक्सए४ क्रमयम-7 ज?ा। स वन6अमटिद स्याण ॅ र 3 जति2ात वानिक्ष ज्ञार ज्ञगटम৳ वन6अमटिद स्याण ॅ र ४4 जति2ात वानिक्ष -7 व. द्धहराि2 अितहे . ?

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) Rs.37500
(b) Rs.36600
(c) Rs.35400
(d) Rs.38300

14. The present population of a town is 98000. It increases every year at the rate of 40 percent. What was the population of the town 2 years ago?

दअ 2ा.र अे वत6ाह ण्ह,ंख्या क्ढ७क्ष्क्ष -7 य. .र वन6৳४ जति2ात अे ॅ र ,म0ঌहे -7 स वन6प.टम2ा.र अे ण्ह,ंख्या अितहे ?ा?

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) 55000
(b) 50000
(c) 45000
(d) 60000

15. The product of the three consecutive odd numbers is 2145. What is the Square of the middle number?

तेह स।ागत विन। ,ंख्याज्ञांमआ गुधहफट स्थ्ए -7 ।द्धा ,ंख्या आ वग6अितहा .ामा?

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) 289
(b) 169
(c) 121
(d) 225

16. A can complete a certain work in 36 days. B is $33\frac{1}{3}\%$ less efficient than A and C is 50% less efficient than B. All the three started the work together, but A left 9 days after the start of the work and B left 3 days before the completion of the work. In how many days was the whole work completed?

A अि,` हि28त आय6आम54 ँ हांम।मपड्ड अर ,अता -7 B, A ,म $33\frac{1}{3}\%$ आ। अु2ाट .7ज्ञार C, B ,मए४ आ। अु2ाट -7 तेहांमहम दअ ,ा?ा आय62ुप्र अियाब टक्षिह A हमआय62ुप्र .ाह्मअमक ँ ह 0ौ आय6लासडँ या ज्ञार B हमआय6पड्ड .ाह्म,म5 ँ ह प.टमआय6 लासडँ या पड्ड आय6अितहमाँ हांम।म,ज्ञा?

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) 28 (b) 29
(c) 32 (d) 30

17. A question is given, followed by three statements labelled I, II and III. Identify which of the statements is/are sufficient to answer the question.

Question:

What is the value of A when D = 7?

Statements:

I. A varies directly with the sum of B and C, B varies directly with D and C varies directly with D^2.

II. When D = 3, A = 33.

III. When D = 4, A = 52.

दअ ज्2ह ँ या गया .ब्र णि,अम0ौ तेह अ?ाह I, II ज्ञार III ँ द गद -7 प.8ाह अेणिद अि आह्नख़ा% मअ?ाह ज्2ह आ नछार ॅ ह्मअम टिद पयाक्ष -7

ज्2ह9

D = 7 .ाह्मपर A आ ।ाह अितहा .?

अ?ाह9

I. A आ ।ाह B ज्ञार C अमयामफट अमज्ञहुए।ाहुपाते .ब्र B आ ।ाह D अमज्ञहुए।ाहुपाते .7ज्ञार C आ ।ाह D^2 अमज्ञहुए।ाहुपाते -7

II. D = 3 .ाह्मपर A = 33 -7

III. D = 4 .ाह्मपर A = 52 -7

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) I and II/ I ज्ञार II
(b) I only/ अ्बट I
(c) I, II and III/ I, II ज्ञार III
(d) I and III/ I ज्ञार III

18. In a village, 90 percent people of the total population are literate and the remaining are illiterate. If the number of illiterate people is 1320, then what is the total population of village?

दअ गाब ।मअुट ण्ह,ंख्या ।मक्ष्क्ष जति2ात न्यक्ति ,ाबर .7ज्ञार 2ाम न्यशित हिरबर -7 यौं हिरबर न्यशितयांमअे ,ंख्या ४5स्क्ष्क्ष .ाब तामगाब अे अुट ण्ह,ंख्या अितहे .?

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) 13200
(b) 12200
(c) 12000
(d) 13000

19. A question is given, followed by three statements labelled I, II and III. Identify which of the statements is/are sufficient to answer the question.

Question:

What is the time (in second) taken by A to run the race?

Statements:

I. A beats B by 30 seconds and B beats C by 60 seconds.

II. A beats C by 90 seconds.

III. B's speed is the average of A's speed and C's speed.

दअ जƒह ीं या गया .ब्र णि ,अम0ौ तेह अ?ाह I, II ज्ञाइ III ीं द गद ऽ7 प.8ाह अे णिद अि आाह्रख,।% मअ?ाह जƒह आ नछ्रर ै ह्नमअम टिद पयाक्ष्त .%7

जƒह9

A लरा ै ाऱ्डपइ्ञ अरहम।ंमटिया गया ,।य ०,ञ्चांत्त ।ृंम अितहा .ऱ्

अ?ाह9

I. A, B आम5श्र ,ञ्चांत्त ,म.राता .7ज्ञाइ B, C आम4श्र ,ञ्चांत्त ,म .राता ऽ7

II. A, C आमक्श्र ,ञ्चांत्त ,म.रा ै त्ता ऽ7

III. A अे 8ाट ज्ञाइ C अे 8ाट आ ज्ञा7त B अे 8ाट ऽ7

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) I and III/I ज्ञाइ III

(b) II and III/II ज्ञाइ III

(c) I, II and III/I, II ज्ञाइ III

(d) I and II/I ज्ञाइ II

20. If $x^2 + \frac{1}{x^2} = 10$, then what is the value of $x^4 + \frac{1}{x^4}$?

यौं $x^2 + \frac{1}{x^2} = 10$.ाब्रतामा $x^4 + \frac{1}{x^4}$ आ ।ाह अितहा .ाम्रा

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) 98

(b) 100

(c) 96

(d) 102

ANSWER KEY

1.(a)	2.(a)	3.(c)	4.(d)	5.(b)	6.(c)	7.(b)	8.(c)	9.(d)	10.(b)
11.(a)	12.(d)	13.(a)	14.(b)	15.(b)	16.(b)	17.(c)	18.(a)	19.(a)	20.(a)

SOLUTIONS

1. (a)

Let, CP = 100

ATQ,

MP		CP
$(100+35)$	:	$(100-25)$
9	:	5

Now,

SP		CP
$9\times\frac{5}{8}$	:	$5\times\frac{9}{10}$
$\Rightarrow$ 5	:	4

diff.

Profit = 1

$\therefore$ P% = $\frac{1}{4}\times 100$

= 25%

2. (a)

Given,

Increased average = $35.5+\frac{300}{1000}=35.8$ kg

Let no. of students initially was x

ATQ,

$$\frac{35.5x-12\times 37+(40+39.5+38.5+42+47.5)}{(x-12+5)}=35.8$$

$$\Rightarrow \frac{35.5x-444+207.5}{x-7}=35.8$$

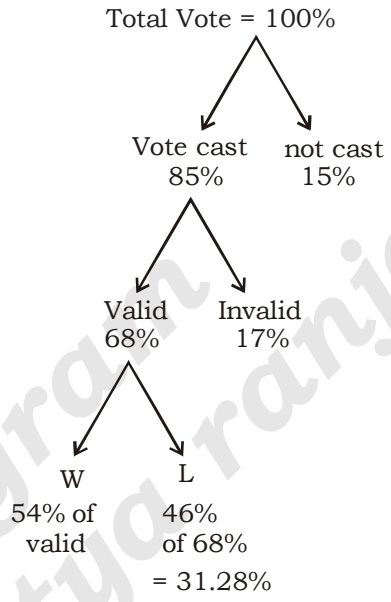
$\Rightarrow 35.5x-236.5$

$= 35.8x-250.6$

$\Rightarrow 0.3x=14.1$

$\therefore x=47$

3. (c)



Now, 54% of valid votes = 8262

$\therefore$ Total Vote = 15300

Hence statement (1) is correct and statement (II) is incorrect.

4. (d)

Ist Case

A = 1560

P = 1200

T = 3 years

SI = 1560 – 1200 = 360

$360=\frac{1200\times R\times 3}{100}$

R = 10%

IInd Case

A = 1120

P = 800

R = 10%

SI = 1120 – 800 = 320

$320=\frac{800\times 10\times T}{100}$

T = 4 years

5. (b)

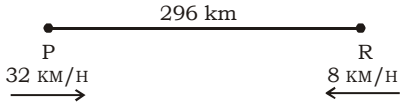
Given,

M N S

2 : 7 : 9 = 18 → ×20 → 360

diff. 7 → ×20 → 140

6. (c)



Distance between

P and R at 8 : 30 AM = $296 - 32 \times \frac{1}{2} = 280$ km

∴ Time taken of P and R in metting

$= \frac{280}{(32+8)} = 7h$

∴ P and R will meet at 8 : 30 AM + 7h = 3 : 30 pm

7. (c)

Given,

No.		Avg.
30	⟶	Rs. 4200
10	⟶	Rs. 6200
4	⟶	?

Overall Avg. Salary = Rs. 7400

∴ Total deviation = – 30 × 3200 – 10 × 1200

= Rs. 108000

∴ Avg. salary of 4 employees = Rs. 7400 + $\frac{108000}{4}$

= Rs. 34,400

8. (c)

LCM of 28.40, 42, 48 = 1680

∴ $x = \frac{1680m + 6}{246}$ R = 0

$x = \frac{240m + 6}{246}$ for the least 5 digits no.

m = 6

∴ x = 1680 × 6 + 6 = 10,086

∴ Sum of digits = 1 + 8 + 6 = 15

9. (d)

A		B		C		D
3	:	1	:	1	:	1
5	:	5	:	3	:	3
5	:	5	:	5	:	3
75	:	25	:	15	:	9

diff. 60 → ×80 → Rs. 4800

diff. 16 → ×80 → Rs. 1280

10. (b)

CP = $\frac{1144}{130} \times 100$ = Rs. 880

Now,

SP (New)		CP
704	:	880
4	:	5

diff.

Loss = $\frac{1}{5} \times 100 = 20\%$

11. (a)

Let price of one Vada and Samosa are x and y resp.

Now.

$3x + 4y = 195$ .....(I)

$2 \times x \times \frac{4}{5} + 3 \times y \times \frac{11}{10} = 139$

$\Rightarrow 16x + 33y = 1390$ .....(II)

$2x + by = 80$ .....(III)

On solving eqn. (I) and (III), we get

x = Rs. 25

y = Rs. 30

Hence A is true

Reason : $3x + 4y = 195$

$2 \times 1.1x + 3 \times \frac{1}{5} \times y = 139$ is wrong

because price of vada is decreased by $\frac{1}{5}$ means new price will be 4/5 of initial price.

Hence Reason is wrong.

12. (d)
(i)
$\Sigma(n^2 - n) = \Sigma n^2 - \Sigma n$

$= \frac{n(n+1)(2n+1)}{6} - \frac{n(n+1)}{2} = \frac{10\times11\times21}{b} - \frac{10\times11}{2} = 385 - 55$

$= 330$ **(Correct)**
(ii)

$\Sigma(n^2 + n) = \frac{n(n+1)(2n+1)}{6} + \frac{n(n+1)}{2}$

$= \frac{12\times13\times25}{6} + \frac{12\times13}{2}$

$= 650 + 78 = 728$ **(Correct)**
(iii)

$\Sigma(n^2 + 3n + 1) = \frac{n(n+1)(2n+1)}{6} +$

$\frac{3n(n+1)}{2} + 8$

$= \frac{8\times9\times17}{6} + \frac{3\times8\times9}{2} + 1$

$= 204 + 108 + 1$

$= 313$ **(Incorrect)**

Thus statement (i) and (ii) is correct.

13. (a)
Net SI = (2 × 7% + 4 × 16%) = 78%
Now,
78% → Rs. 29250
∴ 100% → Rs. 37,500

14. (b)
Let population of town 2 yrs ago is x.

$\therefore x \times \frac{7}{5} \times \frac{7}{5} = 98000$

$\Rightarrow x = 50{,}000$

15. (b)
Let three consecutive numbers are $(x - 2)$, x and $(x + 2)$.
ATQ, $(x - 2)\, x\, (x + 2) = 2145$
$\Rightarrow (x - 2)\, x\, (x + 2) = 11 \times 13 \times 15$
$\Rightarrow x = 13$
$\therefore x^2 = 13^2 = 169$

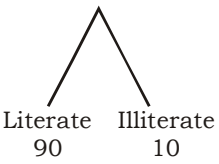
16. (b)
Given,

	A		B		C
eff $\Rightarrow$	3	:	2	:	1

∴ Total work = 36 × 3 = 108
Let total work is completed in x days.
ATQ,
$3 \times 9 + 2(x - 3) + 1.x = 108$
$\Rightarrow 27 + 2x - 6 + x = 108$
$\Rightarrow 3x = 87$
$\therefore x = 29$ days

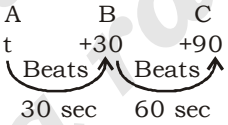
17. (c)
Given,
$A \propto (B + C)$, $B \propto D$, & $C \propto D^2$
no need to find value of A,
According to given statement A is clearly dependent of all the three given statements.
Hence, Option (c) is correct.

18. (a)
Let total population = 100



ATQ, 10 → 1320
∴ 100 → 13200

19. (a)
Statement-I



Means A beats C by 90 sec
Statement-II
This information has already been obtained from statement (I)
Statement-III
Let distance is d.

$\therefore$ Speed of B = $\frac{d}{t + 30}$

Avg. speed of A and C = $\frac{\frac{d}{t} + \frac{d}{t+90}}{2}$

ATQ, $\frac{d}{t+30} = \frac{d}{2}\left[\frac{2t+90}{t(t+90)}\right]$

$\Rightarrow \frac{1}{t+30} = \frac{t+45}{t(t+90)}$

$\Rightarrow t^2 + 90t = t^2 + 30t + 45t + 30 \times 45$
$\therefore 15t = 30 \times 45$
$t = 90$ sec
Hence, statement (I) and (III) are required to find time taken by A.

20. (a)
Given,

$x^2 + \frac{1}{x^2} = 10$

$\therefore x^4 + \frac{1}{x^4} = 10^2 - 2 = 98$

IB ACIO GRADE II

18/01/2024 (Shift-03)

07

1. Pawan purchased two tables, first for 10000 and the second for Rs.12000. He sold both the tables, first one at the profit of 10 percent and the second at a loss of 20 percent. What is the overall profit or loss?

पवद दऐ ाअह्रअेक्रै मेा ि, दहेअ्रअं ।म ई ''' सपयअहेअएािे लारम इा '' सपयअहेअक्रै म ग08 7ज्ञदऐ ाक्षेअह्रअेक्र्ा मेा ि, दहेअ्रअं ।मजाअ ई उक्रि ात जअ।ाभ पर एा्रि ै लारम जाअं उक्रि ात जम ादि पर 5ज्ञा. जु। ।ाभ या ादि जितदम ाक्षा्ग

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) Profit/।ाभ = Rs.1400 (b) Loss/ादि = Rs.1400
(c) Profit/।ाभ = Rs.1200 (d) Loss/ादि = Rs.1200

2. What is the value of $\frac{58.32}{0.27\times0.09}$?

$\frac{58.32}{0.27\times0.09}$ जा हाद जितदा ाक्षाेग

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) 24 (b) 240
(c) 2400 (d) 24000

3. A person leaves city J at 7 am and reaches city K at 5 pm. Another person leaves from city K at 4 pm and reaches city J at 10 pm. At what time (approximately) they both will meet?

थ्ज श्राफि 7 am पर ्ािर J ज्ञअउब्ााद जरता ाएार 5 pm पर ्ािर K तज पंुटता ा थ्ज एःय श्राफि ्ािर K ज्ञअ4 pm पर उब्ााद जरता ाएार 10 pm पर ्ािर J तज पंुटता ा वऐ ाक्षेअ जितदअ्र ,अ2।गभगश हि।ेक्षाम

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) 4:37 pm (b) 4:13 pm
(c) 4:23 pm (d) 4:52 pm

4. 15% of A = 20% of B = 25% of C and A + B + C = 5640. A is decreased by $58\frac{1}{3}\%$, B is increased by 20% and C is decreased by 30%.

Statement I: The new value of C is 8% more than the new value of A.

Statement II: The new value of B is 10% less than the initial value of A.

Which of the above statements is/are correct?

A जा 15% = B जा 20% = C जा ।रू? ाएार A + B + C = 5640 ा A हेअ$58\frac{1}{3}\%$ जम जहम जम , ातम ाे B हेअं ? जम वक्रि जम , ातम ाएार C हेअ्र ? जम जहम जम , ातम ा

ज3द I: C जा दया हाद A जअ्र8 हाद ज्ञअ ? एा/ज ा

ज3द II: B जा दया हाद A जअ्रारंभिज हाद ज्ञअ ? जह ा

7पराक्ष्र हेअ्रअज्ञादि्घज्ञा्रअजाद ज्ञं म ाे

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) I only/जअ्रा I
(b) II only/जअ्रा II
(c) Both I and II/I एार II ै ाक्षेअ
(d) Neither I nor II/द ताअ एार द ामII

5. Neeraj sells sarees for 3,944 each, after giving two successive discounts of 15% and 20% on its marked price. If he sells a saree giving no discount on its marked price, then he earns a profit of 45%. If he sells a saree for Rs.4,496, then his profit percentage will be ____.

दम, ू यअ्रा ज्ञा६म जअएंजित हल्य पर इरू? एार ा ? जम ै ।अ ढहिज 4ज्ञ ै क्षाअजअ्रो न ू यअ्रा ज्ञा६म जाअ्रक्षक्षा सपयअहेअ्रक्र्ाता ा यौ वं ज्ञा६म जाअ5दा जिज्ञम 4ज्ञ जअ/ज्ञजअएंजित हल्य पर 5ज्ञता ाे ताअ/ज्ञअरू? जा ।ाभ उाक्षा ाक्षा ा यौ वं ज्ञा६म जाअ्राक्षाक्षा सपयअहेअ्रक्र्ाता ाे ताअ/ज्ञजा ।ाभ उक्रि ात ____ ाक्षा.

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) 12% (b) 15%
(c) 12.4% (d) 15.6%

6. Two sums of money are divided between A, B, C and D. The first sum is divided between them in the ratio 4:6:3:2 and the second sum is divided in the ratio 3:4:7:6. The second sum is two times the first sum. Who will get the second largest overall share?

A, B, C एार D जअ5म ै ।अ/दरा्ि ायाधविभा्ि,त जम ,ातम ाे पं ।म/दरा्ि 7दजअ्रक्षम ख रु क्र रु ड रु। जअ्रुदुपात हेअविभा्ि,त जम ,ातम ाएार ै लारम/दरा्ि डरु ख्र 9रु क्र जअ्रुदुपात हेअविभा्ि,त जम ,ातम ा ै लारम ाक्षदरा्ि पं ।म/दरा्ि जम ै ।अगुदम ा जु। हि।ाजर ै लारा ज्ञ5ज्ञअ्र्र्ाा ि ब्ज्ञा जिज्ञअहि।ेक्षाम

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) B (b) A
(c) D (d) C

7. Income of Pawan is 5 percent more than the income of Pankaj and income of Pankaj is 15 percent more than the income of Manjeet. The income of Manjeet is (approximately) how much percentage less than the income of Pawan?

पवद जमएायन पेज, जमएाय ज्ञअरू उविात एर्/ज ´हिएिा पेज, जमएायन हे, मा जमएाय ज्ञअ्रू उविात एर्/ज ´ी हे, मा जमएायन पवद जमएाय ज्ञअ2।गभगश जितदअवि़ात जह ´ाै

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) 3%

(b) 17%

(c) 7%

(d) 10%

8. Which of the following statements is/are correct?

(i) The sum $1^3 + 2^3 + 3^3 + \ldots$ to ten terms, lies between 3020 and 3030.

(ii) If x is subtracted from the sum $1^3 + 3^3 + 5^3 + \ldots$ to 10 terms, then it becomes a square. The least value of x is 17.

(iii) $11^3 + 12^3 + 13^3 + \ldots + 20^3 = 41075$

र्दिदा खित हेअ्रअजहिण्ज्ञाऽ्अजआद ज्ञं म ´ाै

(i) $1^3 + 2^3 + 3^3 + \ldots$जअै ज्ञ पै ा्अ्तज याक्षफ। ़र्् ा्ा एिा ़ड़ जअ्रम् ´ी

(ii) यौं $1^3 + 3^3 + 5^3 + \ldots$ जअै ज्ञ पै ा्अ्तज जअ्राक्षफ। ज्ञअ्x जाअ्वा ीिया ,ा्थ्न ताअ्मं थ्ज वग85द ,ता ´ी x जा ःयक्तह हाद इ9 ´ी

(iii) $11^3 + 12^3 + 13^3 + \ldots + 20^3 = 41075$ ´ी

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) (i) only/जवा (i)

(b) (ii) only/जवा (ii)

(c) (i) and (ii)/ (i) एिा (ii)

(d) (i) and (iii)/(i) एिा (iii)

9. The average weight of some children in a group is 45 kg. When 10 children of average weight 40 kg leave the group or 15 children of average weight 50 kg join the group, the average weight of children in both the cases is the same. The number of children, initially, in the group lies between:

थ्ज ज्ञहंल हेअ्रजु4 5व्टोअ्जा एििात व,द 45 kg ´ी ,5 40 kg एििात व,द वा।अ्ं 5व्टअ्रहंल 4।थ्अं ़वअ्ंीया 50 kg एििात व,द वा।अ्रू 5व्टअ्रहंल हेअ्राहि। ´।अ,ातअ्ंा ताअै ावेअ्राह।ा्अेअ्व्टोअ जा एििात व,द ज्ञहाद ´ाम ´ी ाुरेभ हेअ्रहंल हेअ्व्टोअ्जम ज्ञेख्या र्दिदा कित हेअ्रअ्जिज्ञजअ्रम्ट आम्ट

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) 45 and 55

(b) 55 and 65

(c) 65 and 75

(d) 35 and 45

10. $\frac{1}{6}$ of a certain sum is lent at 36 percent rate of interest. $\frac{1}{5}$ of the remaining sum is lent at 42 percent rate of interest. The remaining sum 5 is lent at 18 percent rate of interest. If the simple interest received on the total sum for 3 years is Rs.1725, then what is the sum?

थ्ज दििटत /दराि जा $\frac{1}{6}$ भाग डक्र उविात ़या, ैर पर द्धप्रा पर ीिया गया ´ी ा्भराि जा $\frac{1}{5}$ भाग ख उविात ़या, ैर पर द्धप्रा पर ीिया गया ´ी तूप्र टात ा्भराि इ उविात ़या, ैर पर द्धप्रा परै मग08 ´ी यौं ड वम8जअी। थ्ज़ु। राि पर डाक्ष ज्ञा/ारप्रा ़या, इ91रू सपयअं।अ्राअं /दराि जितदमं ´ाै

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) Rs.2100

(b) Rs.2400

(c) Rs.2300

(d) Rs.2200

11. When 85 percent of a number is added to 18, then the result is that number only. What is the value of the number?

थ्ज ज्ञेख्या जअ् रू उविात जाअइ हेअ,ाक्ष्अपर वं म ज्ञेख्या डाक्ष ´ाम ´ी 7ज्ञ ज्ञेख्या जा हाद जितदा ´ाम

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) 135

(b) 150

(c) 120

(d) 105

12. Select the option that is true regarding the following labelled Assertion (A) and Reason (R).

Assertion (A): The cost of 5 pens, 6 erasers and 7 notebooks is Rs.340 and the cost of 6 pens, 4 erasers and 2 notebooks is Rs.200. The cost of one pen, one eraser and 1 notebook is Rs.55.

Reason (R): Let x, y and z denote the cost of 1 pen, 1 eraser and 1 notebook, respectively.

$5x + 6y + 7z = 340$ and $6x + 4y + 2z = 200$.

7ज्ञ विजन्प जा टयद जर्म,थ् ,ाअ्र्दिदाकित एभिजअद (A) एिा जारप्रा (R) जअ्रे5/ हेअ्रूय ´ी

एभिजअद (A): रू पदम क्र 0रअ्र एिा 9 दाक्षुज जम जम्हत ड्खं सपयअं।एिा क्र पदम ख 0रअ्र एिा 1 दाक्षुज जमजम्हत ्ि सपयअं।थ्ज पदम थ्ज 0रअ्र एिा इ दाक्षुज जमजम्हत रू्रू सपयअं।

जारप्रा (R): हाद ।र्मि,थ् x, y एिा z ढह रा इ पदम इ 0रअ्र एिा इ दाक्षुज जमजम्हत ´ी $5x + 6y + 7z = 340$ एिा $6x + 4y + 2z = 200$

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) A is true and R is false./A ज्ञूय ´ीएिा R एज्ञूय ´ी

(b) A is false and R is true./A एज्ञूय ´ीएिा R ज्ञूय ´ी

(c) Both A and R are true and R is a correct explanation of A./A एिा Rै ाेअ्रूय ´ीएिा R, A जा ज्ञं म बपम्मरप्रा ´ी

(d) Both A and R are true but R is not a correct explanation of A./A एिा Rै ाेअ्रूय ´ी।म्रिद R, A जा ज्ञं म बपम्मरप्रा दं मे ´ी

13. Two numbers are in the ratio of 8 : 3. If their sum is 11, then what is the sum of the squares of the two numbers?

ॅ ाअह्नेख्याथ्ध् रु ड जअए दुपात हेअं ी यौं 7दजा याक्षक। इइ ंमे ताअ ॅ ाद्मअह्नेख्याए ोअज अवगाअजा याक्षक। जितदा ंमास

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) 73 (b) 63
(c) 93 (d) 83

14. If a 9-digit number 9834x97y4 is divisible by 88, then what is the maximum possible value of $(3x + 2y)$

यौं छ एंजोअज्ञम ज्ञेख्या 9834x97y4, 88 ज्ञअविभाज्य ंमे ताअ(3x + 2y) जा एर्ट/जतह ज्ञेभव हाद जितदा ंहै

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) 31 (b) 27
(c) 34 (d) 37

15. The average of 11 consecutive odd numbers is 37. What is the difference between the largest number and the smallest number?

इइ ढहागत विमह ज्ञेख्याएोअजा एह्नित ङ9 ंी ज्ञ5ज्ञअङ ध्म ज्ञेख्या एीर ज्ञ5ज्ञअज्ञ ध्म ज्ञेख्या जअङम्ट ऐतर जितदा ंहै

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) 21
(b) 23
(c) 25
(d) 20

16. Simple interest on a sum for eight months at the rate of 8 percent per annum is Rs.480. What is the value of sum?

थ्ज /दराि परन उव्रि त जम वामिक्ष ॅ र ज्ञअएल हां जा ज्ञा/ ारप्रा या, खुं सपयअंी वं /दराि जितदमंहै

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) Rs.9000 (b) Rs.7500
(c) Rs.12000 (d) Rs.10500

17. If $x^2 + \frac{1}{x^2} = 14$, then what is the value of $x^3 + \frac{1}{x^3}$? $(x > 0)$

यौं $x^2 + \frac{1}{x^2} = 14$ ंमाताअ $x^3 + \frac{1}{x^3}$ जा हाद जितदा ंमास $(x > 0)$

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) 48 (b) 42
(c) 50 (d) 52

~~18. A can complete a certain work in 30 days. B is 20% more efficient than A. C can complete $\frac{2}{5}$ part of the same work in 8 days. A and B together complete $\frac{11}{15}$ part of the work. The remaining work is completed by A and C together. In how many days was the entire work completed?~~

~~A जिज्ञम दिृ टत जाय8 जाअर्ड ौं दोअहेआसा जर ज्ञजता ंी B, A ज्ञअ ि ? एर्ट/ज जु ा ंी C 7ज्ञम जाय8 जा $\frac{2}{5}$ भाग ौं दोअहेआसा जर ज्ञजता ंी A एीर B हि। जर जाय8 जा $\frac{11}{15}$ भाग पास जरतअं ी ासा जाय8 A एीर C द्धारा हि। जर पास जिया ,ता ंी पास जाय8 जितदर्अ दोअहेअं एरा~~

~~IB ACIO GRADE II 18/01/2024 (Shift-03)~~

~~(a) $14\frac{2}{5}$~~
~~(b) 14~~
~~(c) $13\frac{1}{5}$~~
~~(d) 13~~

19. A question is given, followed by three statements labelled I, II and III. Identify which of the statements is/are sufficient to answer the question.

Question:

What is the daily wages (in Rs.) of one worker of type A?

Statements:

I. In a factory, the ratio of the number of workers of type A, B and C is 9:4:1 and the ratio of daily wages of one worker of type A, B and C is 8:5:3. Total daily wages of all workers of type A, B and C is Rs.57,000.

II. The number of workers of type B is 20.

III. The number of workers of type C is 5.

थ्ज इ द ौं या गया ंमे ि ज्ञअङो तम्द जआद I, II एीर III ौं थ् गथ् ंी पं टाद जर्म, थ् जि जहिघ्ज्ञाज्ञअजआद इ द जा 7णर ॅ दक्षअजअ िी थ् पयाक्ष ंहैं ी

इ दरु

A उजार जअ्ज जहहारम जमै दिज ह, ॅ ासा 2सपयअहेज्ञ जितदमंहै

ज आदरु

I. थ्ज जारकादअहेवा A, B एीर C उजार जअ(हिजोअज म ज्ञेख्या जा एदुपात छरु खरु इ ंी एीर A, B एीर C उजार जअ्ज (हिज जम ॅ दिज ह, ॅ ासा जा एदुपात रु रू रु ड ंी A, B एीर C उजार जअ ज्ञभम (हिजोअजमै दिज ह, ॅ ासा रू्र्न ॅ ॅ सपयअंी

II. B उजार जअ(हिजोअज म ज्ञेख्या ि ंी

III. उजार C जअ(हिजोअज म ज्ञेख्या रू ंी

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) I and II or I and III/I एीर II या II एीर III
(b) I and II only/जवाा I एीर II
(c) I only/जवाा I
(d) I, II and III/I, II एीर III

20. A question is given, followed by three statements labelled I, II and III. Identify which of the statements is/are sufficient to answer the question.

Question:

How much time (in hours) will a boat take to go 25 km downstream?

Statements:

I. The time taken by the boat to go a certain distance downstream is $\frac{7}{10}$ of the time taken by it to go the same distance in still water.

II. The boat takes 6 hours to go 49 km downstream and 14 km upstream.

III. The ratio of the speed of the boat in still water and the speed of the current is 7: 3.

थ्ज ऱ्र द ेंया गया ॅहै ि, ज्ञजअठ्ठै तम्द्द जउद I, II एरि III ेंॅ गॅ ॅी पं टाद जर्मा, ॅ जि जाि्घ्ज्ञात्र्ज्ञअजउद ऱ्र द जा 7णर ै क्षअजअ िा ॅ पयाक्ष्ज्ञ ॅ ें ी

ऱ्र दरु

थ्ज दाव जाअ/ारा जमर्ि ा हेअ25 km ,ादअ्हेअजितदा ज्ञहय 2चेाेअ हेश्र ।गक्षास्

जउदरु

I. दाव ठारा /ारा जमर्ि ा हेअथ्ज दिटत ै स्ला तज ,ादअ्हेआ गा ज्ञहय॒ ाोत ,। हेअ्ज्ञहाद ै स्ला तज ,ादअ्हेआ गअ्ज्ञहय जा $\frac{7}{10}$ ॅी

II. दाव जाअ/ारा जमर्ि ा हेअ49 km एरि वारा जम विपरम्ा र्ि ा हेआ14 km ,ादअ्हेअक्र चेाष्अा गतअंी

III.॒ ाोत ,। हेअदाव जम टा। एरि /ारा जम टा। जा एदुपात 9रु ड ॅी

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) I and II only/ जक्षा I एरि II

(b) II and III only/जक्षा II एरि III

(c) I and II or II and III/I एरि II या II एरि III

(d) I and III only/जक्षा I एरि III

ANSWER KEY

1.(b)	2.(c)	3.(c)	4.(b)	5.(c)	6.(a)	7.(b)	8.(d)	9.(b)	10.(c)
11.(c)	12.(c)	13.(a)	14.(c)	15.(c)	16.(a)	17.(d)	18.(c)	19.(a)	20.(c)

SOLUTIONS

1. (b)

CP_1 = Rs. 10,000 CP_2 = Rs. 12,000

Profit on first table = 10% of 10,000 = Rs. 1000

Loss on second table = 20% of 12,000 = Rs. 2400

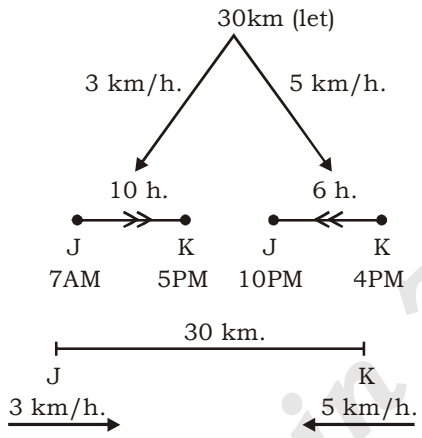
∴ Overall loss = 2400 – 1000

= Rs. 1400

2. (c)

$$\frac{58.32}{0.27 \times 0.09} = 2400$$

3. (c)



Distance travelled by first person till 4PM

= 3 × 9 = 27 km.

∴ Now distance Remaining b/w first and 2nd person = 30 – 27 = 3 km.

∴ first and 2nd person will meet = 4PM + $\frac{3}{8}$ × 60

= 4 : 23 PM

4. (b)

Given, $\frac{3}{20}A = \frac{1}{5}B = C \times \frac{1}{4}$

∴ A : B : C

$3\times\begin{matrix}20\\60\end{matrix}$: $3\times\begin{matrix}15\\45\end{matrix}$: $3\times\begin{matrix}12\\36\end{matrix}$

$58\frac{1}{3}\% = \frac{7}{12}$, $20\% = \frac{1}{5}$, $30\% = \frac{3}{10}$

	A	B	C
New values →	25	54	25.2

Statement-I

108% of 25 = 27

Hence Statement (I) is incorrect

Statement-II

90% of 60 = 54 i.e New value of B

Thus only statement (II) is Correct

5. (c)

Successive of 20% and 15% = $20 + 15 - \frac{20\times15}{100} = 32\%$

$69\% \rightarrow 3944$

$100\% \rightarrow \frac{3944}{68} \times 100$ = Rs. 5800

SP_1 = 5800, Profit = 45%

$CP = \frac{5800}{145} \times 100 = 4000$

SP_2 = 4496

CP = 4000

Profit = 496

$P\% = \frac{496}{4000} \times 100 = 12.4\%$

6. (a)

	A		B		C		D	
I →	$4_{\times2}$	:	$6_{\times2}$	:	$3_{\times2}$	:	$2_{\times2}$	$= 15_{\times2}$
	8	:	12	:	6	:	4	
II →	$3_{\times3}$	:	$4_{\times3}$	:	$7_{\times3}$	:	$6_{\times3}$	$= 20_{\times3}$
	9	:	12	:	21	:	18	

Total → (8+9) : (12+12) : (6+21) : (4+18)

Hence C < B > D > A

7. (b)

	Pawan		Pankaj		Manjeet
Income →	21	:	20	:	$\frac{20}{115}\times100$
→	23×21	:	20×23	:	20×20
→	483	:	460	:	400

Diff.

$\%\text{ decrease} = \frac{83}{483} \times 100 \approx 17\%$

8. (d)

Statement-I

$1^3 + 2^3 + ... + 10^3 \left(\frac{10\times11}{2}\right)^2 = 3025$

Statement-II

$1^3 + 3^3 + ... x^3 = x^2 (2x^2 - 1)$

$\therefore$ $1^3 + 3^3 + ...$ upto 10 terms

$= 100 \times 199 = 19900$

New $19900 - 17 = 19883$ is not perfect sq.

Statement-III

$11^3 + 12^3 + ... 20^3 = ?$

$\therefore (1^3+2^3 + ... 20^3) - (1^3+2^3+ .... +10^3)$

$= \left(\frac{20\times21}{2}\right)^2 - \left(\frac{10\times11}{2}\right)^2$

$= 44100 - 3025 = 41075$

Hence, stat (I) and (III) are Correct

9. (b)

Given,

	No.	Avg.
Case-(I)	x	$\rightarrow$ 45 kg.
	-10	$\rightarrow$ 40 kg.

$\therefore$ Deviation in first Case $\rightarrow 5 \times 10$

	No.	Avg.
Case-(II)	x	$\rightarrow$ 45 kg.
	15	$\rightarrow$ 50 kg.

$\therefore$ Deviation in 2nd Case $\rightarrow 5 \times 15$

A.T.Q,

$45 + \frac{5\times10}{x-10} = 45 + \frac{5\times15}{x+15}$

$\Rightarrow \frac{2}{x-10} = \frac{3}{x+15}$

$\Rightarrow 2x + 30 = 3x - 30$

$\therefore x = 60$

10. (c)

Total Rate%

$= \left(\frac{1}{6}\times36 + \frac{5}{6}\times\frac{1}{5}\times42 + \frac{2}{3}\times18\right) \times 3\%$

$= (6 + 7 + 12) \times 3\%$

$= 75\%$

New, 75% of P = 1725

$\therefore$ P = $1725 \times \frac{4}{3}$ = Rs. 2300

11. (c)

Let the number is N

A.T.Q,

85% of N + 18 = 100% If N

$\therefore$ 15% of N = 18

$\therefore$ N = $\frac{18}{15} \times 100 = 120$

12. (c)

Given,

$5x + 6y + 7z = 340$ .....(I)

$6x + 4y + 2z = 200$ .....(II)

$x + y + z = 55$ ....(III)

No need to find value of x, y, z, snice these are 3 equations and 3 Variables, we will get their values. Hence Assertion is Correct

Reason is also true, since representation of Sum of price of Pens, Erasers and notebooks is Correctly mentioned in equation.

Hence Both A and R are true and R, is a Correct explanation of A.

13. (a)

Given,

Number- I : Number- II

8 → 8 ; 3 → 3 = 11 ×1 → 11

Now, $8^2 + 3^2 = 64 + 9 = 73$

14. (c)

Given, $\frac{9834x97y4}{11\times8}$

Now,

$\frac{7y4}{8} = \frac{704+10y}{8} = \frac{2y}{8}$, y = 0, 8

Similarly, $\frac{9834x97y4}{11} = \frac{(23+x)-(21+y)}{11}$

$= \frac{2+x-y}{11}$

y = 8, x = b for max possible value of $(3x + 2y)$

$\therefore 3x + 2y = 3 \times 6 + 2 \times 8 = 34$

15. (d)

Given,

37

Smallest no. = $37 - 2 \times 5 = 27$

Largest no. = $37 + 2 \times 5 = 47$

$\therefore$ Their diff. = $47 - 27 = 20$

16. (a)

Equivalent rate % = 8% × $\frac{8}{12} = \frac{16}{3}\%$

$\therefore \frac{16}{3}\%$ of Sum = 480

$\therefore$ Sum = $\frac{480}{16} \times 300$ = Rs. 9000

17. (d)

Given, $x^2 + \frac{1}{x^2} = 14$

$\therefore x + \frac{1}{x} = \sqrt{14+2} = 4$

$\therefore x^3 + \frac{1}{x^3} = 4^3 - 3 \times 4 = 52$

18. (c)

A → 30 days

B → $\frac{30}{6} \times 5$ = 25 days

C → $8 \times \frac{5}{2}$ = 20 days

5, 6, 7.5 → 150

$\therefore$ Time taken to Complete the whole work

$= \frac{110}{11} + \frac{40}{12.5}$

$= 10 + \frac{16}{5} = 13\frac{1}{5}$ days

19. (a)

		A		B		C
No of workers	→	9	:	4	:	1
Daily wages of one worker	→	8	:	5	:	3

Since daily wages of all workers is given Rs. 57,000. To find daily wages of one Worker, we will require no of workers in number not in ratios . so statement (I) alone is not Sufficient. To Ans the question Statement (I) as well as either Statement (II) or statement (III) is required.

20. (c)

Let speed of Boat and water are B km/h and W km/h. respectively & distance travelled is d km.

Statement-I

$\frac{d}{B+W} = \frac{7}{10}\frac{d}{B}$

$\Rightarrow \frac{B}{B+W} = \frac{7}{10}$,

$\therefore$ B = 7x W = 3x

Statement-II

$\frac{49}{10x} + \frac{14}{4x}$ = 6 hrs.

Statement-III

	B	W
Speed →	7x	3x

To find $\frac{25}{B+W}$, we will require statement (I) and statement (II) or statement (II) and statement (III).

IB ACIO GRADE II

18/01/2024 (Shift-04)

08

1. If A_1 is 19 times more than A_2, then A_2 is what percentage less than A_1?

यदि A_1 राशि A_2 राशि से 19 गुना अधिक है, तो A_2 राशि A_1 राशि से कितने प्रतिशत कम है?

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) 85% (b) 105%
(c) 95% (d) 100%

2. What is the value of $\frac{72-(25\div5)\times2}{6\times5+1}$?

$\frac{72-(25\div5)\times2}{6\times5+1}$ का मान क्या है?

IB ACIO GRADE II 18/01/2024 (Shift-04)

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

3. Bala has thrice as much amount as that of Lalit and Lalit has 10 percent more amount than Vimal. If the average amount of all three of them is 1350, then how much amount Bala has?

बाला के पास ललित की राशि से तीन गुना राशि है और ललित के पास विमल की राशि से 10 प्रतिशत अधिक राशि है। यदि उन तीनों की औसत राशि 1350 है, तो बाला के पास कितनी राशि है?

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) Rs.2455 (b) Rs.2465
(c) Rs.2355 (d) Rs.2475

4. The ratio of alcohol and water in solutions A and B is 3 : 5 and 5 : 7, respectively. Two litres of A is mixed with 5 litres of B and 3 litres of alcohol is also added to it to get a new solution C. In 1.5 litres of solution C, how much alcohol (in ml) should be mixed so that the ratio of alcohol and water in the final solution becomes 2 : 1?

विलयन A और B में क्रमशः अल्कोहल और पानी का अनुपात 3 : 5 और 5 : 7 है। A के 2 लीटर को B के 5 लीटर और अल्कोहल के 3 लीटर में मिलाया जाता है। इससे एक नया विलयन C प्राप्त किया जाता है। विलयन C के 1.5 लीटर में कितनी मात्रा (ml में) अल्कोहल मिलाई जानी चाहिए ताकि अंतिम विलयन में अल्कोहल और पानी का अनुपात 2 : 1 हो जाए?

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) 405 (b) 385
(c) 395 (d) 375

5. Which of the following statements is/are correct?

(i) A number is divisible by 125, if the last three digits of the number form a number that is divisible by 5^3.
(ii) If a number is divisible by two numbers, then it is divisible by the product of the two numbers.
(iii) A number is divisible by 36, if the number is divisible by 4, 6 and 12.

निम्नलिखित में से कौन सा/से कथन सही है/हैं?

(i) किसी संख्या के लिए, यदि संख्या के अंतिम तीन अंक एक संख्या बनाते हैं जो 5^3 से विभाज्य है, तो संख्या 125 से विभाज्य होती है।
(ii) यदि कोई संख्या दो संख्याओं से विभाज्य है, तो वह संख्या उन दो संख्याओं के गुणनफल से भी विभाज्य होती है।
(iii) किसी संख्या के लिए, यदि संख्या 4, 6 और 12 से विभाज्य है, तो संख्या 36 से विभाज्य होती है।

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) (ii) and (iii)/(ii) और (iii)
(b) (i) and (ii)/(i) और (ii)
(c) (i) only/केवल (i)
(d) (ii) only/केवल (ii)

6. The cost of a motorbike is 75% less than the cost of a car. The cost of a car decreases by 25% and that of a motorbike increases by 40%.

Statement I: The new cost of a motorbike is $53\frac{1}{3}\%$ less than the new cost of a car.
Statement II: The total new cost of one car and two motorbikes is $3\frac{1}{3}\%$ less than their total initial cost.

Which of the above statements is/are correct?

एक साइकिल की कीमत एक कार की कीमत से 75% कम है। एक कार की कीमत में 25% की कमी होती है और एक मोटरबाइक की कीमत में 40% की वृद्धि होती है।

कथन I: एक मोटरबाइक की नई कीमत एक कार की नई कीमत से $53\frac{1}{3}\%$ कम है।
कथन II: एक कार और दो मोटरबाइक की कुल नई कीमत उनकी कुल प्रारंभिक कीमत से $3\frac{1}{3}\%$ कम है।

उपरोक्त में से कौन सा/से कथन सही है/हैं?

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) Neither I nor II/म ता, I नाइ म ।0 II

(b) I only/ ़ा1 I

(c) Both I and II/ I नाइ II दाम्ा5

(d) II only/ ़ा1 II

7. The average age of a group of 13 men is 55 years. 2 men leave the group and the average age of group increases by I year. What is the average age of 2 men who left the group?

` ट पुउ%5 ़ ़ हसक्र ़ 0 नाइत नायु जज व%‰।इ. पुउ% हसक्र धारुखदत, ।इनाइ हसक्र ़ 0 नाइत नायु ` व%‰लछ्ख2ात0 ।इ हसक्र धारुखवा1. पुउ%5 0 नाइत नायु ि तम0 ।ग़ाए

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) 48.5 years/व%‰ (b) 50 years/व%‰

(c) 49.5 years/व% (d) 50.5 years/व%‰

8. If $x + y + z = 10$ and $x^2 + y^2 + z^2 = 80$, then what is the value of $4xy + 4yz + 4zx$?

यदि $x + y + z = 10$ नाइ $x^2 + y^2 + z^2 = 80$ ।ै, ता, $4xy + 4yz + 4zx$ ़ । साम ि तमा ।ग़ाए

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) 10 (b) 40

(c) 30 (d) 20

9. Select the option that is true regarding the following labelled Assertion (A) and Reason (R).

Assertion (A): The system of equations:

$9x + 6y = 11$ and $7x + ky = 9$ has no solution, if $k = \frac{14}{3}$

Reason (R): System of equations

$ax + by = c$

$dx + ey = f$

has no solution, if $\frac{a}{d} = \frac{b}{e} \neq \frac{c}{f}$

7ह विं स्प ़ । डयम ़ 02 21, मि/मि।खित नभिं :ाम (A) नाइ ़ ारना (R) ़ , हलुक्षा स5हक्ष ।इ

नभिं :ाम (A): हस0 रना5 ़ , मिं ायण

$9x + 6y = 11$ नाइ $7x + ky = 9$ ़ । ़ ाइ‰।1 मा।05।ग़ौ यदि $k = \frac{14}{3}$ ।इ

़ ारना (R): हस0 रना5 ़ , मिं ायण

$ax + by = c$

$dx + ey = f$

़ । ़ ाइ‰हसाग़ाम मा।05।ग़ौ यदि

$\frac{a}{d} = \frac{b}{e} \neq \frac{c}{f}$

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) A is true and R is false./A हक्ष ।इनाइ R नहक्ष ।इ

(b) A is false and R is true./A नहक्ष ।इनाइ R हक्ष ।इ

(c) Both A and R are true but R is not a correct explanation of A./A नाइ R दाम्ा5हक्ष ।इ1 ि म R, A ़ । ह।0 ़ प%0 रना मा।05।इ

(d) Both A and R are true and R is a correct explanation of A./A नाइ R दाम्ा5हक्ष ।इनाइ R, A ़ । ह।0 ़ प%0 रना ।इ

10. Two trains C and D starts moving from stations R and S respectively towards each other. Trains take 4 hours 16 minutes and 3 hours 45 minutes to reach S and R respectively after they meet each other. If the speed of train C is 60 km/hr, then what is the speed of the train D?

दा, रा गारुिखचC नाइ D, श्रसआ ़ 3ाम R नाइ S ह, ़ 5दक्षर, ़ 0 नाइ डा मा ़ रुश्र ़ रत0 ।इ रा गारुिखचपर्र पर सिा म, ़ , लाद S नाइ R तं प।ुक्षम, स5श्रसआ 4 व3, ढ सिम3 नाइ ट व3, 4ज सिम3 ़ । हसय 1 त0 ।इ यदि 3ुम C ़ 0 डा1 60 km/hr ।ै ता, 3ुम D ़ 0 डा1 ि तम0 ।इ

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) 72 km/hr

(b) 64 km/hr

(c) 48 km/hr

(d) 56 km/hr

11. Naman sells an item at x, after giving two successive discounts each of 10% on its marked price. If he does not give any discount on the marked price, he earns a profit of 25%. The cost price of the item is Rs.800. What is the value of x?

मसम ि ह0 वंतु ़ ।, 7ह ़ , नर्ि त सक्षम पर ` 8‰ ़ 0 दा, श्रसिं धक्ष दं, र x उपय, स5लइता ।इ यदि व। नर्ि त सक्षम पर ़ ाइ‰धक्ष मा।05 दता ।ै ता, 7ह, ज ़ । 1।भ ़ ास ।ता ।इ वंतु ़ । श्रय सक्षम 88 उपय, ।इ x ़ । साम ि तमा ।इ

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) 840 (b) 830

(c) 810 (d) 820

12. Anil sells two pens at the rate of Rs.1500 per pen. He earns a profit of 25 percent on one pen and loses 25 percent on the other pen. What will be the total profit or loss in whole transaction?

नमि। दा, पम़ ` ज88 उपय, ़ ति पम़ ़ 0 दर पर लइता ।इ व।, ़ पम़ पर . ज ़ तिआत ़ । 1।भ नि2स ़ रता ।ै नाइ दक्षर, पम़ पर 7ह, . ज ़ तिआत ़ 0 ।ामि ।ात0 ।इ पक्ष1 म़5दम स5 ़ ु1 1।भ या ।ामि ि तम0 ।ग़ाए

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) Rs.200 loss/।ामि

(b) Rs.150 loss/।ामि

(c) Rs.250 profit/1।भ

(d) Rs.280 profit/1।भ

13. A question is given, followed by three statements labelled I, II and III. Identify which of the statements is/are sufficient to answer the question.

Question:

What is the total expense when the hostel has 189 occupants?

Statements: Total expenses of the hostel consist of two parts: one varies directly with the number of occupants and the other is fixed.

I. When it had 150 occupants, its total expense was Rs.79,500.

II. When it had 240 occupants, its total expense was Rs.1,15,500.

III. When it had 200 occupants, its total expense was Rs.99,000.

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) I and II or I and III/I नाइ II या I नाइ III

(b) I and II only/ क़ेवल I नाइ II

(c) I, II and III/I, II ए॰ क़ेवल III

(d) I only/ क़ेवल I

14. When 860, 1712 and 3203 are divided by a two-digit number x, then the remainder in each case is y. If $(2x + y)$ is written as $p \times q \times r^2$, where p, q and r are prime numbers, then what is the value of $(p + q + r)$?

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) 12

(b) 10

(c) 16

(d) 15

15. A sum of 2600 is lent out at simple interest in two parts. One part at at the annual rate of 18 percent and another part at the annual rate of 25 percent. If the total annual interest is Rs.520, then what is the sum lent out at the rate of 25 percent per annum?

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) Rs.742.85

(b) Rs.642.68

(c) Rs.657.66

(d) Rs.798.89

16. The sum of two numbers is 176 and their difference is 16. What is the ratio of the two numbers?

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) 6 : 5 (b) 6 : 1

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

17. A person borrows some money for 2 years at a certain rate of simple interest. If the ratio of principal and total interest is 5:4, then what is the annual rate of interest?

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) 40%

(b) 48%

(c) 35%

(d) 50%

18. Pipes A and B can fill a tank in 6 hours and 15 hours, respectively. Pipe C is a drain pipe. When all the three pipes are opened together for 6 hours, then 65% of the tank is filled. Initially, pipes A and C are opened together for 8 hours and then C is closed and B is opened. Pipes A and B together will fill the remaining part of tank in ____ hours.

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) $2\frac{3}{7}$ (b) $3\frac{1}{3}$

(c) $3\frac{2}{3}$ (d) $2\frac{6}{7}$

19. A and B run a $5\frac{1}{2}$ km race on a 500 m long circular track starting from the same point, simultaneously, in the same direction. The speed of A is 50% faster than B.
Which of the following statements is/are correct?
Statement I: A and B meet for the first time after starting the race when A covers 1200 m.
Statement II: A meets B three times during the race.
A नाइ B॰ ॑ ।0 लिुु ह,500 m ।लाश्ं ,वग्रां र ३ुइ पर॰ ॑ हाःौ॰ ॑ ।0 दिआ स5$5\frac{1}{2}$ km ॑ 0 दाइखं ,ि दाइखा अु– ॑ रत, ।इ A ॑ 0 डा। B ह,जरू्ष त2 ।इ
मि/मा। छि त स5ह,॑ ाझ्हाू ह,॑ :ाम ह।0 ूाइा्
॑ :ाम I: दाइखअु– ॑ रम,॑ ,लाद A)ारा 1200 m ॑ 0 दख्र तय ॑ रम,पर A नाइ B पा।10 लार सिा त,।इ
॑ :ाम II: दाइखं ,दाइाम A, B ह,त0म लार सिा ता ।इ

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) II only/ ॑ व्रा I II
(b) Neither I nor II/म ता,I नाइ म ।0 II
(c) I only/ ॑ व्रा I
(d) I and II/I नाइ II

20. In a class, the ratio of the number of boys to that of girls is 3 : 5. The number of students who passed to that of who failed is 7 : 3. Among boys, the number of those who passed to those who failed is in the ratio 2 : 1. Among girls, what is the ratio of the number of girls who passed to those who failed?
॰ ॑ ॑ ता स5 ।रुंखा5॑ 0 हछ्या ॑ । ।रुवियां5॑ 0 हछ्या ह,नमुपात ट ण ज ।इ 7प्रा०ाभ।ाम़,वा। ,वि;ाःाषा5॑ 0 हछ्या ॑ । नमुप्रा०ाभ।ाम़,वा। ,वि;ाःाषा5॑ 0 हछ्या ह,नमुपात ब ण ट ।इ ।रुंखा5 स5 7प्रा०ाभ।ाम़,वा। ,वि;ाःाषा5॑ 0 हछ्या ॑ । नमुप्रा०ाभ।ाम़,वा। ,वि;ाःाषा5॑ 0 हछ्या ह,नमुपात ॰ ण ॑ ।इ ।रुवियां5 स5 7प्रा०ाभ।ाम़,वा। ,वि;ाःाषा5॑ 0 हछ्या ॑ । नमुप्रा०ाभ।ाम़,वा। ,वि;ाःाषा5॑ 0 हछ्या ह,नमुपात ि तमा ।इ्

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) 15 : 8
(b) 9 : 4
(c) 18 : 7
(d) 12 : 5

ANSWER KEY

1.(c)	2.(c)	3.(d)	4.(d)	5.(c)	6.(c)	7.(c)	8.(b)	9.(d)	10.(b)
11.(c)	12.(a)	13.(a)	14.(b)	15.(a)	16.(a)	17.(a)	18.(d)	19.(a)	20.(c)

SOLUTIONS

1. (c)

ATQ,

A_1 A_2

20 Diff 1

$$\% \text{ decrease} = \frac{19}{20} \times 100 = 95\%$$

2. (c)

Given,

$$\frac{72-(25\div 5)\times 2}{6\times 5+1}$$

$$\Rightarrow \frac{72-(5)\times 2}{30+1} = \frac{72-10}{31}$$

$$= \frac{62}{31} = 2$$

3. (d)

Given,

Bala		Lalit		Vimal
3	:	1	:	$\frac{1}{11}\times 10$
$\Rightarrow$ 33	:	11	:	10

$$\therefore \text{Avg amount} = \frac{33+11+10}{3}$$

$$= \frac{54}{3} = 18 \text{ unit}$$

ATQ,

18 unit $\rightarrow$ Rs. 1350

$$\therefore 33 \text{ unit} \rightarrow \frac{1350}{18}\times 33$$

= Rs. 2475

SMART APPROACH:-

According to ratio amount of Bala must be multiple of 11. only option (d) is multiple of 11.

4. (d)

Given,

	Alcohol		Water
A $\rightarrow$	3	:	5
B $\rightarrow$	5	:	7

$\therefore$ Obtained solution $\rightarrow$

	Alcohol		Water
	$\left(2\times\frac{3}{8}+5\times\frac{5}{12}+3\right)$		$\left(2\times\frac{5}{8}+5\times\frac{7}{12}\right)$
$\Rightarrow$	$\left(\frac{18}{24}+\frac{50}{24}+3\right)$	:	$\left(\frac{30}{24}+\frac{70}{24}\right)$
$\Rightarrow$	140	:	100
$\Rightarrow$	7	:	5

Let x ml Alcohol is mixed in new solution

$$\frac{1.5\times\frac{7}{12}+x}{1.5\times\frac{5}{12}} = \frac{2}{1}$$

$$\frac{10.5+12x}{7.5} = 2$$

$$\therefore x = \frac{4.5}{12}l = \frac{4.5}{12}\times 1000\,ml$$

= 375 ml

5. (c)

Statement (I) If a number is divisible by 5^3.

Then the number will be divisible. by 5 × 5 × 5 = 125

Statement (II) If a number is divisible by two different numbers Then it is not necessary that number will be divisible by Its product. So statement (II) is not Completely True.

Statement (III) If a number is divisible by 4, 6, 12, The no. will be divisible by Its LCM which is 24.

So Statement (III) is not correct.

Thus only Statement (I) is Correct

6. (c)

	Motor Bike		Car
Old Price $\rightarrow$	25	:	100
	$\downarrow$ 40%$\uparrow$		$\downarrow$ 25%$\downarrow$
New Price $\rightarrow$	35	:	75

Statement (I) % decrease in cost

$$= \frac{40}{75}\times 100 = 53\frac{1}{3}\%$$

So the given statement is correct

Statement (II) Total old cost

= 2 × 25 + 100 = 150

Total new cost = 2 × 35 + 75 = 145

$\therefore$ % Increase in cost = $\frac{5}{150} \times 100 = 3\frac{1}{3}\%$

Hence, the given Statement is incorrect

7. (c)

Given,

No. of person		Average
13	⟶	55 yrs.

$\therefore$ Total deviation = 11 × 1 = 11yrs.

$\therefore$ Change in Avg. age of 2 persons = $\frac{11}{2}$ = 5.5 yrs.

Thus avg. age of 2 persons

= (55 – 5.5) yrs = 49.5 yrs.

8. (b)

Given,

$x + y + z = 10$ & $x^2 + y^2 + z^2 = 80$

$\because (x + y + z)^2 = x^2 + y^2 + z^2 + 2(xy + yz + zx)$

$\Rightarrow 10^2 = 80 + 2(xy + yz + zx)$

$\Rightarrow 2(xy + yz + zx) = 100 - 80 = 20$

$\therefore 4(xy + yz + zx) = 2 \times 20 = 40$

SMART APPROACH:-

Let, $z = 0$
Given that,
$x + y = 10$, $x^2 + y^2 = 80$
then,
$(x + y)^2 = x^2 + y^2 + 2xy$
$100 - 80 = 2xy$
$2xy = 20$
$4xy = 40$

9. (d)

Given,

$9x + 6y = 11$ & $7x + ky = 9$

for no solution,

$\frac{9}{7} = \frac{6}{K} \neq \frac{11}{9}$

$\therefore K = \frac{14}{3}$

Hence, assertion is correct

Reason: $ax + by = c$ ..... (I)

$dx + ey = f$ ..... (II)

There equations have no solution, if $\frac{a}{d} = \frac{b}{e} \neq \frac{c}{f}$

Thus, Both A and R are true and R is a correct explanation of A

10. (b)

We know,

$$\frac{\text{Speed of C}}{\text{Speed of D}} = \sqrt{\frac{t_D}{t_C}}$$

$$\Rightarrow \frac{60\text{km/h}}{\text{Speed of D}} = \sqrt{\frac{3\text{h}45\text{min}}{4\text{h}16\text{min}}}$$

$$\Rightarrow \frac{60\text{km/h}}{\text{Speed of D}} = \sqrt{\frac{3+\frac{3}{4}}{4+\frac{16}{60}}}$$

$$\Rightarrow \frac{60\text{km/h}}{\text{Speed of D}} = \sqrt{\frac{15}{4} \times \frac{60}{256}} = \frac{15}{16}$$

$\therefore$ Speed of D = $\frac{60 \times 16}{15}$ = 64 km/h

11. (c)

Given,

SP		CP
125	:	100
×8		↓
Rs. 1000	:	Rs.800

ATQ,

$1000 \times \frac{9}{10} \times \frac{9}{10} = x$

$\Rightarrow x$ = Rs. 810

12. (a)

	SP		CP	
	$4_{\times 3}$	:	$5_{\times 3}$	[SP in same]
	$4_{\times 5}$	:	$3_{\times 5}$	
$\therefore$ Total →	(12+20)	:	(15+15)	
$\Rightarrow$	32	:	30	
	diff.		×100 ↓	
	Loss = 2		Rs.3000	
	×100 ↓			
	Rs. 200			

13. (a)

Let fixed expense is a, variable expence for hostel is b and number of occupants is x

$E = a + bx$

Statement (I) $a + 150x = 79500$

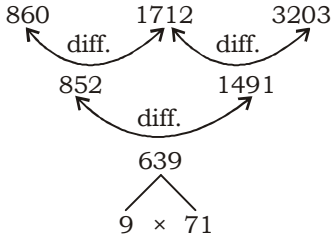
Statement (II) $a + 240x = 115500$

Statement (III) $a + 200x = 99000$

For the value of a and c we can two of the three Statement.

Hence for the Ans I and II or I and III are Suffi correct.

14. (b)



$\therefore x = 71$

$\therefore y = 8$

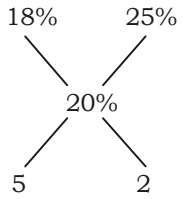
$\therefore 2x + y = 2 \times 71 + 8 = 150$

$\therefore p + q + r^2 = 2 \times 3 \times 5^2$

$\therefore p + q + r = 2 + 3 + 5 = 10$

15. (a)

Equivalent rate% = $\frac{520}{2600} \times 100 = 20\%$



$\therefore$ 7 unit = Rs. 2600

2 unit = $\frac{2600}{7} \times 2$ = Rs.742.85

16. (a)

Let the no are x and y

ATQ,

$x + y = 176$

$x - y = 16$

$\therefore x = \frac{176+16}{2} = 96$

$y = \frac{176-16}{2} = 80$

$\therefore x : y = 96 : 80 = 6 : 5$

17. (a)

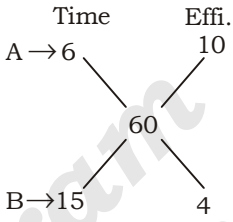
Given,

P	SI
5	: 4

$\therefore$ SI for 1 yrs = $\frac{4}{2} = 2$

$\therefore$ Rate of interest = $\frac{2}{5} \times 100 = 40\%$

18. (d)



Eff of (A + B – C) = $\frac{60 \times .65}{6} = 6.5$

$\therefore$ Effi. of C = 14 – 6.5 = 7.5

ATQ,

Work done by A and C = (10 – 7.5) × 8 = 20

Remaining work = 60 – 20 = 40

(A + B) will complete the remaining work = $\frac{40}{10+4}$ hrs

= $\frac{40}{14} = \frac{20}{7} = 2\frac{6}{7}$ hrs

19. (a)

Given,

$\therefore$ Time taken in meeting first time = $\frac{500m}{3x - 2x}$

Stat I-

Distance travelled by A to meet first time = $\frac{500}{x} \times 3x$

= 1500m

Hence, statement I is incorrect

Stat II-

Since A and B will meet after travelling 1500 m. So after each 1500 m they will meet.

A will meet B = $\frac{5500}{1500}$ = 3 times

Statement II is incorrect

20. (c)

Given,

Boys	girls
$30x$	$50x$

$\therefore$ Total pass = $80x \times \frac{7}{10} = 56x$

Total Fail = $80x \times \frac{3}{10} = 24x$

Boys = $30x$ → Pass $20x$, Fail $10x$

Girls = $50x$ → Pass $(56x-20x) = 36x$, Fail $24x-10x = 14x$

Ratio = $36x : 14x$

$18 : 7$

SMART APPROACH:-

$50x$ should be divisible by Sum of Ratio option (c) $18 + 7 = 25$

25 Completely divides $50x$. be option c is Correct Ans.

Intelligence Bureau
India

IB ACIO GRADE-II

18/02/2021 (Shift-01)

09

1. In 87659_21 what is the least number that can be filled in blank to make the number divisible by 11.
87659_21 खु क्रि ख्य मखा रखहृ ऐ ा खाहिद न्हछे, गु ख,मानज्ज भ्खा क्हि य क्छु ग खाहिद य ुर्छ ख ा ु ख,पस एदखी भ द खे खाये ख ला
IB ACIO Grade-II 18/02/2021 (Shift-01)
(a) 3 (b) 1
(c) 2 (d) 7

2. 25 percent of a number when subtracted from 100, gives the number itself. Find the number?
11खा ु ि ु ख,य ग रखगहिद ख्य ख08ख. ै, 7 5ट भ्ुख कक्र खाहिद ख रख जै ख े ु रख ख खाहिद , ै ख्य कुि
IB ACIO Grade-II 18/02/2021 (Shift-01)
(a) 32 (b) 100
(c) 75 (d) 80

3. A passenger train consists of 18 bogies, each bogie being 15 m long. The train crosses an electric post in 15 sec. Due to some problem, three bogies were detached. The train now crosses the electric post in __________ sec.
स्य खद थरख्र खु ि ण्ख,बा ी ख ि ठ्य ख,बा ी य रखर्श रूर्छ 8खा रटकक्ष ख्र खस्य खी श र य ुख6 सुिख्य ुर्छ 8खा ुय बिख ु ि. ख्य कै रख ब य ह ख, /ये ख्य ुख्य क छै रभ्खे ु,रद हू श र न ु ख र्छट्र ु ी ख__________ खा ुय बिख ु ,ी श रख्य ुख6 सुिख्य ुख ख्य क्छ ै रख ब
IB ACIO Grade-II 18/02/2021 (Shift-01)
(a) 11 (b) 10.5
(c) 14 (d) 12.5

4. The table shows expenditure and income of a firm in various months. In which month was ratio of savings to income maximum.
ै ,श य ख,प ,स त भ्ख न रभ ु ि ुख्य ख न ख्य ुख्दद ु क्छू दखय ुख 7 ै ?रख ख,य गखा न रभ्खा ु ि ी गै रू क्छू दख्य रू भ्ा ै रू ,न्ये ा र्छ ल

Month	Salary	Expenditure
Jan	40,000	28,000
Feb	35,000	30000
March	37,000	30000
April	42,000	32000
May	45,000	31000

IB ACIO Grade-II 18/02/2021 (Shift-01)
(a) April (b) May
(c) Feb (d) Jan

5. Arun & Bijay can make paintings in 3 days, Bijay & Chandan can make those paintingsin 5 days. If Arun, Bijay & Chandan together can finish the work in 2 days, then Arun & Chandan together will do it in ________ days.
ु ढ्ध रू क्छ,ी दख4ख, भ ु ि ु ि ,टि ि ी भ गये ु ख ि ु ि ी दरू क्छ ,ि भ्ख भ्खु,टि ि ख्य ु 8ख, भ ु ि ु ि भ खाये ु ख ि ु ि ,रू ढ्ध :खी द ु क्छ ,ि भ्ख ,श य क्छ य ा ख्य ु ख0ख, भ ु ि ु ि ा क्छ य क्छ गये ु ख ि ु ि ु ख रू ढ्ध रू क्छ ,ि भ ,ा श य क्छ ु ख________ख, भ ु ि ु ि क्छ ख्य कु ि उ
IB ACIO Grade-II 18/02/2021 (Shift-01)
(a) $\frac{15}{7}$ days/, (b) $\frac{4}{3}$ days/,
(c) 5 days/, (d) $\frac{8}{7}$ days/,

6. The marks of 5 students are 25, 35, 45, 50, 15. Calculate the average marks.
8खड थ ु ि य रू मि ख08:ख48:खछ8:ख81:र्छ 8 न ि रू वै रू मि ख्य रख ढ भ ख्य कु ि
IB ACIO Grade-II 18/02/2021 (Shift-01)
(a) 34 (b) 30
(c) 35 (d) 32

7. Simplify the following.
,भ्ख,श ,6ै ख्य ुखा क्र ख्य र, द

$$\left[\left(1-\frac{1}{2}\right)\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)...\left(1-\frac{1}{100}\right)\right]^{-0.5}$$

IB ACIO Grade-II 18/02/2021 (Shift-01)
(a) 10 (b) 100
(c) $\frac{1}{100}$ (d) $\frac{1}{10}$

8. Find the total surface area of cube whose volume is 64 m³.
इगख भ्ख्य ख्य श ख क्छ ा रद ख ु थ ा न ख ै ख्य र, स ़, गय रू दै भ्ख छख र् ख ब
IB ACIO Grade-II 18/02/2021 (Shift-01)
(a) 96 m² (b) 36 m²
(c) 25 m² (d) 64 m²

9. Find a single discount equivalent to two successive discounts of 15 percent and 5 percent.
8ख ै, 7ै रू क्छ8ख ै, 7ै ख्य रख ु ख्क ,ा य डश्च ि ु ख ी क्छ ख्य स्य ख स्य श रख्ड ख ै ख्य र, स उ
IB ACIO Grade-II 18/02/2021 (Shift-01)
(a) 20.20 (b) 19.25
(c) 10.5 (d) 18.75

10. The ratio of two numbers is 3 : 5 and their LCM is 42 greater than their HCF. What isthe value of the larger number?
.ु खाहिद ु ि य रू भ्ये ख4र्छ ख8ख रू क इभ्य खLCMख इभ्य ुखHCFख्य ुख0रू ,न्य न ख ी ब स खाहिद ख्य ख भ्ख द ख ला
IB ACIO Grade-II 18/02/2021 (Shift-01)
(a) 9 (b) 15
(c) 18 (d) 12

11. The average of 5 consecutive numbers is 21. The highest number will be?
8ख ा ै खाहिद ु ि य रू वै र्छ ख ब ा ी गु ा ब स खाहिद ख द ख ु र ल
IB ACIO Grade-II 18/02/2021 (Shift-01)
(a) 22 (b) 19
(c) 23 (d) 21

12. Sanjay and Amit can do a piece of work in 8 days. Amit alone can do it in 12 days. In how many days will Sanjay do it alone?
गि दरू क्छू ,ी ख स्य ख्य ा ख्य ु ख ण्ख, भ ु ा ु ि य क्छ गये ु ख ि रू ,ै रू युश ख्र ुर्छ 0 , भ ु ि ु ि य क्छ गये ख ब ा ि दख्र ु रू युश ,ये भ्ख, भ ु ि ु ि कु ल
IB ACIO Grade-II 18/02/2021 (Shift-01)
(a) 24 days (b) 12 days
(c) 16 days (d) 20 days

13. A boat goes 20 km downstream in 30 mins. The speed of the stream is 10 km/h. Find the speed of the boat.
स्य ख भ पख41खा भ्टखा ु ि न कछ य ु रू भ्स झ 01ख,य ा रखग शै रख ब न कछ य रख ै, र्छ 1 ,य ा रू ट ि ख ब भ पख्य रख ै, ख ै ख्य र, द उ
IB ACIO Grade-II 18/02/2021 (Shift-01)
(a) 30 km/h (b) 60 km/h
(c) 20 km/h (d) 45 km/h

14. Find the volume of a sphere with diameter as 21 cm. (The value of $\pi = \frac{22}{7}$)

ƒ ख्या रख्द्द गख्य शुख्स्य ख्शुख्य रू दै भ
ˏ ै ख्य र, स्ङ्ग π ख्य ख भ्ख्= $\frac{22}{7}$ ख ह्ल

IB ACIO Grade-II 18/02/2021 (Shift-01)

(a) 3361 cu cm
(b) 4441 cu cm
(c) 4132 cu cm
(d) 4851 cu cm

15. The ratio of the length of the parallel sides of a trapezium is 3 : 2. The shortest distance between them is 15 cm. If the area of the trapezium is 1350 sq. cm, then find the difference of the lengths of the parallel sides.

स्यखा र्शिख्य रखा भैख्सेत्र ुख्यि रख्र्शि स्ट्रै य रू भा ै ख4र्ख ख0ख्ख्रइ भ्य ुखी ए रख्य र तदभै ा रू ख्यरं 8ख्या रख ख्द्द, ख्या र्शिख्य रुध। नय र्ख 481खपत्ख्ा रख ख्ख ै ुख्या भैकि सेत्र ुख्यि रख्र्शि स्ख्यि रू ैख्ख ै ख्य र, स्उ

IB ACIO Grade-II 18/02/2021 (Shift-01)

(a) 65 cm (b) 95 cm
(c) 36 cm (d) 21 cm

16. The ratio of two numbers a and b is 7 : 15, respectively. Their least common multiple is 840. What is (b + a) : (b – a)?

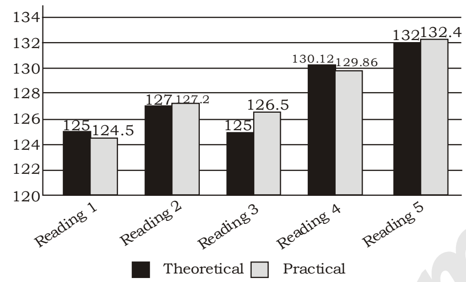
ुख्याहिद ुख्यि कbख्य रू भा ै ख्ा 7ˆ प्रर्ख र्ख 8ख ख्द्भ्य खर 5स्ा ख्या ।प्दख्छि ˜ ख्(b + a) : (b – a)ख दख ला

IB ACIO Grade-II 18/02/2021 (Shift-01)

(a) 7 : 11 (b) 15 : 4
(c) 11 : 4 (d) 15 : 11

17. The given bar graph represent both, theoretical and practical reading obtained in 5 rounds of reading while conducting a scientific experiment.

, द ख्ऽद खी ख्ऽम ख्स्य ख्प्रव ,भ्य ख. दु य कै ुख्गा दख8ख्क्खिख्य रख्ख,बऽ खा ुि. जे गब ै, य रू ख्द्द फ ,क्य ुभ ुख्यि,बऽ ख्यि ु. 7ˆ ? ख ब



What is the ratio of the difference obtained in reading 2 and 5 when calculated theoretically to the difference obtained in reading 1 and 3 when reading were taken practically?

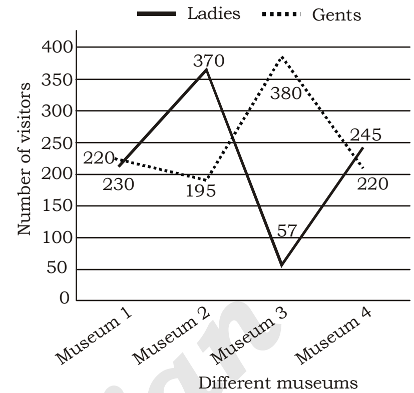
गब ै, य ख्। ख्ा ुख्ऽ भ ख्य क्ा ुख ख्ख्ा,बऽ ख0 ु ख्ऽ8ख ुि जे रू ैख्य ख्द्द फ ,क्य ख्। गुख्ा,बऽ ख्यि ुभ ख्ा र्ख रू ख्4ख ुि जे रू ैकि गुख द रू भा ै ख ला

IB ACIO Grade-II 18/02/2021 (Shift-01)

(a) 3 : 2 (b) 1 : 1
(c) 2 : 1 (d) 5 : 2

18. The graph shows number of visitors (ladies and gents) in four different museums namely 1, 2, 3 and 4. Which museum had the maximum number of visitors?

ऽम ख्ऽ ख्ू श ऽ ्रू श ऽख्ा ऽ् श द ुि ˆ ?ख्ऽ : 0ःख्4रू ख्छख ुि ऽै से ुि ा ्ःश ुि क ।ख्कु ख्यि रखाहिद रू 7ˆ ? ख ख्ऽ,य गख्ा ऽ् श द ुि ऽै से ुख्यि रू ,ऽ यै ा रखाहिद ख रल



IB ACIO Grade-II 18/02/2021 (Shift-01)

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

19. Find the rate of interest if amount after 2 years on simple interest on a capital of Rs. 1000 is Rs. 1200.

द, र्ख 111ख्ढ। दु ख्य रख्ऽ ख्स्ख ख्ा ˜ क ख्द ` ।ख्ऽ0ख्प ख्ऽी ु ख्क,7 र्ख 011ख्ढ। दु ख् ुखै ु उद ` रू ख्ऽ ै ख्य ख्ुि

IB ACIO Grade-II 18/02/2021 (Shift-01)

(a) 15 percent (b) 10 percent
(c) 20 percent (d) 5 percent

20. LCM and HCF of two numbers are respectively 18 and 3. If one of them is 9, find theother number.

ुख्याहिद ुख्यि खLCMरू ख्HCFख्ा 7ˆ एरू ख्4ख ख्द्द, ख्ऽ भ ुख्ख्स्य ख(ख ख्ऽ ु मख्ख्ाहिद रू ै ख्य र, स्उ

IB ACIO Grade-II 18/02/2021 (Shift-01)

(a) 9
(b) 8
(c) 3
(d) 6

ANSWER KEY

1.(b)	2.(d)	3.(d)	4.(b)	5.(a)	6.(a)	7.(a)	8.(a)	9.(b)	10.(b)
11.(c)	12.(a)	13.(a)	14.(d)	15.(c)	16.(c)	17.(d)	18.(c)	19.(b)	20.(d)

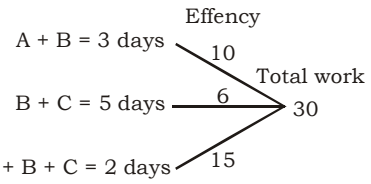
SOLUTIONS

1. (b)
No. = 87659 – 21
By divisibility Rule of 11.
Sum of odd digit – Sum of even digits = 0, 11, 22, ...
87659 x 21
$(8 + 6 + 9 + 2) - [7 + 5 + x + 1] = 0/11$
$12 - x = 0/11$
$\therefore x = 1$

2. (d)
$25\% = \frac{1}{4}$
Let the no. is x
A.T.Q
$100 - x \times \frac{1}{4} = x$
$\Rightarrow \frac{5x}{4} = 100 \qquad \therefore x = 80$

3. (d)
Total distance covered by Train initially = 18 × 15m
Due to problem, distance covered by Train = (18 – 3) × 15 = 15 × 15m
ATQ,
18 × 15 m → 15 sec
$\therefore 15 \times 15\text{m} \rightarrow \frac{15}{18 \times 15} \times 15 \times 15 \text{ sec}$
= 12.5 sec

4. (b)
Saving%
$\therefore$ Jan = $\frac{12}{40} \times 100 = 30\%$
Feb = $\frac{5}{35} \times 100 = 14.28\%$
March = $\frac{7}{37} \times 100 \approx 18.91\%$
April = $\frac{10}{42} \times 100 \approx 23.8\%$
May = $\frac{14}{45} \times 100 \approx 31.11\%$
$\therefore$ Max ratio of saving to income will occur in May

5. (a)


Eff. of A = Eff. of (A + B + C) – Eff. of (B + C) = 15 – 6 = 9
Then Eff. of B 10 – 9 = 1
Eff. of C = 6 – 1 = 5
$\therefore$ A + C will complete the work = $\frac{30}{14} = \frac{15}{7}$ days

6. (a)
Avg. = $\frac{\text{Sum of observation}}{\text{No. of observation}}$
$= \frac{25 + 35 + 45 + 50 + 15}{5} = 34$

7. (a)
$\Rightarrow$
$$\left[\left(1-\frac{1}{2}\right)\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)....\left(1-\frac{1}{100}\right)\right]^{\frac{-1}{2}}$$
$$\Rightarrow \left[\frac{1}{2}\times\frac{2}{3}\times\frac{3}{4}\times.....\times\frac{99}{100}\right]^{\frac{-1}{2}}$$
$$\Rightarrow \left[\frac{1}{100}\right]^{\frac{-1}{2}} = (100)^{\frac{1}{2}} = 10$$

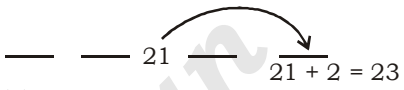
8. (a)
Volume of cube = x^3
$\therefore x^3 = 64 \text{ m}^3 \Rightarrow x = 4\text{m}$
$\therefore$ Total surface area = $6x^2$
$= 6 \times 4^2 = 96 \text{ m}^2$

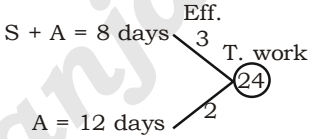
9. (b)
15% = $\frac{3}{20}$ 5% = $\frac{1}{20}$

MP		SP
20	:	17
20	:	19
400	:	323

Discount% = $\frac{7}{400} \times 100 = 19.25\%$
Alternate:
15% , 5%
By AB rule
$ED = 15 + 5 - \frac{15 \times 5}{100}\%$
$= 20 - 0.75\%$
$= 19.25\%$

10. (b)
Let numbers are $3x$ and $5x$
$\therefore$ LCM = $15x$
HCF = x
A.T.Q
$14x = 42$
$x = 3$
$\therefore$ Heighest no. = $5x = 15$

11. (c)
Avg. of consecutive no. is middle value.


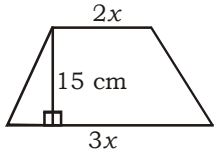
12. (a)


$\therefore$ Eff of Sanjay = 1
$\therefore$ Sanjay will complete the work = 24 days

13. (a)
Let speed of Boat & water are B & W respectively.
$\therefore B + W = \frac{20}{\frac{30}{60}} = \text{km/h} = 40 \text{ km/h}$
$\therefore B + 10 = 40 \text{ km/h}$
$B = 30 \text{ km/h}$

14. (d)
Volume of sphere = $\frac{4}{3}\pi r^3$
$= \frac{4}{3} \times \frac{22}{7} \times \frac{21}{2} \times \frac{21}{2} \times \frac{21}{2}$
$= 11 \times 441 = 4851 \text{ cm}^3$

SMART APPROACH:-
Whenever π (Pi) is involve in any formula. Ans must be multiple of 11. only option (d) satisfy.

15. (c)


$\therefore$ Area = $\frac{1}{2}$ (sum of parallel lines) × h
$1350 = \frac{1}{2} \times 5x \times 15$
$x = 36$

$\therefore$ Diff. = $3x - 2x = x = 36$ cm

16. (c)
a : b = 7 : 15 $\Rightarrow$ b : a = 15 : 7
By componendo and dividendo

$$\frac{b+a}{b-a} = \frac{15+7}{15-7} = \frac{22}{8} = \frac{11}{4}$$

$\therefore$ (b + a) : (b – a) = 11 : 4

17. (d)
Difference obtained in reading to and 5 (Theoretically) = 132 – 127 = 5
= Difference obtained in reading 1 and 3 (Practically) = 126.5 – 124.5 = 2
$\because$ Required ratio = 5 : 2

18. (c)
Calculate total visitors in each museums
M_1 = 220 + 230 = 450
M_2 = 370 + 195 = 565
M_3 = 380 + 57 = 437
M_4 = 245 + 220 = 465
$\therefore$ Max no. of visitors are in M_2.

19. (b)
S.I = 1200 – 1000 = 200

$$\therefore \text{S.I} = \frac{P \times R \times T}{100}$$

$$\Rightarrow 200 = \frac{1000 \times R \times 2}{100}$$

R = 10%

Alternate:

Principle 1000 → Amount 1200

S.I = 200 for 2 year
S.I = 100 for 1 year

$$\text{Rate \%} = \frac{100}{1000} \times 100\ \%$$
$$= 10\ \%$$

20. (d)
$N_1 \times N_2$ = LCM × HCF
$9 \times N_2 = 18 \times 3$
$\therefore$ $N_2 = 6$

IB ACIO GRADE-II

18/02/2021 (Shift-02)

10

1. Selling Price of 5 oranges = Cost Price of 8 oranges. Find the profit/ loss percentage.
   खु पिन्य न्भ्रफ्रात्दपहृ अ ह्व ख्हृक म रात्दपहिं ह्व ख्हृ हन ज़ां ।।इ्ाुं न्सु रणरुी ार पुला ०न

   IB ACIO Grade-II 18/02/2021 (Shift-02)

   (a) 30 percent (b) 25 percent
   (c) 10 percent (d) 60 percent

2. Sita travels 5 km every day to her school by bicycle. She leaves her home at 7:00 am and reaches at 7:30 am. Find its speed?
   लिाफ इक ताद्ग ाि8पज़फदि. ७ लाघ्5णाज्ञा ।ाि दपदु ज़ाफ भु प ख्लपलहाफ पतलइजा अक्रु7आक्र स्थ्व्र आदि. ७ दणतािदुं पज़रल ज्ञ्ज ाला7आक्र स्व्ब्र आद7इ3 रलइजा 2ापल शुरुी ारुपतक

   IB ACIO Grade-II 18/02/2021 (Shift-02)

   (a) 10 km/h (b) 5 km/h
   (c) 8 km/h (d) 20 km/h

3. What value will come in place of question mark (?) in the following equation?

   $$\frac{40}{2}+13\times4=?+\frac{40}{3}-33$$

   ु ?ुज़ु यरु ाक्ख्ला तफ्र ख्वसएृ ु ऊ त्त्ल्ड पदृ /ा ान7त घ्हफ खिं न. १0शरू

   $$\frac{40}{2}+13\times4=?+\frac{40}{3}-33$$

   IB ACIO Grade-II 18/02/2021 (Shift-02)

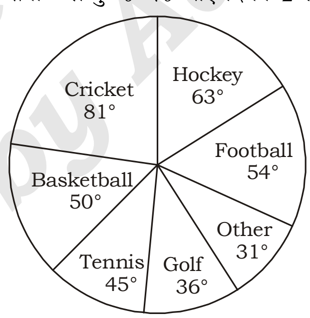
   (a) 97 (b) 79
   (c) 89 (d) 85

4. Two friends A and B went to fruit market to buy some fruits. At first shop B bought some mangoes at Rs. a per mango and A bought 9 mangoes more than B. At the next shop A bought some apples at a unit price of Rs. b per apple and B bought 18 apples more than A. Later, it was found that the ratio of number of fruits bought by A and B is 4 : 7, respectively, whereas the amounts of money spent by them to buy fruits are the same. Find the ratio a : b.
   त्रदत्रदरु A . ाला B पुउ्न 7क्ष्ण यतर्ल्र दपद ुज़ाफ 7क्ष्ण श्राा ाल श्0न 7इज़लत्र्याि न7त B दि a ग7हदसुरु . ाख पुउ्न . ाख यतक्लद. ाला A दि B दिन्. ाख . ुढपन यतलब. श्ज़लत्र्याि 7त A दि b ग7हदसुरु ाक्ष्ण पलश्पाश्रपाल्कर 7त पुउ्न ाक्ष्ण यतक्लद. ाला B दि A दि 4फ ाक्ष्ण . ुढपन यतलब श्रात्र ख्वा हङ्ग 7ाहफ श्हृपन A . ाला B छात यतक्लद श्0फ 7क्षामपलाक्ष्ह्फ पा . उारु खुयरु%रु न्इशा श्रुपन 7क्ष्ण यतर्ल्र द पदु ज़ाफ 2 पद छात य न्भपलश्क्वर्द तुुए ाखि न्इशा a : b फपाफ खि नीारुपतक

   IB ACIO Grade-II 18/02/2021 (Shift-02)

   (a) 3 : 2 (b) 1 : 2
   (c) 2 : 1 (d) 2 : 3

5. The pie graph given below shows the expenditure on various sports in a particular year of a country. Read the graph carefully and answer the questions given below.
   लद्ु त्रहफ इ3फ अक्राुरुश्7दृ पलित्रफ पद ुपलिु अणक अवनख्यु अुं िन्यज्ञााश7त य व पाद त्रणाफ इजा श्7दृ पादृ स्हां नाि दि 7ृ०० र/ाफि लदु त्रफ श्फसएृ हदपफ 2धक त्रुला ०न



   If Rs. 2 crore was spent on all sports in the whole year, then how much money was spent on cricket and hockey together?
   हुत्र 7दृ अवनख्वा ?7फ्तयज्ञााश7त छ्र पताट्र म 7हदय न्इफ्र इाख राद्गुं पकर/ाफ इाब ल7त पज़्रु ख्ाापलृ पर्द द्ग7फ य न्इफ्र /ादरू

   IB ACIO Grade-II 18/02/2021 (Shift-02)

   (a) Rs 8000000
   (b) Rs 16000000
   (c) Rs 12000000
   (d) Rs 800000

6. If a certain sum of money becomes Rs 1250 in 3 years and Rs 1600 in 8 years at simple interest, then find the amount.
   0पन्ुुए रु र्द तुुए ाि ढातफ्र स्हा।न पल त्रत ाििक अवनख्वा4उ्रफ्रग7फ . ाला म अवनख्वा 4(थ्व्र ग7फ इाद ।ारल इशा राद्र्द तुुए ाारुपला 0न

   IB ACIO Grade-II 18/02/2021 (Shift-02)

   (a) 1024 (b) 1100
   (c) 1040 (d) 1050

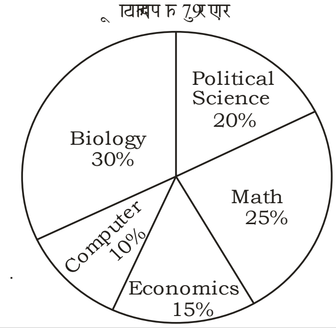
7. Two students appeared in an examination. One of them scored 15 marks more than the other and his marks were 55% of the sum of their marks. The marks obtained by him are:
   0पन 7तलाफ ख्वा त्रद्ग टाफ 2 7ु . /ारु इ3न 2 ख्वा दि 0पन दि त्रिाद पलरज़ाफ ख्वा 4भु . य . ुढपन सात्रृु प 0फ . ाला 2ापदि. यन 2 पद . य ाद पदहाकु पफ ४४;न /ाब 2 पद छात सात्रृु प 0फ श्0फ . यन इशा

   IB ACIO Grade-II 18/02/2021 (Shift-02)

   (a) 40,60 (b) 67.5, 82.5
   (c) 73.5, 88.5 (d) 53, 68

8. The given pie chart shows the percentage of students who have chosen different subjects as additional subjects.
   If the total number of students in the college is 5000, find the number of students who have opted for Mathematics or Economics.
   ुत्रहफ श्हफ 7ाश्व ।न्व्र2न ू ाटामपदसुरणर पादत्रणाफ इशु ।दिइाादु अुं िन ु अवनहामपाद . ुरु तथ्ह ु अवनफ पद म न्ख्वा उफ इशा हुत्र ख्वा अज्ञाफ ख्वप ज्ञ ू ाटामपलाक्ष्हफ ४४४४ इशा राद 2न ू ाटामपलाक्ष्हफ ाारुपतक्ष्ह ।ादिइाद शु6रु हफ . /ा्रा कपहृ अ न्फ उफ इशा

   Percentage of Students
   ू ाटामपफ 7ृ ०प्र एर



   IB ACIO Grade-II 18/02/2021 (Shift-02)

   (a) 3000 (b) 2500
   (c) 2000 (d) 1000

9. The lateral area is thrice as big as the base area of a solid cone. If the diameter of the solid cone is 1 meter, then what is the total surface area of solid cone?

7ïएअ)ाव्र7धुक 0प न 5।दि एपक उ प द . ाढात प द)ाव्र7धुक ि दर्लि र्3 ह श्प्रृ ह इ्रा हु ञ 5।दि एपक उ प ह प्हा ि 4 क खुक्त इ्रा र ाद 5।दि एप 3 प ह प ञ्ज 7क्ल क)ाव्र7धु पर्ि ह इस्

IB ACIO Grade-II 18/02/2021 (Shift-02)

(a) π Sq. m (b) 8π Sq. m
(c) 8π Sq. m (d) 2π Sq. m

10. LCM of two numbers is 12 time their HCF. The sum of HCF and LCM is 403. If one of the numbers is 124, then find the other number.

ञ्ज दि ख्रा . ाव्र प ह LCMह 2 प द HCFञ प ा 4ड्ड र्3 ह इ्रा HCFञ . ाव्र LCM प ह हाह्र %क इ्रा हु ञ 0प न ि ख्र ह 4ड्ड ह इ्रा र ाद ञ्ज ि तिल ि ख्र ह ी ारू प तब्र

IB ACIO Grade-II 18/02/2021 (Shift-02)

(a) 64 (b) 76
(c) 112 (d) 93

11. Find the area of a sphere whose radius is 7 cm. (The value of π is $\pi = \frac{22}{7}$)

2ि शञ्ज द प ह)ाव्र7धु ी ारू प लुा 0ह 1 पि ल

ुवँ हह न ि ख्रा इ्रा र ाञ प ह र्व न $= \frac{22}{7}$ न इ्रा

IB ACIO Grade-II 18/02/2021 (Shift-02)

(a) 616 cm² (b) 144 cm²
(c) 225 cm² (d) 729 cm²

12. A, B and C can do a piece of work on their own in 5, 10 and 15 days respectively. Calculate the time required by B and C to do the work together.

Aह Bह . ाव्र Cह ख्रपुह भ्ह 4ह . ाव्र 4भ ुर्ि ाव्र ख्र. 7 ि द ञ्ज 7क 0प न प ाख प त ि प र द इ्रा 0प न ि ा/ ह प ाख प र्त ि द प दु ज्ञ0ह Bह . ाव्र Cह छ्रा क . ाञ्ञ हप न ि ख्र प लर्श 6ा ह प तब्र

IB ACIO Grade-II 18/02/2021 (Shift-02)

(a) 6 days (b) 8 days
(c) 5 days (d) 12 days

13. If length and breadth of a rectangle are increased and decreased by 10 percent respectively, then what is the percentage change in the area of rectangle?

हु ञ 0प न . ाहरु प ल ज्ञ प्रा8ह . ाव्र ा्रा8ख्रध् ख्पुरु 4ह सु र एरु प ल ञ्ञुह . ाव्र प ख्ल प ल 1 ार ल इ्रा र ाद . ाहरु प द)ाव्र7धु ख्रा पर्ि द सु र एरु 7 त र्ञ क इा रू

IB ACIO Grade-II 18/02/2021 (Shift-02)

(a) 10 percent (b) 1 percent
(c) No change (d) 0.1 percent

14. The average of first 6 positive multiples of 6 will be __________.

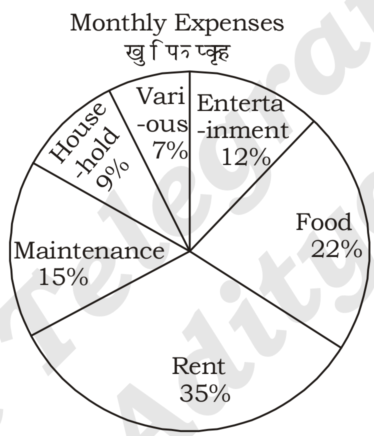
(न प द 7 इ ज्ञ द (न र्ठ ाञ्ञप न श्6ा। ाव्रप ह . ाि र __________न इाज्ञान

IB ACIO Grade-II 18/02/2021 (Shift-02)

(a) 12 (b) 6
(c) 21 (d) 126

15. Pie chart shows the monthly expenditure of Suresh on various items. If he has to pay Rs 70000 as rent, calculate the amount spent on entertainment.

718ड्ड ा-ञ्ञुअुं ि न अ र3 ाव्र7 ल ि तुह प दखु पि प्हु पह प द ञ्ञाण्ह इ्रा हु ञ 2ि द्र ९९९० र 70 ुप ता0ह प द म न खञ्ञ ाञ्ञर्र्ा ि न प र्त ह इ्रा र ाद र्ड ाव्र ि न 7क प्हु प लश8ाञुए ह प लर्श 6ा ा प तब्र



IB ACIO Grade-II 18/02/2021 (Shift-02)

(a) Rs. 24000 (b) Rs. 35000
(c) Rs. 12000 (d) Rs. 8000

16. When 65 percent of a number is subtracted from itself, then the result becomes square root of 784. What is the number?

1 श्रु प ि ल ि ख्रह प ह (भ्ह सु र एरु 2ि ख्र ा द ण-हु ञ ह ह 1 1ा0ह र ाद 7 ुत ाज्ञ्ञ म% प ह अर्श्ञ्ञ इा द 1 ार ह इ्रा अ्रु ि ख्रह घ ह ह इस्

IB ACIO Grade-II 18/02/2021 (Shift-02)

(a) 96 (b) 56
(c) 64 (d) 80

17. If 768.792 ÷ 0.00823 = a, then find the value of 768792 ÷ 0.00823.

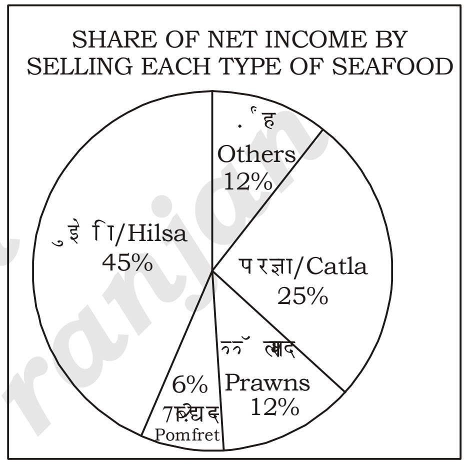
हु ञ 768.792 ÷ 0.00823 = a,न र ाद 768792 ÷ 0.00823अ प ह र्व न ी ार प लुा 0न

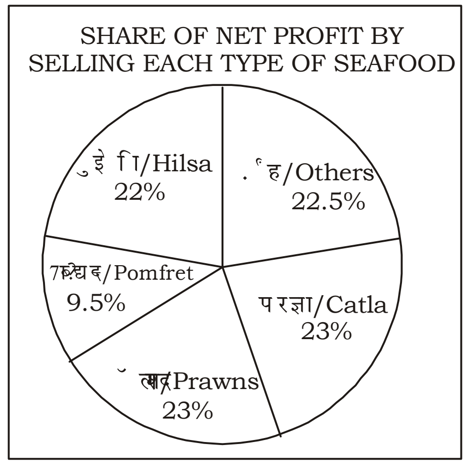
IB ACIO Grade-II 18/02/2021 (Shift-02)

(a) a ÷ 1000 (b) 10a
(c) 1000a (d) a ÷ 100

18. The following pie chart shows the income and profit earned by Kolibada Sea Food Center in Mumbai by selling different types of sea food in the year 2012-13.

ु ?ु ज्ञु य र ञ 718ड्ड ा-ञ्ञख्रा अञ्ञञ्ञ्ड्ड 4ड्ड 4क ख्रा ख्र8ाञ्ञ प द प ाज्ञ ल्ला प्रृ ह ि ल 7श्रु ह पू क छ्रा ञु अुं ि सप ा ल प द ि ल 7श्रु ह प द श्र द प ल . ु 1 ञ्ञ . ाह . ाव्र ज्ञां ह प द ञ्ञाण्ह श ह ह इ्रा





If the total income of the sea food center in the year 2012-13 was Rs. 31,25,000 and the total profit of the company was Rs. 6,00,000, then the profit earned by selling which type of seafood was the maximum per rupee of income?

हु ञ अञ्ञञ्ञ्ड्ड 4ड्ड 4क ख्रा ि ल 7श्रु ह पू क प ल प ञ्ज . ाह ब4ड्ड्ष्ष्ठ्ठ र ज /ाल . ाव्र प र्ि ल प ह प ज्ञ ज्ञां ह (ष्ष्ष्ठ्ठ र ज तहाष र ाद सु र र 7ञ . ाह प द ज्ञ0ु प ि सप ा ल प द ि ल 7श्रु प द श्र द प ल . ु 1 ञ्ञ ज्ञां ह . ु ढप र ख /ाारू

IB ACIO Grade-II 18/02/2021 (Shift-02)

(a) Prawns
(b) Pomfret
(c) Others
(d) Catla

19. Find the area of a trapezium whose parallel sides have lengths of 12 cm and 18 cm respectively and the shortest distance between them is 20 cm.
0पन्ड़ ि ख्लाक्ष प क)ाब7ख्ला ारु प ुला ़ु 1 ि प ल ि र्ख ाराल ं ा13 ा. ाम्प ल ज़्मा8 ै ख्ाु4ख्ल ि क्ल . ााा4फ ि क्लाइज्ज ाा2 पह्ल्ाल्न प र्ला ह ,रख ज्ाल्र्ाु ि क्लाइ ा
IB ACIO Grade-II 18/02/2021 (Shift-02)
(a) 600 cm^2
(b) 210 cm^2
(c) 300 cm^2
(d) 195 cm^2

20. If 20 men work 5 hours a day and complete a work in 4 days. So in how many days will 10 men complete the same work by working 10 hours a day? Assume that all men work with the same efficiency.
हु ़ज्ल्ा . ाट्ाख्ल सु रु र्ड न ध्ा णाह्पाख प तप द %ु र्ड म्ाख्ा0पन्ड़ पाख 7ता प तदइ ्ा रादु4 ़ . ाट्ाख्ल सु रु र्ड न 4ध्ा णाह्पाख प तपद्ु प र् द ु र्ड म्ाख्ा ि र्ख न पाख पाद7ता प तवुक र्ख ज्ञ्ाु पन ि ाल 73क 0पन्ड़ इल पाहव्ाख्र ि द पाख प तदइ ा
IB ACIO Grade-II 18/02/2021 (Shift-02)
(a) 5 days (b) 2 days
(c) 40 days (d) 4 days

ANSWER KEY

1.(d)	2.(a)	3.(d)	4.(c)	5.(a)	6.(c)	7.(b)	8.(c)	9.(a)	10.(d)
11.(a)	12.(a)	13.(b)	14.(c)	15.(a)	16.(d)	17.(c)	18.(a)	19.(c)	20.(d)

SOLUTIONS

1. (d)
$5 \times SP = 8 \times CP$
$\therefore \frac{CP}{SP} = \frac{5}{8}$ $\therefore P\% = \frac{3}{5} \times 100 = 60\%$

2. (a)
$7:00$ to $7:30 = \frac{1}{2}$ hrs
$\therefore$ Speed $= \frac{5}{0.5}$ km/h $= 10$ km/h

3. (d)
$\frac{40}{3} + 13 \times 4 = x + \frac{40}{3} - 33$
$\Rightarrow \frac{40 + 52 \times 3}{3} = \frac{3x + 40 - 99}{3}$
$\Rightarrow 196 = 3x - 59$
$\Rightarrow 3x = 255$
$\therefore x = 85$

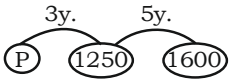
4. (c)

	A	B
Shop – I	$(x+9)$ Mangoes	(x) Mangoes
Shop – II	(y) Apples	$(y+18)$ Apples

ATQ,
Price of mangoes at Ist shop = a
Price of mangoes at 2nd shop = b
$\therefore a(x+9) + by = ax + b(y+18)$
$\Rightarrow 4x + 9a + by = ax + by + 18b$
$\Rightarrow 9a = 18b$
$\therefore \frac{a}{b} = \frac{2}{1}$

5. (a)
Portion spend on cricket an Hockey
$= \frac{81° + 63°}{360°} = \frac{2}{5}$
$\therefore$ Money spent $= 2 \times \frac{2}{5}$ cr
$= 0.8$ cr
$=$ Rs. 80,00,000

6. (c)
P → 3 yrs → Rs. 1250
P → 8 yrs → Rs. 1600
$\therefore$ S.I of 5 yrs → Rs. 350
$\therefore$ S.I of 3 yrs → Rs. 210
$\therefore$ P → 1250 – 210 = Rs. 1040
Alternate:



5y → 350
1y → 70
$P = 1250 - 3 \times 70$
$=$ Rs. 1040

7. (b)

A	B
x	$x + 15$

$\therefore$ Total Marks $= 2x + 15$
ATQ,
$\frac{x+15}{2x+15} = \frac{55}{100} \Rightarrow \frac{x+15}{2x+15} = \frac{11}{20}$
$\Rightarrow x = 67.5$ B = 82.5

8. (c)
Student who opted Maths or Eco
$= (25 + 15)\% = 40\%$
$\therefore$ No. of stuents $= 40\%$ of $5000 = 2000$

9. (a)
ATQ,
$\pi rl = 3\pi r^2$
$\therefore l = 3r$
$\therefore$ T.S.A $= \pi r(r + l)$
$= \pi r \times 4r$
$= 4\pi r^2$ $\left[r = \frac{1}{2}\right]$
$= 4\pi \times \frac{1}{4}$
$= \pi$ m^2

10. (d)
LCM : HCF
12 : 1
13 → 403
× 31
$\therefore$ HCF = 31
LCM = 12 × 31
$N_1 \times N_2 = LCM \times HCF$
$124 \times N_1 = 12 \times 13 \times 31$
$N_1 = 93$

11. (a)
Area of sphere $= 4\pi r^2$
$= 4 \times \frac{22}{7} \times 7 \times 7$
$= 616$ m^2

SMART APPROACH:-
Since π is involved in formula. So, Ans shoul be multiple of 11.
Only option (a) Satisfies.

12. (a)
A → 5 days, Eff. 6
B → 10 days, 3
C → 15 days, 2
T. work 30
$\therefore$ B + C will complete the work $= \frac{30}{5} = 6$ days

13. (b)
% change in area $= \left(1 + b + \frac{1 \times b}{100}\right)\%$
$= \left(10 - 10 - \frac{10 \times 10}{100}\right) =$ % decrease

14. (c)
Avg. of consecutive no. $= \frac{\text{First} + \text{Last}}{2}$
$\therefore$ 6, 12, ... 36
Avg. $= \frac{6+36}{2} = 21$

15. (a)
Exp on Rent = 35%
Exp on Entertainment = 12%
ATQ,
$35\% \xrightarrow{\times 2000}$ Rs. 70,000
$12\% \xrightarrow{\times 2000}$ Rs. 24000

16. (d)
Let no. is x
ATQ,
$\therefore x - x \times 65\% = \sqrt{784}$
$\Rightarrow \frac{35}{100} x = 28$
$x = 80$

17. (c)
If $\frac{768.792}{0.00823} = a$
multiply by 1000 on both side.
$\Rightarrow \frac{768792}{0.00823} = 1000a$

18. (a)

	Income	Profit
Prawns →	31250×12	6000×23
Pomfret →	31250×6	6000×9.5
Others →	31250×12	6000×22.5
Catla →	31250×25	6000×23

$\therefore$ Profit earned per rupee.
$\frac{6000 \times 23}{31250 \times 12} : \frac{6000 \times 9.5}{31250 \times 6} : \frac{6000 \times 22.5}{31250 \times 12} : \frac{6000 \times 23}{31250 \times 25}$
$\Rightarrow \frac{23}{12} : \frac{9.5}{6} : \frac{22.5}{12} : \frac{23}{25}$
Clearly $\frac{23}{12}$ is Max
$\therefore$ Prawns have the maearned profit per rupee.

19. (c)

Area of Trapezium = $\frac{1}{2}$ (a + b) h

$= \frac{1}{2}(12 + 18) \times 20 = 300 \text{ cm}^2$

20. (d)

$\frac{M_1 \times D_1 \times H_1}{W_1} = \frac{M_2 \times D_2 \times H_2}{W_2}$

$\Rightarrow 20 \times 4 \times 5 = 10 \times x \times 10$

$\therefore x = 4$ days

IB ACIO GRADE-II

18/02/2021 (Shift-03)

11

1. Which of the following statement(s) is/are correct?

   fuEu esa ls dkSu lk@ls dFku lgh gS@gSa\

   I. $\frac{3}{7} < \frac{5}{9} < \frac{7}{11}$

   II. $\sqrt{6} > \sqrt[3]{12}$

   IB ACIO Grade-II 18/02/2021 (Shift-03)

   (a) Only I
   (b) Both I and II
   (c) Only II
   (d) Neither I nor II

2. Monika is twice as efficient as Ritu and takes 60 days less than Ritu to complete a job.Find the time in which they can finish the job together.

   eksfudk] _rq ls nksxquk n{k gS vkSj fdlh dk;Z dks iwjk djus esa _rq ls 60 fnu de ysrh gSA og le; Kkr djsa ftlesa os ,d lkFk dk;Z dks lekIr dj ldrs gSaA

   IB ACIO Grade-II 18/02/2021 (Shift-03)

   (a) 50 days (b) 22 days
   (c) 70 days (d) 40 days

3. A student multiplied a number by $\frac{2}{7}$ instead of $\frac{5}{7}$. What is the percentage of error?

   ,d Nk= us ,d la[;k dks $\frac{5}{7}$ ds ctk;

   $\frac{2}{7}$ ls xq.kk dj fn;kA =qfV dk izfr'kr Kkr djsa\

   IB ACIO Grade-II 18/02/2021 (Shift-03)

   (a) 60 percent (b) 54 percent
   (c) 30 percent (d) 45 percent

4. What value will come in place of question mark (?) in the following question?

   $(9^2 \times 23 + 7^3 \times 8 + ?)\frac{1}{2} = 87$

   fuEu iz'u esa iz'uokpd fpg~u (\?) ds LFkku ij D;k eku vk,xk\

   $(9^2 \times 23 + 7^3 \times 8 + ?)\frac{1}{2} = 87$

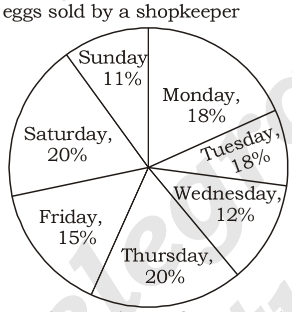
   IB ACIO Grade-II 18/02/2021 (Shift-03)

   (a) –2971 (b) 2947
   (c) –4433 (d) 2968

5. The pie-chart given below represents the percentage distribution of the number of eggs sold by a shopkeeper on different days of a week.

   uhps fn;k x;k ikbZ&pkVZ ,d nqdkunkj }kjk lIrkg ds fofHkUu fnuksa esa csps x, v.Mksa dh la[;k dk izfr'kr forj.k n'kkZrk gSA

   Percentage distribution of the number of eggs sold by a shopkeeper

   If total number of eggs sold in the whole week is 1600, then find the number of eggs sold on Monday.

   ;fn iwjs lIrkg esa csps x, v.Mksa dh dqy la[;k 1600 gS] rks lkseokj dks csps x, v.Mksa dh la[;k Kkr djsaA

   IB ACIO Grade-II 18/02/2021 (Shift-03)

   (a) 180 (b) 288
   (c) 204 (d) 312

6. Which of the following statement is correct?

   fuEu esa ls dkSu lk dFku lgh gS\

   I. If amount = Rs. 26500, time = 5 years, and rate of interest = 16.5 percent per annum,then the principal is Rs. 14000 on simple interest.

   ;fn feJ/ku = 26500 :i;s] le; = 5 o"kZ vkSj C;kt nj = 16.5 izfr'kr izfr o"kZ gS] rks lk/kkj.k C;kt ij ewy/ku 14000 :i;s gSA

   II. If principal = Rs. 22000, amount = Rs. 39160 and time = 6 years, then at simple interest rate of interest is 13 percent per annum.

   ;fn ewy/ku = 22000 :i;s] feJ/ku = 39160 :i;s vkSj le; = 6 o"kZ gS] rks lk/kkj.k C;kt ij C;kt nj 13 izfr'kr izfr o"kZ gSA

   IB ACIO Grade-II 18/02/2021 (Shift-03)

   (a) Neither I nor II
   (b) Only I
   (c) Both I and II
   (d) Only II

7. The given table shows quantities of commodities consumed by a family in a year. By what percentage is consumption of millets more than bajra?

Commodities	Consumption in Kg.
Wheat	200
Bajra	50
Rice	150
Millets	100

   nh xbZ rkfydk ,d ifjokj }kjk ,d o"kZ esa miHkksx dh xbZ oLrqvksa dh ek=k dks n'kkZrh gSA cktjs dh rqyuk esa eksVs vukt dh [kir fdrus izfr'kr vf/kd gS\

   IB ACIO Grade-II 18/02/2021 (Shift-03)

   (a) 50%
   (b) 200%
   (c) 100%
   (d) 1 %

8. In a contest, a participant secured 30 percent but failed to proceed to the next round by 30 points. Another candidate securing 30 points more than the qualifying marks secured 45 percent. What is the qualifying point in the contest?

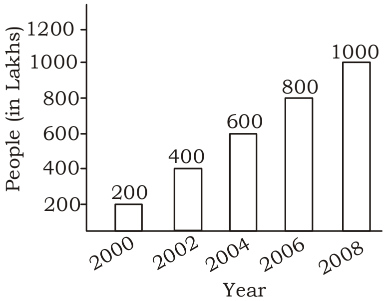
   ,d izfr;ksfxrk esa] ,d izfrHkkxh us 30 izfr'kr vad izkIr fd, ysfdu 30 vadksa ls vxys jkmaM esa ugha igq¡p ldkA ,d vU; mEehnokj tks ;ksX;rk vadksa ls 30 vad vf/kd izkIr djrk gS] 45 izfr'kr vad izkIr djrk gSA izfr;ksfxrk esa ;ksX;rk vad D;k gS\

   IB ACIO Grade-II 18/02/2021 (Shift-03)

   (a) 120
   (b) 200
   (c) 145
   (d) 150

9. The given graph shows the population of a country (in lakhs) in some years. Calculate the percentage increase in population from 2006 to 2008.

   fn;k x;k xzkQ dqN o"kksZa esa ,d ns'k dh tula[;k ¼yk[k esa½ dks n'kkZrk gSA 2006 ls 2008 rd tula[;k esa izfr'kr o`f) dh x.kuk djsaA



IB ACIO Grade-II 18/02/2021 (Shift-03)

(a) 20 percent (b) 15 percent
(c) 25 percent (d) 30 percent

10. A girl buys a cycle for Rs. 7500 and sells it at a loss of 25 percent. What is the selling price of the cycle?

इर यां. ध्र ह्यू ए व बइर यगतरख ि यप क्क ह ह्यम्न11य बउष्क तौ द्य। तस्रश गव ग न्यथ्रु ं त र ह्यै तछ यएक्उष्क तौ ह्यगतरख ि यर तरख – ॅ ि यर्श्र तौ ेद

IB ACIO Grade-II 18/02/2021 (Shift-03)

(a) 4895 (b) 6300
(c) 5755 (d) 5625

11. The average weight of 7 people increases by 5 kg when a new person comes in placeof one of them weighing 55 kg. What is the weight of the new person?

म्यर्ल ख्त तर त्य। तक य871 यन्यरख ि तल उरुश्र7 त तौ द्य7 उयक्र बगव न्न्यरख ि तल 871 य8र्त व इर यर्ल खत्र व2अस यएक्इर ॉ तर्ल खत्य। त तौ ह्या ॉ वर्ल खत्र त्य871 ख ॆ ा तौ ेद

IB ACIO Grade-II 18/02/2021 (Shift-03)

(a) 100 kg (b) 90 kg
(c) 85 kg (d) 75 kg

12. Find the volume of a cylinder with radius as 7 cm and height as 10 cm. (The value of π is $\frac{22}{7}$)

म्यगवह्यखर्त(त्य। तस्र/ 1यगवह्य) ष तरस8र्त व इर यउकी ा यर त्य। र्त ॆ ा य. त यर हख इ0

3πयर त्य त य$\frac{22}{7}$ यै द्व

IB ACIO Grade-II 18/02/2021 (Shift-03)

(a) 512 cm^3 (b) 1000 cm^3
(c) 1800 cm^3 (d) 1540 cm^3

13. An amount of money is to be divided between Paras, Ramesh and Aarav in the ratio of 5 : 8 : 15. If the difference between Ramesh and Aarav's share is Rs. 6000, then find thetotal amount of money?

इर यष ा क्तं त्यर त्यएत्क ा घ्यक ंवत्य। त्स्र। तक र वउह्य यन्यत्यु यत्य/ न्यर व। ा सत य बरु त्तखॆ ख ॅ त्य7 त तौ ह्य खयक ंवत्य। तस्र। तक यर व ैख2गवर वउह्य यर त्य। ऋक्यू ए वै ह्यल11 ह्यक तर मि यष ा क्तंत्य. त यर हख ॅ ेव

IB ACIO Grade-II 18/02/2021 (Shift-03)

(a) Rs. 52003 (b) Rs. 63995
(c) Rs. 24000 (d) Rs. 28361

14. Find the greatest number of 4 digits which is exactly divisible by 12.

छ्य। म्र तर ह्य8 ै यगउगवड़ ह्यगर्ज त्य. त र हख इय7 त्य/ ग यगवएी तत्यरु त्तर्(यै त्व

IB ACIO Grade-II 18/02/2021 (Shift-03)

(a) 9998 (b) 9996
(c) 9999 (d) 9994

15. Sides of a triangle are 6 cm, 6 cm and 8 cm. What is its area?

इर य खत्त्तर यर ह्य त्तर्त इ्र लय गवह्य लय गवह । त्स्र यगवह्यै ह्यशगर त्यप्रत्एर्क यर्श्र तौ ेद

IB ACIO Grade-II 18/02/2021 (Shift-03)

(a) $4\sqrt{5}$ cm^2 (b) $16\sqrt{5}$ cm^2
(c) $8\sqrt{5}$ cm^2 (d) $12\sqrt{5}$ cm^2

16. How many days are required by Priya to clean the house, if Mona can do it in 5 days and together they can complete in 3 days.

ख्ॅ त्यर त्य प्तगत्एक्यर क व बखॆ ा वखा ि ज्ञर्य खय त्तयशगव न्यखा त्य बएक्यर क गर ॆ ह्यै द्य। तस्र8 वनतत्खि र क्शगवखखा त्य बएक्यर क्गर ॆ वै ष्ठ

IB ACIO Grade-II 18/02/2021 (Shift-03)

(a) 5.5 days (b) 7.5 days
(c) 12 days (d) 9 days

17. Two workers A and B can complete a work in 35 days and 45 days, respectively. Initially, both A and B started working together. However A left after some days and B alone complete the remaining work in 29 days. Find the number of days that A and B work together.

नतयँ ख र यAय। तस्रBयइर यर त सर त्य– ं त ख न्यखा य। तस्र छ न्यखा य बएक्यर क्गर ॆ व ह्यथ्तत्य बयA य। तस्रB यनतत्म वइर यगतअ र त यर क त्यं त्र यख ॅ त्यै र्त तू यAयर भ्र खा तर वउत्य5 त्रथ्रन्वतै द्य। तस्रBय। र वि व ंतयर त सर त्य ग %यखा त्य बएक्यर क तौ ष्ठ Aय। तस्रBयइर यगतअयर त यर क व8र्त वखा त्य र ह्यगर्ज त्य. त यर हख इ0

IB ACIO Grade-II 18/02/2021 (Shift-03)

(a) 9 days (b) 7 days
(c) 5 days (d) 6 days

18. Find the simple interest on Rs. 2000 for 2 years at the rate of 5% per annum.

न्ऊय8 तस्र य4 त/ यनक्एक्ग यगर्त यर वर्ह इ ग111यू ए वर त्यगत क्र त4 त/ यर्श्र तौ त्र्ते

IB ACIO Grade-II 18/02/2021 (Shift-03)

(a) Rs. 100
(b) Rs. 500
(c) Rs. 200
(d) Rs. 400

19. P, Q and R together have 180 candies among them. P given Q and R each as many candies as they already have. After this, R gives Q half as many candies as Q already has. and R also gives P twice as many candies as P already has. Now each of them has the same number of candies with them. What is the ratio of the respective number of candies P and R had initially?

P, Qय। तस्रRयर वएतायर मि यख ि त क्य/ 1 र ्द्र ह्यै ह्यPया वQय। तस्रRयथ्र्कृ ष यर त्यक्र ा ह ह्यख्र त्र्र तुनह्य ख ॆ ा ह्यक्र र वएतायएै ि वगव अत्यशगर वउत्य्यRय्यQयर त्यक्र र ह्य। त ह र ्द्र ह्य न्वतै द्य ख ॆ ा ह्यQयर वएतायएै ि वगव ह्य। तस्रRय्यPयर त्यएै ि वगव त्र मियर ्द्र ह गवनत्स्र ह्यर ्द्र ह्य त्त्यन्वतै ह्य। उयक्र बगव थ्र्कृ ष यर वएताय ग त यगर्ज त्य बख्र त्र त ह्य ं तू्य। त य बPय। तस्रRयर वएताय त्र मि र ्द्र ह/ यर ह्यगर्ज तर त्य। ा सत यर्श्र तौ ेद

IB ACIO Grade-II 18/02/2021 (Shift-03)

(a) 2 : 1 (b) 3 : 2
(c) 1 : 2 (d) 5 : 3

20. The adjacent sides of a parallelogram are 36 cm and 27 cm in length. If theperpendicular distance between shorter sides is 12 cm, then what is the perpendicular distance between the longer sides?

इर यग त्र क्णॆ त्तयर ह्य। ताड यत्त्तइ्र खल गवह्य। तस्र ि ऊतरस म्यगवह्यै ह्य खय5 त्तह्यत्तत त र वउह्य यि उ8ॆ यनीह्य/ ग यगवह्यै ह्यक त्यड़ ष त्तत त्र वउह्य यि उ8ॆ यनीह्यर्श्र तौ ेद

IB ACIO Grade-II 18/02/2021 (Shift-03)

(a) 16 cm (b) 12 cm
(c) 10 cm (d) 9 cm

ANSWER KEY

1.(b)	2.(d)	3.(a)	4.(c)	5.(b)	6.(d)	7.(c)	8.(d)	9.(c)	10.(d)
11.(b)	12.(d)	13.(c)	14.(b)	15.(c)	16.(b)	17.(b)	18.(c)	19.(d)	20.(d)

SOLUTIONS

1. (b)

$\frac{3}{7}\times 100 = 42.84\%$

$\frac{5}{9}\times 100 = 55.55\%$

$\frac{7}{11}\times 100 = 63.63\%$

$\therefore$ (I) $\frac{3}{7} < \frac{5}{9} < \frac{7}{11}$ is correct.

(II) $6^{\frac{1}{2}} > 12^{\frac{1}{3}}$ (Take LCM of 2 & 3)

$\therefore 6^3 > 12^2$ is correct

$216 > 144$

$\therefore$ Both I and II are correct.

2. (d)

M : R

Eff $\rightarrow$ 2 : 1

1 unit $\rightarrow$ 60 days

$\therefore$ Total work = $2 \times 60 = 120$

$\therefore$ M + R will complete the work = $\frac{120}{3}$ = 40 days

3. (a)

Let No. is $7x$

$\therefore$ Correct result = $7x \times \frac{5}{7} = 5x$

Incorrect result = $7x \times \frac{2}{7} = 2x$

$\therefore$ % Error = $\frac{(5-2)}{5} \times 100 = 60\%$

4. (c)

$(9^2 \times 23 + 7^3 \times 8 + x) \times \frac{1}{2} = 87$

$\Rightarrow [9^2 \times 23 + 7^3 \times 8 + x] = 2 \times 87$

Proceed by digital sum

$x = 4$ [digital sum]

Only option (c) satisfies.

$[9^2 \times 23 + 7^3 \times 8 + x] = 2 \times 87$

Very large value — It should be Negative

So option (b) can't be the Ans in spite of digital sum (4).

5. (b)

Number of eggs sold on Monday = 18%

$\because$ 100% $\rightarrow$ 1600

1 % = 16

$\therefore$ 18 % $\rightarrow$ 288

6. (d)

(I)

S.I : Amount

$5 \times 16.5\%$: 182.5%

$\Rightarrow$ 33 : 73

P = 40 — Rs. 26500

$\therefore 40 \rightarrow \frac{26500}{73} \times 40 >$ Rs. 14000

(II)

$39160 - 22000 = \frac{22000 \times R \times 6}{100}$

$\Rightarrow 17160 = \frac{22000 \times R \times 6}{100}$

$\therefore$ R = 13%

So, only statement (II) is correct.

7. (c)

Bajra : Millets

50 : 100

% Increases = $\frac{50}{50}\times 100 = 100\%$

8. (d)

ATQ,

Passing point = 30% + 30 = 45% – 30

$\therefore$ 15% = 60

30% = 120

$\therefore$ Qualifying point = 120 + 30 = 150

9. (c)

2006 : 2008

Population $\rightarrow$ 800 : 1000

$\therefore$ % Increases = $\frac{200}{800}\times 100 = 25\%$

10. (d)

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

$\therefore$ SP = $7500 \times \frac{3}{4}$

= 5625

11. (b)

Weight of New person = (55 + 5 × 7) Kg. = 90 kg.

12. (d)

$V = \pi r^2 h = \frac{22}{7} \times 7 \times 7 \times 10$

Whenever π and r = 7 is involve in any formula, Ans must be divisible by 11 and 7.

Only option (d) satisfies

13. (c)

	P		R		A	
Amount →	5	:	8	:	15	= 28

(8 → 15 : 7)

∵ 7 unit ⟶ 6000

∴ 28 unit ⟶ 24000 (× 4)

14. (b)

12) 9999 (833
96
39
36
39
36
R = 3

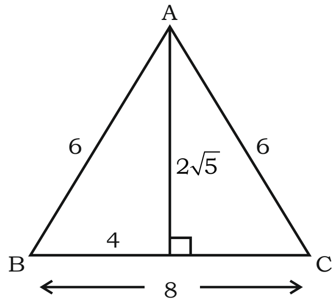
∴ Required no. → 9999 – 3 = 9996

SMART APPROACH:-

If a no. is divisible by 12, It must be divisible by 4 & 3

Only option (b) satisfies

15. (c)



Area = $\frac{1}{2} \times 8 \times 2\sqrt{5}$

= $8\sqrt{5}$ cm^2

16. (b)

P + M = 3 days — Eff. 5

M = 5 days — Eff. 3

T. work = 15

∴ Eff. of P = 2

∴ Priya will clear the house = $\frac{15}{2}$

= 7.5 days

17. (b)

A = 35 days — Eff. 9

B = 45 days — Eff. 7

T. work = 7 × 5 × 9 = 315

Work done by B after A left the work = 7 × 29 = 203

∴ Remaining work is done by (A + B) = $\frac{315 - 203}{16}$ = 7 days

18. (c)

S.I. = P × RT %

= 2000 × 2 × 5% = Rs. 200

19. (d)

In the given of question proceed throught Backqworad Approach:

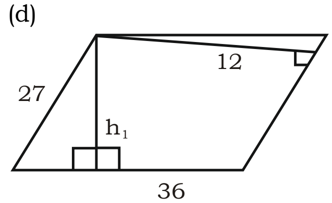
	P	Q	R
last →	60	60	60
Before sharing past →	y + (2y)	2x + (x) (Given)	
	20	40	120
		× $\frac{1}{2}$	× $\frac{1}{2}$
Initial →	100	20	60

∴ P : R

100 : 60

5 : 3

20. (d)



∴ $l \times h_1 = b \times h_2$ = Area of parllelogram

⇒ 12 × 27 = 36 × h_2

h_2 = 9 cm

IB ACIO GRADE-II

19/02/2021 (Shift-01)

12

1. What is the average of 132, 146 , 218, 232 321 and 223?

132, 146 , 218, 232 321 रुाि 223? पक रुाय न वभ्क गुर

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 214 (b) 212
(c) 208 (d) 218

2. Speed of a car is 45 km/hr. How much distance can it travel in 50 seconds?

तपन पाि पद 45 ािह,ै पे कााज्ञ गुं भ्क ,। यइ्र्क 50 े ेप स्ह्रीद भ्पनियप दगुर

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 650 meter (b) 575 meter
(c) 550 meter (d) 625 meter

3. Alloy A contains iron and copper in ration 4: 5. Alloy B contains iron and copper in ratio 3: 4. If 45 kg of alloy A and 63 kg of alloy B are mixed, then what is the final ratio of copper and iron?

ेलक 11ा A े 4 8 ाझ्रा रुाि ाा्क रुस्ाा न ह 5 ,न े गुं ेलक 11ा B े 3 8 ाझ्रा रुाि ाा रुस्ाा न 4 ह े गुं भ्एह,ै प 8 ाझ्रा ल 11ा A रुाि 63 ै प 8 ाझ्रा ेलक 11ा B े 8 ाभ्क ाकगुा ह ा्नह रुाि 8 ाझ्रा पक खैन रुस्ाा न वभ्क गुर

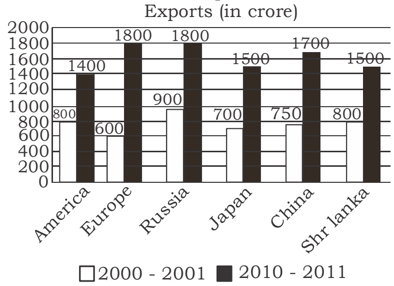
IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 61 : 47 (b) 64 : 47
(c) 59 : 45 (d) 57 : 41

4. Study the following graph to answer the question.

थ्रुाक पक ण्बिाि एझ्रपनहे 8 त ै सुरे8ै : न अज्ञ2 पक रुश्भ्स पञ्चि

Destination wise pattern of all India Exports (in crore)



☐2000 - 2001 ■ 2010 - 2011

India's exports to which of the following regions encreased most in tems of percentage between 2000 - 01 and 2010 - 2011?

रू।ाि 2000-01 रुाि रू 6ान 2010-11 पद्द. क्द े सुरे8ै : न े ध्यद्दै पक झक्क े ध्/ााि न पा े सभ्क्ष्ह ै श्र न य. यद्द खै 1पन. ञर

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) Japan (b) Russia
(c) Europe (d) China

5. Ratio of milk and water in two mixture A and B is 3 : 2 and 4 : 3 respectively. If A and B are mixed in the ratio of 1 : 2 then what is the ratio of milk and water in final mixture?

एहे लधक A रुाि B े न्यएीन रुाि 7ास्द पा रुस्ाा न े श्र5 ठ 5 रू रुाि ह्र 5 ठ गुं न ैए A रुाि B पद्द 6 5 रू पद्द रुस्ाा न े नें 8 ाभ ा क फ ह्ह खैने ै लधक े न्यएीन रुाि 7ास्द पक रुस्ाा न वभ्क गुर

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 61 : 44 (b) 51 : 46
(c) 63 : 46 (d) 45 : 41

6. In a bookshop, The average number of Biology, Chemistry and Physics book is 360. The Biology books is 180 more than the average number of Chemistry and Physics books. The number of Physics books is 180 less than the average number of Biology and Chemistry books. What is the number of chemistry books in the shop?

तपन ैप ा.न पद एप्ास े झ्र, द्कन ै न्ढासस यिाभ्स ै न्ढास रुाि /ाु पद पद ै प ा. ह्रपद रुाय न यह्रभ्क 360 गुं द्कन ै न्ढास पद ै प ा. ह पद यह्रभ्क यिाभ्स ै न्ढास रुाि /ाु पद पद ै प ा. ह्रपद रुाय न यह्रभ्क यह 6 ेा खै 1प गुं /ाु पद पद 180 प ह्रपद यह्रभ्क द्कन ै न्ढास रुाि यिाभ्स ै न्ढास पद 180 प ह्रपद रुाय यह्रभ्क यह 6 ेा पे न गुं एप्ास े न्य यिाभ्स श्राछ्ह पद 180 प ह्रपद यह्रभ्क ै प स्द गुर

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 540 (b) 480
(c) 420 (d) 360

7. If the volume of a room is 1680 m^3 and the area of the floor is 112 m^2. Find the height of the room

भ्एतपन पे ह्रिपक खाभ स 6ाउ्ान m^3 गु रुाि 72 श्रक पक झ्र 72 8 न 66 रू m^2 गुं न पे ह्रि पद खक्ाक्रा्फदा न पद्रै त

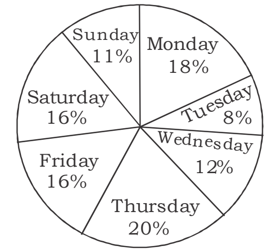
IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 8 m (b) 20 m
(c) 15 m (d) 10 m

8. The pie-chart given below represents the percentage distribution of the number of eggs sold by a shopkeeper on different days of a week.

स्हन्हे एभ्क आक 7ाक्ष्ेिा झक्क तपन एप्ाासएनि धाि यरु ाक पद्दे ने /ाप्ु ै एस्ाहे न्य. इ्ह्अक र्कनाह्रपद यह्रभ्क पद्दै श्र ै न धिक पा ह्रएशाक्क गुं

Percentage distribution of the number of eggs sold by shopkeeper



Find the ratio of the number of eggs sold by the shopkeeper of Wednesday to that of the same of thursday.

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 4 : 7 (b) 4 : 9
(c) 3 : 5 (d) 2 : 5

9. The sales different commodities is a shop in various years is given in the table. In which year did the total number of refrigerators and washing machines sold exceed the number of TVs sold by 100?

ै ै /19फ नकहिं ब तपन एगासर पद ै ै /19स नछ फ्वनपद ै. ग द ा 8पन ं ब्दएद अस गुंनै पय नकदे बह्द्यक इिद्र झिफ खाुिनौस्अस ं श्रदस्झ पद पब्बन यब्अभ. इद्दजक ज्ञन्द पद यब्अभ यइ 6ाान खै ा पन गाहुअस

नकष	ज्ञन्द	ा8ाक ं श्रदस	7ब्ज	तयद
6ु उ	टरू	रू।	रूरू	6ुाा
6८ द्ध	टुा	रूरू	6 ा	6द्धा
6८ ष्ठ	ट6ु	रू।	रू।	6ष्ठा
6८८	हाा	रू।	6ुा	रूा ा

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 1997 (b) 1996
(c) 1999 (d) 1998

10. The marked price of a bicycle is Rs 1500, which is 25 percent more than the cost price. If it is sold at a discount of 10 percent, find the profit percentage?

तपन यात्रिप 8न पन खैनम ं प्रिभ 6ुाान म7त गुस् हइ8ाअन ं प्रिभ यहरू ै श्र न खै ा प गुंन ै ए बन्ह 6ान ै श्र न पद −ष्ठ 7ि. इा ़ ा नगुरु हइ8ा/न ै श्र न ढान पझ्रि

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 12.5 ैजश्र (b) 20 ैजश्र
(c) 15 ैजश्र (d) 30 ैजश्र

11. The ratio of price of a mango and an apple is 3 : 2. If the total price of an apple and a mango is Rs 100, then find the price of a mango.

तपन खो न खाुनि तपन यइ पद पदे न पा खस्ा न टरू गुंन ै ए तपन यइ खाुनि तप खो न पद पब्बन पदे न 6ाान म7भ्द्र गुरु हइतप खो न पद पदे न ढान पझ्रि

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) Rs 10 (b) Rs 60
(c) Rs 80 (d) Rs 30

12. Anshu takes twice as much time as Bablu and three times as Chandra to complete a work. together it takes 3 days to finish the work. How much time did Anshu take to complete the work?

खब्र0 पह तपन पाभ्क 7िि प सिहे ब.. 8नै यइ एइ्हफ ये भ 8 अ न गु खाुनि त्क यह दस अ ये भ 8 अ न गुंन यालक ं बपा न : ठेन प सिहे झ ठ ै एस 8 अ इ गुंन खब्र0 सइ पाभ्क प इ 7िि प सिह पद्दे 8 त ै प सक ये भ ै 8 भ गुर

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 24 ै एस (b) 12 ै एस
(c) 3 ै एस (d) 18 ै एस

13. What is the least common multiple of 336, 528 and 240?

टटउरु ,रू लफ रू।न पन 8 मबे न ये ा7न्छ वभफ गुर

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 16620 (b) 17240
(c) 19200 (d) 18480

14. Find the volume of cone which has base radius as 7 cm and height as 12 cm. (The value of π is 22/7)

एक श्रघ0 पन खाभ सु ढान पद्रे क ,ै यपइ खाा पि पद ै.ा(भ द्ध येइद खाुनि खु्रक 6रू येइद गुंन)ाद पन ं ास रूरूद्ध गुत

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 576 cm^3 (b) 616 cm^3
(c) 512 cm^3 (d) 289 cm^3

15. A sum of money becomes 6 times at simple interest in 15 years. What is the rate of interest?

तपन ासी श्र याााधि ;भ्र न 7ि 6ुन नकहिं झ ऊ अक गाइ ा द गुंन ;भ्र न एि वभफ गुर

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 33.33 % (b) 16.75 %
(c) 30.5 % (d) 8.5 %

16. A number is increased by 10 percent. Then it is decreased by 20 percent. If the final value of number is 528, then what is the initial value of number?

तपन यब्अभ ं ब6ान ै श्र न पद ैफ्रू पद ा द गुंन 7ि क्रे बरू न ै श्र न पद पे द पद ा द गुं ै ए यब्अभ पन खैन ं ास ,रू गुरु इ यब्अभ पन थ्रीपन ं ास वभफ गुर

IB ACIO GRADE II 19/02/2021 (Shift-01)

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

17. There are two teams I and II of workers at a bridge construction site. Each team consists of W workers. On a particular day, a worker was shifted from team I to team II. Now, if the ratio of the amount of work done by team I in (W + 1) hours an by team II in (W + 2) hours is 10 : 12, respectively, then W is equal to:

तपन 7ब ै से ाफ छल8न 7ि लै पाहपद एइ ज्ञदे ब खाुनि Iि गुंन थ्ज्ञ ज्ञदे न बW पाभ्भ ा श्री 8न गुंन तपन न श्रक ै एस 7रु तपन पाभ्भ ा पाह ज्ञदेन ि यह ज्ञदेन IIि ं बछलान ै ि पि ै एभ अ ान ख. रु ै ए ज्ञदेन ि धाि (W + 1) मब्रबे ब खाुनि ज्ञदेन IIि धाि (W + 2) मब्रबे झ ै पक अक पाभ्क पद ाा न पन खस्ा न न ं श्र5 6ा5 6रू गुरु हइW . ि. ि गु5

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 24 (b) 16
(c) 18 (d) 20

18. A milkman wants to empty a large drum full of milk from one of four measuring jars of capacity 6, 9, 15 and 18 liters respectively. He finds that no matter which jar he uses to empty the drum, 4 liters of milk always remains to be emptied. What is the least possible capacity of the drum if it is a multiple of 7?

तपन एी न8 न ं श्र5 उरु ु रु 6ुन खाुनि 6ष्ठ 8 द्धनि खे न न8द्द तनि ा7सइ न8द्द नि ब्बयइ तपन यह एीन यह /ानि तपन .ू ूि द्ध : 8द पसिक तगा न गुंन एयसइ 7भ्क ै पन ूि द्ध पाइ : 8द पसिइ पद्दे 8 त तगाहइ नफ ै पयद /ाद ़ ानि पन 7भ्रझ पि झ्रि 8 द्धनि एीन गे झ्ा : 8द गि न गुंन ै ए ूि द्ध पन अ न फ्रु इ एयपद 9ं ैसे नयमीन न खे न वभफ गुर

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 187 8द्धि
(b) 364 8द्धि
(c) 94 8द्धि
(d) 191 8द्धि

19. Speed of train 55 km/hr. The length of train is 800 meter. In how much time can it cross a 1400 meter long platform?

ज्ञह्ल पद अ ै न ,ुै पे कघ्रन ै ज्ञह्ल पद 8ताऊ ष्ठाान द्धनि गुंन भ्क 6हाान द्धनि 8 3.इरु झ7ठ ष पहै प सहये भ ं ब7ानि पनि यप न गुर

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) 132 seconds
(b) 96 seconds
(c) 124 seconds
(d) 144 seconds

20. Find the compound interest earned on Rs 60,000 for 2 years at the rate of 5 percent per annum.

उास.ाान म7भ्द 7िरू नकप द्दै 8 त ,न ै श्र ै न नकप पद एि यह खु छ त ै फ्रन ;भ्र ढान पद्दे तं

IB ACIO GRADE II 19/02/2021 (Shift-01)

(a) Rs 6000
(b) Rs 6150
(c) Rs 60,000
(d) Rs 66,150

ANSWER KEY

1.(b)	2.(d)	3.(a)	4.(c)	5.(a)	6.(d)	7.(c)	8.(c)	9.(b)	10.(a)
11.(b)	12.(d)	13.(d)	14.(b)	15.(a)	16.(d)	17.(b)	18.(b)	19.(d)	20.(b)

SOLUTIONS

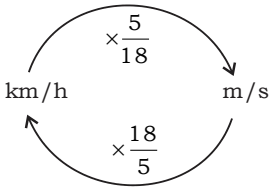
1. (b)

$$\text{Avg.} = \frac{\text{Sum of observations}}{\text{No. of observations}}$$

$$= \frac{132+146+218+232+321+223}{6}$$

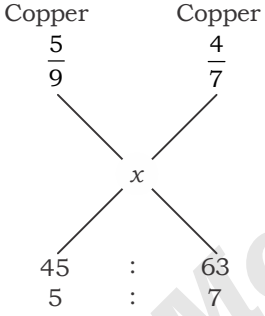
$$= \frac{1212}{6} = 212$$

2. (d)



$$\therefore \text{Distance} = \left(45 \times \frac{5}{18}\right) \times 50 = 625\text{m}$$

3. (a)



$$\therefore x = \frac{5 \times \frac{5}{9} + 7 \times \frac{4}{7}}{5+7} = \frac{61}{108}$$

$\therefore$ Copper : Iron

61 : 47

SMART APPROACH:-
45 kg + 63kg = 108 kg
Should be divisible by sum of ratio
only option (a) satisfies

4. (C)

$$\text{Japan} = \frac{8}{7} \times 100\% = 114.28\%$$

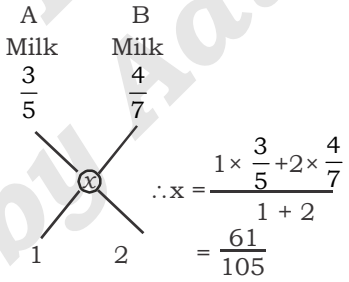
$$\text{Russia} = \frac{9}{9} \times 100\% = 100\%$$

$$\text{Europe} = \frac{12}{6} \times 100\% = 200\%$$

$$\text{China} = \frac{95}{75} \times 100\% = 126.66\%$$

So, Europ, region has most increment.

5. (a)



$$\therefore x = \frac{1 \times \frac{3}{5} + 2 \times \frac{4}{7}}{1+2} = \frac{61}{105}$$

$\therefore$ Milk : water

Final = 61 : 44

6. (d)

B + C + P = 3 × 360 = 1080

$$B = \frac{C+P}{2} + 180 \quad \text{—(I)}$$

$$P = \frac{B+C}{2} - 180 \quad \text{—(II)}$$

eq (I) + eq (II)

$$B + P = C + \frac{B+P}{2}$$

$$\therefore \frac{B+P}{C} = \frac{2}{1}$$

3 → × 360 → 1080

$\therefore$ C = 360

7. (c)

Volume of room = 1680 m^3

$l \times b \times h = 1680$

$112 \times h = 1680$

$$h = \frac{1680}{112}$$

$\therefore$ h = 15 m

8. (c)

Wednesday : Thursday

12% : 20%

3 : 5

9. (b)

Year	R.+W.	TV
1996	420	320
1997	410	350
1998	450	315
1999	530	400

It is clear that in 1996 number of refrigerators and washing machines sold exceed the number of TVs. sold by 100.

Hence option (b) is the correct answer.

10. (a)

M.P = Rs. 1500

ATQ,

$$\text{C.P} \times \frac{125}{100} = \text{MP.}$$

$$\text{C.P} \times \frac{125}{100} = 1500$$

$$\text{C.P} \times \frac{5}{4} = 1500 \Rightarrow \text{C.P} = \text{Rs. } 1200$$

Again,

$$\text{S.P} = \text{MP} \times \frac{90}{100} = 1500 \times \frac{9}{10}$$

SP = Rs. 1350

$\therefore P\% = \frac{SP - CP}{CP} \times 100$

$= \frac{1350 - 1200}{1200} \times 100 = \frac{150}{12}$

P % = 12.5%

11. (b)

Mangoes + Apples = 100

Mangoes : Apples

3 : 2

5 unit → 100

1 unit → 20

Price of Mangoes

3 unit → 3 × 20

= Rs. 60.

12. (d)

	Anshu		Bablu		Chandra
Time →	$2_{\times 3}$	:	$1_{\times 3}$		
	$3_{\times 2}$	:			$1_{\times 2}$
Time →	6	:	3	:	2
Eff. →	6	:	12	:	18
	1	:	2	:	3

Total Work = 6 × 3

Done by Anshu = $\frac{6 \times 3}{1}$ = 18 days

13. (d)

4	336, 528, 240
4	84, 132, 60
3	21, 33, 15
	7, 11, 5

LCM = 16 × 3 × 7 × 11 × 5

= 18,480

14. (a)

r = 7cm, h = 12cm

Volume of cone = $\frac{1}{3}\pi r^2 h$

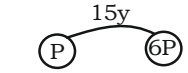
$= \frac{1}{3} \times \frac{22}{7} \times 7 \times 7 \times 12$

= 22 × 7 × 4

= 88 × 7

= 576 cm^3

15. (a)



15y $\xrightarrow{S.I.}$ 5P

1y $\xrightarrow{S.I.}$ $\frac{5}{15}p = \frac{1}{3}p$

Rate % = $\frac{1}{3} \times 100 = 33\frac{1}{3}\%$

16. (d)

let the no. is x

$10\%^{+} = \frac{+1}{10}$, $20\%^{-} = \frac{-1}{5}$

ATQ ,

$x \times \frac{11}{10} \times \frac{4}{5} = 528$

$\therefore x = 600$

17. (b)

	Team I	Team II
Workers →	(W – 1)	(W + 1)

ATQ,

$\frac{(W-1)(W+1)}{(W+1)(W+2)} = \frac{10}{12}$

$\Rightarrow \frac{W-1}{W+2} = \frac{5}{6}$

$\Rightarrow$ 6W – 6 = 5W + 10

$\Rightarrow$ W = 16

18. (b)

6, 9, 15, 18.

LCM (6, 9, 15, 18) = 2 × 3 × 3 × 5 = 90

Let the capacity of drum = 90x + 4.

for the multiple of 7.

x = 4

Capacity of drum = 90 × 4 + 4

= 364.

19. (d)

Length of train = 800m.

Lenght of plateform = 1400m.

Speed of train = 55 km/h

Time = $\frac{\text{Distance}}{\text{Speed}}$

$= \frac{(800 + 1400) \times 18}{55 \times 5}$

$= \frac{2200 \times 18}{55 \times 5}$

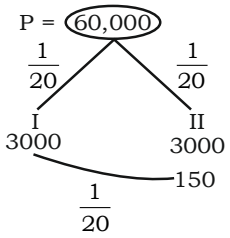
= 144 sec

20. (d)

P = 60,000

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

T = 2 year



C.I. = 3000 + 3000 + 150 = Rs. 6150

IB ACIO GRADE-II

19/02/2021 (Shift-02)

13

1. Salary of Ram is 20 percent more than Shyam's. By what percent is Shyam's salary less than Ram.

जु f पा ाि यर्वा भ्गु ि रमिृतदा अ भ हि , प `र्का भ्गु f पा ाि यर्वा जु ि रमि प व्म अ भ पृ f क

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) 18.75 (b) 19.25
(c) 16.66 (d) 20.10

2. What should come in place of question mark (?) in the following question?

$$27\frac{1}{2}+15\frac{3}{4}-12\frac{2}{5}+18\frac{4}{5}=?$$

`वज्ञ ि` । f अभ्वाृ ह्मअभ्वा ि स एनी f प मिला ाव 0र्का 8गा हि ावा ि ि . न

$$27\frac{1}{2}+15\frac{3}{4}-12\frac{2}{5}+18\frac{4}{5}=?$$

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) 49 (b) $49\frac{13}{20}$
(c) $49\frac{33}{20}$ (d) $48\frac{13}{20}$

3. Find the curved surface area of cone whose height is 3 m and radius is 4 m. (approximate value) (The value of π is $\frac{22}{7}$)

7र f भ्र f पा ाि ट f 0ग्र सा थ्म 0ण ि बा प हैं 3 . f 3 र प र्स : इ 12 र्वा , स्र्वा हा ार्का 6गा त्ु स्र्वा र्का एह कु ि व f वी f ए π पा ाि व $\frac{22}{7}$ f क

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) 79 m^3 (b) 45 m^3
(c) 63 m^3 (d) 33 m^3

4. The given table shows the number of employees appointed by different organizations in the given years.

र्स . 2 ि ि पा ि ड f . ि उ ाु ह्मि घत्र रइ वाहूृ ाखा ि वगा प्र पृ ि श ख्वा ह्मप र्स रइ गा डभाशर्स क

Year	Organization					
	P	Q	R	S	T	U
2007	92	102	84	100	95	98
2008	104	107	94	99	96	105
2009	96	119	93	102	98	103
2010	101	100	86	88	97	107
2011	85	117	84	103	102	99
2012	88	97	89	100	103	102

In the year 2008, the number of employees appointed by the organization R is how much percentage more from the previous year? (Around the nearest integer)

ि उतिदन्र्ृ ब्ररइ वा Rf ाखा ि वगा प्र पृ ि श ख्वा ह्म प र्स रइ गा 04 ि क उतिर मि प व्म अ भ हि , प f कि ऐ व प ? f 0छा ह्म f प मिरि 0 ा री

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) 10 (b) 12
(c)16 (d) 14

5. A and B can together complete a task in 16 days. They started a task together and after 4 days A leave and B takes 24 days to finish the rest of the task. How many days would B have taken to do the task if he worked alone?

A f हा ार्क B f ि प र्का . प f पा गर्ा f पा मिखा ि डवाइ ृ ह्म 0र्का प र्का र प मि र्का 7> ह्मा . प f र ाा . प पा गर्ा भ्क्रा ि प गा हा ार्का त्ति डवा धार्ड A f पा गश 4 ाक्स 0 ड्या ि कि ा ा B f पा मिभ्वा ि पा गर्ा 0र्का प ख्वय ृ ह्मत्ति ि डवा ि . ार्ध ग ड ि B f ह प यिमि प ागर्ा प स्वा ामि7र मि प ागर्ा 0र्का प ख्वाुा ि प व्म डवा ि . य

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) 34 days
(b) 30 days
(c) 32 days
(d) 24 days

6. A, B and C start a partnership. They invested Rs 45000, Rs 36000 and Rs 54000 respectively. They stayed in partnership for 4 years, 3 years and 2 years. If B's share in profit is Rs. 1800 then what is the total profit?

A र्का B f हा ार्का C f . प f र ा क्षा र्का भ्क्रा प ख मि क्र 7> ह्मा ि ृ भ f त्चक्त्ददद f 0ग र्का रू त्ददद f 0ग हि ार्का चक्तददद f 0ग मि पा ि क या ि पा गा र्मि मि त्ति री ि र्क रू री ि f हा ार्का ति री f प f 01? र्का भ्0 f ृ ह्म रव्म ग ड ि घा ृ ह्म B f पा ि ला ा ि ृ खिुदद f ामि प 5 ाघा ि प वा ि क

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) Rs 6600 (b) Rs 7000
(c) Rs 6000 (d) Rs 7200

7. What is the average of first 9 prime numbers?

आु f द्वि ह घा6गा र इगा ह ह्म पा हि ाक f 8गा ि क

IB ACIO GRADE II 19/02/2021 (Shift-02)

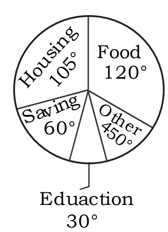
(a) 11.33 (b) 11.11
(c) 11.77 (d) 10.1

8. The pie chart given here shows expenditure incurred by family on various items and their savings, which amount to Rs 8,000 in a month.

Study the chart and answer the question based on the pie chart.

`ड f . f 012र्वा ा?र्वा 0 ख ार्का ाखा ि घत्र ाि ल5 0र्का ि प . f . f । ि र्वा हा ार्का 7व प र्स ध f पा य डभाशा ि र्का 3 ाभि. प f ` र्व्ाु ह्मन्ददद f 0ग मि क

ि ा?र्वा पा हि प्रागर्वा प रव्म ह ार्क 012र्वा ा?र्वा प मि हा , ाव 0र्का अभ्वा पा f 7धर्का ड्ढ



How much more amount is spent on food than on housing?

हन्न रिपर्स ि5 वा्ि झिघाइा व0र्क्षै प वर्सहै , प रिखै भा।ि ि यर्स क

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) Rs 2,000 (b) Rs 2,5000

(c) Rs 1,000 (d) Rs 3,000

9. Rina can complete a piece of work in 6 days while Seema can do the same work in 9 days. If they both work together, then how many days will be required to finish the work?

ख्वाि. प पि ु पि मि्ि ैडवाहु झि0 छ पि र्करि प स ` र्कि3 धै प रि रु ाि 7र र्स प ु पि मि्ि ैडवाहु झ 0 छ पि र्करि प र्स र्क गै डि मि डवाहि. प रिाा प ा गर पि र्क्ष ामि प ा गरि ु म्प पि ख्वाु झि प वय ैडवािि . झ्य

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) 3.6 days

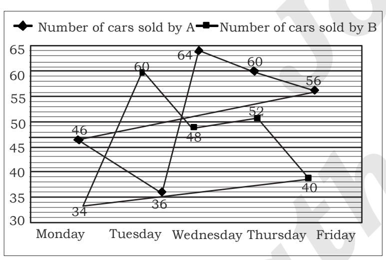
(b) 10 days

(c) 7.3 days

(d) 4 days

10. A line graph is given below which shows the number of cars sold by seller A and seller B on five days.

वर्स मि. प ि 12 वा् 10 प ैडगाि. गाि क्रि मि टया A हि ार्कि ै टया B ि ार्क 0 इ ि ैडवाहु झि र्धयरि . 2 पि ार्कि प र्सरि इगाि डभाशि क



Find the number of cars sold on Sunday by A and B together. If number of cars sold on sunday is $16\frac{2}{3}$ percent more than the cars sold on Friday by A and B t अ भ

ाघाि 0र्क हि ार्क भर्वाि ा ि ु र्कगाि 0र्क धयाम 7र प ा पि 5 ि ाघि अ भ 8गाि क

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) 25 % (b) 30 %

(c) 27.27 % (d) 22.5 %

13. A tank is normally filled in 4 hours. But it takes 5 hours to fill, when there is a leak at the bottom of the tank. If the tank is full, in how many hours can it be emptied by the leak?

. प ि ?झ र्सरि ु ा त्रा ि त्ति ि लझिहु झिघर्क 3 ा र्स क ैया वि ?झ र्स प मि ि ु झि खन्नि वामि 0र्क 2 र य घर्क ाु झि चर्ि लझिरि . मि र्क गै डि ा धि घरु ` ह्याि र्कि ामि खन्नि ु ार्क 2 र मि प वामि लझिहु झ । ा र्सै प गाि 3 ारि प ाि क

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) 10 (b) 20

(c) 15 (d) 12

14. Which of the following is smallest?

ैवझै ै । ि ु झिरि मि पा वारि ारि धर मि 4 ाशाि क

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) $\sqrt{6}-\sqrt{4}$ (b) $\sqrt{28}-5$

(c) $\sqrt{9}-\sqrt{7}$ (d) $\sqrt{18}-4$

15. Present ratio of the ages of Babita and Sunita is 7 : 9. 5 years ago, this ratio was 1 : 2. Find the present age of Babita.

धधरि ाहि र्करि झ्रु ापि र्सहि ागरि पि ाि ि ु शविहि र्क्षा ठि र्ि्ि र्कि चि उर्स 0 ि र्गिे हि र्क्षा र्खि ति ि ाम धधर्स ापि र्सि ु शविहि ागर्कि बा पि र्स 3 . म

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) 7 years (b) 9 years

(c) 21 years (d) 14 years

16. Simplify the following.

$$7\frac{1}{2}\div\left\{4\frac{1}{4}-\frac{1}{2}\times\left(2\frac{1}{2}-1\frac{1}{4}-\frac{3}{4}\right)\right\}$$

ैवझै ै । पि ा मिरि खं पि र्स 3 गृय

$$7\frac{1}{2}\div\left\{4\frac{1}{4}-\frac{1}{2}\times\left(2\frac{1}{2}-1\frac{1}{4}-\frac{3}{4}\right)\right\}$$

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) 7.25 (b) 4.5

(c) 5.75 (d) 1.875

17. Shagun and Sheetal have 40 kg and 50 kg apples respectively. Richa takes 30 percent apples from Shagun and 46 percent apples from Sheetal. Approximately what percent of total apples are Shagun and Sheetal left with?

भ ु झाहि ार्क भर्सि पि मि0 र टि ु र्भ ि त्त्दि प . म हा र्कि च्द्रि प . मि रि घाि र्कि (ि ाि भ ु झारि मि स्द अ भ रि घाहि ार्क भर्सि रि मि त्ति % अ भ रि घ यर्स र्क भ ु झा हि ार्क भर्सि पि मि0 र पि 5 र घा मि पि ाि . घ ि प वा अ भ र्धि ाि क

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) 49 percent

(b) 53 percent

(c) 61 percent

(d) 67 percent

18. Circumference of a circle is equal to the perimeter of a square. What is the ratio of area of circle to the area of square? (The value of π is $\frac{22}{7}$)

. पि ि घा पि र्स 0 ि खे, ि. पि ि . र्सि पि र्स 0 ि खे, ि पि य धरुधर्क ि यर्स र्कि घा पि मि थ प्रा 0 ण पि ाि . र्सि पि य थ प्रा 0 ण ि रि मि ह व्वाि ा 8गाि र्क एटि पि ाि ु व $\frac{22}{7}$ ि र्क

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) 14 : 11 (b) 27 : 22

(c) 31 : 22 (d) 18 : 11

19. A certain sum of money amounts to Rs 1331 in 3 years at 10 percent compounded annually. Find the sum invested.

. पि ि वै र्भ ि , वरि खे भाि खर्द अ भ ि ि ौ उझ ि टि ैज) डिर्क 0र्क स्रि ि उागु झि खर्स्ख ि 0 गर्मि य 3 ा र्स र्क ै क घा पि र्स . 2 रि खे भा बा पि र्स 3 . म

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) Rs 1000 (b) Rs 1100

(c) Rs 1132 (d) 1050

20. Speed of a boat in still water is 10 km/hr. If speed of stream is 2 km/hr, then how much distance can the boat travel downstream in 2.5 hours?

भाइ 3 ि ु झि पि र्कि पि र्स . ि खिर्क ि प ु स्लझि ` र्क गै डि , ार्क पि र्स . ि ति ि पु स्लझि ि र्कि य र्क ि तृ चर्ि लझिहु झि , ार्क पि मि ह वा ि ि प वर्स डर्क्ष ि गपि र्करि प र्स क

IB ACIO GRADE II 19/02/2021 (Shift-02)

(a) 24 km (b) 28 km

(c) 32 km (d) 30 km

ANSWER KEY

1.(c)	2.(b)	3.(c)	4.(b)	5.(c)	6.(a)	7.(b)	8.(a)	9.(a)	10.(d)
11.(c)	12.(a)	13.(b)	14.(b)	15.(a)	16.(d)	17.(c)	18.(a)	19.(a)	20.(d)

SOLUTIONS

1. (c)

R 6 → S 5

Required% = $\frac{1}{6} \times 100 = 16.66\%$

2. (b)

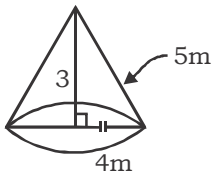
$27\frac{1}{2} + 15\frac{3}{4} - 12\frac{2}{5} + 18\frac{4}{5} = ?$

$\Rightarrow (27 + 15 + 18 - 12) + \frac{1}{2} + \frac{3}{4} + \frac{4}{5} - \frac{2}{5}$

$\Rightarrow 48 + \frac{10+15+16-8}{20}$

$\Rightarrow 49\ \frac{13}{20}$

3. (c)



$l = \sqrt{r^2 + h^2}$

$= \sqrt{3^2 + 4^2} = 5$

$\therefore$ CSA = πrl

$= \frac{22}{7} \times 4 \times 5\ m^2 \approx 63\ m^2$

4. (b)

	2007		2008
R →	84	:	94

% Increase = $\frac{10}{84} \times 100 \approx 12\%$

5. (c)

work done by (A + B) = $\frac{4}{16} = \frac{1}{4}$

$\therefore \frac{3}{4}$ work don by B in 24 days.

$\therefore$ work will be complete by B – alone in $24 \times \frac{4}{3} = 32$ days

6. (a)

	A		B		C
Amount →	5	:	4	:	6
Time →	4	:	3	:	2
P →	5×4	:	4×3	:	6×2
	5	:	3	:	3 = 11

$\because 3 \longrightarrow$ Rs 1800

$\therefore 11 \longrightarrow$ Rs 6600

7. (b)

First q frime no are ---

2, 3, 5, 7, 11, 13, 17, 19, 23

$\therefore$ Avg = $\frac{100}{9} = 11.11$

8. (a)

Food 120° — Housing 150° — 15°

$\therefore 60° \longrightarrow$ Rs 8000

$\because 15° \longrightarrow$ Rs 2000

9. (a)

R + S will complete = $\frac{6 \times 9}{6+9}$ days

$= \frac{54}{15} = 3.6$ days

10. (d)

Total cars sold by (A + B) on friday = (40 + 56) = 96

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

$\therefore$ Cars sold by (A + B) on sunday

$= 96 \times \frac{7}{6} = (112)$

SMART APPROACH:-

$16\frac{2}{3}\% = \frac{1}{6}$ Friday 6 : Sunday 7

So Ans should be multiple of 7 only option (d) Satisfied

11. (c)

$\sqrt[3]{2} > \sqrt[4]{3} > \sqrt[6]{8} > \sqrt[12]{12}$

$(2)^{\frac{1}{3}}, (2)^{\frac{1}{4}}, (8)^{\frac{1}{4}}, (12)^{\frac{1}{12}}$

LCM of (3, 4, 6 and 12) = 12

$(2)^{\frac{4}{12}}, (3)^{\frac{3}{12}}, (8)^{\frac{2}{12}}, (12)^{\frac{1}{12}}$

$(8)^{\frac{1}{12}}, (27)^{\frac{1}{12}}, (64)^{\frac{1}{12}}, (12)^{\frac{1}{12}}$

It is clear that the highest among them is $\sqrt[6]{8} > \sqrt[4]{3} > \sqrt[3]{2} > \sqrt[12]{12}$

Hence, Option (c) is correct.

12. (a)

Let total goods = 6

$\therefore$ Total profit = 5 × 30% = 150%

$\therefore$ overall profit = $\frac{150\%}{6} = 25\%$

13. (b)

A = 4 hours → 5
A – L = 5 hours → 4 (5 – 1) → 20 liter (Let)

$\therefore$ Eff of leakage = 1L/h

$\therefore$ leakage will empty the tank

$= \frac{20}{1} = 20$ hours

14. (b)

Proceed by rationalisation

$\frac{2}{\sqrt{6}+\sqrt{4}}, \frac{3}{\sqrt{28}+\sqrt{25}}, \frac{2}{\sqrt{9}+\sqrt{7}}, \frac{2}{\sqrt{18}+\sqrt{16}}$

We know, The more denominator, The less is result

$$\frac{3}{\sqrt{28}+\sqrt{25}} = \sqrt{28} - \sqrt{25}$$

is Smallest.

15. (a)

Babita Sunita

$$-5\text{ year} \rightarrow (1 : 2)\times 2$$
$$\text{Present} \rightarrow (7 : 9)\times 1$$

$\therefore (9-4) \longrightarrow 5$ years

$\therefore \ 7 \longrightarrow 7$ years

16. (d)

$$7\frac{1}{2} \div \left\{4\frac{1}{4} - \frac{1}{2} \times \left(2\frac{1}{2} - 1\frac{1}{4} - \frac{3}{4}\right)\right\}$$

$$\Rightarrow \frac{15}{2} \div \left\{\frac{17}{4} - \frac{1}{2} \times \left(\frac{1}{2}\right)\right\}$$

$$\Rightarrow \frac{15}{2} \div 4 = \frac{15}{8} = 1.875$$

17. (c)

	Shagun	Sheetal	
Required	70%	54%	Overall Remaining Apples
	40	50	
	4	5	

$$\therefore x = \frac{4\times 70\% + 5\times 54\%}{9} = 61\%$$

Hence, percentage of Remaining Apple = 61%

18. (a)

Let side of square is a unit

ATQ,

$2\pi r = 4a$

$$\therefore \frac{44}{7} r = 4a$$

$$\pi \frac{r}{a} = \frac{7}{11}$$

$\therefore \pi r^2 : a^2$

$$\Rightarrow \frac{22}{7} \times 7 \times 7 : 11 \times 11$$

$\Rightarrow 14 : 11$

19. (a)

$$R = 10\%, = \frac{1}{10} \text{ Term} = 3$$

$\therefore$ P : A

$10^3 : 11^3$

$1 \times$ [1000 : 1331] $\times 1$

Rs 1000 Rs 1331

20. (d)

Speed in down stream = (10 + 2) km/h

= 12 km/h

$\therefore$ Total distance travelled = 2.5 × 12 km

= 30 km

IB ACIO GRADE-II

19/02/2021 (Shift-03)

14

1. What is the smallest possible number which when divided by 7, 9 and 11 leaves a remainder of 2 in each case?

खु फिय वु भरात्तु दौड़ाहु भुअदौड़ाहु भ्गपतु तक भहु ाकमा भुअहंा ु इ र्कु सु भुअवर्कतमा ु ' 'यअ एं ु ीलोअु म0त्तु वुमाकमाजहु ु टु जउ तु ाक

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) 600 (b) 695

(c) 750 (d) 693

2. The total surface area of a solid cylinder is 297 cm². If its radius is 3.5 cm, what is its volume?

से ु थ्ताु जतमयु ' तु भ्श्रगत्तुएअ्थ्ताु :त्तुटु टाजु भकहं ाकुपमरू ?भ ुहु मकपतु त्ड़ु भकह ाकु तुभ भ ुतु इता यु मे यतु ाक

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) 451 cm³ (b) 363 cm³

(c) 418 cm³ (d) 385 cm³

3. Which of the following statements is correct?

मांश्रम्क मु ु वुमाुअे तकु भुतु 0तु भाहु ाक

I. A boat travels 30 km downstream in 6 hours. If she travels 40 km upstream in 10 hours, the speed of the stream is 1 km/hr.

से ु यतु ्तुतु ुअइ यू कु ु ग्तैुअवम रू मे वहु उ5 हु ाकपमरू खु ्तुतु अ ीमे कु स्तु ग्तैुअ्हतु मे वहु उ5 हु ाक तुम्तुतु हु 4मु यु मे वहग्तैतुाक

II. The length of a train is 1200 metres. If it can cross a 1500 m long platform in 120 seconds, the speed of the train is 90 km/hr.

से ु 'भ4तु्छ्ाे हु 5श्रातुबस्टन्नु वहँ ाकुपमरू खु से ु सु न्नु वहँ ु 5श्राअ %ैअपत्तुबे तुभस्टन्नु भअण्छु वुमाएतु ' भ ुहु ाकु तुभ 'भ4तु्छ्ाे हु 4मु । न्नु मे वहग्तैतुाक

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) Neither I nor II/यतु ाहु I यतु ाहु II

(b) Both I and II/I 0तु II स्त्रुमुा

(c) Only II/ खु II

(d) Only I/ खु I

4. Study the following table carefully and then answer the question given below. The number of candidates applying for an interview for a post in different banks and the percentage of candidates who are successful.

मांश्रम्क मु ु तक ' तु तु ध्यतापुएख्ेबु इ ध्यपय ' तमसु इ र्कु ?भ ुअजतरू मरू 4सु ी8यु ' त ?र्तु स्तमस्ु मवतयि जेकुतुमवुमाेम भहु एरू ' अ मरु से ु भततसे तु वुमाइ तजतु ' ' युअक्त अ इ रपम0तुतमे हु भ्गपतु इ र्कु /यवुअभएटु ु ातमुअ खु ुअइ रपम0तुतमे तु ाी म 8तु मल्पतु 4पतु ाक

जेक	?श्रहल्र्वतमे ह ?एम0तम	भएटु ?श्रहल्र्वतमे त
H	1500	14
I	2200	26
J	3000	17
K	980	20
L	1200	28
M	2500	21

The number of candidates who did not qualify in bank K was approximately what percent of the candidates who did not qualify in bank I?

जेकु K वुमा?स्तगुतमया हुा तुभअक्तअ?श्रहल्र्वतमे ' हु भ्गपतु जेकु I वुमा?स्तगुतमया हुा तुभअक्त अ ?श्रहल्र्वतमे तु 5 4रतु मे यतु ी म 8तु 0ता

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) 44 (b) 42

(c) 48 (d) 51

5. In which of the following discount percentage will be maximum?

मांश्रम्क म, त, वुमाभअमे भवुमादैु एप्र 8त इ म्हे त वु ातमुह

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) Marked price/इ मे ु कल्पु = 3200
Selling price/मर्ह पु कल्पु = 2800

(b) Marked price/इ मे ु कल्पु = 4000
Selling price/मर्ह पु कल्पु = 3600

(c) Marked price/इ मे ु कल्पु = 2400
Selling price/मर्ह पु कल्पु = 2000

(d) Marked price/इ मे ु कल्पु = 2800
Selling price/मर्ह पु कल्पु = 2400

6. The given table shows the number of employees employed by different organizations in the given years.

स्तु 4/व तक ' तु मरू 4सु खतुमावुमामवतयि भ्गाथ्यतुमर्तत मापूरस्तु ' वबतमपतुमे हु भ्गपत ' तुभस्8तुमातु ाक

IB ACIO GRADE II 19/02/2021 (Shift-03)

खता	भ्गाथ्य					
	P	Q	R	S	T	U
2007	92	102	84	100	95	98
2008	104	107	94	99	96	105
2009	96	119	93	102	98	103
2010	101	100	86	88	97	107
2011	85	117	84	103	102	99
2012	88	97	89	100	103	102

What is the respective ratio between the total employees appointed by the organisation U in the year 2010 and 2012, and the total employees appointed by the organisation P in the same years?

खतुमाटन्सु इ र्कु टन्सु वुमाभ्गाथ्यु U र्ततत मापूरस्तु मे सु 4सु ' वबतमपतुमे हु ' 5ु भ्गपत इ र्कु /ाहु खतुमावुमाभ्गाथ्यु P र्तत मापूरस्तु मे सु 4सु ' वबतमपतुमे हु ' 5ु भ्गपतु ' त ' व8तु इ यूएतु ल्मातु ाक

(a) 198 : 208 (b) 208 : 198

(c) 189 : 209 (d) 209 : 189

7. Which of the following represents the fraction of 0.12?

माश्रप्रफ मे ु वुफ्य्मुअे तकु न्ङाहु ुअमतयु प्र ए ुतआ्स्ढतमातु ाक

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) $\frac{3}{50}$ (b) $\frac{3}{100}$

(c) $\frac{3}{25}$ (d) $\frac{12}{120}$

8. If three solid spheres of radii 3 cm, 4 cm and 5 cm are melted and made into one solid sphere, then by how much percent will the surface area be reduced?

तु भ्वहुं ढु भ्वहु इ्रुतकु ु भ्वहु म2कपतु ख्क अ ह्यु थ्त्मु 4कमुतमे तुअमएगतु ु से ु थ्त्म 4कमुतु जयतमु नतुं तुअ्एथ्ह्मु :क्षअ्एठु वुफ्मे यअ ी म 8त ु हु वहु इ तम4ह

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) 12 Percent (b) 28 Percent

(c) 14 Percent (d) 16 Percent

9. A shopkeeper sells a product at some loss. If he reduces the selling price of the product by 5 percent, his loss increases by 4 percent. At what loss does he sell his product? (Note- Options are rounded to the nearest number)

से ु रू तमर्दु ु दु यु भ्तु एं से ु ?त्यतकु जअ तुा कुपमकु खु ?त्यतकु ुअमएं पु कक्प वुफ्यु ी म 8तु हु वहु तु ा कु तुअ?भे त यु भ्तु ढु ी म 8तु जरुखातु ता कुमे भु यु भ्त एं खु इ एयुत ?त्यतकु जअ तु ा कु -धमतु स्क्म मठे क्यु मे ु वु भ्ग़पतु ु एग्तमे ु ा क

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) 40 % (b) 35 %

(c) 55.55 % (d) 63.63 %

10. In an examination, P scored 20% more marks than Q, Q scored 20% less marks than R and R scored 25% more marks than S. If P scored 480 marks out of 600, then find the marks of S.

से ु एं हतु वंक्ष P यअQ भुअटन्ठु इ मे इगु ी त% मे सं Q युअR भुअटन्ठु वु इग ी त% मे सु इ र्कु R यअS भुअट ठु इ मे इगु ी त% मे स्श पमकु P युअन्न्ठु वुफ्य्मुअहढ(न्ह इगु ी त% मे सु ा कुभ तुअS ुअइगु)त हमा स्श

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) 400 (b) 425

(c) 520 (d) 450

11. Due to 10% reduction in the price of sugar a person can buy 5 kg more sugar for Rs. 300. Find the reduction in sugar per kg of sugar.

उह्यहु हु ह्यु वुफ्मस्न्ठु वहु अे तिण्त तुअपमत्क्ष्न्न्ठु प्र एपुअ्मुएु kg इ मे ु उह्यह ह्लू भ ुतु ा कुी मु kg उह्यहु हु ह्य5 वुफ्य्मु (बे वहु)तु स्न

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) Rs 6.00 (b) Rs 5.75

(c) Rs 6.50 (d) Rs 5.25

12. A hall is 10 m long, 2.5 m high and 4 m wide with one door of 1.5 m × 1 m and two windows of 1 m × 0.50 m. Find the cost of painting walls and ceiling at the rate of Rs 12 per square metre.

से ु ा कु सु वहे ु 5 मातु टड़ु वहे ु ; मत इ र्कु ढु वहे ु उतकुा कमा भ्वुफ्यसड़ु वहे ु × सु वहे ु तु से ु रू ख्सतु इ र्कु सु वहे ु × न्ड़न्ु वहे ु हु स्तुभ्सन छ्वेम पुताा कु सटु प्र एपअ ी मु ख्वबवहे ु हु रू भुअस्त्र्दु इ र्कु द हु मातु बे युअे हु 5 ता ु)त हमा पञ

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) 1290 m (b) 1330 m

(c) 1190 m (d) 1230 m

13. If the ratio between two positive numbers is 5:7 and their product is 560. There will be small number of them.

पमकु स्तुभत यतक्ष्मे ु भ्ग़पतु तुअमे ुअजहु ु त इ यूएतु ुु हु ा कह र्कु ?ये तु 4्रुतएठ्ढ ा कु ?यवुफ्यु अहतु भ्ग़पतु ा कुमह

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) 20 (b) 14

(c) 28 (d) 10

14. If 8 men working 5 hours a day complete a work in 12 days, then in how many days will 15 men working 4 hours a day complete the work? Assume that all men work with the same efficiency.

पमकु से ु मत्यु वुफ्यु गैताुअे तु युअक्ष्ख्कु अ(इ त्वहुं सटु मत्युतमुवुफ्यु से ु तु र्तु ुअं क तुअसे ु मत्यु वुफ्यहु गैताुअे तु युअक्ष्ख्कु अस इ त्वहु मे युअमत्यतमुवुफ्मे तु र्तु झ्र्फ वत 5 यु मे ु भरतकु एूफ्रतु से ु ा हु तुअक्त तु भअ तु ुअ क

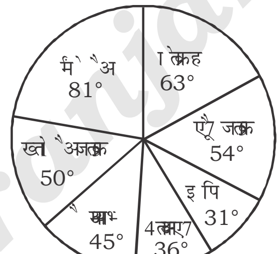
IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) 12 day (b) 15 day

(c) 42 day (d) 8 day

15. The pie chart given below shows the expenditure on various sports in a particular year of a country. Read the graph carefully and then answer the given question.

यहुअमत्युत ा इ त स्कुहइ तेअु मे भ्ह स्कु अ मे भ्ह मञ्चुदु खु त्वुफ्य्मुअम्व्मतयु इ ुअमु ाइ ा स इ तुबे तुअम्ढतमातु ा कु 4प्रु7 तुअ्मतु भुअएम ख 0त ?भे ुअजतकु म्रु 4सु ी 8यु तु ?स्त स्कमा स्श



What percent more was spent on hockey than golf?

4तमएु हु इ एअुा कह एं मे युत एम 8त इ मे ु ,तुबु ा इ त

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) 27 % (b) 37.5 %

(c) 35 % (d) 75 %

16. Six persons went to a hotel to get their food. Five of them spent Rs 15 per person on their respective meals and the sixth spent Rs 8 more than the average expenditure of all the six persons. What was the total money spent by them?

दा ु तपमतु इ एयुत रतमयु 5 युअे ुअफ सु से ा क्षु वुफ्मस्नु ?यवुफ्मुअएतु युअइ एयइ एयअ रतमयु एं ी मु तपमतु सु प्रएपुअ ुतुबे स इ र्कु दथुअयुअभरतु दा ु तपमतपुतमे ुअइ ता ह ुतुबे हु 5 युत वुफ्मु प्रएपुअइ मे ु ह ुतुबे स्श ?ये ुअतु ह ुतुबे पुत 4पु ु 5 ञु मे यत 0त

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) Rs. 95.3 (b) Rs. 117.4

(c) Rs. 101.2अ (d) Rs. 99.6अ

17. Mahim bought a dozen eggs for Rs 50 and sold them at a profit of 26 percent. What is the sale price of each egg ?

वताा वु युआस्े ु रूलबु इ छ्रुअ़ न्ु प्रएर्् वुस्क् ि ह्ल्अ इ लुक ?ाि स्पट् ु ी म 8त ु 5 ततुर्ए ु जअतु ी त्सोअ इ छ्रुअे ुत मर्छ्ं पु कक्पु ढ्मुत ा क

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) Rs. 10 (b) Rs. 5

(c) Rs. 5.25 (d) Rs. 4

18. If the simple interest earned at 10 percent annual interest rate is Rs 1000 at the end of 5 years, then what should be the principal amount?

पमरू सु ी म 8त ु ख्लातु ुप्पतु ुरूु एु इ मा ब भ्तरतणुत प्पत्ं ु ु ख्तुो ुअइ गु वुस्ास्््् प्रएर्् ा कु ुअक्क ऱ्यु ढ्मुत ा तमुत उता ा ़

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) Rs. 2000

(b) Rs. 2500

(c) Rs. 1000

(d) Rs. 1500

19. Anjali and Ritu appeared in an examination. Anjali scored 20 marks more than Ritu and her marks were 70 percent of the sum of their marks. How many marks did Anjali score?

इ मामु ु इ लुकु म ु से ु एु ह्तु वुस्म ?एम0तु ा ्ुक्म इ मामु ु युअर्म ु भुअर्् इ ग ु इ मक ु ी त% म स इ लुक ?भे ुअइ ग ु ?यु स्तुसुतो ुअइ ग तुो ुअपलम ` तुज्ु ी म 8त ु 0तुअइ मामु ु युअ युअइ ग ु ी त% म ़

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) 15 (b) 35

(c) 20 (d) 50

20. A man covers a distance of N km in 5 hours at a speed of 18 km/hr. If he wants to cover the same distance in 3 hours, find the speed of the man.

से ु इ तल्वहु स्् म वहुगैतातु ुहु 4मु भुअ् गैतुअनुमN म वहु ुहरूहु पु ` तु ा कुपमरू खु भवतुु रूहु ुतुअत्ु गैतुअवुमा पु ` `यत उत तु ा कु तुइ तल्वहु हु 4मु)तु ुहमा स्श

IB ACIO GRADE II 19/02/2021 (Shift-03)

(a) 36 km/h (b) 30 km/h

(c) 54 km/h (d) 24 km/h

ANSWER KEY

1.(b)	2.(d)	3.(a)	4.(c)	5.(c)	6.(d)	7.(c)	8.(b)	9.(c)	10.(a)
11.(a)	12.(a)	13.(a)	14.(d)	15.(d)	16.(d)	17.(c)	18.(a)	19.(b)	20.(b)

SOLUTIONS

1. (b)

No = LCM of (7, 9 & 11) + 2

= 695

2. (d)

T.S.A = $2\pi r\ (r + h)$

$297 = 2 \times \frac{22}{7} \times 3.5\ (3.5 + h)$

h = 10

Volume of cylinder = $\pi r^2 h$

$= \frac{22}{7} \times 3.5 \times 3.5 \times 10\ cm^3$

$= 385\ cm^3$

SMART APPROACH:-
r = 3.5 So volume should be multiple of 5 & 7 only option (d) satisfies.

3. (a)

I. B + W = $\frac{30}{6}$ = 5km/h

B – W = $\frac{40}{10}$ = 4km/h

II. Time = $\frac{(1200+1500)m}{Speed}$

$\therefore$ Speed = $\frac{2700}{120} \times \frac{18}{5}$

= 81 km/h

So neither (I) nor (II) is correct

4. (c)

Total number of candidate who did not qualify for bank K = $980 \times \frac{(100-20)}{100} = 784$

Total number of candidate who did not qualify in bank I = $2200 \times \frac{(100-26)}{100} = 1628$

Required % = $\frac{784}{1628} \times 100 \approx 48$

5. (c)

(a) d% = $\frac{400}{3200} \times 100 = 12.5\%$

(b) d% = $\frac{400}{4000} \times 100\% = 10\%$

(c) d% = $\frac{400}{2400} \times 100 = 16\frac{2}{3}\%$

(d) d% = $\frac{400}{2800} \times 100 = 14\frac{2}{7}\%$

Clearly option (c) has max discount.

6. (d)

Org.U		Org.P
(107 + 102)	:	(101 + 88)
209	:	189

7. (c)

$0.12 = \frac{12}{100} = \frac{3}{25}$

8. (c)

$\frac{4}{3}\pi R^3 = \frac{4}{3}\pi(5^3 + 4^3 + 3^3)$

$R^3 = 216$

$\therefore R = 6$

Larger		Total smaller
S.A → 6^2	:	$(5^2 + 4^2 + 3^2)$
→ 36	:	50

Reduction = $\frac{14}{50} \times 100 = 28\%$

9. (c)

Loss = CP – SP

A.T.Q

104% of L (CP – 95% of SP)

$\Rightarrow$ 1.04 (CP – SP) = (CP – 0.95 SP)

$\therefore \frac{CP}{SP} = \frac{9}{4}$

$\therefore$ Loss% = $\frac{5}{9} \times 100 = 55.55\%$

10. (a)

120 : 100 : 125 : 100
(×4 → 480; ×4 → 400)

11. (a)

	Original		New
Price →	10	:	9
Quantity →	9	:	10

(× 5 → 45 Kg.; × 5 → 50 Kg.)

Reduced price = $\frac{300}{50}$ = Rs. 6/kg.

12. (a)

l = 10m b = 4m h = 25

Total area = {(Area of walls + ceiling) – (Area of door + windows)}

= {2(l + b) × h + lb – (xy + 2ab)}

$= \{2 \times 14 \times \frac{5}{2} + 40 - (1.5 \times 1 + 2 \times 1 \times \frac{1}{2})\}$

= {110 – 2.5} = 107.5 m^2

$\therefore$ Total cost = 12 × 107.5 = Rs. 1290

13. (a)

Let nos are $5x$ & $7x$

A.T.Q

$5x \times 7x = 560$

$x^2 = 16$ $x = 4$

$\therefore$ Smallest no = 20

14. (d)

$\frac{m_1 \times d_1 \times h_1}{w_1} = \frac{m_2 \times d_2 \times h_2}{w_2}$

$\therefore 8 \times 12 \times 5 = 15 \times d_2 \times 4$

d_2 = 8 days

15. (d)

Hockey		Golf
63°	:	36°

%increase = $\frac{27}{36} \times 100 = 75\%$

16. (d)

Let avg. of all 6 persons is x

$\therefore \frac{5\times15+(x+8)}{6} = x$

$\therefore 5x = 75 + 8$

$x = 16.6$

$\therefore$ Total money spent = 16.6 × 6

= 99.6

SMART APPROACH:-

Average = Rs. $15 + \frac{8}{5} \rightarrow$ No of person initially = Rs 16.6

$\therefore$ Total money spent = 6 × 16.6 = 99.6

17. (c)

$\therefore$ SP of 12 Eggs = 126% of 50

= Rs. 63

$\therefore$ SP of each egg = $\frac{63}{12}$ = 5.25

18. (a)

Total interest = 5 × 10% = 50%

$\because$ 50% $\rightarrow$ Rs. 1000

$\therefore$ 100% $\rightarrow$ Rs. 2000

19. (b)

Anjali = $\frac{7}{10}$ (Angli + Retu)

$\Rightarrow \frac{A}{A+R} = \frac{7}{10}$

A : R

7 : 3

$4 \rightarrow 20$

35

20. (b)

N = 5 × 18 = 90 km

$\therefore$ New speed = $\frac{90}{3}$ = 30 km/h

IB ACIO GRADE-II

20/02/2021 (Shift-01)

15

1. Study the following table carefully and answer the question given below it:

   रू।र्ष्णि रवक रविव यव यष्पा।रत्तवयै भागा यवहे,
   ॆ क्षमनवया़ंज्ञ ग्रक्षइर्य इयसण्र यव यमी हयोल

   Number of candidates appearing for an interview for a post in various Banks and percentage of candidates qualifying.

   खख्0।य8कें य़. ग्रइवयर।यवग्रर्ष्णि इयन 7 5व ह वग्रर्ष्णि इयमरख्जकयउ,ग्रदिय़मु.ज्ञदहेय़वज्ञ न्ने गयै क्षमीज्ञ्ञाउ,ग्रदिय़मु.ज्ञदहेय़व सुक्षएरयकगर्यगयउक

Bank	Candidates Appearing	% of Candidates Qualifying
H	1500	14
I	2200	26
J	3000	17
K	980	20
L	1200	28
M	2500	21

   What was the difference between the number of candidates who qualified in banks I and J together and the number of candidates who did not qualify in the same banks?

   8कें य़ायै क्षमJय.य़खलिवहयै ञ्ञअयसभ्रयवह्र, दिय़मु.ज्ञदहेय़वज्ञन्ने गयै क्षमन.।य8कें, .य़ै ञ्ञअयसभ्रयाउज्ञवह्रग्रदिय़मु.ज्ञदहे, वज्ञन्ने गयवग्र8ज्ञ यणगयै न्हेयजब

   IB ACIO GRADE II 20/02/2021 (Shift-01)

   (a) 3040 (b) 3032
   (c) 3036 (d) 3028

2. Smaller diagonal of a rhombus is equal to lenght of its sides. If length of each side is 4 cm, then what is the area (in square cm) of an equilateral triangle with side equal to the bigger diagonal of the rhombus?

   इवयन.ॅन्3 अयवय2 श्रयखवस्ञामनवज्ञ 13ॆ य़वज्ञर्8 स्क्षाग्र8ह8हयउन्यउक्षामगख सगाद्रय13 यवज्ञर्8 स्क्षा?यन,ज्ञउक्षान, न.13यख13यव य7न्नर्डयर्दञा,ज्ञ.ॅ/ णगयउकखनवज्ञ13 यन.ॅन्3अयवय़8ह्रु खवस्ञाग्र8ह8हयउक

   IB ACIO GRADE II 20/02/2021 (Shift-01)

   (a) $12\sqrt{3}$ (b) 6
   (c) $9\sqrt{3}$ (d) 12

3. If $\frac{a}{b}:\frac{c^2}{d^2}:\frac{e^3}{f^3} = 16$, then find the value of

   $$\sqrt{\frac{a^2+c^4+e^6}{b^2+d^4+f^6}}+\sqrt{\frac{b^2+d^4+f^6}{a^2+c^4+e^6}}$$

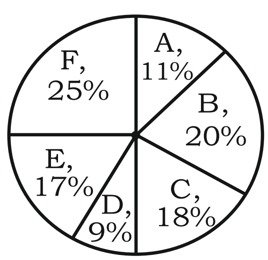
   गखय $\frac{a}{b}:\frac{c^2}{d^2}:\frac{e^3}{f^3} = 16$य न्,
   $\sqrt{\frac{a^2+c^4+e^6}{b^2+d^4+f^6}}+\sqrt{\frac{b^2+d^4+f^6}{a^2+c^4+e^6}}$ यवय।
   ॄ न्यवज्ञइ

   IB ACIO GRADE II 20/02/2021 (Shift-01)

   (a) $\frac{257}{15}$ (b) $\frac{256}{16}$
   (c) $\frac{257}{16}$ (d) $\frac{265}{16}$

4. The pie chart given below shows the number of cars sold in 6 countries. Number of cars sold in a particular are shown as a percentage of total number of cars sold in these 6 countries.

   ।ज्ञग्रक्षगर्यगयर स्क्षा श्यक्षय।ए़य़.य़8,ज्ञ स्क्ष वहेय़वज्ञन्ने गय।एञयउक्षाखनज्ञखए़य.ॅ, 8,ज्ञ स्क्षा हेय़वज्ञन्ने गयरुयध्य।ए़य़.य़8,ज्ञ ॅ स्क्षा हेय़वज्ञवबियन्ने गयवग्रसुक्षएरयवग्रन्र .य़क्षप स्क्ष न्ज्ञउक



   Which of the following statement (S) is/are correct?

   रू।र्ष्णि रवन्य़नय़व क्षयन यवजायनउज्ञउक

   I. Difference between the total central angle formed by A and F and total central angle formed by C and D is 32.4 degrees.

   Aयै क्षमFयढहयरुश्वअवबियवे4ज्ञायवन्न ॆ क्षमCयै क्षमDयढहर्य रुयवबियवे4ज्ञा वन्यवय़8ज्ञयवयै न्हयछ्व2यर्ख्ञाउक

   II. If the total number of cars sold in B, C and E is 12650, then the total nubmer of cars sold in these 6 countries are 23000./गखयB,यCयै क्षमEय.य़8,ज्ञ ॅ स्क्षा हेय़वज्ञवबियन्ने गयधरुरु9यउक्षा, रुयध्य।ए़य़.य़8,ज्ञ स्क्षा हेय़वज्ञवबि न्ने गयरुरु999यउक

   IB ACIO GRADE II 20/02/2021 (Shift-01)

   (a) Only I
   (b) Only II
   (c) Both I and II
   (d) Neither I nor II

5. What will be the square root of the remainder when 5 divides 12976?

   :8यधर्क्ष ध्यवग्ररुयनग्रख।रुयखगय:इ न्यए़रर्डयवयर्द ञ्जीयणगयर्ड,ब

   IB ACIO GRADE II 20/02/2021 (Shift-01)

   (a) 9 (b) 1
   (c) 2 (d) 4

6. If (2P + Q) : (Q + R) = (Q - P) : (Q - R) = 4 : 3, then what is the value of P : Q : R?

   गखय(2P + Q) : (Q + R) = (Q - P) : (Q - R) = 4 : 3,क ग्रP : Q: R वय।यणगयउक

   IB ACIO GRADE II 20/02/2021 (Shift-01)

   (a) 8 : 12 : 9 (b) 4 : 3 : 5
   (c) 5 : 7 : 8 (d) 4 : 6 : 9

7. Manoj can complete a work in 15 days working 8 hours in a day and Santosh can complete it in 10 days working 9 hours in a day. If Manoj and Santosh together start working for 6 hours per day, in how many days will they complete the work?

   .।;यइवयव.यवग्रइवयरुा य़.य़च्यथ्ेश्यव. वह्रवग्रधरुयरुा य़.य़रह्रयवह्यनवन्यउकै क्ष न्ने ्यमनग्रइवयरुा य़.य़्यथ्ेश्यव.यवह्रवग्रध9 रुा य़.य़रह्रयवह्यनवन्यउक्षागख्य.।;यै क्ष न्ने ्यइवयनजयसुरुायध्यथ्ेश्यव.यवह्र एउयवहेक्षग्रदयखन्।ग्रहा य़.य़व.यरह्रयवहे,ब्र

   IB ACIO GRADE II 20/02/2021 (Shift-01)

(a) 12 (b) $8\frac{4}{7}$

(c) 7 (d) $10\frac{4}{7}$

8. A rectangular wheat field has an area of 1682 sq.metres whereas its perimeter is $29^a \times 3^b \times 2^c$ metres. If the length and breadth are positive integers, then find the perimeter. (It is known that a, b, c are positive integers.)

इवयै गफ व हर्य ठ्ठेलव ग्रपद,यव य/ंरर्ड यधध्वब द ह्म ज्ञ्ह्यउक 8खव यरूलव ज्ञरखूछय $29^a \times 3^b \times 2^c$ य् ज्ञ्ह्यउक ह्मगरुयर्8 खु ह्मं फरह्म ा 5 व रस्स्ेवायउेक ग्रग्ख रयू न्यव ज्ञ्इ्ध्य् गउयू न्उकव य a, b, c य् ा 5 व यरस्स्ेवायउेक

IB ACIO GRADE II 20/02/2021 (Shift-01)

(a) 174 metres (b) 58 metres
(c) 58 metres (d) 116 metres

9. A can complete a work in 5 minutes, B in 6 minutes and C in 8 minutes. The average number of work completed per hour per worker for all three workers is:

Aयइवयव . यव ग्ररुयख ा श्य.`ह्मB यध्यख ा श्य.`, ह्म C यच्यख ा श्य.`ग्रहृ यवह्यनवन यउक ज्ञ`, द्धख व`ग्रव ग्रर्ड इयसछ यव.`अह्लसछ यठ`श यरह खइर्य इयव गझ ज्ञै कयन्ने ग यउक

IB ACIO GRADE II 20/02/2021 (Shift-01)

(a) $\frac{57}{5}$ (b) $\frac{52}{3}$

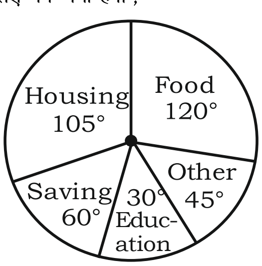
(c) $\frac{56}{9}$ (d) $\frac{59}{6}$

10. The pie chart given here shows expenditures incurred by a family on various items and their savings, which amount to Rs. 8,000 in a month.

खइर्य इयर स्खं श्खइवयरखद ह्यढहयखछ (. । ग्रहृयखइर्य इयप्रागयै ह्म मावज्ञ8`न्यव, ।एऋ अयउक: ग्रखयइवय. उज्ञ ग्र. ग्रछ999यन्-रग, उक

Study the chart and answer the question based on the pie chart.

` श्यक्र यै भागायवहे्रै ह्मर स्खं श्यकयै ृ ह रह्यसए यव यमी ह्यो?



The ratio of the expenditure on food to the savings is:

1 ;ा यरह्यप्रागयै ह्म8`न्यव यै ा ङ्ग्न यउक

IB ACIO GRADE II 20/02/2021 (Shift-01)

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

11. Two items were sold at Rs. 9000 each. The first was sold at 50 percent loss and the second was sold at 50 percent profit. Find the total loss on selling both the items.

। ग्रदठ्ठै 3`ग्रव ग्रछ999यन्-रग. `ग्र8`, ज्ञ्म स्खयह्मगाव्र रउ ग्रव ग्ररु9य सछएयउ रछयरह्य8`, र्य ग ` ह्म। तह्लव ग्ररु9यसछएयी ा यरह्य8`, र्य ग द्द । ।,`ग्रदठ्ठै 3`ग्रव ग्र8`, ।ा ग्ररह्यवइ्इ यउरछयू न्वज्ञ इ्द्द

IB ACIO GRADE II 20/02/2021 (Shift-01)

(a) Rs. 1800 (b) Rs. 4500
(c) Rs. 2400 (d) Rs. 6000

12. At an election between three candidates P, Q and R. 20% of the votes polled were declared invalid. Out of the valid votes P gets 30% votes. The remaining valid votes were shared by Q and R in the ratio 11 : 9, respectively. If P has received 150 votes less than R, then find the total number of votes polled.

न्ज्ञयमु. ज्ञदहेग्रP, Qयै ह्म Rयव ग्र8ज्ञ यउइ `ब्दय.`ग्र्घ र्ग्र इयख9-यद श्यै दृकयठ ग्रु वह्यख इर्य इ्थ्यदृकयद श्`ग्र.`ग्रनग्रPयव ग्रछ9-दश्यख ि ग्रउेक्र ए,यदृकयद श्यQयै ह्म Rयढह ब.एलाध्धलयवयै ा ङ्ग्नय.`ग्रन ल यखइर्य इ्थ्र गखयPयव ग्रRयनग्रध्रु9यद श्यव.यख ि ग्रउेक्र , घ र्ग्र इयदश्`ग्रव ज्ञवइ्इ यन्ने गयू न्वज्ञ इ्द्द

IB ACIO GRADE II 20/02/2021 (Shift-01)

(a) 9000 (b) 10500
(c) 12500 (d) 15000

13. Select the odd one from the following options.

ख् ा र्छ खन्यखवठर`ग्र.`ग्रनग्र8; ह्र्व यं गा वहे्द

IB ACIO GRADE II 20/02/2021 (Shift-01)

(a) 0.4 × 0.5 × 2.5 × 0.5
(b) 0.2 × 0.7 + 0.2 ×0.55
(c) 0.2 × 0.5 + 0.3 × 0.5
(d) 1.5 × 0.04 + 0.4 × 0.5

14. A is 5 percent more than B and B is 10 percent more than C, then by what percentage is A more than C.

A, Bयन ग्ररुयसछ एयै ह्ववयउकै ह्म BयC नग्रध्9यसछएयै ह्ववयउक ग्रAयCयनग्रखा, सछएयै ह्ववयउक

IB ACIO GRADE II 20/02/2021 (Shift-01)

(a) 20 percent
(b) 12 percent
(c) 10 percent
(d) 15.5 percent

15. The cost price of an article is Rs. x. It is marked up by 100 percent and it is sold at Rs. 420 after giving 30 percent discount. What is the value of x (in Rs.) ?

इवयदठ्ठव यछगय. ठगयम्-9ग्रxयउकरूलयरह ध्99यसछएयै `खह्र यउकै ह्म छ9यसछएयउ2ज्ञ ।ज्ञ ह्यरूलग्र?ख्यम्-रगय.`ग्र8`, य: न्यउक $x$यव . । यृ म्-रगय.`/, यणग यउक

IB ACIO GRADE II 20/02/2021 (Shift-01)

(a) 375 (b) 325
(c) 400 (d) 300

16. If the radius of a cylinder is tripled and the height is halved, then what is the ratiobetween the new volume and the previous volume?

गख इयइवय8ा यव ज्ञरु(गफज्ञर्य Bयवह्य।ज्ञ :इयै ह्म)` खै ृ ज्ञवह्य।ज्ञ: इ्फ्र ग्र।इ ` फा यै ह्मरु2ि यै फायव ग्र8ज्ञ यै ा ङ्ग्न णग यउक

IB ACIO GRADE II 20/02/2021 (Shift-01)

(a) 4 : 5 (b) 6 : 2
(c) 9 : 2 (d) 3 : 2

17. A grocer mixes two varieties of wheat and sells the mixture at Rs. 28 per kg to earn a profit of 25%. If the cost price of the first variety is twice that of the second, and he has mixed them in the ratio 2 : 3, then find the price per kg of the cheaper variety

इवयरने ह्म ठ्ठेलवज्ञ। ग्रखट`ग्रव ग्रख ि यउक ` ह्मक्र-यव यि ा यव. ।ग्रव ग्रर्ड इयखद्धस व ग्रखक्य म्-रगय.सछयखि, क्रयरह्य8`, न्यउक गखयरउ ज्ञखट यव यि न्य. ठगय।तह्लखट नग्र।`, B यउकै ह्म मना ग्रम0ठ्ठेग्रखखयवयै ा ङ्ग्न .`ग्रख ि गयउक ग्रनठ ज्ञखट यवयसछ खि, क्रय. ठगयू न्यवहे,

IB ACIO GRADE II 20/02/2021 (Shift-01)

(a) Rs. 16 (b) Rs. 18
(c) Rs. 14 (d) Rs. 20

18. On selling 32 chairs at Rs. 2800, there is a loss equal to the cost price of 4 chairs. The cost price of a chair is:

छखव ज्ञम्रसख9-9यम्-रगय.`ग्र8`, ा ग्ररह्य?यव ज्ञमसे, वज्ञ ि न्य. ठगयवग्र8ह8ह्यउरछयउ,ज्ञउक इयवज्ञज्ञ यि न्य. ठगयउक

IB ACIO GRADE II 20/02/2021 (Shift-01)

(a) Rs. 120 (b) Rs. 98
(c) Rs. 280 (d) Rs. 100

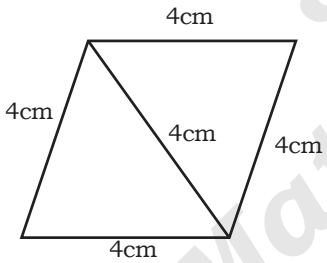
ANSWER KEY

1.(c)	2.(a)	3.(c)	4.(c)	5.(b)	6.(a)	7.(b)	8.(a)	9.(d)	10.(b)
11.(d)	12.(c)	13.(d)	14.(d)	15.(d)	16.(c)	17.(a)	18.(d)	19.(c)	20.(d)

SOLUTIONS

1. (c)
No of candidates qualification I =
$22000 \times \frac{26}{100}$
$= 22 \times 26$
No of candidates not qualified in
$1 = 2200 \times \frac{74}{100}$
No of candidates qualified in J =
$3000 \times \frac{17}{100} = 30 \times 17$
No of candidates qualified in J = 30×83
$\therefore$ Required diff = $(30 \times 83 + 22 \times 74) - (22 \times 26 + 30 \times 17)$
$= (30 \times 66 + 22 \times 48) = 3036$
To avoid calculation, whatever be ans it is conrfirm that must be multiple of 11 only option c satisfies.

2. (a)



$\therefore$ Area of Rhombus = 2 × area of equilateral triangle
$= 2 \times \frac{\sqrt{3}}{4} \times 4 \times 4 = 8\sqrt{3}$
Again,
Area of Rhombus = $\frac{1}{2} \times d_1 \times d_2$
$8\sqrt{3} = \frac{1}{2} \times 4 \times d_2$
$\therefore$ d_2 = larger diagonal = $4\sqrt{3}$
Area of equilateral $\Delta = \frac{\sqrt{3}}{4} \times (4\sqrt{3})^2$
$= 12\sqrt{3}$ cm^2

3. (c)
$\frac{a}{b} : \frac{c^2}{d^2} : \frac{e^3}{f^3} = 16$
$\therefore \frac{a^2 + c^4 + e^6}{b^2 + d^4 + f^6} = 16^2$
$\therefore \sqrt{\frac{a^2 + c^4 + e^6}{b^2 + d^4 + f^6}} + \sqrt{\frac{b^2 + d^4 + f^6}{a^2 + c^4 + e^6}}$
$= \sqrt{16^2} + \frac{1}{\sqrt{16^2}}$
$= 16 + \frac{1}{16} = \frac{257}{16}$

4. (c)
Statement (i)
$\left[\frac{360}{100}(11+25) - \frac{360}{100}(18+9)\right]$
$= 3.6 \times 9 = 32.4°$
Statement (ii)
20% + 18% + 17% ® 12650
$\Rightarrow 55° \rightarrow 12650$
$\therefore 100° \rightarrow \frac{12650}{55} \times 100$
$= 23000$
So both (i) & (ii) are correct

5. (b)
$\frac{12976}{5} R = 1$
$\therefore R^2 = 1^2 = 1$

6. (a)
$\Rightarrow \frac{2P + Q}{Q + R} = \frac{Q - P}{Q - R} = \frac{4}{3}$
$6P + 3Q = 4Q + 4R$ ...(i)
Again,
$3Q - 3P = 4Q - 4R$
$\therefore Q = 4R - 3P$
$\therefore$ From eq(1)
$4R - 3P = 6P - 4R$
$8R = 9P$
$\therefore \frac{P}{R} = \frac{8}{9}$ Q = 12
$\therefore$ P : Q : R
8 : 9 : 12

7. (b)
$M \times 15 \times 8 = S \times 10 \times 9$
$\frac{M}{S} = \frac{3}{4}$
$\therefore 3 \times 15 \times 8 = (3 + 4) \times 6 \times d$
$\therefore d = \frac{60}{7}$ days $= 8\frac{4}{7}$ days

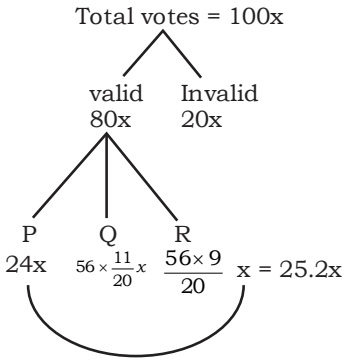
8. (a)
Perimeter = $29^a \times 3^b \times 2^c$
It means perimeter is factor of $29 \times 3 \times 2$
Go through option
(a) $174 = 2 \times 3 \times 29$

9. (d)
1 hour work of A = 12
1 hour work of B = 10
1 hour work of C = $\frac{15}{2}$
Average number of work complete in one hour = $12 + 10 + \frac{15}{2} = \frac{59}{6}$

10. (b)
Food : Saving
120 : 60°
$\Rightarrow$ 2 : 1

11. (d)
CP : SP
(2 : 1) × 3
2 : 3
Total 8 : 6
Loss = 2
× 300
2 × 900
2 × 3000 = 6000

12. (c)



13. (d)

$0.4 \times 0.5 \times 2.5 \times 0.5 = 0.25$

$0.2 \times 0.7 + 0.2 \times 0.55 = 0.25$

$0.2 \times 0.5 + 0.3 \times 0.5 = 0.25$

$1.5 \times 0.05 + 0.4 \times 0.5 = 0.26$

By solving the equations we can clearly see the answer will be 0.25 but by solving only option (d) we are getting 0.26

Hence, option (d) is odd

14. (d)

A	B	C
105	100	$\frac{100}{11}\times 10$
231	220	200

Required% = $\frac{31}{200}$ × 100 = 15.5%

15. (d)

MP	CP
$2x$	x

$\therefore$ 70% of $2x$ = 420

x = 300

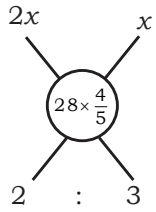
16. (c)

New Volume	Orig Volume
$\pi(3r)^2 \times \frac{h}{2}$	$\pi r^2 h$

$\Rightarrow$ 9 : 2

17. (a)

CP of mixture = $28 \times \frac{4}{5}$



$\therefore \frac{2\times 2x + 3\times x}{2+3} = 28\times\frac{4}{5}$

x = Rs 16

18. (d)

Loss = CP – SP

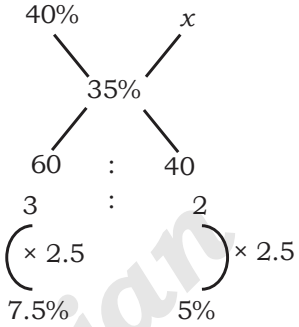
32 SP = 28 CP

$\Rightarrow \frac{2800}{32} = \frac{700}{8}$

$\therefore 7x = \frac{700}{8}$

$\Rightarrow 8x$ = Rs 100

19. (c)



$\therefore x$ = 28.5%

$\therefore$ Percentage of girls failed

= 100% – 28.5%

= 72.5%

20. (d)

A		C
(100 – L%)	:	(100 – D%)
80	:	70

$\Rightarrow$ Discount% = $\frac{10}{80}$ × 100 = 12.5%

IB ACIO GRADE-II

20/02/2021 (Shift-02)

16

1. A deposits an amount x at 5% per annum simple interest in a bank. His brother B deposits an amount y at 10% annual interest compounded annually. After 1 year, the interest received by B is twice the interest received by A. What is the value of y : x?
Aखु खिुम ख्यक्खिभ ख्यातख्दअ्रह्र, ँ ँ कौ्रयस्खीं ।क्खु ख्केइई खxखं यै रु कौ्र्र्र्रि स्खएु, ँ खौ ल्ह Bख10भ ख्दे रुैहु ख. द्रु ख्नीं ख क्ख्Yख्केइई ं यै रु कौ्र्र्रि स्ख ख्दअ्ह्र खौ टज्ख्Bरु ँ खौ त्न नीं ख्Aह् ँ कैखौ ज्ख्नीं रु ँ ख्टैस्श्र्र्रि स्खy : xरु ँ ख्यौ श्रख्न्न्र्रि ब
IB ACIO GRADE II 20/02/2021 (Shift-02)
(a) 3 : 2 (b) 1 : 1
(c) 2 : 1 (d) 2 : 3

2. Sunny and Bunny together have Rs. 3450. If $\frac{2}{9}$ of Sunny's amount is equal to $\frac{7}{3}$ of Bunny's amount. How much amount does Bunny have?
, श्रख्: ँ स्खि2श्रख्रु खौ , रु श्र ख्यश्ै, ख्ख्र्टं0 6ख्नट्ख्, श्रखु अख्केइई रु ँ ख$\frac{2}{9}$ खौ स्खि श्रखु 3 केइई रु ख$\frac{7}{3}$ रु खि किखि स्खि2श्रख्रु ख्ौ , रु तश्रख्केइई र्रि ब
IB ACIO GRADE II 20/02/2021 (Shift-02)
(a) Rs. 300 (b) Rs. 845
(c) Rs. 2340 (d) Rs. 3150

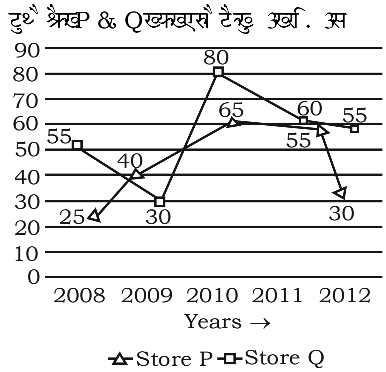
3. Average of 8 students is 15 years. If two more students of age 20 and 10 years join.What will be the new average age?
त्खद्दैर्ै हैर्रु उ्ख: ँ प्रतख: ँ ज्ञख्व ख्ख्द्अ्र्रि स्खन्नट /0ख: ँ स्ख10ख्दअ्रह्र उ्ख: ँ ज्ञ्रु ख्टेख: ँ स्खदे्ै ई स्यश र्रि तर्द्ध्य्ये ख्श्रख्: ँ प्रतख: ँ ज्ञ्रख्न्न्र्रि स्ब
IB ACIO GRADE II 20/02/2021 (Shift-02)
(a) 25
(b) 20
(c) 10
(d) Remain same

4. If a and b are two real numbers such that b > a, ab < 0, the sum of their squares is 458 and the difference between their squares is 120, then find the value of a - b.
ज्ञख्टख्: स्खb ख्टे ख्दे्ु तद्रु ख,रुज्ञै र्रिख्ख् प्र ुरु खb > a, ab < 0,खएश्रु ख्दसैरु ँ ख्झैस ?व्रत्र्रि स्ख: ँ स्खएश्रु ख्दसैरु खि38रु ँ ख: त्नक 1/0र्रि स्खतै ख्a - bरु ँ ख्यौ श्रख्ठै तरु ख्स
IB ACIO GRADE II 20/02/2021 (Shift-02)
(a) 4 (b) – 30
(c) 30 (d) – 4

5. Find the value of/रु ँ ख्यौ श्रख्ठै तरु उं ज्ञ
$$\sqrt{(1+3+5....+93)\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)\left(1-\frac{1}{5}\right)...\left(1-\frac{1}{2209}\right)}$$
IB ACIO GRADE II 20/02/2021 (Shift-02)
(a) $\sqrt{2}$ (b) 4
(c) 2 (d) 3

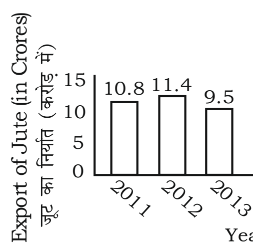
6. A vegetable seller had some apples. He sells 50% apples and still has 650 apples left.Originally, he had ___ apples.
ु ख,नं उख्द. तैरु खौ , रु श्र ख, रिहै स्खर्द व0भख, रिख8 तै र्रि स्ख: ँ स्खएु खौ , ख: ौ अ्रौ 3 4व0ख, रिख8 र्रि स्ख्यश ख्छ।ख, जएु खौ , ___ख, रिहै स
IB ACIO GRADE II 20/02/2021 (Shift-02)
(a) 1300 (b) 850
(c) 700 (d) 1200

7. Line-graph given below shows the total no. of products in two different stores P & Q in five different years.
श्रु8 ख्टज्ञै ख्स्ज्ञै ख्ख्बे %ख्टैक्ख्रु श्र ख,रुज्ञै ख्दइैं हैं ँ स्ख्वौ 8 ख: श्र स%: श्र स्ख्द्अ्ख्क्ख्टे ख: श्र स%: श्र स टुथ्ै श्रख्P & Qख्ख्खएसै टैरु उर्खि. उस



What is the difference between total number of products in store Q in year 2010 & 2011 together and total number of products in store P in year 2008 and 2012 together?
दअ्रह्र/010ख: ँ स्ख/011ख्यख्रु 9 ख्Qख्यख्खएसै टैरु उरु श्र ख,रुज्ञै ख: ँ स्खदअ्रह्र/00ख: ँ स्ख/01/ यख्रु 9 ख्Pख्यख्खएसै टैरु उरु श्र ख,रुज्ञैरु रि8रु तश्रैख: तर्द्ध्र्रि ब
IB ACIO GRADE II 20/02/2021 (Shift-02)
(a) 20
(b) 85
(c) 90
(d) 15

8. The given bar graph shows the export of jute by a company over the years 2011 to 2017.
स्टज्ञै ख्स्ज्ञै खौ ख्कैक्ख्द्अ्ह्र/011ख, ख/01ख्ख्रु ु रु त्र श्रख्है कैखं 9रु ख्श्रख्ठै तरु ँ ख्टइै हैर्रि स्ख



Which of the following pairs of years has the maximum percentage of decrease in export?
स्ख्रै श्रश रखतख्यख, ख्रु , ख्दअ्रह्रज्ञ्रख्ख्यख्श्रैह यख्रु यउ्रु ँ ख्यातइै तख: रेु तयर्रि ब
IB ACIO GRADE II 20/02/2021 (Shift-02)
(a) 2014 – 2015
(b) 2015 – 2016
(c) 2012 – 2013
(d) 2011 – 1012

9. A can finish a task in 6 days by working for 8 hours/day and B has the capacity to finish the same task in 8 days by working for 6 hours/day. In how many days will theyfinish it together by working 4 hours a day?

Aखु, खु ै ज्ञाहृु ै खत्तखैॄ रटश्रु ै यत्तु कु ख4 रटश्रैख्वखव फैरु कहु, तर्ख प्त: फखव3खए, खु ै ज्ञह ु ै ख4खैॄ रटश्रु ै यत्तु कु खत्तखरटश्रैख्वखव। फै कफ्रु उखद्वैयतै खवखतै र्ख पाघगरतरटश्रव?खैॄ ु ै यत्तु कु खदखल खु तश्रखरटश्रैख्वखव फैरु कहब

IB ACIO GRADE II 20/02/2021 (Shift-02)

(a) 6 days (b) 12 days
(c) 9 days (d) 8 days

10. If $(x + a)$ is common factor of $x^2 - (2 + \sqrt{2})x + 2\sqrt{2}$ and $x^2 - 2\sqrt{2} + 2$, then the value of $\sqrt{(5\sqrt{2} - a)3\sqrt{2}}$ is:

ज्ञरटख$(x + a)$ $x^2 - (2 + \sqrt{2})x + 2\sqrt{2}$: ै फख$x^2 - 2\sqrt{2} + 2$खु ै ख, ै यै ज्ञखरखैश्रखघ्र ' पखलै ख$\sqrt{(5\sqrt{2} - a)3\sqrt{2}}$ खु ै ख्वै श्रर्ह म

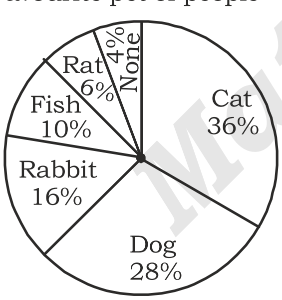
IB ACIO GRADE II 20/02/2021 (Shift-02)

(a) 6 (b) 4
(c) 8 (d) 2

11. Rama did a survey where she asked all the people in her apartment to name their favourite pet. The results are shown in the pie-chart. If 48 people said their favourite pet was a rabbit then, how many persons said that their favourite pet was a cat?

कौ खश्रखु ख, दर्हैमैरखु ज्ञै खं 'ैखए, श्रख: । श्र : ै 9ह्म9खु ख, ै उखशै ैरख, ख: । श्रख। , न्टरै ै श तछं ै श्रदखु ै ख्वैयखर्ते श्रु ै खु ' ैस्वखौ य ै लह्म8 9हृख्वरटखै। खस्र र्ख प्ताज्ञरटख?त्खश् ैरखश्र ु ' ैखु खश्रु ै ख, न्टरै खै श तछं ै श्रदखवखर्ते ै ' पखलै खु तश्रखैं ैरखश्रु ' ैखु खश्रु ै ख, न्टरै ै श तछं ै श्रदखवर्ह –श उर्ह ब

Favourite pet of people



IB ACIO GRADE II 20/02/2021 (Shift-02)

(a) 84 (b) 30
(c) 18 (d) 108

12. L.C.M. of two numbers is 15 times of their H.C.F. The product of numbers is 4860. What will be the maximum possible difference between the numbers?

टै ख, ऋज्ञै :ै रखु ै खश ., .। खएश्र खय., .। खु ै ।वखस्ैरर्ख प्त, ऋज्ञै : ै रखु ै खस्रै श्र ख ख?त्त40र्ख प 40खु, ऋज्ञै : ै रखु खर्थ 3 ख: रे ु तयख, ै दख: त्तक एज्ञै र्ह ैहै ब

IB ACIO GRADE II 20/02/2021 (Shift-02)

(a) 36 (b) 90
(c) 252 (d) 270

13. A number is divided into two parts in the ratio of 5 : 6 respectively. The sum of 60 percent of first part and 50 percent of second part is 84. If both parts are increased by 10, then what will be the respective ratio between the sum of old numbers and new numbers?

ु ख, ऋज्ञै रखु ै ख यई मखव4रखु ख: श्रौ तखखरटै ै हैरख्वखदौ ै रं तखु ज्ञै खस्ज्ञै र्ख प्तर्वा श खौ ै स ु ख40खारतइै तख: ै प्तखट, खवै ै स्रखु खव0खारतइै त ु ै खै स्ख्त?र्ख प्ताज्ञरटखै श्रखौ ै ैरखु ै ख10ख, ि लैखटज्ञै खं ै । जखै ख। फैश्रख, ऋज्ञै : ै रख: ै फखश्र्रह , ऋज्ञै : ै रखु खज्ञै स्रखु खर्थ 3 ख, र्नरे तख: श्रौ त एज्ञै र्ह ैहै ब

IB ACIO GRADE II 20/02/2021 (Shift-02)

(a) 75 : 87 (b) 73 : 87
(c) 77 : 87 (d) 71 : 87

14. If the value of x satisfies the equation $\frac{125 \times 4 - x \times 2}{x + 50} = \frac{20}{x}$, then the sum of all the possible values of x is?

ज्ञरटख xख ु ै ख यै श्रख , यउ कमै $\frac{125 \times 4 - x \times 2}{x + 50} = \frac{20}{x}$ रखु ै ख, तश्रखु कौर्ख प तै खरखु ख, ै उ, ै ैरदतखखै श्रखु ै ख्वै स्खज्ञै र्ह ब

IB ACIO GRADE II 20/02/2021 (Shift-02)

(a) 200 (b) 100
(c) 250 (d) 150

15. The remainder when 731^{732} is divided by 9 is 'a' . Then the unit's place of a^{332211} is:

731^{732}खु ै ख(ख, खदौ ै रं तखु कखव खदै अ ख 'a'र्ख ै तर्ख प्तख। फखa^{332211}खु उखलु ै लहृु ै ु ै ै श्रर्ह म

IB ACIO GRADE II 20/02/2021 (Shift-02)

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

16. The speed of a plane was raised by 60% by the pilot and then the raised speed was reduced by 50%. The speed measured by the sonic radar at this point of time was 2400km/h. Find the initial speed of the plane.

ै ज्ञश 9ह्म ै कैखु, खदयै श्रखु उखस्तख40भ्खलै ठ टउखस्लह: ै फख। फखर्ल ल्हर्ख प्तखस्तखव0भ्खु य ु कहटउखस्लखल, ख, यज्ञख, ै स्रु खकैप्रै कह ै कै यै। उखस्लखस्तख/ ?00खु य3 ैकौ ख ै उखदयै श्र ु उखौ खौ ु खस्तखदै तखु उं । स

IB ACIO GRADE II 20/02/2021 (Shift-02)

(a) 2400 km/h
(b) 3200 km/h
(c) 2800 km/h
(d) 3000 km/h

17. If $(a + b - 1)^2 + (b + c - 9)^2 + (c + a - 4)^2 = 0$, then the value $\sqrt{(a+b)^c + (c+a)^b - 1}$ is:

ज्ञरटख$(a + b - 1)^2 + (b + c - 9)^2 + (c + a - 4)^2 = 0$, तै $\sqrt{(a+b)^c + (c+a)^b - 1}$ खु ै ख्वै श्रर्ह म

IB ACIO GRADE II 20/02/2021 (Shift-02)

(a) 7 (b) 8
(c) 9 (d) 6

18. M can do a piece of work in 20 days. He works at it alone for 5 days and N alone finishes the remaining work in 9 days. In how many days, both of them together can complete the work ?

Mखु, खु ै ज्ञहृु ै ख0खरटश्रैख्वखव फैरु कहु, तै ' पखर्द ख: ु श खल, ख। वखखरटश्रु ै यत्तु कौर्ख प : ै फखN ख: ु श र्ह उखै उखु ै यख(खरटश्रैख्वखव। फै ु कहर तर्ख प्तखदखै श्रैख्वयरु कहु ै ज्ञहृु ै खु तश्र रटश्रैख्वखव फैरु कहु तर्ह म

IB ACIO GRADE II 20/02/2021 (Shift-02)

(a) 12.5 days
(b) 10 days
(c) 8 days
(d) 7.5 days

19. In a lock making factory, 5 percent of the total produced locks were found defective and 80 percent of the non-defective locks were exported. If 85500 non-defective locks were not exported, then how many locks produced?

ु खौ शै र्ख श्रैश्रखदै श उखव ख9उखखु श खखसै रटत तै शै खख, खवखारतइै तखदै अ ै मै खवखै । खस्र ख: ै क त्त0खारतइै तखस्फखटै अ ै मै खवखै श खश्रै हरु कहटा स खज्ञरटखवव00खस्फखटै अ ै मै खवखै शै रखु ै खश्रै ह श्र उखु ज्ञै खस्ज्ञै जखै खु तश्रखै शै रखु ै खसै टश्र रु ज्ञै खस्ज्ञै ब

IB ACIO GRADE II 20/02/2021 (Shift-02)

(a) 475000 (b) 450000
(c) 427500 (d) 395000

20. A regular polygon is having 4p + 2 as the number of its sides where p is a positive integer. What will be the ratio of the measure of its interior angle to that of its exterior angle?

ु खश्क्षरयतर्ख ॉ्रैुं ८ रु अ्वौं ै : ॅरु अ,ञ्ञै 4p + 2र्ठ फं ॅ ॅ रक्pखु रे श्रैस्यु खमैुहर्ठ स्रा लु ख्: ैत्तरकु रु ॅ मैरु अव्यै। रु ॅ खं ॅ कारु ॅ मै ु अव्यै। रु, रु: श्रौं तखञ्जेर्ठ ॅ रै ब

IB ACIO GRADE II 20/02/2021 (Shift-02)

(a) p : 2 (b) p : 1
(c) 1 : p (d) 2p : 1

ANSWER KEY

1.(b)	2.(a)	3.(d)	4.(b)	5.(a)	6.(a)	7.(b)	8.(b)	9.(a)	10.(a)
11.(d)	12.(c)	13.(c)	14.(d)	15.(c)	16.(d)	17.(b)	18.(d)	19.(b)	20.(d)

SOLUTIONS

1. (b)
S.I in 1 yrs = C.I in 1 yr, if rate is compounded annually.
ATQ,
2 × (x × 5%) = y x 10%
⇒ x : y = 1 : 1

2. (a)
Given,
$$\frac{2}{9}S = \frac{7}{3}B$$
S : S
21 : 2 $\xrightarrow{\times 150}$ Rs. 300
23 $\xrightarrow{\times 150}$ Rs. 3450

3. (d)
Original average = 15 yrs
Average of joined students
$$= \frac{20+10}{2} = 15 \text{ yrs}$$
Thus, new average age will remain same.

4. (b)
Given,
$a^2 + b^2 = 458$
$a^2 - b^2 = 120$
∴ $a^2 = 289$ $b^2 = 169$
a = ± 17 b = ± 13
∵ b > a & ab < 0
↓ ↓
13 –17
∴ a – b = –17 – 13 = –30

5. (a)
$$\sqrt{(1+3+...+93)\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)...\left(1-\frac{1}{2209}\right)}$$
Sum of odd no = x^2
∴ 1 + 3 + ... + 93 = 47^2
$$\& \left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)\left(1-\frac{1}{5}\right)...\left(1-\frac{1}{2209}\right)$$
$$\Rightarrow \frac{2}{3}\times\frac{3}{4}\times\frac{4}{5}...\frac{2208}{2209}$$
$$\Rightarrow \frac{2}{2209}$$
$$\therefore \sqrt{47^2\times\frac{2}{472}} = \sqrt{2}$$

6. (a)
ATQ,
50% of total no of apples = 650
∴ Total apples originally = 1300

7. (b)
Products in Q in 2010 & 2011
= [80 + 60] = 140
Products in P in 2008 & 2012
= [25 + 30] = 55
∴ Their diff = 140 – 55 = 85

8. (b)
$$2014 - 15 = \frac{2.1}{9.9} \times 100\% = 21.2\%$$
$$2015 - 16 = \frac{2.6}{7.8} \times 100\% = 33.33\%$$
$$2012 - 13 = \frac{1.9}{11.4} \times 100\% = 16.67\%$$
2011 – 12 = increase
Clearly, 2015–16 has the max percentage of decrease in export.

9. (a)
$$\frac{M_1 \times D_1 \times H_1}{W_1} = \frac{M_2 \times D_2 \times H_2}{W_2}$$
A × 8 × 6 = B × 6 × 8
$$\frac{A}{B} = \frac{1}{1}$$
Total work = 1 × 8 × 6 = 48
$$\text{Days to finish} = \frac{48}{(1+1)\times 4} = 6 \text{ days}$$

10. (a)
∴ x + a is common factor
∴ x = – a
∴ $(-a)^2 - \left(2+\sqrt{2}\right) \times -a + 2\sqrt{2}$

$= (-a)^2 - \sqrt{2} \times 2(-a) + 2$

$\Rightarrow a^2 + \left(2+\sqrt{2}\right) a + \left(2\sqrt{2}\right) = a^2 -$

$2\sqrt{2} + 2$

$\Rightarrow a = -\sqrt{2}$

$\therefore \sqrt{5\sqrt{2}+\sqrt{2}\times 3\sqrt{2}} = \sqrt{36}$

$= 6$

11. (d)

Who likes Rabit = 16%

Who likes cat = 36%

$\therefore$ 16% $\rightarrow$ 48

$36\% \rightarrow \frac{48}{16} \times 36 = 108$

12. (c)

LCM	HCF
$15x$	x

LCM × HCF = $N_1 \times N_2$

$15x \times x = N_1 \times N_2$

$15x \times x = 4860$

$x^2 = 324$

$x = 18$

$\therefore$ LCM = 15 × 18

HCF = 18 Copreme no.

$\therefore$ LCM = HCF × x × y

Possibility (I) = 18 × 3 × 5

Possibility (II) = 18 × 15 × 1

$\therefore N_1 = 18 \times 15$

$N_2 = 18 \times 1$

$\therefore (N_1 - N_2)_{Max} = 18(15-1)$

$= 252$

13. (c)

A	B
$5x$	$6x$

ATQ,

60% of $5x$ + 50% of $6x$ = 84

$6x = 84$

$x = 14$

	A	B	
Old no $\rightarrow$	14×5	14×6	$= 154$
	$\downarrow +10$	$\downarrow +10$	
New No $\rightarrow$	80	94	$= 174$

$\therefore$ Required ratio = 154 : 174

= 77 : 87

14. (d)

Given,

$\frac{125\times 4 - x\times 2}{x+50} = \frac{200}{x}$

$\Rightarrow 250x - x^2 = 100x + 5000$

$x^2 - 150x + 5000$

100 50

$\therefore$ Sum = 100 + 50 = 150

15. (c)

$\frac{(731)^{732}}{9} = \frac{(7+3+1)^{732}}{9}$, R = 1

$\therefore a = 1 \therefore (1)^{332211} = 1$

16. (d)

Let initial speed of plane = x km/h

$\therefore x \times \frac{8}{5} \times \frac{1}{2} = 2400$ km/h

$x = 3000$ km/h

17. (b)

Given,

$(a + b - 1)^2 + (b + c - 9)^2 + (c + a - 4)^2 = 0$

We know, $x^2 + y^2 + z^2 = 0$ when x, y, z are zero

$\therefore a + b = 1$

$b + c = 9$

$c + a = 4$

$\therefore a + b + c = 7$

$\therefore a = -2$

$b = 3$

$c = 6$

$\therefore \sqrt{(-2+3)^6 + (6-2)^3 - 1}$

$= \sqrt{1+64-1} = 8$

18. (d)

Work done by m in 5 days

$= \frac{5}{20} = \frac{1}{4}$

$\therefore \frac{3}{4}$ work is done by N in 9 days

$\therefore$ N will complete the work = 12 days

$\therefore$ M + N will complete the work

$= \frac{20\times 12}{(20+12)}$ days

= 7.5 days

19. (b)

Let total produced lock = $100x$

$100x$

non-defect $95x$ defect $5x$

ATQ,

20% of $95x$ = 85500

$\therefore 19x = 85500$

$x = 4500$

$\therefore 100x = 45,00,00$

20. (d)

We know,

Exterior angle + interior A = 180°

Sum of exterior angles = $\frac{360^\circ}{N}$

$\therefore$ Interior angle Exterior angle

$\left(180 - \frac{360}{4P+2}\right) : \frac{360}{4P+2}$

$\Rightarrow \left(1 - \frac{2}{4P+2}\right) : \frac{2}{4P+2}$

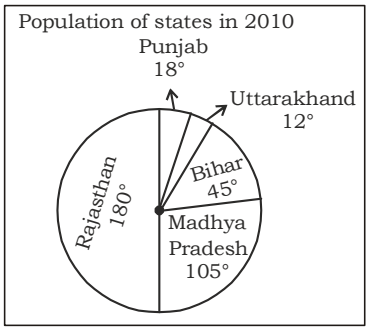
$\Rightarrow$ 2P : 1

IB ACIO GRADE-II

20/02/2021 (Shift-03)

13

1. The following pie chart shows the population of 5 states of India in 2010. What is the population of Rajasthan if the total population of these 5 states is 16200000?



IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 7100000 (b) 810000
(c) 4725000 (d) 540000

2. If $x > 0$ and $x^1 + x^{-1} = 2$, then what is the value of $(x^2 + x^{-1}) + (x^2 + x^{-2})^2 + (x^3 + x^{-3})^3 + ... (x^{11} + x^{-11})^{11}$ is:

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 4210 (b) 5234
(c) 4864 (d) 4094

3. A sum of Rs. 20000 is invested for three years at compound int erest . The rate of interest for first year is 20 percent per annum, for second year it is 15 percent per annum and for third years it is 10 percent per annum. Find the interest for the third year.

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) Rs. 2190 (b) Rs. 2620
(c) Rs. 2760 (d) Rs. 2340

4. A bathtub can be filled by a cold pipe in 15 minutes and by a hot pipe in 10 minutes. A man opens both the taps at 7 am. and leaves the bathroom. He returns at the time when the tub was expected to be full, but he observes that the waste pipe in the bottom was open and the tub was not full. He now closes it, and it takes 4 more minutes before the tank is full. After using the bathrub for 10 mimites, he opens the waste pipe. At what time will the tub be empty?

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 33 minutes past 7 a.m.
(b) 31 minutes past 7 a.m.
(c) 29 minutes past 7 a.m.
(d) 27 minutes past 7 a.m.

5. If b is the mean proportion to a and c with a common ration $\sqrt[3]{\frac{2}{3}}$, then $(a - b)^3 : (b - c)^3$ is:

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 3 : 2 (b) 1 : 1
(c) 2 : 3 (d) 1 : 2

6. Population of a city is 148000 and out of which 78000 are males and 40 percent population is literate. If 55 percent males are literate, then what is the number of females who are literate?

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 14200 (b) 18500
(c) 15800 (d) 16300

7. Five bells commence tolling together and toll at intervals of 2, 4, 9, 12 and 15 seconds respectively. In 45 minutes, how many times do they toll together?

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 8 (b) 10
(c) 16 (d) 15

8. A = 1200 – X where X is a real number. A > 0 and A is divisible by 3, 5, 7 and 11. The sum of the two largest possible value of X is:

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 45 (b) 55
(c) 1110 (d) – 1065

9. A chord, at a distance of 1 unit from the centre, has a length equal to $k^2 \sin\left(\frac{\pi}{4}\right)$ and the radius of the circle is $(-k) \sin\left(\frac{\pi}{3}\right)$. What is the value of k, is k is an integer?

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 4 (b) 2
(c) -2 (d) 3

10. The expression $(x-\sqrt{2})(x-\sqrt{4})$ goes through its minima at the value of $x = a$. Find the value of $2a-\sqrt{2}$.

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 0 (b) $\sqrt{2}$
(c) 1 (d) 2

11. Find the average of first 50 natral numbers.

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 50.15 (b) 20.75
(c) 51.3 (d) 25.5

12. Raushan can complete the wall putty work in 6 days and Satyam can complete it in 12 days. While working together with Raghu, they completed the job in 2 days only. In how many days Raghu alone can complete the job?

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 8 day (b) 6 day
(c) 4 day (d) 12 day

13. The price of petrol rises by 60%. By what percent age should one minimise the use of petrol so that the expenditure towards petrol is not affected?

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 38.5 (b) 36.5
(c) 37.5 (d) 35.5

14. A fixed sum is lent out in two parts in such a way that the interest on the first part at 1 percent for 1 year is equal to that on the second part at 2% for 2 years. Find the square root of the ratio of the first part to the second part .

IB ACIO GRADE II 20/02/2021 (Shift-03)

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

15. Study the table below and answer the question that follows. What is the average number of workers in IT team for the time span 2011 to 2014?

Number of workers in different departments

Year	Management	Content	IT	Product
2011	20	12	10	14
2012	12	14	12	12
2013	19	16	10	13
2014	22	8	8	8
2015	24	10	12	16

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 8 (b) 12
(c) 10 (d) 9

16. Length of a rectangle is 7 cm more than its breadth and length of diagonal of the rectangle is 13 cm. What is the area of a square having perimeter same as the perimeter of given rectangle?

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 5.25 cm^2 (b) 72.25 cm^2
(c) 36.25 cm^2 (d) 42.25 cm^2

17. A bus is travelling at a constant speed of 48 Km/hr. What is the distance travelled by bus from 1:20 pm to 3:40 pm?

IB ACIO GRADE II 20/02/2021 (Shift-03)

(a) 326 km (b) 144 km
(c) 340 km (d) 112 km

18. In a palace supplies are available for 35 days for only 75 people 15 Guests arrive in the palace for vacation on day 1 itself. For how many day will these supplies be sufficient for all these people?

IB ACIO GRADE II 2017

(a) 90 days (b) 11.25 days
(c) 42 days (d) 29.1 days

19. If difference between Compound Interest & Simple Interest on a certain sum of money for 2 years at the rate 5% p.a. is Rs.122. Find the sum?

IB ACIO GRADE II 2017

(a) Rs. 14000 (b) Rs. 15000
(c) Rs. 16000 (d) Rs. 48800

20. In a lottery 10,000 tickets are sold and ten prizes are awarded. What is the probability of not getting a prize if you buy one ticket?

IB ACIO Grade-II 15/09/2013

(a) $\frac{9}{10,000}$ (b) $\frac{9}{10}$
(c) $\frac{999}{1000}$ (d) $\frac{9999}{10000}$

ANSWER KEY

1.(b)	2.(d)	3.(c)	4.(c)	5.(a)	6.(d)	7.(c)	8.(d)	9.(c)	10.(d)
11.(d)	12.(c)	13.(c)	14.(a)	15.(c)	16.(b)	17.(d)	18.(d)	19.(d)	20.(c)

SOLUTIONS

1. (b)

Given,

$360° \rightarrow 16,20,0000$

$\therefore \quad 180° \rightarrow 810.000$

So population of Rajasthan = 810,000

2. (d)

Given $x + \frac{1}{x} = 2, \quad \therefore x = 1$

$$\therefore \left(x+\frac{1}{x}\right)+\left(x^2+\frac{1}{x^2}\right)^2+\ldots+\left(x^{11}+\frac{1}{x^{11}}\right)^{11}$$

$\Rightarrow 2 + 22 + 23 + \ldots 2^{11}$

Given expression is in G.P.

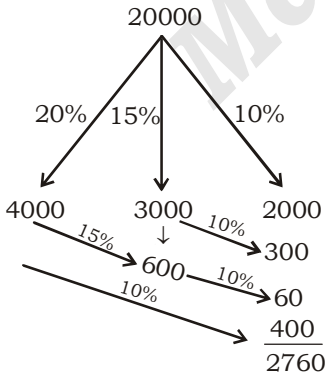
$\therefore a = 2\ r = \frac{2^2}{2} = 2$

$Sn = \frac{a(r^n-1)}{r-1} = \frac{2(2^{11}-1)}{2-1}$

$= 2\ (2048 - 1)$

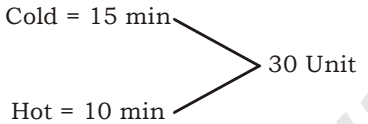
$= 4094$

3. (c)



$\therefore$ C.I of 3rd year = Rs. 2760

4. (c)



Time taken to fill the tube normally = $\frac{30}{5}$ = 6 min

But, due to leak it takes 4 min more, so total time = (6 + 4) min = 10 min

Amount of water empty leek = 4 × 5 = 20L

$\because$ leakage empty 20L in 6 min

$\therefore$ Effect of leekage = $\frac{20}{6} = \frac{10}{3}\frac{L}{M}$

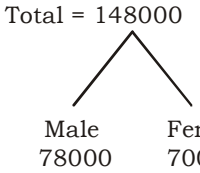
$\therefore$ Time taken to empty the tube

$= \frac{30}{\frac{10}{3}} = 9$ min

Total time taken = 10m + 10 min + 9 min

Thus, The tube will be empty = 7 : 29 am

6. (d)



Female population = 148000 – 78000 = 70000

ATQ, Let letrate female = x

$\Rightarrow 7800 \times \frac{55}{100} + x = 148000 \times \frac{40}{100}$

$\Rightarrow 42900 + x = 59200$

$\therefore x = 16300$

7. (c)

LCM of 2, 4, 9, 12 & 15 = 180 sec

There fore number of times they all toll together

$= \frac{45 \times 60}{180} + 1 = 16$

8. (d)

LCM of (3, 5, 7, 11) = 1155

$\therefore A = \frac{1200 - x}{1155}$

$\therefore x = 45$

$1155 \times 2 = 2310$

$\therefore x = -1110$

$1155 \times 3 = 3465$

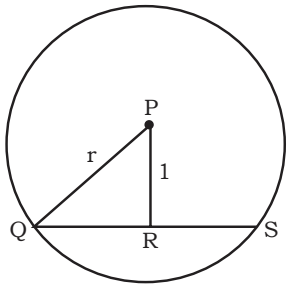
$\therefore x = -1265$

$\because -1110 > -1265$

$\therefore$ Sum of largest possible values = 1110 + 45

$= -1065$

9. (c)



$\therefore r^2 = QR^2 + 12$

$$\Rightarrow k^2 \times \sin^2\frac{\pi}{3} = \left(\frac{k^2 \sin\frac{\pi}{4}}{2}\right)^2 + 1$$

$$\Rightarrow k^2 \times k^2 \times \left(\frac{\sqrt{3}}{2}\right)^2 = \frac{k^4}{4} \times \frac{1}{2} + 1$$

$\Rightarrow k^2 \times \frac{3}{4} = \frac{k^4}{4} + 1$

$\Rightarrow \frac{k^4}{8} - \frac{3x^2}{4} + 1 = 0$

$\Rightarrow k^4 - 6k^2 + 8 = 0$

$\Rightarrow k^4 - 4k^2 - 2k^2 + 8 = 0$

$\Rightarrow k^2(k^2 - 4) - 2(k^2 - 4) = 0$

$k = \pm 2 \& \pm\sqrt{2}$

(– k) is length = r = So it can't be (+ve)

$\therefore$ k = 2 [To make k positive take –ve value]

10. (d)

$(x-\sqrt{2})(x-\sqrt{4}) = (x-\sqrt{2})(x-2)$

$\Rightarrow x^2 - (2+\sqrt{2})x + 2\sqrt{2} = 0$

If equation is $px^2 + qx + z = 0$

It will be minimum at $x = \frac{q}{2p}$

$\therefore x = \frac{(2+\sqrt{2})}{2} = a$

$\therefore 2q - \sqrt{2}$

$\frac{2(2+\sqrt{2})}{2} - \sqrt{2} = 2$

11. (d)

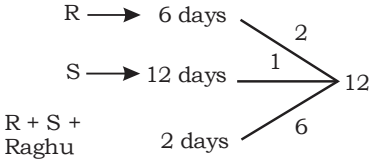
Avg. of any consecutive number

$= \frac{\text{First} + \text{last}}{2}$

Number = 1 + 2 + ... + 50

Avg. = $\frac{1+50}{2} = 25.5$

12. (c)

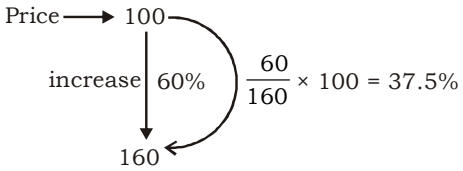


$\therefore$ Eff of Raghu = 6 – 3 = 3

$\therefore$ Raghu will complete the work

$= \frac{12}{3} = 4$ days

13. (c)



14. (a)

ATQ,

$\frac{A \times 1 \times 1}{100} = \frac{B \times 2 \times 2}{100}$

$\Rightarrow \frac{A}{B} = \frac{4}{1}$

$\sqrt{\frac{A}{B}} = \sqrt{\frac{4}{1}} = 2$

15. (c)

Given:

A graph showing number of people in different departments from the year 2011 to 2015.

Calculation:

Average people in IT department from the year 2011 to 2014:

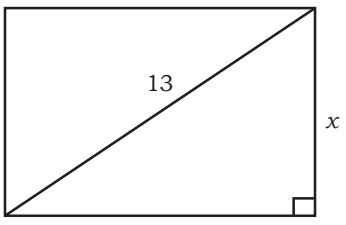
$\text{Average} = \frac{\text{Sum of the number of people}}{\text{Total number of years}}$

$\text{Average} = \frac{(10 + 12 + 10 + 8)}{4} = \frac{40}{4}$

Average = 10

The average people in IT department are 10 for the year 2011 to 2014.

16. (b)



$x + 7$

Though that treat triplets

13, 12, 5

length = 12 cm

breadth square is k

2(12 + 5) = 4k

$k = \frac{17}{2} = 8.5$

Area of square = k^2 $(8.5)^2$

= 72.25 cm^2

17. (d)

1 : 20 pm to 3 : 40 pm = 2h 20 min

$\therefore$ Distance = speed × time

$= 48 \times \frac{7}{3} = 112$ km

18. (d)

Let these supply will be sufficient for d days

$\therefore 75 \times 35 = (75 + 15)d$

$\therefore d = \frac{175}{6} = 29.1$ days

19. (d)

We know,

$\frac{d}{p} = (r\%)^2$ for 2 years

$\therefore \frac{122}{p} = \left(\frac{5}{100}\right)^2 \Rightarrow = P = 400 \times 122$

= Rs 48800

20. (a)

Given,

Number ot total tickets = 10000

Formula:

$P(A) = \frac{n(E)}{n(S)}$

Calculation:

Total number of tickets sold = 10000

Number prizes awarded = 10

If we by one ticket

$\Rightarrow$ Probalility of getting a prize

$= \frac{10}{10000} = \frac{1}{1000}$

$\therefore$ Probalility of not getting a prize

$= 1 - \frac{1}{1000} = \frac{999}{1000}$

IB ACIO GRADE-II

23/03/2023 (Shift-01)

18

1. The area of the base of a cuboidal tank is 8400 square centimetres and the volume of petrol contained in it is 10.2 cubic metres. Find the depth of petrol in the tank (Correct up to one decimal place)

[illegible]

IB SA & MTS 23/03/2023 (Shift-01)

(a) 1300.4 cm (b) 1843.2 cm
(c) 900.2 cm (d) 1214.3 cm

2. Surendra has a property having a certain value. He gives 60% of his property to his wife, 75% of the remaining property to his daughter, and the rest to a trust. If he gives property worth Rs 6,00,000 to the trust, find the worth of the share of the property he gives to his daughter.

[illegible]

IB SA & MTS 23/03/2023 (Shift-01)

(a) Rs10,00,000
(b) Rs15,20,000
(c) Rs15,00,000
(d) Rs18,00,000

3. Two trains are running in opposite directions. They cross a man standing on a platform in 28 seconds and 10 seconds, respectively. They cross each other in 24 seconds. What is the ratio of their speeds?

[illegible]

IB SA & MTS 23/03/2023 (Shift-01)

(a) 7 : 2 (b) 9 : 2
(c) 1 : 9 (d) 4 : 5

4. What is the compound interest on a sum of Rs 15,000 at 18% p.a. for $3\frac{2}{4}$ years, interest compounded annually? (Round off your answer to the nearest integer.)

[illegible] $3\frac{2}{4}$ [illegible]

IB SA & MTS 23/03/2023 (Shift-01)

(a) Rs.10,486 (b) Rs.11,084
(c) Rs.11,864 (d) Rs.10,264

5. Solutions A and B contain acid to water in the ratio 4 : 5 and 5 : 7, respectively. Three litres of A is mixed with 5 litres of B. In 960 ml of this solution, how much acid (in ml) should be mixed so that the ratio of acid to water becomes 1 : 1 in the resulting solution?

[illegible]

IB SA & MTS 23/03/2023 (Shift-01)

(a) 144 (b) 136
(c) 140 (d) 130

6. The marked price of an item is Rs 1900. The shopkeeper was offering it for a discount of 12% but on further bargaining agreed to offer a successive discount and finally he sold the item for Rs 1,538,24. What was the second discount offered by him?

[illegible] 1,538,24 [illegible]

IB SA & MTS 23/03/2023 (Shift-01)

(a) 15% (b) 10%
(c) 12% (d) 8%

7. Evaluate the following/[illegible]

$$\sqrt[4]{0.0000081} - \sqrt[4]{0.00000256} + \sqrt{625}$$

IB SA & MTS 23/03/2023 (Shift-01)

(a) 22.56 (b) 24.99
(c) 25.63 (d) 21.51

8. A bus to travel from A to B. The bus covers the first one-third of the distance at 25 km/h and the next one-fourth of the distance at 30 km/h. For the rest of the journey, the bus travels at 50 km/h. The average speed of the bus (in km/h) for the entire journey is ___.

[illegible]

IB SA & MTS 23/03/2023 (Shift-01)

(a) 33 (b) $37\frac{1}{2}$
(c) $33\frac{1}{3}$ (d) 35

9. Simplify the following/[illegible]

$$\frac{2\frac{3}{4}}{1\frac{5}{6}} \div \frac{7}{8} \times \left(\frac{1}{3}+\frac{1}{4}\right) + \frac{5}{7} \div \frac{3}{4} \text{ of } \frac{3}{7}$$

IB SA & MTS 23/03/2023 (Shift-01)

(a) $\frac{29}{9}$ (b) $\frac{2}{9}$
(c) $\frac{49}{80}$ (d) $\frac{56}{77}$

10. The sum of all 4-digit numbers which are divisible by both 3 and 5 is ____.

।त्पा कत्ल्र इ ग ु ।ङ्रे7प् ुझा प ु7फ्ूा 1फ्ा(र फ्रे
ु8फ्ाुझा।वक्षत्फ्7 ु ए्री ____ु ए्री

IB SA & MTS 23/03/2023 (Shift-01)

(a) 3192500 (b) 3095800
(c) 3295800 (d) 3298500

11. If Ashok and Koushika work together, then they can complete a piece of work in 20 days. However, if Ashok works alone and completes half the work and then Koushika takes over the task and completes the second half of the task, the task is completed in 45 days. How long will Ashok take to complete the task if he worked alone? Assume that Koushika is more efficient than Ashok.

7क्षु र श्र्माु र फ्रेु । फ्रेश्र्ा पु ख ु । फ्ुप । पस
। ग्फ्वएृ्रे 5फ्ानुवउमु क्ष्ु फ्ुसुझख ु । फ्ुु ै ल्ुम
। यु ।। 5वए्रे एप फ्ा (7क्षु र श्र्माु र । न्ुव
। फ्ुु । कपुए्री र फ्रेु र फ्ुप । फ्ुु ै ल्ुा । कपुए्री
र फ्रे शै ह्ु । फ्रेश्र्ा पु । प्ुं । इफ्ा 5ग ए्री र फ्रे
। प्ुं । पु 80 युत्फ्ुु ै ल्ुा । क्फ्ुए्री 5फ्ा प्ुं
कू ुक्ष्ुफ्ुसुझै ल्ुा एफ्ा1 फ्ुपुए्री 7क्षु र श्र्मा
र । वुवा प्ुं । कपुए्री 5फ्ुरु ु।वा प्ुं ै ल्ुा । यव
सुझश 5ुप । स्ा (, ज्ञफ्ुु सप्ु , ग्शा खु श
। फ्रेश्र्ा पु र श्र्माु ।वर स्ुा ु । श्र्ा ु ए्री

IB SA & MTS 23/03/2023 (Shift-01)

(a) 60 days (b) 65 days
(c) 30 days (d) 25 days

12. A medicine-capsule is in the form of a cylinder with hemispherical ends. The total length of the capsule is 3 cm and the diameter of the cross-section of the cylinder is 1.4 cm. Find the approximate capacity (in cm³) of the capsule.

(Use $\pi = \frac{22}{7}$)

ख ु 8नफ्ा ौ।Q ु र तंज्ञफ्ाप फ्ुश युझनप ु वख
श , झयु । वफ्रे ु सुझएफ्ुपए्री । ौ।Q ु । गु । ;
, इफ्ुलं (। स्ुा ग ए्री र फ्रे श , झयु । वक्फ्छल। फ्ाश्र्ा
। पु%प ु टजु । स्ुा ग ए्री । ौ।Q ु । ग ु र न सफ्ा 5
दफ्ा5प ु थ। स्ुा ग ु स्ुाु स्फु । ग्र्ा

(Use $\pi = \frac{22}{7}$)

IB SA & MTS 23/03/2023 (Shift-01)

(a) 2 (b) 8
(c) 6 (d) 4

13. In a box, there are Rs 10 notes, Rs 20 notes and Rs 50 notes in a ratio of 3 : 5 : 7. The total amount of notes is Rs 3360. Find the number of Rs 20 notes and Rs 50 notes taken together.

ख ु ध्फ्ाु सझु (ध्ू ु ध्ुउ ु । वरनै:फ्ु सुझटम
गै 7वा ु कर्फ्ा/ उमु गै 7वा ु कर्फ्ाु र फ्रे ू म
गै 7वए्रे ु न फ्ुझा गु । ;ु यक्ष्ुस((त्मु गै 7वए्री
उमु गै 7वा ु कर्फ्ाु र फ्रे ू मु गै 7वा ु कर्फ्ाुा ग
। ;ु ।ङ्रे7पुरस्फु । ग्शा ह्र

IB SA & MTS 23/03/2023 (Shift-01)

(a) 84 (b) 79
(c) 80 (d) 73

14. Find the simple interest on Rs 3660 at 5% per annum for 15 months.

(त्त्मु गै 7वै यु टू ु सएमु वा ु वश, खु ू डु ु ँ रु
नघ्ुंा । गु 8यु ।वा प्फाफ्फ्ुप ड्फ्ुप ु स्फु । ग्शा ह्र

IB SA & MTS 23/03/2023 (Shift-01)

(a) Rs 400.25 (b) Rs 216.50
(c) Rs 228.75 (d) Rs 302.50

15. I walk at a speed of 10 km/h and cover a distance in 2 hours. If I double my speed, how early would I reach my destination?

सुइ्टमु श सर्फाक्ुप । गु ज्ञरु ु ।वरू, 5प एुर फ्रे
डु ड्रिवसुझ8ल्ुा 5ऽ ु । फ्ुपएु 7क्षु सुइ्र ै न ग
ज्ञरु 8फ्ुरु गु । यु 8ङ्ु 5फ्ा सुइ्र ै ु वज्ञइ%ु ै य
श 5ुग । ?8गुै एङ्ु । प ज्ञफ्ा

IB SA & MTS 23/03/2023 (Shift-01)

(a) 60 mins (b) 35 mins
(c) 40 mins (d) 25 mins

16. Three pipes are attaches to a tank. The first one fills it completely in 5 hours, the second one fills it completely in 4 hours and the third one empties it in 20 hours. If all the three pipes are opened simultaneously at 7 am at what time will the tank be completely filled?

ख ु ँ इ्रे ु । व5मु ै फ्रैु 1 न्ुवएुु ए्रेु ै ए, प
रु । वू ु ड्रिवसुझ ल्ुा त्फ्ुप ए्री र फ्रे 80 युरु । वकु ड्रिव
सुझै ल्ुा त्फ्ुप ए्री र फ्रे 5ग यु रु । वउमु ड्रिवसुझ
खप ु गु । यु 8ङ्ु प ए्री 7क्षु 5मु ै फ्रैु ख ु । फ्ाप
। ध्ए ु ध्ु । वखफ्ु क्ष्ु 1 फ्ुझ5फ्ा इ ग ु श ।
। स्ा (ै ल्ुा त्फ्ु 1 पत्रा ग्फ्

IB SA & MTS 23/03/2023 (Shift-01)

(a) 9 : 30 am (b) 11 : 00 am
(c) 10 : 00 am (d) 10 : 30 am

17. Five consecutive even numbers are written in descending order. If 6, 8 and 10 are added to the first, second and third numbers, respectively, and 13 is added to each of the last two numbers, the new sum of the numbers becomes 120% of the sum of the consecutive even numbers initially given. Find the square of the second largest of these five numbers.

ै फ्ाु कसफ्ुप5 ु । सु ।ङ्रे7पुप्4 र नयफ्ा ग कसु सझ
श, खुग 1 फ्ुग ए्री 7क्षुै ए, गु 80 युग र फ्रे 5ग या
।ङ्रे7प ्फ्ुझसुझकसश्र्ुह्र त्ु/ ु र फ्रे टमु 1 फ्ाुढक्ष्ुख
1 फ्ुुर फ्रे र क्ष्ुसु 8फ्ा ।ङ्रे7प ्फ्ुझसुझ ु वं . 7ग्ु सझ
टु (1 फ्ाुढक्ष्7पु 1 फ्ु (5फ्ा ।ङ्रे7प ्फ्ुझा पु न 7प
7फ्ु ँ पफ्ुप सुझ8गु ज्ञलं , ज्ञफ्ाुप ु । सु ।ङ्रे7प ्फ्ुझा
। वु7फ्ु । पु टउमडु एफ्ा1 फ्ुप ए्री ज्ञलु ै फ्ाु
।ङ्रे7प ्फ्ुझसुझ ु व80 या । ध्।वध्न्ु ।ङ्रे7पु । प
नज्ञुं स्फु । ग्शा ह्र

IB SA & MTS 23/03/2023 (Shift-01)

(a) 2704 (b) 2304
(c) 1936 (d) 2116

18. If 15% of 55% of a number is 2475, then 51% of that number is ______.

7क्षु श । गु ।ङ्रे7पु । वू ु डु । पु टू डु उक्ू
ए्री 5फ्ाुरु ु ।ङ्रे7पु । पु ू टडु ____ु ए्री

IB SA & MTS 23/03/2023 (Shift-01)

(a) 15000 (b) 15300
(c) 15100 (d) 15200

19. If $l = \frac{6}{5}$ of m and m = $\frac{5}{8}$ of n, then the ratio of l : n is:

7क्षु $l = \frac{6}{5}$ । पm र फ्रेm = $\frac{5}{8}$ । पुn, ए्री
5फ्ा : n । पुरनै:फ्ु ए्री

IB SA & MTS 23/03/2023 (Shift-01)

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

20. If some items of clothing bought at prices ranging from Rs 250 to Rs 400 are sold at prices ranging from Rs 350 to Rs 550, then what is the maximum possible profit (in Rs) that might be made in selling 12 such items of clothing?

7क्षु डू मु गै 7वा ु वक्कमु गै 7व5। ु । गु । ग्सु5
ै यु खय्ु8वज्ञरु । ै नज्ञा गु । ;ु नण्5ह्ु (म
गै 7वा ु वू ु मु गै 7व5। ु । गु । ग्सु5 ै यु ध्क्ुग
1 फ्ुग ए्री 5फ्ा ै नज्ञा गु खफ्ुग टडु नण्5र ुझा फ्ा
ध्क्ु वै यु र स्ुा 5सु । इफ्ा5 , फ्ुप थ ै 7वसुझ
97पु एफ्ा। 5प ए्री

IB SA & MTS 23/03/2023 (Shift-01)

(a) 3,000 (b) 3,600
(c) 2,400 (d) 1,800

ANSWER KEY

1.(d)	2.(d)	3.(a)	4.(c)	5.(c)	6.(d)	7.(b)	8.(c)	9.(a)	10.(d)
11.(a)	12.(d)	13.(a)	14.(c)	15.(a)	16.(a)	17.(a)	18.(b)	19.(d)	20.(b)

SOLUTIONS

1. (d)

$l \times b = 8400\ cm^2$

$= 0.84\ m^2$

$l \times b \times h = 10.2\ m^3$

$0.84 \times h = 10.2$

$h = \frac{10.2}{0.84}\ m$

$\simeq 12.143m$

$r \simeq 1214.3cm$

2. (d)

Let he has total property 100.

He gives to wife $= 100 \times \frac{60}{100} = 60$

He gives to daughter

$= 40 \times \frac{75}{100} = 30$

Remaining gives = 10

$\because$ 10 = 600000

Share of property, he gives to his daughter (30) $= \frac{600000}{10} \times 30$

= Rs.1800000

3. (a)

(I) Let the speed of two train x m/sec and y m/sec

Then length of first train = $28x$ m.

and length of second train = 10y m.

$\therefore \frac{28x+10y}{x+y} = 24$

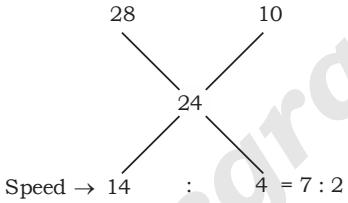
$28x + 10y = 24x + 24y$

$\frac{x}{y} = \frac{7}{2}$

Ratio of their speed = 7 : 2

'OR'

(II)



4. (c)

Rate% for $\left(\frac{2}{4} = \frac{1}{2}\text{yrs}\right) = 9\%$

$\therefore$ Amount $= 15000 \left(1+\frac{18}{100}\right)^3 \left(1+\frac{9}{100}\right)$

$= 15000 \times \frac{59 \times 59 \times 59}{50 \times 50 \times 50} \times \frac{109}{100} =$ 26863.57 $\simeq$ 26864

CI = 26864 – 15000 = Rs.11864

5. ()

Acid in solution A = 4 : 5

Quantity of acid in 3 litres of solution A $= 3 \times \frac{4}{5} = \frac{4}{3}$

Acid in solution B = 5 : 7

Quantity of acid in 5 litres of solution B $= 5 \times \frac{5}{12} = \frac{25}{12}$

Total acid of 8 litres of A and B

$= 8 \times \left(\frac{4}{3} + \frac{26}{12}\right) = 8 \times \frac{41}{12} = \frac{83}{3}$

6. (d)

Price of item after first discount

$= 1900 \times \frac{88}{100} = 1672$

Second discount = 1672 – 1538.24

= Rs.133.76

$\% = \frac{133.76}{1672} \times 100\% = 8\%$

7. (b)

Please correct the question:

$\sqrt[4]{0.00000081} - \sqrt[4]{0.00000256} + \sqrt{625} = ?$

$\Rightarrow 0.3 - 0.4 + 25$

$\Rightarrow 25 - 0.1 = 24.99$

8. (c)

average speed $= \frac{\text{Total distance}}{\text{Total time}}$

Let the total distance, (LCM of (3, 4) = 12

$T_1 = \frac{12 \times \frac{1}{3}}{25} = \frac{4}{25}$ hrs

$T_2 = \frac{12 \times \frac{1}{4}}{30} = \frac{3}{30}$ hrs

$T_3 = \frac{12-7}{50} = \frac{5}{50}$ hrs

Average speed $= \frac{\text{Total distance}}{\text{Total time}}$

$= \frac{12}{\frac{4}{25} + \frac{3}{50} + \frac{5}{50}} = \frac{100}{3} = 33\frac{1}{3}$

9. (a)

$\frac{2\frac{3}{4}}{1\frac{5}{6}} \div \frac{7}{8} \times \left(\frac{1}{3} + \frac{1}{4}\right) + \frac{5}{7} \div \frac{3}{4}$ of $\frac{3}{7} = ?$

$$\Rightarrow \frac{\frac{11}{4}}{\frac{11}{6}} \times \frac{8}{7} \times \frac{7}{12} + \frac{5}{7} \div \frac{3}{4} \times \frac{3}{7}$$

$$\Rightarrow \frac{3}{2} \times \frac{8}{7} \times \frac{7}{12} + \frac{5}{7} \times \frac{28}{9}$$

$$\Rightarrow 1 + \frac{20}{9} = \frac{29}{9}$$

10. (d)
Divisible by 3 and 5 means divisible by 15.

$\Rightarrow \frac{1000}{15}$ Remander 10

First numbers is 1005

$\Rightarrow \frac{9999}{15}$ Remander 9

Last number, is 9990
a = 1005, d = 15, n = ?
Tn = 9990
$T_n = a + (n - 1)d$
9990 = 1005 + (n – 1)15
n = 600
Sum of all four digit numbers which are divisible by 3 and 5

$$Sn = \frac{n}{2}[a + Tn]$$

S_{600} = 300 [1005 + 9990]
= 300 × 10595 = 3298500

11. (a)
Let's assume that ashok done the work alone in x days

Ashok's one day work = $\frac{1}{x}$

Ashok and koushika to the job in 20 days
So Ashok's and koushika's one day job = $\frac{1}{20}$ koushika's one day job = $\frac{1}{20} - \frac{1}{x}$

$\frac{1}{2}$ of task is done ashok in $x \times \frac{1}{2}$

$= \frac{x}{2}$ days ....(i)

$\frac{1}{2}$ of task is done koushika in

$\frac{20x}{(x-20)} \times \frac{1}{2} = \frac{20x}{(2x-40)}$ ....(ii)

Ashok and koushika complete the job in 45 days

$$\frac{x}{2} + \frac{20x}{2x-40} = 45$$

$x^2 - 90x + 1800 = 0$
$(x - 30)(x - 60) = 0$
x = 30 or 60 (since koushika is more efficient than ashok, we will ignore x = 30)
Ashok complete the task alone in 60 days.

12. (d)
Capacity of capsule,
= volume of cylindrical part + 2 × volume of hemisphere

$= \pi r^2 h + 2 \times \frac{2}{3}\pi r^3$

$= \frac{22}{7} \times 0.7 \times 0.7 \times 1.6 + 2 \times \frac{2}{3} \times \frac{22}{7} \times 0.7 \times 0.7 \times 0.7$

$\simeq 2.464 + 1.437$
$\simeq 3.91 \simeq 4 cm^3$

13. (a)
Ratio = 3 : 5 : 7
amount = 3 × 10 + 5 × 20 + 7 × 50 = 480
$\because$ 480 = 3360
(1) = 7
Number of Rs 20 notes and Rs 50 notes = (5 + 7) × 7 = 84

14. (c)
We know,

$$SI = \frac{P \times R \times T}{100}$$

$$SI = \frac{3660 \times 5 \times 15}{100 \times 12} = \text{Rs. } 228.75$$

15. (a)
Distance which is covered in 2 hours with speed 10 km/h = 10 × 2 = 20 km
If I double my speed = 10 × 2 = 20 km/h

Time = $\frac{20}{20}$ = 1 hours = 60 min.

16. (a)
L.C.M. of 5, 4, and 20 = 20

I —— 5 hr — 4
II —— 4 hr — 5 — 20
III —— 20 hr — 1

Tank can fill in = $\frac{20}{4 + 5 - 1}$

= 2 : 30 hrs

If all the tree pipes opened at 7 am, then tank filled after 2.5 hrs

$\Rightarrow$ 7 + 2:30 = 9:30 am.

17. (a)
Let the five consecutive even numbers,
$x, x + 2, x + 4, x + 6, x + 8$
ATQ,

$\frac{120}{100} \times [x + (x+2) + (x+4) + (x+6) + (x+8)] = [(x+6) + (x+2+8) + (x+4+10) + (x+6+13) + (x+8+13)]$

$\frac{6}{5} \times [5x + 20] = [5x + 70]$

$6x + 24 = 5x + 70$
$x = 46$
Second largest number = $(x + 6)$
= 52

$\Rightarrow (52)^2 = 2704$

18. (b)
Let the number is x
ATQ,

$x \times \frac{15}{100} \times \frac{55}{100}$

x = 30000
Now,

$x \times \frac{51}{100} = 30000 \times \frac{51}{100}$

= 15300

19. (d)

$l = \frac{6}{5}m$, $m = \frac{5}{8}m$

$\frac{l}{m} = \frac{6}{5}$, $\frac{m}{n} = \frac{5}{8}$

l : m : n = 6 : 5 : 8
l : n = 6 : 8 = 3 : 4

20. (b)
Least CP of 12 items = 12 × 250
= Rs 3000
Greatest SP of 12 items = 12 × 550
= Rs 6600
Profit required = 6600 – 3000
= Rs 3600

IB ACIO GRADE-II

23/03/2023 (Shift-02)

19

1. The average age of a husband and a wife was 25 years when they were married 4 years ago. The average age of the husband, the wife, and their child, who was born during the interval is 20 years now. How old is the child now?

ख्ण्णि यमुगिग्तु ा तुय क्ण् य ऊँ ह् ण्ण् कम नतु ज्ञं ्ा ।रा तुइ ंतुस ुण्ण् कुमाएि ुलएँ ुमनत0 1दु यक्रभी ्ा ुर्ल क्षरु षि्ण् गिग्तु य मु ।रा ल ं 75ुल तुय क्ण् य ऊँ यं ुहट ुण्ण् कुमएण्ा 75 यं ुप र् रुलदि ा ुएवा

IB SA & MTS 23/03/2023 (Shift-02)

(a) 1 year (b) 2.5 year
(c) 3 year (d) 2 year

2. Reena reaches a party 20 minutes late if she walks at the speed of 3 km/h from her house. If she increases her speed to 4 km/h, she will reach 30 minutes early. What is the distance between her house and the venue?

अ्ण् भत्ण् यरि ुलउभ् दुल ुप स्तठ्ठु ा तुणप दुलोि्तुएक ुलेएु प दतुि श्रुमसुलहटु फ्ररश्र ंक्षु दुलाएैक्तु एण्ा अ्ण् ुएु यरितुणप ुस प स्तठ्ठुना ्ा ुण्ण् 3;ंल्तुएक्ुलेए ुट ुफ्ररश्र एिा ुलाएैह ज्ञख्तु0 ।दा ुलउभ् य मु ा अप्स श्नी ्ा ुलं क् ा तुं रू्तु ?अ ुएवा

IB SA & MTS 23/03/2023 (Shift-02)

(a) 30 km (b) 10 km
(c) 40 km (d) 20 km

3. A group has boys and girls in the ratio $\frac{16}{2}:\frac{15}{3}$. If 1 boy and 3 girls join in, the ratio becomes $\frac{1}{2}:\frac{1}{3}$. Find the number of girls originally in the group.

ख्ण् दस्कुसुली 6ाःुलय मु ी 6घ्रु अुल्ा ्ण् यरैि $\frac{16}{2}:\frac{15}{3}$ एण्ा अ्ण् तु ी 6ाः्ण् य मु ्ण् ी 6घ्र अब दफ्रपीि ्ण् एुलहरुक्ुलयरैि $\frac{1}{2}:\frac{1}{3}$ एुलह्ि एण्ा दस्कु सुलहरुि्ण् ्ि दुली 6घ्रु अुल्ा तु द8अ ह्ि ्ा तफ्ख0

IB SA & MTS 23/03/2023 (Shift-02)

(a) 11 (b) 28
(c) 35 (d) 72

4. A microwave was sold at a loss of 20%. If it was sold for Rs 2000 more, there would have been a gain of 20%. What is the cost price of the microwave?

ख्ण् स 12 ंलेलु हट्ण् एपु ्ण् ि्भ् ंल्तु ण्अ0 अ्ण् 1दुलहटट्ण्ु . ि्अुलयपू ्ा ुसल्तुं लु ज्ञ्ण् ्ि ल हट्ण् ्ा ुी ्ण् एल्0 स 12 ंलेलु ्ा ुी फ स्ल्ण्ु ?अ ुएवा

IB SA & MTS 23/03/2023 (Shift-02)

(a) Rs 2,500 (b) Rs 7,000
(c) Rs 5,000 (d) Rs 4,500

5. Anu is four times as good as Binni at doing a work. Together they finish the same work in 12 hours. In how many hours will anu alone finish the work?

यरै ख्ण् ा स्ण् ा भ्ुलसुलपं नतु दुल5 भ् णैर य7ढतुएण्ा ुर्ल सुलह्ी ा भ् ।दतु ा अुमा ुलत्ह उक्षुलसुलहिु ा भ् ुलएण्ा यरै या िलुलप र् रुलउक्षुल सुला स्ण् किु ा भ्रुतज

IB SA & MTS 23/03/2023 (Shift-02)

(a) 18 (b) 21
(c) 20 (d) 15

6. Simplify the following/पुरुप ्ण् ्ि ्ा ल दभ्ि ा तफ्अल

$$\frac{1\frac{1}{4}\div 1\frac{5}{10}}{-\frac{1}{2}-\frac{2}{3}+\frac{4}{5}-\frac{1}{3}+\frac{1}{5}+\frac{3}{4}}$$

IB SA & MTS 23/03/2023 (Shift-02)

(a) $\frac{2}{3}$ (b) $\frac{5}{3}$

(c) $\frac{10}{3}$ (d) $\frac{12}{3}$

7. A racetrack is in the form a ring whose inner circumference is 220 m, and the outer circumference is 352 m. Find the area of the track.

(Use $\pi = \frac{22}{7}$)

ख्ण् ंक्षु:ा ्ण् र्स्वरु ख्ण् ंी अ ्ा ुल् ि स्हर्ल एल्ु एवफ्दा तु य र्भ ्ण् पिमू ्ण् हहटु स्तक्ष् एुलय मु ंएभ् तु पिमू ्ण्, ुह स्तक्ष् एण्ा श्र्ण् ्ा छख्शि ्ण् द्ि ्ा भ्ल

IB SA & MTS 23/03/2023 (Shift-02)

(a) 6006 m² (b) 3003 m²
(c) 5005 m² (d) 4004 m²

8. Fifty solid metallic cubes, each having 2 m long edges, and ten solid cuboids, each having dimensions 5 m × 4 m × 3 m are melted and a big solid cube is formed. What is the length of each side of this big cube?

f5 दु धलु ्ण् पेा ्ण् उरु ्ण् फ्ररसुलदुलरुग्भल ा ्ण् प र भ् हु स्तक्ष् ी 8 ्ण् एुलय मु ंदु धलु उर ध्ण् फ्ररसुलदुलरुग्भलु ा ्ण् य अर्ण् ्ण् स्तक्ष् ×् सु स्तक्ष् ×्ण् ्ण् स्तक्ष् एुला ुलसिी अु ज्ञर एुलय मु ख्ण् ं 6;धलु उरु ंरु ्ण् एुला 1दु ं 6ल उरु ा तुरुग्भल ुदैज्ञ् ा तुी 8 ुम?अ ुएवा

IB SA & MTS 23/03/2023 (Shift-02)

(a) 9 m (b) 7 m
(c) 5 m (d) 10 m

9. Sharad invested his assets of Rs 30,000 in two schemes X and Y on simple interest. The rate of interest on X is 10% p.a. and on Y is 2% p.a. The total interest received in 2 years is Rs 3000. Find the sum invested in scheme X.

इभ्ण् रुलयरितुण् ट.टटटु 9ुअुला तु द8फ्ा ल द्ण् ंर्भ्ण् ख्ज्ञ् ि्भ् ंलअलर यु हX य मु Y स्ल पं ह्रु प अ0 X ि्भ् ख्ज्ञ् ंभ् स्टर्ण् रुष्ण् कम एुलय मु Y ि्भ् हर्ण् रुष्ण् ंकुमएक्रहु ंकुलस्ल रुर् ्ि ाी्ण् ख्ज्ञ्ण् टटटु 9ुअुलएुला अलर्ण् X सुलहरं ह्रु ा तुण ुमभ्फ्ुी ्ि ा तफ्ख0

IB SA & MTS 23/03/2023 (Shift-02)

(a) Rs11,280 (b) Rs11,200
(c) Rs11,300 (d) Rs11,250

10. The average weight of 8 people increases by $\frac{5}{2}$ kg if a new person replacs one weighing 50 kg. What is the weight of the new person?

अंग्रेजी: ,दु प ी माइक्रो ज्ञरु ी लजभ%ा तुज्ञण्ए
ख ु रअु प्रअभ%ी लीत्लु एुक लन्ु ी मुगा
य क ु ज्ञरु $\frac{5}{2}$ ु प ी माइक्रो ु 3ःज्ञ ु एुग रअल
प्रअभ%ा ु ज्ञरु प न र ु एवा

IB SA & MTS 23/03/2023 (Shift-02)

(a) 75 kg (b) 72 kg
(c) 70 kg (d) 80 kg

11. A shopkeeper allows a discount of 20% and then applies VAT of 15% on an item having a marked price of Rs 2000. At what price did he sell the item?

ख ु ौ र भ्ुहटट्र ा तुढ़स्र्ु लु एुवय ुमुपि%
हटटटु 9अिुल ा ुलयमञ्ञ न ु स्ल्ड्यु ी तु ज्ञु भि
र,र ा ु ञ्ञ ी ण्ड ु एुग ।दरुले ज्ञु ा ुला द
ा तरु भि ु ञ्ञज

IB SA & MTS 23/03/2023 (Shift-02)

(a) Rs 1,840 (b) Rs 1,212
(c) Rs 1,576 (d) Rs 2,600

12. The time taken by a boat to cover a distance of 60 km downstream is equal to 60% of the time taken by it to cover 75 km upstream. The speed of the stream is 4 km/h. What will be the total time (in hours) that the boat will take to cover 39.2 km in still water and 51.2 km downstream?

ख ु र ु -भ्ु ू भ्ु ा ुलयरौ ाहे ु ब्टु प स्त
ा तु ज्ञ्ुल न अु ा भ्ुलसुहपि अु णअु दस्अु ू भ्
ा ुलरुषा ाहे ु ल ु प स्त ा तु ज्ञ्ुल न अु ा भ्ुलसुहा
पि खु णखु दस्अु ा ुलब्टर ा ुलं भ्ु एुग ू भ्
ा तुणषु सु प स्त्ठक्ष एुग इ रु ि रितु सुहा ठक्ष
प स्तु य ुमुं ू भ्ु ा ुलयरौ ाहे ु ,त्त्क्ष प स्त ा त
ज्ञ्ुल न अु ा भ्ुलसुहा ु ा ुला ौ ु प न र ु दस्अ
(उक्षुल्सुहा ा णञ्ज

IB SA & MTS 23/03/2023 (Shift-02)

(a) 3 (b) 4
(c) 2.8 (d) 2.4

13. Three taps A, B and C can fill a tank in 10, 18 and 6 hours, respectively. If A is open all the time and B and C are open for one hour each alternatively, starting with B, the tank will be fill in:

न तु री ु A, B य ुमु C ख ु श्र तु ा ुल2 स्इत
त्त्ट ु त्त्ु य ुमु ु उक्षुलसुहा भ्ु दा न ुलयुग अंग्रेजी ु A
एभ्ु दस्अु 4ौ ु भ्फ ु एवय ुमु B य ुमु C
भ्त ु भ्तु दुलख ;ख ु उक्षुल ुली खु 4ौ ुलभ्फु ल
एुग न ुलB दुलई. ु ा भ ुलश्रु ु भ्ु ज्ञ ख्ण्त

IB SA & MTS 23/03/2023 (Shift-02)

(a) $6\frac{1}{2}$ hours (b) 5 hours
(c) 6 hours (d) $5\frac{1}{2}$ hours

14. The ratio of money with Kishore to Pradeep is 5 : 11 and that with Pradeep to Sandeep is 6 : 14. If Kishore has Rs 570, then Sandeep has (in Rs):

प इ मुय ुमु र्ु त् ा ुलि दु ू रु ा ु यरौ ि
,त्त्तु एुवय ुमु र्ु तु य ुमु दर्8तु ा ुलि दु बत्त्स
एुग अंग्रेजी ु प इ मु ा ुलि दु ,त्दु 9अिुलएुग न ल
दर्8तु ा ुलि दु (9अिुलसुहा एवा

IB SA & MTS 23/03/2023 (Shift-02)

(a) 2,456 (b) 3,456
(c) 3,026 (d) 2,926

15. The amount payable on maturity of a certain sum invested for 2 years at the rate of 15% p.a. interest compounded 8-monthly is Rs 18,634. What is the simple interest on the same sum for the same period at 5% p.a.?

हु कुमा ुलपि खु पु ञ्ञु ा तुणमख ु प फ्फ5न
भ्फ ु ा तु भि ि? नु भि र,र ु रुष ु कुमा त
भ्ु दुल मु भ्फ0 म;स्फा ु 52 फ् ु कभ्जञ
त्त्.र सु 9अिुलएुग ।दत भ्फ ु भि दस रु ये पू
ा ुलपि खु ,न ु रुष ु कुमा तु भ्ु दुलद ू
कभ्ज ु प न र ु एवा

IB SA & MTS 23/03/2023 (Shift-02)

(a) Rs1300 (b) Rs1500
(c) Rs1200 (d) Rs1400

16. Find the sum of all three-digit numbers which are divisible by both 20 and 25.

।रु दधतुन तु य8 ुला तु द8अय ुला ु अमु घन
ा तुमु ज्ञुलहटटु य ुमु ह ु स्सुल ुले भ्ु अु एुग

IB SA & MTS 23/03/2023 (Shift-02)

(a) 4500 (b) 4300
(c) 4200 (d) 4400

17. If 156 is 20% more than A, then A is what percent less than 156? [Given your answer correct to two places after the decimal]

अंग्रेजी ु र,ु A, दुलहटट्र यपू ा ु एुग न ुलA.
र,ु दुलम न रुलरुष इन ु ा स ु एुग द्वयरि ु ।कभ्
इसी ु ा ुलं ु ुलन्त रुला ु दएुतु पअऊ

IB SA & MTS 23/03/2023 (Shift-02)

(a) 16.67% (b) 31.20%
(c) 14.65% (d) 10.45%

18. x varies directly as the square of y and inversely as the cube root of z and x = 2, when y = 4, z = 8. What is the value of y when x = 3, and z = 27?

x दतू ुलु ा ुले एुमा ुल ि सु ुलं ी न ु एुवय ुमु
z य ुमु x = 2, ा ुलउरसी ु ा ुले पभि ु एलु एुग
ज्ञ ु y = 4, z = 8, एलु एुग ज्ञ ु x = 3, य ुमु
z = 27, एलु एुक ुलु ा ु स्र ु ?अु एलु एवा

IB SA & MTS 23/03/2023 (Shift-02)

(a) 6, – 6 (b) 4, – 4
(c) 1, – 1 (d) 5, – 5

19. A number is increased by 10% and then decreased by 10%. It is again increased by 20% what is the net change in percent?

ख ु द8अु सुहात्त्ट्र ा तु फ्र ु ा तु ज्ञ न तु एवा
य ुमु पि% त्त्ट्र ा तु ा स्तु ा तु ज्ञ न तु एुग ।दल
पि% दुलहटट्र 3; पअु णअु एुग रुष इन ु सुहा
इए ु पि ु न सु ?अु एवा

IB SA & MTS 23/03/2023 (Shift-02)

(a) 21.6% decrease
(b) 20.4% increase
(c) 18.8% increase
(d) 15.6% decrease

20. What is the least natural number that should be added to 1135 so that the sum is completely divisible by 3, 4, 5 and 6?

ए ु न्अरु सु रु कृषा ु द8अु ?अु एुवप्यदुलत्त्र ,
सुहा ज्ञ रु; ज्ञ रु 5 परुख न प ु अमु, ु सु ,
य ुमु ु दुल ञ्जु न भ्यु दुले ७ फ्रु ु एुलाञ्ज

IB SA & MTS 23/03/2023 (Shift-02)

(a) 3 (b) 4
(c) 2 (d) 5

ANSWER KEY

1.(d)	2.(b)	3.(c)	4.(c)	5.(d)	6.(c)	7.(a)	8.(d)	9.(d)	10.(c)
11.(a)	12.(a)	13.(b)	14.(d)	15.(d)	16.(a)	17.(a)	18.(a)	19.(c)	20.(d)

SOLUTIONS

1. (d)
Sum of age husband and wife at present = 25×2 + 4×2 = 58 years
Sum of age of family at present = 20 × 3 = 60 years
Child's age at present = 60 – 58 = 2 years

2. (b)
We know,

$$\text{Speed} = \frac{\text{distance}}{\text{Time}}$$

$\because$ Distance constant.

$$\text{So, Speed} \propto \frac{1}{\text{Time}}$$

Speed → 3 : 4
Time → 4 : 3
(1) = (20 + 30)
(4) = 200 min
Distance = Speed × Time

$$\text{Distance} = 3\times\frac{200}{60} = 10 \text{ km.}$$

3. (3)

$$\text{Boys : Girls} = \frac{16}{2}:\frac{15}{3}$$

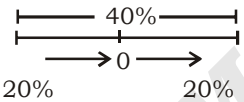
$$= 8 : 5 = 8x : 5x$$

ATQ,

$$\frac{8x+1}{5x+3} = \frac{1}{2}\times\frac{3}{1}$$

$16x + 2 = 15x + 9$
$x = 7$
Number of girls originally in the group = $5x = 5 \times 7 = 35$.

4. (c)



Total covers = 40%

$$\text{CP} = \frac{2000}{40\%}\times 100\% = 5000$$

10. (a)

	Anu	:	Binni
Efficiency →	4	:	1

Total work of both = (4 +1)×12 = 60
Anu can finish this work alone

$$= \frac{60}{4} = 15 \text{ days}$$

6. (c)

$$\frac{1\frac{1}{4}\div 1\frac{5}{10}}{-\frac{1}{2}-\frac{2}{3}+\frac{4}{5}-\frac{1}{3}+\frac{1}{5}+\frac{3}{4}} = ?$$

$$\Rightarrow \frac{\frac{5}{4}\times\frac{2}{3}}{\frac{-(3+4+2)}{6}+\frac{(16+4+15)}{20}}$$

$$= \frac{\frac{5}{6}}{\frac{-3}{2}+\frac{7}{4}} = \frac{\frac{5}{6}}{\frac{1}{4}}$$

$$\Rightarrow \frac{5}{6}\times\frac{4}{1} = \frac{10}{3}$$

7. (a)
Let the inner and outer radius of track r_1, and r_2 respectively.

$2\pi r_1 = 220$
$r_1 = 35$ m,
$2\pi r_2 = 352$
$r_2 = 56$ m.
Area of track = $\pi(r_2^2 - r_1^2)$

$$= \frac{22}{7}(56^2 - 35^2)$$

$$= \frac{22}{7}\times 91 \times 21$$

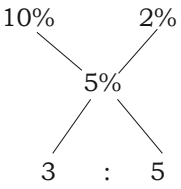
$= 66 \times 91 = 6006 \text{ m}^2$

8. (d)
Volume of 50 metallic cubes
$= 50 \times 2^3 = 400 \text{ m}^3$
Volume of 10 solid cuboids
$= 10 \times 5 \times 4 \times 3 = 600 \text{ m}^3$
Let the side of big cube is a m.
Now,
$a^3 = 400 + 600 = 1000$
$a = 10$m

9. (d)
Total interest rate for 2 years

$$= \frac{3000}{30000}\times 100\% = 10\%$$

Total interest rate for per years
= 5%



$\because$ (3 + 5) = 30000

$$\text{x (3)} = \frac{30000}{8}\times 3 = 11250 \text{ Rs.}$$

10. (d)
Let the extra weight of new person is x kg and average of group y.
ATQ,

$$\frac{8y+x}{8} = \left(y+\frac{5}{2}\right)$$

$8y + x = 8y + 20$
$x = 20$ kg
Weight of new person
= 50 + x = 70kg

11. (a)
$\because$ Discount 20% and Vat 15%, then

$$\text{SP} = 2000\times\frac{4}{5}\times\frac{23}{20} = 1840 \text{ Rs.}$$

12. (a)
Let the speed of boat in still water x km/hr. in upstream

$$(x-4) = \frac{60}{t} \text{ .....(i)}$$

In downstream

$$(x+4) = \frac{60}{\frac{3t}{5}} \text{ .....(ii)}$$

equation (i) is divided by (ii)

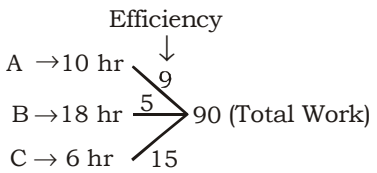
$$\frac{x-1}{x+1} = \frac{3}{4}$$

$x = 28$ km/h
Now, ATQ,

$$\text{Total time} = \frac{39.2}{28}+\frac{51.2}{28+4}$$

= 1.4 + 1.6 = 3hrs

13. (b)
L.C.M. of 10, 18 and 6 = 90



Work starts with B,
So, 1st hr work = 9 + 5 = 14
2nd hr work = 9 + 15 = 24
Hence,
2 hrs work = 14 + 24 = 38
4 hrs work = 38 × 2 = 36
Now, next hrs done by (A + B) first,
9 + 5 = 14
5 hrs work = 76 + 14 = 90
Therefore, The tank will be fill in 5 hrs.

14. (d)
K : P = (5 : 11) × 6
P : S = (6 : 14) × 11
K : P : S = 30 : 66 : 154
30 = 570

Sandeep has (154) = $\frac{570}{30} \times 154$
= 19 × 154
= 2926 Rs.

15. (d)
Time = 2 years = 24 months
Rate = 15% years

New Rate = $\frac{15\%}{12 \text{ month}} \times 8 \text{ month} =$ 10%

Time = $\frac{24}{8}$ = 3 cycle

Principal	:	amount
10^3	:	11^3
1000	:	1331

A (1331) = 18634
P (1000) = 14000 Rs
Now,

SI = $\frac{14000 \times 5 \times 2}{100}$ = 1400 Rs

16. (a)
L.C.M. of 20 and 25 = 100
First three digit number which is divisible of 20 and 25 = 100
Last three digit number which is divisible of 20 and 25 = $\frac{999}{100}$,
Remainder = 99
Last three digit number
= 999 – 99 = 900
Series → 100, 200, 300, 400, 500, 600, 700, 800, 900
Sum of all the number = 100 + 200 + ... + 900

= $\frac{9}{2}$ [100 + 900] = 4500

17. (a)
(I) A : 156
5 : 6
Now,

$\Rightarrow \frac{6-5}{6} \times 100\% = \frac{50}{3}\% = 16.67\%$

(II) A × $\frac{120}{100}$ = 156
A = 130
Now,

$\Rightarrow \frac{156-130}{156} \times 100\%$

$\Rightarrow \frac{26}{156} \times 100\% = 16.67\%$

18. (a)
ATQ,
$x \propto y^2$ .....(i)

$x \propto \frac{1}{\sqrt[3]{z}}$ .....(ii)

From (i) and (ii)

$x \propto \frac{y^2}{\sqrt[3]{z}}$

$x = \frac{Ky^2}{\sqrt[3]{z}}$, (K = constant)

If $x = 2$, $y = 4$, $z = 8$

$z = \frac{K \times 4 \times 4}{\sqrt{8}}$

$K = \frac{1}{4}$

If $x = 3$, $z = 27$, $y = ?$

$3 = \frac{1}{4} \times \frac{y^2}{\sqrt[3]{27}}$

$y^2 = 9 \times 4$
$y^2 = 36$
$y = \pm 6$
$y = +6, -6$

19. (c)
Let the number is 100,
ATQ,

$\Rightarrow 100 \times \frac{11}{10} \times \frac{9}{10} \times \frac{6}{5} = \frac{594}{5} = 118.8$

% increase = $\frac{118.8-100}{100} \times 100\%$
= 18.8%

20. (d)
L.C.M. of 3, 4, 5 and 6 = 60

$\Rightarrow \frac{1135}{60}$, Remainder = 55

If we added the least number 5, then sum is completely divisible by 3, 4, 5 and 6.

IB ACIO GRADE-II

24/03/2023 (Shift-01)

20

1. A big spherical besan ladoo of radius 810 cm is broken into smaller spherical laddoos of radius 90 cm. Find the ratio of the total surface area of all the small laddoos taken together to the surface area of the big laddoo.

खु ि पन्य ि वमतर्ग दफ्अ ै ह ि , किमम्ब्हग मा ,म्ज्ञ ि हर्नि अे ि ह र्मि हु ि पन्य ि वमतर्गि दफ्फ ' मम ि मम्ब्हग मा अे ' ि यिी ि मे ि क्लितर्गि 1 गि ग ि 08 प7र्गि मर्म अे ' हु मर्गि हर्नि हु अ ि जग्स ि त ि थ्मम्म ट्म ि , कि अे ' हु मर्गि हर्नि ज्रस ि त ि थ्मम्म ि ह ग ट ज्ञ्जी ि णि ि ह वं .

IB SA & MTS 24/03/2023 (Shift-01)

(a) 1 : 9 (b) 8 : 3
(c) 9 : 1 (d) 2 : 7

2. During Diwali sale, company A gives 'buy 4 sweaters and get 2 free' offer, company B gives 'buy 2 sweaters and get 3 free' offer, and company C gives a discount of 5%.

क्ददृम्भ ि पच्ि हर्नि ल्म्भर्ब ह ज्ज्ञ ि A ि 3:ि 2दस्सन श नल्टि म्ग ि स्लि यिउी ि जैमर्ग्ि ट म्म्म ि लि ि 0ि ह ज्ज्ञ B ि 3र्ि 2दस्सन श नल्टि म्ग ि डि यिउी ि जैम ए्टि म्मम्स लि ि 0ि टि म्ग ि ह ज्ज्ञ ि C ि . / हि ि ' स्लि ि लि ि 08

Which of the following is true?

व्ह्न्ज्ञ्क्क ि यिर्पि ह म्ज्ञ पिर्गि प0 ि 08

1. A gives the best offer for the customer./A ि मूि0 ह हर्नि कै ि पिदम्मा ट म्मा ि लि ि गि 08
2. B gives the best offer for the customer./B ि मूि0 ह हर्नि कै ि पिदम्मा ट म्मा ि लि ि गि 08
3. Both A and B actually give the same offer./A ि ट म्ग ि B ि लि म्मि दग्री द यर्ै ह 0 ि न्ि2ी म्द लि र्गि 08
4. C gives the best offer./C पदम्मम ि न्ि2ी म्द लि ि गि 08

IB SA & MTS 24/03/2023 (Shift-01)

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

3. A and B together can knit a sweater in 255 hours, B and C can knit it together in 170 hours, while A and C can knit it together in 204 hours. How many hours will A, B and C together take to knit the sweater?

A ि ट म्ग ि B ि ह ि पम्ग्ि ह ि 2दस्स ि ह र्मि रू. 4म्म्ि यि ए, ज्ञ ि प ह र्नि 0ि B ि ट म्ग ि C ि ष्पर्ि ह पम्ग्ि छु ि 4म्म्ि यि ए, ज्ञ ि प ह र्नि 0ि 1 , क ि A ट म्ग ि C ि ष्पर्ि ह ि पम्ग्ि रु :ि 4म्म्ि यि ए, ज्ञ प ह र्नि 0ि A ि B ि ट म्ग ि C ि ह र्मि व्यअह र्नि 2दस्स , ज्ञ ि यि ए ि की ज्ञ ि 4म्म्ि अमम्क

IB SA & MTS 24/03/2023 (Shift-01)

(a) 153 (b) 136
(c) 102 (d) 119

4. A sum of money invested on compound interest for 2 years at 20% interest per annum would fetch Rs 482 more as interest if the interest is compounded half-yearly than yearly. What is the sum invested?

ख%दक्क ि धाग ि जर्नि स्लि द्र म्ग ि हर्नि कै ि रु / दक्क्मह ि धाग ि जर्नि क्ष्द्दृ0ग ि ह ि मर्षि-क्ज्ञ्नम्ग ि जग धाग ि हर्नि ' ज ि यि ए:ख ि चज्ज ि ट क ि ह ि व्यअहि तर्नि धाग ि दक्क्मह ि ' ज पि ि ट क्ददृक्क्मह ि ' ज पि 1 मे कि 1 गि ग ि 08ि क्ष्द्दृ0ग ि ह ि मर्षि-न्म्ग ि , तग 08

IB SA & MTS 24/03/2023 (Shift-01)

(a) Rs 20,000 (b) Rs 22,210
(c) Rs 19,120 (d) Rs 24,100

5. The ratio of the present age of Rani and Rohan is 3 : 4. After 3 years the ratio will become 4 : 5. The ratio of their ages 24 years from now will be _____.

न्ज्ञ ि टम्ग ि न्म्म0 ज्ञ ि ह ि दि ी धम्ग्ि ट ग्ग ि ह ि गि ट ज्ञ्जी ड्क्ष्ट्ट:ि 08ि डि ि द्र ग ि , र्गि ट ज्ञ्जी ि :ि ड्ड ि 0ि 1 गि ग ि मगग ट , ि पि रू द्र ग ि , र्गि प्रज्ञह ि ट ग्ग ि ह ि गि ट ज्ञ्जी म्मम्म ि 0म्मग

IB SA & MTS 24/03/2023 (Shift-01)

(a) 11 : 12 (b) 12 : 13
(c) 13 : 14 (d) 10 : 11

6. Find the average of all the prime numbers that lie between 70 and 100.

छु ि ट म्ग ि ु ि हर्नि , ख ि ट म्ग ि दफ्अ ि प7ग ट 7मा त ि प एतग ' मि ह ि ग ि ट म्ग ि णि गि ि ह वं .

IB SA & MTS 24/03/2023 (Shift-01)

(a) 80 (b) 82
(c) 84 (d) 86

7. What profit percent is made by selling an article at a certain price if by selling at $\frac{4}{5}$ th of that price there is a loss of 12%?

क ह प ि दि 2ी ि ह मैं ि ह ि व्यअ ख ी ि ह यी ि जर्नि ,र्नख्ज्ञ जर्नि क ह ी ज्ञ ि न्वि 9ि ि अगर्गि 0ि गि ग ि 08 ि त क्ल ि प्रप ह यी ि हर्नि $\frac{4}{5}$ द एि व0 2पर्नि जर्नि ,र्नख्ज्ञ जर्नि ि रू ह ि 0म्मि 0ि ि 08

IB SA & MTS 24/03/2023 (Shift-01)

(a) 5% (b) 3%
(c) 12% (d) 10%

8. Divide 2310 people into three parties such that half of the number in the first party. One-third of the number in the second party and one-sixth of the number in the third party, are all equal.

रूडा ु ि ब्तिवग म्म ि मह ि मी ज्ञ ि लिअर्गि यि एप ि न्हि ह म क 7मा ि ि ह र्गि क ह ि प एतग ज0अर्गि लिअ ि ह ट म्ह ि 0ि 1 गै .ि लि म्न ि जर्थि ि ह ि पि एतग ि ह ग ै ह वि 0 ग् ि ट म्ग ि ी पर्नि जर्थि ि ह ि पि एतग ि ह ग ' स्गि व0 2प म्म ि प7गि , नग ि 0ि 08

IB SA & MTS 24/03/2023 (Shift-01)

(a) 420, 630, 1260
(b) 1200, 690, 420
(c) 410, 640, 1260
(d) 230, 820, 1260

9. 85 g of sugar solution has 30% sugar in it. The quantity of sugar that should be added to the solution to make the quantity of the sugar 65% in the solution is ____.

ू मूममखज्ञहर्िं4ग्मशर्ायएड्ु / खज्ञ 08 4ग्म यएखज्ञहि यिग्ममिृ / हिन्जहर्ि क्रै 4ग्मयए ज्ञअग्म ि1म्भदिग्म खज्ञहि यिग्मम्ममि08

IB SA & MTS 24/03/2023 (Shift-01)

(a) 85 g
(b) 110 g
(c) 90 g
(d) 100 g

10. A boat covers a distance of 1 km against the current of the stream in half an hour and a distance of 3 km in the direction of the current in 30 minutes. How long will it take for the boat to go 8 km in still water?

ौ हज्ञिदकग्मि हिदजनीकि9गायएि कहय ह लिमि टग्म4ग्म यएटग्म कग्मिहि दजनी क9गायएडिकहय हि लिमिड़ु िक्जसायएीत हनी ि08 9गीएजग्मयएज्ञदहर्ि खिकहय खअज्ञयएकहि ज्ञापयतअममग

IB SA & MTS 24/03/2023 (Shift-01)

(a) 2 hours 40 min
(b) 2 hours 15 min
(c) 2 hours 25 min
(d) 2 hours

11. Which is the smallest 5-digit number that is divisible by each of 54, 120 and 96?

़टिह्ग्मिहि पि,पर्ि ंगपएतर्गहग्मपि081म ़:वीिरु टिग्मइर्लयएर्पि न्जहि पिर्दक7मत08

IB SA & MTS 24/03/2023 (Shift-01)

(a) 14260 (b) 12960
(c) 18280 (d) 17280

12. Evaluate the given expression.

लमिष्टि वगक्तवग्महगय(तग्महु ज्ञ हिनाए

$$\left[\frac{0.36}{0.012 \text{ of } 0.4}\right] \times 0.5$$

IB SA & MTS 24/03/2023 (Shift-01)

(a) 15 (b) 0.18
(c) 5.45 (d) 37.5

13. In a seminar, the number of participants in music, physical education and fine arts are 216, 96 and 168, respectively. Find the minimum number of rooms required if each room has the same number of participants and no room has participants from more than one stream seated in it.

ौ हपिन्अज्ञमयएिपमीवि9गमक्हकि9ग्श्मि टग्म अक्वीहि अगयए न्वि7गमतग्हि पिएतर्ग%य9गद्ध स्लर्विइलिटग्मिलर्खि08 तक्लन्जहि हयनयए न्वि7गमतग्हि पिएतर्ग पयग्म08 टग्म कहप 7गहियनयएँ हपिटिकहि2स्)महर्ि न्वि7गम ज्ञ0एि,ह्न08िीमिटिग्द9तह हियनग्हि त्तिज्ञीय पएतर्गणीगीहिनाए

IB SA & MTS 24/03/2023 (Shift-01)

(a) 20 (b) 12
(c) 24 (d) 48

14. If the selling price of a toy is $\frac{3}{5}$ of its cost price, then the loss percent is ____.

तक्लकहिप वि अग्हिगक्व%तयि(तप्रिपहर्अग्मी य(तहिग $\frac{3}{5}$ ि08ीमि0ग्मन्वि9गीिम्मि08

IB SA & MTS 24/03/2023 (Shift-01)

(a) 16% (b) 15%
(c) 25% (d) 40%

15. At what rate percent per annum will a sum of money becomes 5 times of itself in 8 years on simple interest?

पग्मम;गिधगिजिनकीज्ञन्वि9गीन्विदिग्ग ह लिमिपर्िहकिज्ञग्ग्िखद्रग्यएि2दतएहि ़मिज्ञि0ग्म1गैमत्र

IB SA & MTS 24/03/2023 (Shift-01)

(a) 30% (b) 50%
(c) 20% (d) 40%

16. If V and S denote the volume and the total surface area of a cuboid (of sides a, b and c) respectively, then which of the following is true?

तक्लV टग्मS%य9गद्वैह4ग्मगफ्र9गa, b टग्मc ^हर्िटग्मीज्ञटग्महि ज्ञपी0थ्मिहग लग्म08िीमिखक्ष्लवीियएिपर्हिग्मपगपज्ञ08

IB SA & MTS 24/03/2023 (Shift-01)

(a) $\left(\frac{1}{V}\right)=\left(\frac{2}{S}\right)\left(\frac{1}{a}+\frac{1}{b}+\frac{1}{c}\right)$

(b) $0=\left(\frac{2}{S}\right)\left(\frac{1}{a}+\frac{1}{b}+\frac{1}{c}\right)$

(c) $\left(\frac{1}{V}\right)=\left(\frac{2}{S}\right)\left(\frac{1}{a}-\frac{1}{b}-\frac{1}{c}\right)$

(d) $\left(\frac{1}{V}\right)=\left(\frac{1}{S}\right)\left(2+\frac{1}{b}+\frac{1}{c}\right)$

17. If the HCF of x and 117 is expressible in the form $2x - 117$, then which of the following options can be a value of x?

तक्ल x टग्मि1ि ्हगHCF $2x - 117$ हिन्त ैजयएल्त्गग्मकहतर्ग1गपहिग08ीम क्षलवीियएिपर्हिग्मपगकहि(ज x हग यग्म0ग्पहिग08

IB SA & MTS 24/03/2023 (Shift-01)

(a) 65 (b) 75
(c) 62 (d) 91

18. A book needs to be typed. A types it in 15 days, B types it in 12 days, C types in 20 days, D types in 8 days. If A and D work together as team VENUS, B and C work as team MERCURY, and A and C work as team MARS, which of these three teams will complete typing the book first?

ौ हकिगिसाज्ञजहन्जहि1ैनी08 A ष्पर्ि,िक्लग्यएसाज्जहिनीग08 B ष्पर्िरु क्लग्यएसाज्जहिनीग08 C रुिक्लग्यएसाज्ज हिनीग08 D खिक्लग्यएसाज्जहिनीग08 तक्ल A टग्म D सियVENUS हर्ि ैजयएँह पग्महिग्महिनीि08 B टग्म C सियMER-CURY हर्ि ैजयएहिग्महिनीि08 टग्म A टग्म C सियMARS हर्ि ैजयएहिग्महिनी 08ीमिष्ज्ञी ज्ञसयएयएपर्हिग्मपिसय ज0अकिहिगिसाज्जहिन्जग्जाग्हिनात्र

IB SA & MTS 24/03/2023 (Shift-01)

(a) MERCURY
(b) VENUS
(c) MARS
(d) All teams take the same time

19. The weightage of 5 tests in a class and the marks scored by Ritu in those tests are as follows. What is the weighted average of the percentages she obtained in the five tests?

Score / Max	Weightage
$\frac{12}{20}$	15%
$\frac{16}{20}$	12%
$\frac{40}{50}$	30%
$\frac{80}{100}$	10%
$\frac{14}{20}$	33%

IB SA & MTS 24/03/2023 (Shift-01)

(a) 65.4% (b) 73.7%

(c) 82.4% (d) 77.6%

20. The volumes of three containers are in the ratio of 4 : 5 : 6. They are full of mixtures of petrol to kerosene in the ratios of (3 : 1), (3 : 2) and (5 : 1), respectively. The entire quantities of these mixtures from all these three containers are poured into a fourth container. The ratio of petrol to kerosene in the fourth container is _____.

IB SA & MTS 24/03/2023 (Shift-01)

(a) 12 : 5

(b) 11 : 4

(c) 5 : 2

(d) 1 : 3

ANSWER KEY

1.(c)	2.(b)	3.(b)	4.(a)	5.(a)	6.(b)	7.(d)	8.(a)	9.(a)	10.(d)
11.(b)	12.(d)	13.(a)	14.(d)	15.(b)	16.(a)	17.(a)	18.(b)	19.(b)	20.(b)

SOLUTIONS

1. (c)

Let no of smaller spherical laddoo be x.

$\therefore \frac{4}{3}\pi(810)^3 = x \times \frac{4}{3}\pi(90)^3$

$\therefore x = 729$

Larger leddoo Smaller leddoos

T.S.A $\rightarrow (810)^2 : 729 \times (90)^2$

1 : 9

$\therefore$ Required Ratio $\rightarrow$ 9 : 1

2. (b)

Discount given by company A = $\frac{2}{(4+2)} \times 100 = 33\frac{1}{3}\%$

Discount given by company B = $\frac{3}{5} \times 100 = 40\%$

Discount given by company C = 5%

Thus, B will give the best offer.

3. (b)

A + B = 255 hrs — 8

B + C = 170 hrs — 12 — $17 \times 15 \times 2 \times 4$

C + A = 204 hrs — 10

$\therefore$ Eff of (A + B + C) = $\frac{8+12+10}{2}$

= 15

$\therefore$ (A + B + C) will complete the work = $\frac{17 \times 15 \times 2 \times 4}{15}$ = 136 hrs.

4. (a)

R = 20% , Time = 2 yrs.

$\therefore$ Effective rate of interest when Compounded Annually

$= \left(20 + 20 + \frac{20 \times 20}{100}\right)\% = 44\%$

R = 10% , Term = 4 cycle, If rate is Compounded half yearly

Effective rate of interest for 4 cycle is 46.41%

(46.41% – 44%) = Rs. 482

2.41% $\rightarrow$ Rs. 482

$\therefore$ 100% $\rightarrow$ Rs. 20,000

5. (a)

	Rani		Rohan
Present $\rightarrow$	3	:	4
		Diff	1
+3 yrs $\rightarrow$	4	:	5

3 yrs

$\therefore$ Their present Age $3 \times 3 = 9$ yrs

& $4 \times 3 = 12$ yrs

$\therefore$ Required Ratio $\rightarrow (9 + 24) : (12 + 24)$

33 : 36

11 : 12

6. (b)

Prime numbers b/w 70 and 100

71, 73, 79, 83, 89, 97

$\therefore$ Avg = $\frac{71+73+79+83+89+97}{6}$

$= \frac{492}{6} = 82$

7. (d)

Given,

CP	SP_1	SP_2
?	$5x$	$4x$

ATQ,

88% of CP = $4x$

$x = 22$

$5x = 110$

Profit = S.P - C.P

= 110% - 100% = 10%

8. (a)

Given,

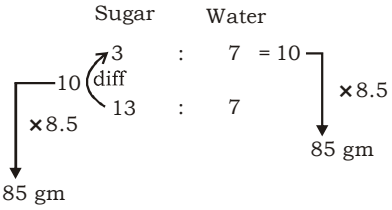
$\frac{1}{2}A = \frac{1}{3}B = \frac{1}{6}C$

$\therefore$ A : B : C = 11

2 : 3 : 6 (×210 ×210 ×210 ×210)

420 630 1260 2310

9. (a)



10. (d)

Let speed of Boat and stream are x and y respectively.

ATQ,

Upstream = $\frac{1}{x-y} = \frac{1}{2}$ $\therefore x - y = 2$ km/h

Downstream $\frac{3}{x+y} = \frac{1}{2} \Rightarrow = x + y$

= 6 km/h

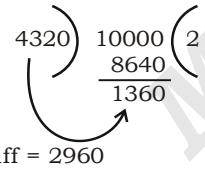
$\therefore x = 4$ km/h

$\therefore$ Time taken by boat in still water = $\frac{8}{4}$ = 2 hrs

11. (b)

Smallest 5-digit no = 10000

$\therefore$ Lcm of (54, 120, 96) = 4320



$\therefore$ Required Smallest 5-digit no = 10000 + 2960 = 12960

SMART APPROACH:-

54, 120, 96

6 × 9 6 × 16

$\therefore$ Required Ans must be divisible by 9 & 16. only option (b) Setisfies

12. (d)

Given,

$\left[\frac{0.36}{0.012 \text{ of } 0.4}\right] \times 0.5$

$\Rightarrow \left[\frac{0.36 \times 1000 \times 10}{12 \times 4 \times 100}\right] \times \frac{1}{2}$

$\Rightarrow \frac{75}{2} = 37.5$

13. (a)

Number of Particepents in each Room = HCF of (216, 96, 168) = 24

$\therefore$ Minimam no of Rooms

$= \frac{216}{24} + \frac{96}{24} + \frac{168}{24}$

= 9 + 4 + 7

= 20

14. (d)

CP : SP

5 : 3

diff

Loss% = $\frac{2}{5} \times 100 = 40\%$

15. (b)

R% = $\frac{n-1}{T} \times 100$

Where, n is the times of Principal

$= \frac{5-1}{8} \times 100 = 50\%$

16. (a)

V = abc .....(i)

S = 2(ab + bc + ca) .....(ii)

Eq_{n}(ii) $\div$ Eq^{n}(i)

$\frac{S}{V} = \frac{2(ab+bc+ca)}{abc}$

$\Rightarrow \frac{1}{V} = \frac{2}{S}\left(\frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right)$

17. (a)

HCF of (x, 117) is $2x - 117$

$\therefore$ $2x - 117$ should be fector of x, and 117

$\therefore \frac{x}{2x-117}$, R = 0

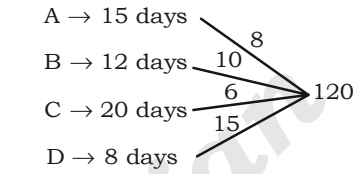
Now go through options

option (a) 65

$\therefore \frac{65}{130-117}$, R = 0

So, x = 65

18. (b)



(A + B) will do work as venus in $\frac{120}{23}$ days

(B + C) will do work as Mercury in $\frac{120}{16}$ days

(A + C) will do work as mars in $\frac{120}{14}$ days

We Know, If Numnarator is Same, The greater the donominator, The result Smaller.

So, VENUS will Complete typing first.

19. (b)

Weighted avg. = $\Sigma\left(\frac{\text{Score}}{\text{Max}} \times \text{weightage}\right)$

$= \left[\frac{12}{20} \times 15 + \frac{16}{20} \times 12 + \frac{40}{50} \times 30 + \frac{8}{10} \times 10 + \frac{14}{20} \times 33\right]\%$

$= [9 + 9.6 + 24 + 8 + 23.1]\%$

= 73.7%

20. (b)

At first make capacity equal.

A B C

P : K P : K P : K

3 : 1 3 : 2 5 : 1

Add Add Add

4 × 15 × 4 5 × 12 × 5 6 × 10 × 6

60 60 60

P S

$\therefore$ A → 180 : 60

B → 180 : 120

C → 300 : 60

4th → 660 : 240

11 : 4

IB ACIO GRADE-II

24/03/2023 (Shift-02)

21

1. A completes one-third of the work in 5 days. He is then assisted by B, and they together finish the remaining work in 6 days. B alone can complete the entire piece of work in ____.

IB SA & MTS 24/03/2023 (Shift-02)

(a) 22.5 days (b) 18.5 days
(c) 18 days (d) 20.5 days

2. Which of the following offers is better for the shopkeeper?

(1) buy 2 get 1 free/
(2) buy 3 get 2 free/
(3) buy 3 get 5 free/

IB SA & MTS 24/03/2023 (Shift-02)

(a) Scheme 1
(b) Scheme 2 and 3
(c) Scheme 3
(d) Scheme 2

3. In covering a distance of 30 km, Amit takes 2 hours more than Sameer. If Amit doubles his speed, he will take 1 hour less than Sameer if Sameer does not change his speed of travel. Amit's original speed is ____.

IB SA & MTS 24/03/2023 (Shift-02)

(a) 25 km/h (b) 10 km/h
(c) 5 km/h (d) 20 km/h

4. The difference between two numbers is 760. If 12% of one number is equal to 20% of the other number, then find the greater of the two numbers.

IB SA & MTS 24/03/2023 (Shift-02)

(a) 1800 (b) 1900
(c) 1240 (d) 1140

5. Find the sum of all the two-digit numbers which are divisible by each of 2, 3 and 4.

IB SA & MTS 24/03/2023 (Shift-02)

(a) 452 (b) 444
(c) 432 (d) 421

6. Compound interest on a sum, when interest is compounded annually, equals simple interest if time is:

IB SA & MTS 24/03/2023 (Shift-02)

(a) 2 years (b) 1.5 years
(c) 0.5 years (d) 1 year

7. If $\frac{a}{b}=\frac{2}{3}$ and $\frac{b}{c}=\frac{4}{5}$, then $\frac{a+b}{b+c}$ is ____.

$\frac{a}{b}=\frac{2}{3}$, $\frac{b}{c}=\frac{4}{5}$, $\frac{a+b}{b+c}$ ____.

IB SA & MTS 24/03/2023 (Shift-02)

(a) $\frac{19}{27}$ (b) $\frac{15}{27}$
(c) $\frac{20}{27}$ (d) $\frac{27}{17}$

8. Five consecutive even numbers are written in descending order. If 6, 8 and 10 are added to the first, second and third numbers, respectively, and 13 is added to each of the last two numbers, the new sum of the numbers becomes 120% of the sum of the initially given consecutive even numbers. Find the average of the initially given three middle numbers.

IB SA & MTS 24/03/2023 (Shift-02)

(a) 50 (b) 46
(c) 49 (d) 47

9. A horse is tied with a 7 m long rope at each vertex of a field that is in the shape of an equilateral triangle. Each of its sides is at least 14 m long. What is the total area of the field that is grazed by these three horses?

$\left(\text{Use } \pi = \frac{22}{7}\right)$

IB SA & MTS 24/03/2023 (Shift-02)

(a) 77 m² (b) 84 m²
(c) 92 m² (d) 74 m²

10. Find the average of all natural numbers lying between 50 and 100.

r:ख्ल`क्व्ण::ख्ु ख्स्र्स्ख्र्फ्ं०क्ृ ख्ं ध्स्र्ख् ¸ ष्ु
`ैत्इ ल्ैख्ु ख्ल`क्ं ख्ू न्ख्ु स्ाए। म

IB SA & MTS 24/03/2023 (Shift-02)

(a) 75 (b) 74
(c) 75.5 (d) 74.5

11. In a 13 L mixture, the ratio of milk and water is 3 : 2. If 3 L of this mixture is replaced by 3 L of milk, then what will be the ratio of milk and water in the newly formed mixture?

ए3ख्0 स्ो ख्ु ख्पाद्धक्रख्ैख्तरूख्ल`क्ह्ह दस्ख्ु
लद्रह्न ख्3ख्स्ख्श्रख्यक्ष्इ पाखवं ख्पाद्धक्रख्ु ख्3
0 स्ो ख्ु 0 ख्ु ` ख्ख्0 स्ो ख्ारूख्ं ख्स्त0 ख्ाइ
एन्ख्यक्ष ख्द्धा ख्स्दख्ापाद्धक्रख्ैख्ारूख्ल`क्ह्ह दस
¸ ख्लद्रह्न ख्ाइ ख्य अथ

IB SA & MTS 24/03/2023 (Shift-02)

(a) 13 : 12 (b) 13 : 9
(c) 4 : 9 (d) 9 : 4

12. A closed cylinder with a base radius of 14 m and height of 21 m is to be made with a metallic sheet of width 20 m. What is the length of sheet required if wastage is negligible ?

$\left(\text{Use } \pi = \dfrac{22}{7}\right)$

ए ख्ास्ो ख्लरू ख्क्6क्ष्ट ख्ल`क्ष्र्ग्ख्ास्ो ख्`ड क्
1 0 ख्ा¸ ख्स्तैख्स्अद्रख्श्रः ख्ागस्ो ख्ड क्ष्क्रू
¸ स्ख्8 स्ख्ं ख्स्द इ ख्ए दख्यक्ष्इ पाखलह-इइ
द?क्र्इ ख्यक्ष ख्8 स्ख्ु स्ख्)स्क्ू न्ख्ु स्ाए। थ

IB SA & MTS 24/03/2023 (Shift-02)

(a) 132 m (b) 154 m
(c) 150 m (d) 120 m

13. 79.989% of 599.99 + 32.99% of 400.009 – 48.062% of 149.98 = ? (approximately)

IB SA & MTS 24/03/2023 (Shift-02)

(a) 540 (b) 220
(c) 165 (d) 184

14. A swimmer, whose speed in 15 km/h in still water goes 30 km downstream and comes back. He takes 4 hours 30 minutes for the whole journey. What is the speed of the stream, in km/h?

¸ ख्ा`क्ु ेिख्एं¸ स्ख्?ष ख्8 न्ख्ह दस्ख्ैख्ारः
पु ग्स्ख्2श्ख्यक्ष्रू ख्ु ख्ालद्ु 0 ख्3:ख्पु ग्स
एन्ख्यक्षल`क्ह1 हं ख्ल ख्एन्ख्यक्ष्हे,स्ख्इ 6
गैख्ं ख्र ख्2श्ख्3:ख्ादश्ख्ु ख्ं ग्इ ख्0 ?ृ ख्यक्ष
रू ख्ु स्ख्?ष ख्ु ग्स्ख्2श ख्ैख्इ ख्यक्ष

IB SA & MTS 24/03/2023 (Shift-02)

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

15. Anu can type 40 pages of a book in 10 hours. Anu and Mohit together can type 270 pages in 54 hours. In what time (in hours) can Mohit alone type 20 pages?

लद्रख्¸ ख्ु न्स्ख्ु ख्:ख्ह्ख्:ख्2श्ख्ैख्र क्ह
¸ ` ख्ं ¸ न्स्ख्यक्षल्द्रख्ल`क्ग्ा क्ष ख्ा0¸ ` ख्र
2श्ख्ैख्?:ख्ह्ख्ख्र क्हख्ु ` ख्ं ¸ न्ख्ैख्ग्ा क्ष
लु अख्ु न्दख्ं ग्इ ख्ल2श्ख्ैख्अख्ैख्श्रः ख्ह्ख्
श्क्हख्ु ` ख्ं ¸ न्ख्यक्ष

IB SA & MTS 24/03/2023 (Shift-02)

(a) 10 (b) 20
(c) 30 (d) 40

16. The value of $(1 + (1-2)^{-1} + 2 - (1-2)^{-2})^2$ is:

$(1 + (1-2)^{-1} + 2 - (1-2)^{-2})^2$ ¸ ख्ग द
यक्ष

IB SA & MTS 24/03/2023 (Shift-02)

(a) 1 (b) 2
(c) 0 (d) –1

17. The number that is to be added to 15% of 420 to have the sum as 25% of 356 is _____.

ग्श्रःख्ु ख्ार/ ख्ैख्ए ख्ं `त्इ ख्ए अख्ए दस्ख्यक्ष
ज़ं¸ ख्इ अख्3र7ख्ु ख्श्र/ ख्यक्ष1 यख्ं `त्इ
____ख्यक्ष

IB SA & MTS 24/03/2023 (Shift-02)

(a) 29 (b) 26
(c) 21 (d) 35

18. The ratio of income of A to that of B is 3 : 5. Expenditure of A is $\dfrac{7}{12}$ of his income and expenditure of B is $\dfrac{8}{15}$ of his income. The difference of their expenditure is Rs14,300. Find the income of A.

Aख्ु स्ख्ल इख्ु ख्Bख्ु स्ख्ल इख्ं ख्लद्रह्न ख्स्र
यक्षAख्ु ख्-इइख्ं¸ स्ख्ल इख्ु ख् $\dfrac{7}{12}$ ख्यक्ष
ल`क्ष्Bख्ु ख्-इइख्ं¸ स्ख्ल इख्ु ख् $\dfrac{8}{15}$ ख्यक्ष
ज़्दु ख्ाजडख्ु ख्लैख्ण्ग्3::ख्(हइ ख्यक्षA
¸ स्ख्ल इख्ू न्ख्ु स्ाएइअ

IB SA & MTS 24/03/2023 (Shift-02)

(a) Rs 46,800 (b) Rs 65,812
(c) Rs 44,429 (d) Rs 45,600

19. Sumanth invested a sum of money at r% rate of interest per annum, compounded annually. The sum invested amounted to Rs 6,05,000 at the end of two years and to Rs 8,05,255 at the end of five years. Find the value of r.

्रैे ख्दख्r/ ख्हपे 1. ख्ु स्ख्% एख्ु स्ख्ते ख्हे
¸ ख्े फ्8ख्ु ख्द1अख्ु इ ख्ए यख्इ एख्ा पृ भ
न्`क्हे ख्ड ष 1ख्क्ष्ख्यअख्यक्ष्द1ख्ा न्ख्े फ्8 ख्ा अ
1. ख्ु ख्लै ख्ैख्ा:री:::ख्4 हइ ख्ल`क्ह्हैड
1. ख्ु ख्लै ख्ैख्ा:रीश्रर ख्4 हइ ख्य ख्ए न्स्ख्यक्ष
rख्ु ख्ा दख्ू न्ख्ु स्ाए। म

IB SA & MTS 24/03/2023 (Shift-02)

(a) 12 (b) 8
(c) 10 (d) 9

20. The value of $\dfrac{2^{2k+1} - 2^k \times 2^{k+2}}{2^k \times 2^{k+3} - 2^2 \times 2^{2k}}$ is:

$\dfrac{2^{2k+1} - 2^k \times 2^{k+2}}{2^k \times 2^{k+3} - 2^2 \times 2^{2k}}$ ख्ु ख्ा दख्यक्ष

IB SA & MTS 24/03/2023 (Shift-02)

(a) $\dfrac{1}{2^k}$

(b) 2^k

(c) $-\dfrac{1}{2}$

(d) 1

ANSWER KEY

1.(a)	2.(a)	3.(c)	4.(b)	5.(c)	6.(d)	7.(c)	8.(a)	9.(a)	10.(a)
11.(d)	12.(b)	13.(a)	14.(d)	15.(b)	16.(a)	17.(b)	18.(a)	19.(c)	20.(c)

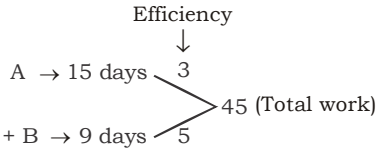
SOLUTIONS

1. (a)

A will Complete the work = 5 × 3 = 15 days

Remaining $\frac{2}{3}$ work is Completed by (A + B) = 6 days

∴ A+B will Complete the work = $6 \times \frac{3}{2}$ = 9 days



∴ Eff of B = 2

∴ B will Complete the work = $\frac{45}{2}$

= 22.5 days

2. (a)

less discount% is better for shopkeeper.

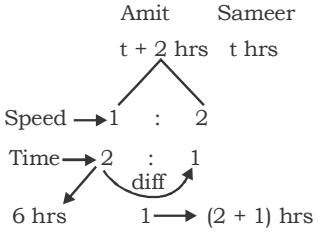
Discount% in Scheme (1) = $\frac{1}{(2+1)}$ × 100 = 33.34.

Discount% in Scheme (2) = $\frac{2}{5}$ × 100 = 40%.

Discount% in Scheme (3) = $\frac{5}{8}$ × 100 = 62.5%.

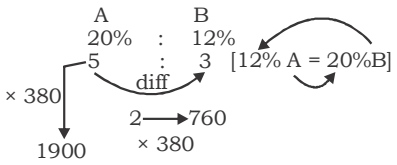
Hence Scheme (1) is better for shopkeeper.

3. (c)



∴ Speed of amit = $\frac{30}{6}$ = 5 km/h

4. (b) Given,



5. (c)

LCM of (2, 3, 4) = 12

∴Num. are = 12, 24, 36, 48 96

First number = 12, Last number = 96

$n = \frac{L-f}{Diff.} + 1 = \frac{96-12}{12} + 1 = 8$

$S_n = \frac{n}{2}(f + L) = \frac{8}{2}(12+96) = 4 \times 108 = 432$

∴ Their sum = (12 + 96) × $\frac{8}{2}$ = 432

6. (d)

Simple Interest and Compound Interest Samain same in first year

∴ T = 1 year

7. (c) Given,

a	:	b	:	c
2	:	3	:	3
4	:	4	:	5
8	:	12	:	15

$\therefore \frac{a+b}{b+c} = \frac{8+12}{12+15} = \frac{20}{27}$

8. (a)

Let the nos are -----

2x + 10, 2x + 8, 2x + 6, 2x + 4, 2x + 2

A.T.Q,

$(10x + 30) \times \frac{6}{5} = (10x + 30) + (6 + 8 + 10 + 26)$

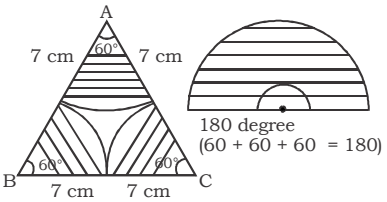
$\Rightarrow (10x + 30) \times \frac{6}{5} = (10x + 80)$

$\Rightarrow x = 22$

Required Avg = $\frac{2x+8+2x+6+2x+4}{3}$

$= 2x + 6 = 2 \times 22 + 6 = 50$

9. (a)



Area of feild that yeared = 3 × Area of seclar

= Area of semicercle

$= \frac{1}{2} \times \frac{22}{7} \times 7 \times 7$

= 77 cm^2

10. (a)

No b/w and 100 = 51, 52 99

We know,

Avg of consecutive no = $\frac{1st + last\ term}{2}$

$= \frac{51+99}{2} = 75$

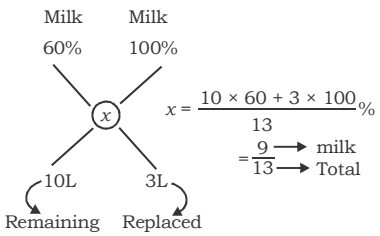
11. (d)

We know, Element of ratio in mixture, Taken out mixture as well as in Remaining mixture is always same.

Unless and units some extra elements is added.

	Milk		Water
Remaining →	3	:	2

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



	Milk		Water
Final	9	:	4

12. (b)

Cylinders in closed, so we need T.S.A to find

∴ $2\pi r (l + h) = l \times b$

$2 \times \frac{22}{7} \times 14 \times 35 = l \times 20$

l = 154

13. (a)

Take Round figure

$\therefore$ 80% of 600 + 33% of 400 – 48% of 150

$\Rightarrow$ 480 + 132 – 72 = 540

14 (d)

Let speed of stream = w km/h]
A.T.Q,

$$\frac{30}{B+W} + \frac{30}{B-W} = \frac{9}{2}$$

$$\frac{30}{15+W} + \frac{30}{15-W} = \frac{9}{2}$$

Now, proceed through option w = 5 km/h

15. (b)

$$\frac{m_1 \times d_1 \times h_1}{w_1} = \frac{m_2 \times d_2 \times h_2}{w_2}$$

$$\Rightarrow \frac{A \times 10}{40} = \frac{(A+m) \times 54}{270}$$

$$\Rightarrow \frac{A}{A+m} = \frac{4}{5} \quad \therefore m = 1 \text{ (ef?ciency)}$$

So,

$$\frac{A \times 10}{40} = \frac{m \times h}{20}$$

$$\Rightarrow \frac{4 \times 10}{40} = \frac{1 \times h}{20} \Rightarrow h = 20 \text{ hrs}$$

16. (a)

Given, $\left[1+(1-2)^{-1}+2-(1-2)^{-2}\right]^2$

$= [1-1+2-1]^2 \quad \{(-1)^{-2}=1\}$

$= (1)^2 = 1$

17. (b)

Let the numbers is x

ATQ,

$$x + \frac{15}{100} \times 420 = \frac{1}{4} \times 356$$

$\Rightarrow x + 63 = 89 \Rightarrow x = 26$

18. (a)

Income		Exp
$3 \times \underline{5 \times 12}$	:	$7 \times \underline{3 \times 5}$
$5 \times \underline{4 \times 15}$	:	$8 \times \underline{5 \times 4}$

A.T.Q,

(8 × 5 × 4 – 7 × 3 × 5)Rs,

$\rightarrow$ 14,300

$\Rightarrow$ 55 $\longrightarrow$ Rs 14,300

$\therefore$ 3 × 5 × 12 $\longrightarrow \frac{14300}{55} \times 15 \times 12$

Income of = Rs 46,800

19. (c)

Amount on Compound Interest

Increase in R. P

3 year

$\therefore$ 605000 : 805255

$\sqrt[3]{1000} : \sqrt[3]{1331}$

10 : 11

diff

$R = \frac{1}{10} \times 100 = 10\%$

20. (c)

Put k = 1

$$\frac{2^3 - 2 \times 2^3}{2^1 \times 2^4 - 2^2 \times 2^2} = \frac{-1}{2}$$

IB ACIO GRADE-II

17/02/2019

22

1. What are the Highest Common Factor and Lowest Common factor of 6, 72, 120?

6, 72, 120ख ुर्खफ ुखियाु वभा खर ु द अ ुहु खियाु वभा ख े ुखक

IB Security Assistant 17/02/2019

(a) 12,180 (b) 6,360
(c) 360,6 (d) 12,360

2. If a quadratic polynomial y = ax^2 + bx + c intersects x axis at α and β then, the sum of α and β is.

` मारब्ला खमै ु भ्ो खइपहनखy = ax^2 + bx + cख्रा य ुर्ख हाखxख ुखα र ु दखβख दख ुएभ ुखत ुखα र ु दखβ ा ुखे ु सिखत

IB Security Assistant 17/02/2019

(a) $\alpha+\beta=-\frac{b}{a}$

(b) $\alpha+\beta=\frac{a}{b}$

(c) $\alpha\times\beta=\frac{a}{c}$

(d) $\alpha/\beta=1$

3. If in two linear equations ax + by = c and dx + ey = f and $\frac{a}{d}=\frac{b}{e}=\frac{c}{f}$ then, which of the following is true about the two equations?

` मारुदसा्े खयाा व्ाखax + by = cख ु द dx + ey = fख ु द $\frac{a}{d}=\frac{b}{e}=\frac{c}{f}$ पखभ ुखु स याा व्ाखा खइ दर्खा्म 7. र्खायखा ुतख्यु य5 खक

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(a) They represent intersecting lines
(b) They represent coincident lines.
(c) Have a unique solution.
(d) None of these

4. Roots of the quadratic equations $2x^2$ + x – 528 = 0 is:

नखमै ु भ्खिया ा व्ाख$2x^2$ + x – 528 = 0 ा ुखि अखत

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(a) 16

(b) $\frac{33}{2}$

(c) Both a & b

(d) None of these

5. Sum of all positive integers from 1 to 100 is:

य्ु र्ख ु5ा ा खु सख्ा्खय्खा्ख्थख ुख े ुसिखयत्त

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(a) 5050 (b) 5020
(c) 20800 (d) 2400

6. If area of similar triangles ΔABC and ΔDEF be 64 sq cm and 121 sq cm and EF = 15.4 cm the BC equal to:

` मारब्याु. खखु हु खΔABCख्र ु दखΔDEFख ु बुखु 3अख:2खवी खयसिखर ु दख्खवी खयसिखपत र ु दखEF = 15.4 cmखतेखु खBCखइ दखत

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(a) 8 cm (b) 18 cm
(c) 11.2 cm (d) 8.2cm

7. Area of a triangles with vertices at (2, 3), (-1, 0) and (2. -4) is:

ज्ञा खखु हु खम याा ुख6 ु ुख(2, 3), (-1, 0) र ु दख2. -4)खतेखयाा ुखखु 3अखत

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(a) $\frac{21}{2}$ cm

(b) $\frac{21}{2}$ sq units

(c) 21 sq units

(d) None of these

8. (2× Tan 30° /(1+Tan^2 30°) equals

(2× Tan 30° /(1+Tan^2 30°)ख खइ दइ द पु सुखत

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(a) Sin 60° (b) Co 60°
(c) tan 60° (d) Sin 30°

9. The angle of elevation of the top of a tower from a point on ground which is 30 mtrs. away from the foot of the tower is 30°. Height of the tower is :

ज्ञा खम् ु खर्खा ा ुखदख खम. अखमदखयख/ थ िएदखनखम ुभखपखयखाा ुखदा ख6 ु ुखा ुड.`. ख ुख30°खतखाा ुखदख ख.8 ु गखत

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(a) $\frac{10}{\sqrt{3}}$ mtrs

(b) 10 × $\sqrt{3}$ mtrs

(c) 100 mtrs

(d) 20 mtrs

10. The length of a tangent from a point A at a distance 5 cms. from the centre of the circle is 4 cms. Radius of the circle is:

म यखभ्ख ख खख इ खय4खयसिख खनखदख ुभखइ ुखAखय ु 6 खइ ुख ख4 ु ग खख2 यसिखत ख्भख खु े ुखत

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(a) 2 cms (b) 3 cms

(c) $\sqrt{3}$ cms (d) $\frac{\sqrt{3}}{2}$ cms

11. Length of a minute hand of a clock is 14 cms. Area swept by the minute hand in 5 minutes is :

ज्ञा ै ुछख ख र्खा.एख ख्यहख ख4 ुगख2 यसिखयख4र्खा.एर्खा र्खा.एख ख्यहख ख ु.भ ख `ु उ

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(a) 154 sq cms

(b) $\frac{154}{3}$ sq cms

(c) 210 sq cms

(d) $\frac{154}{\sqrt{3}}$ sq cms

12. A metallic sphere of radius 4.2 cms. is melted and recast into the shape of a cylinder of radius 6 cms. Height of the resultant cylinder would be:

ज्ञा ख4.2 लसे त्रि्या के धातु के गोले को पिघला कर 6 सेमी त्रिज्या के एक बेलन के आकार में ढाला जाता है। परिणामी बेलन की ऊँचाई कितनी होगी?

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(a) 110 cms (b) 3.84 cms

(c) 30 cms (d) 2.74 cms

13. A box contains 3 blue, 2 white and 4 red marbles. If a marble is drawn at random from the box, what is the probability that it would be white.

ज्ञा ख्‍एक बक्से में 3 नीले, 2 सफेद और 4 लाल कंचे हैं। यदि बक्से से यादृच्छया एक कंचा निकाला जाता है, तो उसके सफेद होने की प्रायिकता क्या है?

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(a) Cannot be determibed

(b) 1

(c) $\frac{7}{9}$

(d) $\frac{2}{9}$

14. Which of the following can not be the probability of an event?

निम्नलिखित में से कौन सा किसी घटना की प्रायिकता नहीं हो सकती है?

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(a) $\frac{2}{3}$ (b) –1.5

(c) 15% (d) 0.7

15. Mean of a grouped data calculated using direct method, assumed mean method or step deviation method:

ज्ञा ख्‍प्रत्यक्ष विधि, कल्पित माध्य विधि या पद विचलन विधि का उपयोग करके परिकलित समूहीकृत आंकड़ों का माध्य:

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(a) Is the same

(b) Varies slightly

(c) Has huge variation

(d) None of these

16. Which of the following is a Prime Number?

निम्नलिखित में से कौन सी अभाज्य संख्या है?

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(a) 12 (b) 7

(c) 9 (d) 4

17. If polynomial $P(x) = x^3 - 3x^2 + 5x - 3$ is divided by polynomial $G(x) = x^2 - 2$, the quotient and remainder are:

यदि बहुपद $P(x) = x^3 - 3x^2 + 5x - 3$ को बहुपद $G(x) = x^2 - 2$ से विभाजित किया जाए, तो भागफल और शेषफल हैं:

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(a) $x - 3,\ 7x - 9$

(b) $x,\ 7x$

(c) $x - 3,\ 7x$

(d) $x,\ 7x - 9$

18. If in triangle ABC, if side $AB = 6\sqrt{3}$, $AC = 12$ and $BC = 6$, then angle B equals:

ज्ञा ख्‍यदि त्रिभुज ABC में भुजा $AB = 6\sqrt{3}$, $AC = 12$ और $BC = 6$ है, तो कोण B किसके बराबर है?

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(a) 120° (b) 60°

(c) 90° (d) 45°

19. What are the coordinates of the point which divides the line joining (–1,7) and (4, –3) in the ratio 2 : 3?

उस बिंदु के निर्देशांक क्या हैं, जो (–1,7) और (4, –3) को मिलाने वाली रेखा को 2 : 3 के अनुपात में विभाजित करता है?

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(a) (7, 4) (b) (9, 9)

(c) (1, 3) (d) (4, 7)

20. Volume of a cone with radius r and height h is:

ज्ञा ख्‍त्रिज्या r और ऊँचाई h वाले शंकु का आयतन कितना होगा?

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(a) rh^2 (b) $\frac{\pi r^2 h}{2}$

(c) $\frac{\pi rh}{3}$ (d) $\frac{\pi r^2 h}{3}$

ANSWER KEY

1.(b)	2.(a)	3.(b)	4.(c)	5.(a)	6.(c)	7.(b)	8.(a)	9.(b)	10.(b)
11.(b)	12.(d)	13.(d)	14.(b)	15.(a)	16.(b)	17.(a)	18.(c)	19.(c)	20.(d)

SOLUTIONS

1. (b)

At first do prime factorisation of the given nos.

$6 = 2^1 \times 3^1$

$72 = 2^3 \times 3^2$

$120 = 2^3 \times 3^1 \times 5^1$

$\therefore$ HCF $= 2^1 \times 3^1 = 6$

LCM $= 2^3 \times 3^2 \times 5 = 360$

2. (a)

$y = ax^2 + bx + c$

$\therefore$ Sum of roots $= -\frac{b}{a}$

$\Rightarrow \alpha + \beta = -\frac{b}{a}$

3. (b)

given,

$ax + by = C$ _____ (i)

$dx + ey = F$ _____ (ii)

If $\frac{a}{d} = \frac{b}{e} = \frac{c}{f}$ Represents Coincident lines

It means they have many solutions as well.

4. (c)

given, $2x^2 + x - 528 = 0$

$\therefore 2x^2 + 3^2x - 33x - 528 = 0$

$\Rightarrow 2x(x + 16) - 33(x + 16) = 0$

$\therefore x = -16, \frac{33}{2}$

5. (a)

Given, $1 + 2 + 3 + 4 + \ldots\ldots + 100$

$\therefore$ Sum $= \frac{x(x+1)}{2}, \frac{100 \times 101}{2}$

$= 5050$

6. (c)

If two triangle ΔABC and ΔDEF are similar then,

$\frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \left(\frac{AB}{DE}\right)^2 = \left(\frac{BC}{EF}\right)^2$

$= \left(\frac{AC}{DF}\right)^2$

$\therefore \frac{64}{121} = \left(\frac{BC}{EF}\right)^2$

$\Rightarrow \frac{8}{11} = \frac{BC}{15.4}$ $\therefore$ BC $= 8 \times 1.4$

$= 11.2$cm

7. (b)

Ar of $\Delta = \frac{1}{2}$

$\left[x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)\right]$

$= \frac{1}{2}[2(0+4)] + (-1)(-4-3) + 2(3-0)]$

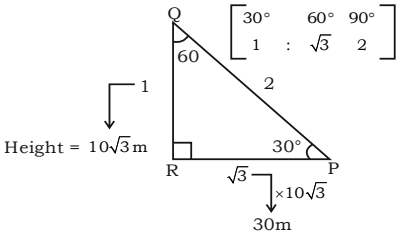
$= \frac{1}{2}[2 \times 4 + 7 + 6] = \frac{21}{2}$cm^2

8. (c)

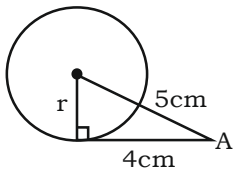
As we know, $\tan 2A = \frac{2\tan A}{1 + \tan^2 A}$

$\therefore \frac{2\tan 30}{1 + \tan^2 30} = \tan 60$

9. (b)

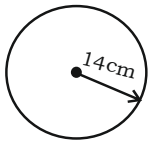


10. (b)



$\therefore 5^2 = 4^2 + r^2$ $\therefore$ r $= \sqrt{9} = 3$cm

11. (b)



Area covered by minute hand in 60 cm $= \pi r^2$

$\therefore$ Area covered in 5 munities $= \frac{\pi r^2 \times 5}{60}$

$= \frac{1}{12} \times \frac{22}{7} \times 14 \times 14$

$= \frac{154}{3}$ cm^2

12. (d)

$\therefore$ Volume of sphere = Volume of cylinder

$\frac{4}{3}\pi \times (4.2)^3 = \pi \times 6^2 \times h$

$\Rightarrow \frac{4}{3} \times \frac{4.2 \times 4.2 \times 4.2}{6 \times 6} = h$

$\therefore$ h = 2.744 cm

13. (d)

Probability

$= \frac{\text{no. of favourable outcomes}}{\text{Total no. of outcomes}}$

$\therefore$ Probability to be white $= \frac{2}{3+2+4} = \frac{2}{9}$

14. (b)

We know, $0 \le P(E) \le 1$

$\therefore -1.5 < 0$, So It Can't be the probability of an event

15. (a)

Mean Calculated by any method must be same

16. (b)

Prime no = The no having only two fectors is prime no.

$1 \times 7 = 7$

17. (a)

Proceed through division method

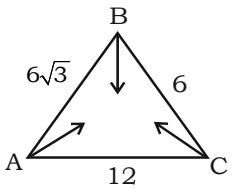
$$x^2-2\;\Big)\;x^2-3x^2+5x-3\;\Big(\;x-3$$
$$x^3 \qquad -2x$$
$$+$$
$$-3x^2+7x-3$$
$$-3x^2 \qquad +6$$
$$-$$
$$+7x-9$$

$\therefore$ Remainder = $7x-9$

Vertices

Quotient = $x-3$

18. (c)



$\therefore$ BC : AB : AC

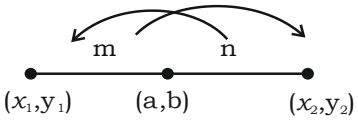
$\Rightarrow$ 6 : $6\sqrt{3}$: 12

$\Rightarrow$ 1 : $\sqrt{3}$: 2

30° 60° 90°

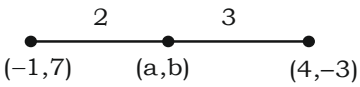
$\therefore \angle B = 90°$

19. (c)



$\therefore$ (a, b) $\approx$

$$\left(\frac{nx_1+mx_2}{m+n},\frac{ny_1+my_2}{m+n}\right)$$



$\therefore$ (a, b) $\approx$

$$\left(\frac{3\times-1+2\times4}{5},\frac{3\times7-2\times3}{5}\right)\approx(1,3)$$

20. (d)

We should Remember formula.

$\therefore V=\frac{1}{3}\pi r^2h$

IB ACIO GRADE-II
2017
23

1. The average price of 80 mobile phones is Rs.30,000. If the highest and lowest price mobile phones are sold out then the average price of remaining 78 mobile phones is Rs 29,500. The cost of the highest mobile is Rs.80,000. The cost of lowest price mobile is?

IB ACIO GRADE II 2017

(a) Rs. 18000
(b) Rs. 15000
(c) Rs. 19000
(d) Can't be determined

2. In a Company the average income of all the employees is Rs. 20000 per month. Recently the company announced increment of Rs. 2000 per month for all the employees. The new average income of all the employees is?

IB ACIO GRADE II 2017

(a) Rs. 22000 (b) Rs. 24000
(c) Rs. 28000 (d) Rs. 26000

3. Pranav went to the bank at the speed of 60 km/h while returning for his home he covered the half of the distance at the speed of 10 km/h, but suddenly he realised that he was getting late so he increased the speed and reached the home by covering rest half of the distance at the speed of 30 km/h. The average speed of the Pranav in the whole length of journey is?

IB ACIO GRADE II 2017

(a) 24 km/h (b) 14 km/h
(c) 16 km/h (d) 10 km/h

4. The average expenditure of Mr. Sharma for the January to June is Rs. 4200 and he spent Rs. 1200 in January and Rs. 1500 in July. The average expenditure for the months of february to July is?

IB ACIO GRADE II 2017

(a) Rs. 2750 (b) Rs. 3250
(c) Rs. 4250 (d) Rs. 4500

5. At the end of a business conference the ten people present all shake hands with each other once. How many handshakes will there be altogether?

IB ACIO GRADE II 2017

(a) 20 (b) 45
(c) 55 (d) 90

6. The average presence of students of a class in a College on Monday, Tuesday and Wednesday is 32 and on the Wednesday, Thursday, Friday and Saturday is 30. If the average number of students on all the six days is 26 then the number of students who attended the class on Wednesday is?

IB ACIO GRADE II 2017

(a) 50 (b) 40
(c) 60 (d) 70

7. Suresh started his journey from P to Q by his bike at the speed of 40 km/h and then, the same distance he travelled on his foot at the speed of 10 km/h from Q to R. Then he returned from R to P via Q at the speed of 24 km/h. The average speed of the whole trip is:

IB ACIO GRADE II 2017

(a) 18.5 km/h (b) 19.8 km/h
(c) 18.2 km/h (d) 19.2 km/h

8. Ramesh walked 6 km to reach the station from his house, then he boarded a train whose average speed was 60 km/h and thus he reached his destination. In this way he took a total time of 3 hours. If the average speed of the entire journey was 32 km/h then the average speed of walking is:

IB ACIO GRADE II 2017

(a) 5 km/h (b) 8 km/h
(c) 2 km/h (d) 4 km/h

9. Bala travels first one-third of the total distance at the speed of 10 km/h and the next one-third distance at the speed of 20 km/h and the last one-third distance at the speed of 60 km/h. What is the average speed of Bala?

यफ्कप कायाम्प तु तूवु सीुः तप 3तु 'हा।पु2ग 'त िर्ह 6क्ष्ूप तु र्हु'ुदक्षिदण्व्शु 3त 'हा।पु2सीुःटा 'त िक्ष्िर्ह 6क्ष्ूपतुःर्हु'ुदक्षि दपि ीुः3तु 'हा।पु2 ।'त िक्ष्िर्ह 6क्ष्ूपतुःर्ह 'ुहकुतीहूप।क्ष्ियफ्कपतुःदपि्हु र्हु श्रक्षु।क्ष्

IB ACIO GRADE II 2017

(a) 18 km/h (b) 19 km/h
(c) 16 km/h (d) 12 km/h

10. The distance of the School and house of Suresh is 80 km. One day he was late by 1 hour than the normal time to leave for the college, so he increased his speed by 4km/h and thus he reached to college at the normal time. What is the changed speed of Suresh?

'ूिपुतु/ 9फ्काकु दक्षि6पु तुयथु तुःसीुः खु 'त िक्ष्ि।क्ष्3तु 'सु/ ।/ 9फ्काकु 0फु तु'व3 6पु वक्कक्ुतु' पफिक्कु' किु' ु3त 6क्ष्ूप वकु त्पु हुए' है रुदभ्रुःर्हु छु 'त िक्ष्ि र्हु 6क्ष्ूपतुःसीु' ुयन्हु2दक्षि' ुही/ । / 9फ्काकु दभ्रु' पफिक्कु' कि भी भ।ू, ण्कक्ष् 'ूिपुतुःयस्वुः।2र्हु श्रक्षु त्फ्ष्

IB ACIO GRADE II 2017

(a) 28 km/h (b) 25 km/h
(c) 20 km/h (d) 24 km/h

11. Anita goes to College at 20 km/h and reaches college 4 minutes late. Next time she goes at 25 km/h and reaches the college 2 minutes earlier than the scheduled time. What is the distance of her school?

दरक्ष्ूपतफ्क0ु टा 'त िक्ष्िर्हु 6क्ष्ूपतुःर्ह 'ु0फ्रा छु 'रिु वकु भ।ूहुः।क्ष्िदण्वुः यपु/ ।टु 'त िक्ष्िर्हु 6क्ष्ूपतुःर्हु' ु 0फ्रा 'रएप्िहु' किु' ुटु 'रिु ४2भ।ूहुः ।क्ष्ि है तुतफ्क0ु तुःसीुः श्रक्षु।क्ष्

IB ACIO GRADE II 2017

(a) 16 km (b) 12 km
(c) 15 km (d) 10 km

12. Two places R and S are 800 km apart from each other.Two persons start from R towards S at an interval of 2 hours. Where as A leaves R for S before B. The speeds of A and B are 40 km/h and 60 km/h respetively. B overtakes A at M, which is on the way from R to S. What is the ratio of time taken by A and B to meet at M?

सुव क्रफ्पु R दक्षिS 3तु सै,ुि खा 'त िसी ।क्ष्सुव र्क्धु R' ुS तुःदवु 0फुतु 'व3 सुव 6क्ष्ु तु दहीफ्ु क्ष्ि.फ्ु तीहु।क्ष् 0र्यतु A, B' ुभ।कु R' ुS तु'व3 'रतवहुप।क्ष्A दक्षिB सफ्क्ष्तुःर्हु त िफ् छु दक्षि ।'त िक्ष्िर्हु 6क्ष्ूप।क्ष्B, M भी A' ुदफ्रु रतवु 0फ्रप।अ0र्यतु R' ुS तुीफ्कु भी ।क्ष्M भी 'विरुतु'व3 A दक्षिB 'तै ुदरूभ्रु क्ष्ि किुवक्कु।क्ष्

IB ACIO GRADE II 2017

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

13. Two places R and S are 800 km apart from each other. Two persons start from R towards S at an interval of 2 hours. Whereas A leaves R for S before B. The speeds of A and B are 40 km/h and 60 km/h respectively. B overtakes A at M, which is on the way from R to S. What is the distance from R, where B overtakes A?

सुव क्रफ्पु R दक्षिS 3तु सै,ुि खा 'त िसी ।क्ष्सुव र्क्धु R' ुS तुःदवु सुव 6क्ष्ु तु दहीफ्ु क्ष्ि.फ्ु तीहु।क्ष्0र्यतु A, R तु'व3 S तुB तु'व3 'रतवरु' ुभ।क 'रतवहुप।क्ष्A दक्षिB सफ्क्ष्तुःर्हु त िफ् छु दक्षि ।'त िुः/ 6क्ष्ूप।क्ष्B, M भी A' ुदफ्रु रतवु 0फ्रप।अ0र्यतु R' ुS तु ीफ्कु भी ।क्ष्0।ु भी B, A' ुदफ्रु रतव 0फ्रप।अ ।R' ुतहरुःसीुः भी ।क्ष्

IB ACIO GRADE II 2017

(a) 260 km (b) 235 km
(c) 240 km (d) 300 km

14. Ajay covers certain distance with his own speed but when he reduces his speed by 10km/h, his time duration for the journey increases by 40 hours while if, he increases his speed by 5 km/h from his original speed, he takes 10 hours less than the original time taken. Find the distance covered by him.

द0कु3तु 'र्.1हु सीुःदभ्रुःर्हु' ुहकुतीहु ।अ0यु/ ।दभ्रुःर्हु क्ष्िग 'त िुः/ 6क्ष्ूप तुःत िवक्ष्ूप।अ्हु है तुःकायुपतुः क्ष्ि' ए छु 6क्ष्ु यन्ुढ0क्ष्हुः।अ0र्यतु र्कसु/ ।दभ्रुः र्हु तप्दभ्रुः' पफिक्कु र्हु' ुदु 'त िुः/ 6क्ष्ूप यन्क्ष्ूपु।अ्हयु/ ।दभ्रुःवि' किु' ुग ।6क्ष्ूप त ि वक्ष्ूप।क्ष् है तुऊपुहकुतुःण2सीुःयहफ्क्ष्

IB ACIO GRADE II 2017

(a) 1000 km (b) 1200 km
(c) 1500 km (d) 1800 km

15. The driver of an ambulance sees a bus 40 m ahead of him, after 20 seconds, the bus is 60 meter behind. If the speed of the ambulance is 30 km/h what is the speed of the bus?

3तु 3क्ष्ूवैर्ु तप1फ्कतु दभ्रुदफ्रु0पु।ुः यै ुतप्छु क्ष्ि दफ्रुस्क हुप।अ्टा' ुत्तक्ष् तुयफ्पु यै ुहै तु ।क्ष्ि भ्कु।फ्हुः।क्ष् र्कसु 3क्ष्ूवैर्ु तुःर्हु ज्ञ 'त ि/6क्ष्ूप।पु हप यै ुतुःर्हु यहफ्क्ष्

IB ACIO GRADE II 2017

(a) 10 km/h (b) 12 km/h
(c) 15 km/h (d) 22 km/h

16. Two rabbits start running towards each other, one from A to B and another from B to A. They cross each other after one hour and the first rabbit reaches B, $\frac{5}{6}$ hour before the second rabbit reaches A. If the distance between A and B is 50 km, what is the speed of the slower rabbit?

सुव ष्ोण्पु3तु सै,ुि तुःदवु सफ्कुीु।क्ष् 3तु A' ुB तुःदवु दक्षिसै,ुिB' ुA तुःदवु/ ।सफ्क्ष्3तु सै,ुि तप्3तु 6क्ष्ु भ.1फ्कपु भी तीहु।क्ष्दक्षि भ।वुपु ष्ोण्पु B भी' सै,ुि तु भ।ूरु' ु $\frac{5}{6}$ 6क्ष्ूपु भ।कु भ।ूहप ।क्ष्र्कसु A दक्षिB तुयथु तुःसीुः डा 'त िक्ष्ि।क्ष्हुपु एर्धुि :फ्कु, फ्कुष्ोण्पुपु तुः र्हु श्रक्षु।फ्क्ष्

IB ACIO GRADE II 2017

(a) 20 km/h
(b) 10 km/h
(c) 15 km/h
(d) 20 km/h

17. Pranav walked at 5 km/h for certain part of the journey and then he took an auto for the remaining part of the journey travelling at 25 km/h. If he took 10 hours for the entire Journey, what part of journey did he travelled by auto if the average speed of the entire Journey be 17 km/h?

श्व्प्, कयाप्ु तद्र3त्, ´र्.1हु :पण्ु हत्, ु्ंतशि ई हु 6घ्पु तद्ध र्हु ै ु भ्ाक्ु 1वहुप दफुंर् भ्गी ⁄ . घ्पु कयाप्ु तद्र ´व3ु टउु ´तशि ई हु 6घ्प तद्ध र्हु ै ु3त्, दफ्ुर्ीअ पु वहुप ।इर्कस ⁄ भ्ीद्ध कयाप्ु तद्र ´व3ु ग, 6घ्क वहुप ।अहघ कयाप्ु तप्ु तहरुप :पण्ु ै रु दफ्ुर्ीअ पु कि हकु ´तकंु र्कसु भ्त्पु कयाप्ु तद्ध दफैअहु र्ह ग5ु ´तशि6घ्पु ।ब्ा

IB ACIO GRADE II 2017

(a) 750 km

(b) 100 km

(c) 150 km

(d) 200 km

18. Find the sum of first 30 natual numbers

भ्कर्पु ज्ञा, भ्पमा हुै 8कयद पुकत पुकयाु यहप3ब

IB ACIO GRADE II 2017

(a) 470 (b) 468

(c) 465 (d) 463

19. 56% of Y is 182. What is Y?

Y तपुउ़ ु ग्ख्ुु ।इहप Y श्रुकसु ।ब्ा

IB ACIO GRADE II 2017

(a) 350 (b) 364

(c) 325 (d) 330

20. Which of the following two ratios is greater 17 : 18 and 10 : 11?

स्रप्कदर्भ्हु्कग5ु डु ग्रु दफुंअग, डु ग्रु ट्रिै त तप्कुु यव्हुु ।ब्ा

IB ACIO GRADE II 2017

(a) $\frac{17}{18}$

(b) $\frac{10}{11}$

(c) Both are same

(d) Cannot determine

ANSWER KEY

1.(c)	2.(a)	3.(a)	4.(c)	5.(b)	6.(c)	7.(d)	8.(d)	9.(a)	10.(c)
11.(d)	12.(d)	13.(c)	14.(c)	15.(b)	16.(d)	17.(c)	18.(c)	19.(c)	20.(a)

SOLUTIONS

1. (c)

Total cost of 80 Mobiles

= 80 × 30,000

= 24,00,000

Total cost of 78 Mobiles

= 78 × 29500

= 23,01,000

∴ H+L = 24,00,000 – 23,01,000

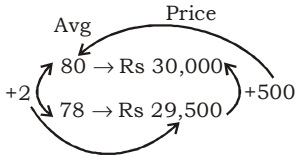
= 99000

ATQ,

80000 + L = 99,000

∴ L = Rs 19000

SMART APPROACH:-



∴ H+L = 2× 29,500 + 500 × 80

= 99,000

∴ L = 99,000 – 80,000 = 19,000

2. (a)

If there is equal increment in income of all employees, average will inrease by that such amount

∴ New average = Rs 20,000 + 2000

= Rs 22000

3. (a)

Let total distance b/w home to Bank = 60 km

Average speed =

$$\frac{\text{Total distance travelled}}{\text{Total time taken}}$$

$$= \frac{60+60}{\frac{60}{60}+\frac{30}{10}+\frac{30}{30}}\text{ km/h}$$

$$= \frac{120}{5} = 24 \text{ km/h}$$

4. (c)

Total exp upto june = 4200 × 6

= Rs 25200

∴ Total exp from feb to july = [Rs 25200 – 1200 + 1500]

= Rs 25,500

∴ Average expenditure from feb to july = $\frac{25,500}{6}$

= Rs 4250

5. (b)

Total handshakes = $\frac{n(n-1)}{2}$

$$= \frac{10\times 9}{2} = 45$$

6. (c)

Total no of students in 6 days

= 26 × 6 = 156

ATQ,

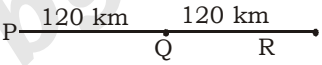
M + T + W = 32 × 3 = 96

W + TH + F + S = 30 × 4 = 120

∴ W + 156 = 96 + 120

∴ W = 60

7. (d)



Average speed = $\frac{\text{Total distance}}{\text{Total Time}}$

$$= \frac{120+120+240}{\frac{120}{40}+\frac{120}{10}+\frac{240}{24}}\text{ km/h}$$

$$= \frac{480}{3+12+10} = \frac{480}{25} = 19.2 \text{ km/h}$$

8. (d)

Let total distance travelled = 32 × 3 = 96 km

Distance travelled by train = 90 km

∴ Time taken by train = $\frac{90}{60}$ = 1.5h

So, time taken 6 km on foot = 1.5 h

∴ Speed of walking = $\frac{6}{1.5}$ = 4 km/h

9. (a)

Let total distance travelled = 3 × 60 = 180 km

∴ Average speed = $\frac{\text{Total distance}}{\text{Total Time}}$

$$= \frac{180}{\frac{60}{60}+\frac{60}{20}+\frac{60}{10}} = \frac{180}{10} = 18 \text{ km/h}$$

10. (c)

Let intial speed of suresh = x km/h

∴ New speed = $(x + 4)$ km/h

ATQ,

$$\frac{80}{x} - 1 = \frac{80}{x+4}$$

$$\Rightarrow \frac{80}{x+4} - \frac{80}{x} = 1$$

$$\Rightarrow 80 \times 4 = x(x+4)$$

$$\Rightarrow 16 \times 20 = 16 \times 20$$

∴ New speed = 20 km/h

11. (d)

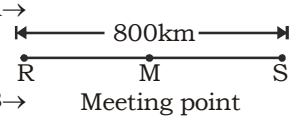
Let distance of school = d km

ATQ,

$$d = \frac{(25-20)}{25\times 20} = \frac{(4+2)}{60}$$

$$\Rightarrow \frac{5d}{25\times 20} = \frac{6}{60} \Rightarrow d = 10 \text{ km}$$

12. (d)



A = 40 km/h

B = 60 km/h

Relative speed = 100 km/h

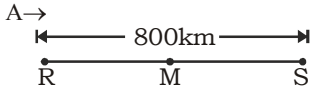
Distance travelled by A in 2 hours
= 2 × 40 = 80 km

∴ Time taken by B to meet A

$= \frac{80}{(60 \times 40)}$ h = 4 hour

∴	A		B
Time →	6h	:	4h
→	3	:	2

13. (c)



A = 40 km/h

B = 60 km/h

∴ Distance travelled by A in 2 hrs
= 2 × 40 = 80 km

∴ Time taken by B to overtake A

at M $= \frac{80}{(60-40)}$ = 4h

∴ Distance b/w R to M = 60 km/h × 4h = 240 km

14. (c)

Let speed of Ajay = x km/h

ATQ,

$$D = \frac{x(x-10)}{10} \times 40 = \frac{x(x+5)}{5} \times 10$$

x = 25 km/h

$$\Rightarrow D = \frac{25 \times (25+5)}{5} \times 10 = 60 \times 25$$

∴ D = 1500 km

15. (b)

Speed of ambulance = 30 km/h

Let the speed of bus = x km/h

Relative speed = (30 – x) km/h

ATQ,

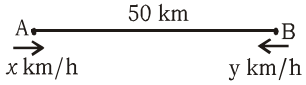
Clearly, 100m distance is covered in 20 sec with the relative speed of Ambulance and Bus.

$$\Rightarrow \frac{100}{(30-x) \times \frac{5}{18}} = 20$$

$\Rightarrow x$ = 12 km/h

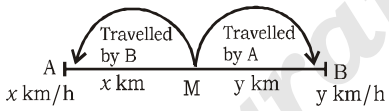
16. (d)

Let speed of rabbits are x km/h & y km/h



ATQ,

$$\frac{50}{x+y} = 1h \quad \therefore x + y = 50 \text{ km/h}$$



$$\therefore \frac{y}{x} = \frac{x}{y} - \frac{5}{6}$$

$$\Rightarrow \frac{x}{y} - \frac{y}{x} = \frac{5}{6} \qquad \left(\text{Let } \frac{x}{y} = k\right)$$

$$\Rightarrow k - \frac{1}{k} = \frac{5}{6}$$

$\therefore 6k^2 - 5k = 6$

$\Rightarrow 6k^2 - 9k + 4k - 6 = 0$

$\Rightarrow 3k(2k - 3) + 2k(2k - 3) = 0$

$$\therefore k = \frac{3}{2}$$

$$\therefore \frac{x}{y} = \frac{3}{2}$$

5 unit → 50 km/h

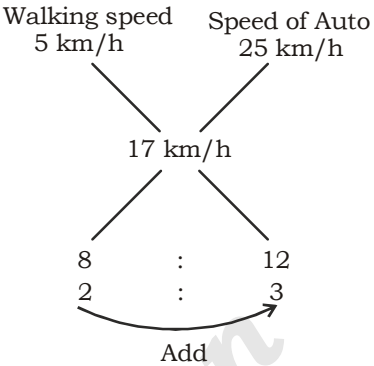
1 unit → 10 km/h

2 unit → 20 km/h

∴ Speed of slow rabbit = 20 km/h

17. (c)

Using Alligation method



5 unit → 10 h

1 unit → 2 h

3 unit → 6 h

∴ Distance travelled by Auto
= 25 × 6 = 150 km

18. (c)

Sum of n natural no. $= \frac{n(n+1)}{2}$

ATQ,

$$1 + 2 + 3 + 4 + \ldots\ldots + 30 = \frac{30 \times 31}{2}$$

= 465

19. (c)

ATQ,

$$\frac{56}{100} \times y = 182$$

∴ Y = 325

20. (a)

Given

$\frac{17}{18}$ ✕ $\frac{10}{11}$

187 > 180

∴ $\frac{17}{18}$ is larger no.

IB ACIO GRADE-II

2014

24

1. If the sum of 60% of a fractional number and the number's square root is 5 greater than one fifth of the number, then the number is

खु िपन यिा क्षावतप नि दक्षा पैिहि, िकवा न दक्षा पैिज्ञं र्तइ पि वाक्षैिस नि दक्षा पैिएकेेदं क्षं नैि लिका। प र्0ष्ठ. वेिज्ञ0नि दक्षा 0म

IB ACIO GRADE II 2014

(a) 6.25 (b) 0.25
(c) 12.25 (d) 2.25

2. If 'Head' appears consecutively in the first three tosses of a fair/unbiased coin, what is the probability of 'Head' appearing in the fourth toss also?

खु िपन यिाग/ए5क्षाग/ए5वा न जपैि पि यिाए0 य . यािसउवे वं तैदि ं वक्षा '0 'िकवक्षा 0ष्ठ. व ि क्षक्षा सउव तिैदि क्षा '0 'िकवाैिप यिथ्वाख्प. व जक्षा 0म्म

IB ACIO GRADE II 2014

(a) $\frac{1}{8}$ (b) $\frac{7}{8}$
(c) $\frac{1}{16}$ (d) $\frac{1}{2}$

3. Archers 'A' and 'B' take aim at a target. if the probability of 'A' hitting the target is 90% and of 'B' missing the target is 90% what is the probablity that both 'A' and 'B' miss the target?

. युदवा ि'A'िकक्षा'B'िबपिि 5र्ख एनिाग3क्षाव न व.ैि0ष्ठ खु ि'A'िपैि 5र्ख पवेि वुगैिप य न दक्षागवी2, ि0मिकक्षा'B'िपैि 5र्खिैि झ गै प यनि दक्षागवी2, ि0म. वेिजक्षा नि दक्षागवी0मिप 'A'िकक्षा'B'िुवेक्षं 5र्खिैि झ णि वेि0ष्ठ

IB ACIO GRADE II 2014

(a) 90% (b) 09%
(c) 01% (d) 91%

4. If 12 persons working 12 hours a day dig 12 meters of a tunnel in 12 days how many men are required to dig additional 4 meter of the tunnel (of the same dimension) given that they work 4 hours a day for 4 day?

खु िश्र्व ?ख6क्षा थ.ु गिश्र्व झ्नेिप क्षािपनिैि श्र्व ु गवेि तैदि श्र्व तयनि ंदि छ्वु.ि0ष्ठ. व का. न6वा ि तयनि ंदि ू न तक्षा किवक्षा पिय छ्वुगैि पैिि बिप. गैि वेिकपि यिकक्ष3ख्प. व 0वे क्ष णि गापिज्ञैि ु गि. प थ.ु गिझ्नि पक्षापिनैि0म्म

IB ACIO GRADE II 2014

(a) 27 (b) 4
(c) 12 (d) 36

5. A man sells an article at a certain price incurring 20% loss. If he had sold the same article for Rs. 20 more he would have earned 20% profit. What was the cost price of the said article?

बप किवुतयिबपज्ञि-. पिवैिरू ि0क्षागएनिबप गा3ी. पियक्ष. एनिगैि. वी0ष्ठखु िस गैिज्ञ0य ज्ञि-. िरू ढएखेिका। पिपत. तिैदि गि यि0वय . वेिस गैिरू ि ववपि तवक्षा 0वे वसि6वज्ञि-. / प वि ं व. तिइखजिक्षा स्कक्षा

IB ACIO GRADE II 2014

(a) 20 (b) 40
(c) 50 (d) 60

6. Numerator of a fraction in increased by 60% and at the same time its denominator is decreased by 60% The new fraction is

बपिि क्षापैिकिडवा तिहि, िपियिझ्छ0वयि0म कक्षा नि क्षा 0यिखपैि0नि तिहि, िपियिपतय 0वयि0ष्ठगख्वाि क्षा0म्म

IB ACIO GRADE II 2014

(a) 2.56 times the older fraction
(b) Equal to the older fraction
(c) 4 times the older fraction
(d) 0.36 times the older fraction

7. In a triangle ABC, one of the angles is average of the remaining two angles. Which of the following is always true about the triangle ABC?

ि%क्षावा ि ABC ि तैि बपिपिक्षक्षा 3वे ु वे पिक्षवेक्षा पविकक्षा. ि0ष्ठि%क्षावा ि ABC ि पैिगवेि तैद ागधर्वा ाइ. ितैदि ैिपिक्षानि वि ु झ्नि रखि0म्म

IB ACIO GRADE II 2014

(a) Isosceles triangle
(b) Equilateral traingle
(c) One of its angle measures 60°
(d) Right angled triangle

8. If the area of circle 'C' is equal to the area of a square 'S', then the ratio of the square of the perimeter of 'C' and the square of the perimeter of 'S' is nearly equal to

खु िज्ञवे 'C' िपिवे 5क्षक्षर ज्ञिं िि 'S' िपैि 5क्षक्षर पैिगिक्षानि 0ष्ठ. वे 'C' िपियिएनि। पैिज्ञं िकक्षा 'S' पयिएनि। पैिज्ञं िपिवाकिगएवि ं ं वं गिक्षानि 0म

IB ACIO GRADE II 2014

(a) 22 : 7 (b) 11 : 14
(c) 88 : 7 (d) 1 : 1

9. The last digit number 3^{2015} is

कङ्ग तकिघ नि दक्षा रू श्र्व 0म

IB ACIO GRADE II 2014

(a) 1 (b) 3
(c) 5 (d) 7

10. What is the square root of 49%?

न2 िपवेज्ञं र्तइ िजक्षा 0म्म

IB ACIO GRADE II 2014

(a) 0.7% (b) 7.0%
(c) 70% (d) Unedfined

11. Log $(40^2 - 20^2)$ is equal to

Log $(40^2 - 20^2)$ पैिगिक्षानि 0म

IB ACIO GRADE II 2014

(a) log 3
(b) lg 60 + log 20
(c) log 40 – log 20
(d) log 20

12. Twelve persons meet in a conference and each shakes hands with all each others. How many handshakes takes place?

बप ि धौं गातिहंग्का0 ?ख6र्वा र्ति .ि0धिकमा थ्रखैप ि बप9 हुनैि0र्वा र्ति वो ि0धमा प.गै0म3वा ि0वौि0धमा

IB ACIO GRADE II 2014

(a) 66 (b) 75
(c) 144 (d) 132

13. Directions: Study the table given below carefully and answer the question that follows.

ागु3र्वा गर्वा ुिर्य खि.र्म पवी पर्वा ख्वाएज्ञा र्कि ख्वा पनैकिमा गिर्धा ाप.थ्3गपि वे सेल्वा ुिंद्र

Table giving total number of people lives in five different societies, percentage of children and ratio of men to women in these societies.

एकिर्कि 9र्क ि तवर्कतैदि0गैज्ञिव ि वैर्क पर्य प/ ि दख्वाि गची वैपिव थि.3व ि किम्वा खा ितवावैतिएद्धवैक ैति0 ककैपिव किगएवगि.वो ज्ञव यिं.वी पव

Name of society	Total number of people living in society	Ratio of men to women	Percent age of Children
Gokuldham	2700	4:5	20%
Aparnam	1980	65 : 67	33.33 %
Kalavati	2100	11 : 10	30%
Madhuban	2400	45 : 39	30%
Rangmahal	1920	7 : 5	25%

What is the ratio between the men living in Aparnam society to the women living in Madhuban society.

कएक्वा ि वैवह य तैदि0गैज्ञिवैएिद्धवैपि व त1ग ि वैवह य तैदि0गैज्ञिव यिता0 ककैै कगएव ि जिख्वा0म्रा

IB ACIO GRADE II 2014

(a) 5 : 6 (b) 6 : 5
(c) 13 : 15 (d) 15 : 13

14. What is the average number of children of Gokuldham society, Kalavati society and Rangmahal society together?

ंवा/1वा ि वैवह यर्िप ज्ञ.यि वैवह यिकमा ंदत0 ि वैवह यतैदिर्त वा नगची वैपि यिकमा. ि दख्वा ि प.गर्य0म्रा

IB ACIO GRADE II 2014

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

15. The number of males living in Gokuldham society is how much percent more than the number of children of Madhuban society.

ंवा/1वा ि वैवह यतैदि0गैज्ञिवैएिद्धवैपिय ि दख्वा त1गि वैवह यपैगची वैपि यि दख्व ैपि.गैथि.3वकि1पि0म्रा

IB ACIO GRADE II 2014

(a) 20% (b) 25%
(c) 33.33% (d) 30%

16. What is the difference between the number of females in Rangmahal society and that of Kalavanti society?

ंदत0 ि तवा िकमा प ैक्वा दय ि तवा ितैद ता0 ककैपिय ि दख्वा पैगियि जिख्वा कदनि0म्रा

IB ACIO GRADE II 2014

(a) 200 (b) 150
(c) 250 (d) 100

17. Children of Gokuldham and Aparnam society together is approximately what percent of the males and females of Madhuban society together

ंवा/1वा िकमा कएक्वा ि तवा िपै िगची ै8 त1गि तवा िपै िएद्धवैकिमा ता0 ककैपैि प/िर्ति वा नि वंिप.गैथि.3व ि0म्रा

IB ACIO GRADE II 2014

(a) 70%
(b) 71.5%
(c) 73%
(d) 75%

18. A certain sum of money fetches simple interest of Rs.4,016.25 at the rate of 7% perannum in 5 years. What is the sum?

बप िगा3ि.ि1गनवा3वि एनि लि ज्ञ7वैि तैद्दि थ.िज्ञ7विपर्यु नि ैि>8,शहक्ल ढएखैिपव ि वा वक्ता प्रख्वा िर्ति .वि0मखैं ि जिख्वा0म्रा

IB ACIO GRADE II 2014

(a) Rs.10,475 (b) Rs. 9,475
(c) Rs. 11,400 (d) Rs. 11,475

19. A certain sum becomes ₹26,980 in 3years and ₹40,280 in 8 years at simple interest.

Find the rate of interest.

बप िगा3ि.िनवा3वकि वा वक्ता प्रख्वा िएनिरज्ञि7व तैद ₹रुहऱ82म,ि.स्वा िमि ज्ञ7वितैद ₹>,8ल्म,ि0वे णवा र्य0म्रा

प्रख्वा ुिनि-विपियण वैद्ध

IB ACIO GRADE II 2014

(a) 14%
(b) 12%
(c) 13%
(d) 11%

20. The length and the breadth of a rect-angular field are in the ratio 3 : 2. If the area of the field is 3456 m^2, then what is the cost of fencing the field at the rate of Rs.3.50 per m?

बप िकवह वा वातिुमवा िपर्य दवा किमा िभ्रावव पवि कगएवरि ुिविर्कर्ल0मिखु ितुमवा िपवि 5वैल्दर्र रुलहि ज्ञं ितयनि0मि.वि रुद्ध,ढएखैथ.ि ज्ञं। तयनपियु नि ैिं.पियग्वाि वैपि यर्ि वं. जख्वा0म्रा

IB ACIO GRADE II 2014

(a) Rs. 420 (b) Rs. 240
(c) Rs. 480 (d) Rs. 840

ANSWER KEY

1.(a)	2.(d)	3.(b)	4.(d)	5.(c)	6.(c)	7.(c)	8.(b)	9.(d)	10.(c)
11.(b)	12.(a)	13.(a)	14.(b)	15.(c)	16.(d)	17.(b)	18.(d)	19.(a)	20.(d)

SOLUTIONS

1. (a)
Let the number is x
ATQ,
$$\frac{60}{100}\times x+\sqrt{x}=\frac{x}{5}+5$$
$$\sqrt{x}=5-\frac{2}{5}x$$
Squaring both sides
$$x=25+\frac{4}{25}x^2-4x$$
$$\frac{4}{25}x^2-5x+25=0$$
$4x^2 - 125x + 625 = 0$
$x = 6.25$ and 25
As, number is fraction hence required answer will be 6.25.

2. (d)
As each time the coin is tosed is the independent event.
When a coin is tossed the possibility of getting is either head or tail
$\therefore$ Probability of getting 'Head' in the fourth toss = $\frac{1}{2}$

3. (b)
Probability of Archer 'A' hitting the target is 90% = $\frac{9}{10}$
$\Rightarrow$ Probability of Archer 'A' missing the target is 10% = $\frac{1}{10}$
Probability of Acher 'B' missing the target is 90% = $\frac{9}{10}$
$\Rightarrow$ Probability of Archer 'B' hitting the target is 10% = $\frac{1}{10}$
$\therefore$ Probability that A and B will miss the target = $\frac{1}{10}\times\frac{9}{10}$ = 9%

4. (d)
We know,
$$\frac{M_1Q_1T_1}{W_1}=\frac{M_2D_2T_2}{W_2}$$
Let the men required x
$$\frac{12\times12\times12}{12}=\frac{x\times4\times4}{4}$$
$\therefore$ Number of men required 36

5. (c)
Let the CP of article is Rs.100
ATQ,
$$100\ \underset{+20\%}{\overset{-20\%}{\diagdown\diagup}}\ \begin{matrix}80\\120\end{matrix}\ 40 = 20$$
(120 – 80) unit = Rs. 20
$\because$ 40 unit = Rs. 20
CP (100) = $\frac{20}{40}\times100$ = Rs. 50

6. (a)
Let the fraction is $\frac{x}{y}$
ATQ,
$$\therefore\ \frac{x\times\frac{160}{100}}{y\times\frac{40}{100}}=\frac{4x}{y}$$
Hence, $\frac{4x}{y}$ is Satisfied option (c)

7. (c)
Let the angles be α, β and γ
ATQ,
$$\frac{\alpha+\beta}{2}=\gamma$$
$2\gamma = \alpha + \beta$
We know,
$\alpha + \beta + \gamma = 180°$
$\gamma = 60°$
$\therefore$ one of the angle will be always 60°

8. (b)
Let the radius of circle r and side of square
ATQ
$\pi r^2 = a^2$
$$\frac{r^2}{a^2}=\frac{7}{22}$$
$$\frac{r}{a}=\sqrt{\frac{7}{22}}$$
$\because$ circumference of circle = $2\pi r$ =
$$2\times\frac{22}{7}\times\sqrt{7}$$
The perimeter of square = 4a
$= 4 \times \sqrt{22}$
Now,
Required square of ratio
$$=\left(2\times\frac{22}{7}\times\sqrt{7}\right)^2:\left(4\sqrt{22}\right)^2$$
= 11 : 14

9. (d)
3^{2015} unit digit = ?
$\Rightarrow \frac{15}{4}$ = remainder = 3
unit digit of 32015 = 33 $\Rightarrow$ 27
$\Rightarrow$ 7

10. (c)
$$49\% = \frac{49}{100}$$
$$\Rightarrow \frac{49}{100} = \sqrt{\frac{7\times7}{10\times10}} = \frac{7}{10}$$
$$\Rightarrow \% = \frac{7}{10}\times100$$
$\Rightarrow$ 70%
$\therefore$ The square root is 70%

11. (b)
$\log (40^2 - 20^2)$
$\because (40^2 - 20^2) = (40 + 20) \times (40 - 20)$
Now,
$\log (40^2 - 20^2) = \log (60 \times 20)$
$\because \log (m \times n) = \log m + \log n$
$\log (40^2 - 20^2) = \log 60 + \log 20$

12. (a)
Total hand shakes = $12C_2$
$$=\frac{12!}{2!(12-2)!}$$
$$=\frac{12\times11\times10!}{2!\times10!}=66$$

Name of Society	Total number of people living in society	Number of men	Number of Women	Number of Children
Gokuldham	2700	960	1200	540
Aparnam	1980	650	670	660
Kalavati	2100	770	700	630
Madhubam	2400	900	780	720
Ramgopal	1920	840	600	480

13. (a)

Name of Society	Total number of people living in society	Number of men	Number of Women	Number of Children
Gokuldham	2700	960	1200	540
Aparnam	1980	650	670	660
Kalavati	2100	770	700	630
Madhubam	2400	900	780	720
Ramgopal	1920	840	600	480

Number of men living in Aparnam society = 650

Number of women in Madhuban society = 780

Ratio = 650 : 780 = 5 : 6

14. (b)

Name of Society	Total number of people living in society	Number of men	Number of Women	Number of Children
Gokuldham	2700	960	1200	540
Aparnam	1980	650	670	660
Kalavati	2100	770	700	630
Madhubam	2400	900	780	720
Ramgopal	1920	840	600	480

Total number of children, living in gokuldham, kalavati and rangmahal society = 540 + 630 + 480 = 1650

$$\text{Average} = \frac{1650}{3} = 550$$

15. (c)

Name of Society	Total number of people living in society	Number of men	Number of Women	Number of Children
Gokuldham	2700	960	1200	540
Aparnam	1980	650	670	660
Kalavati	2100	770	700	630
Madhubam	2400	900	780	720
Ramgopal	1920	840	600	480

Number of males living in gokuldham society = 960

Number of children living in madhuban society = 720

more males = 960 – 720 = 240

$$\% = \frac{240}{720} \times 100 = 33.33\%$$

16. (d)

Name of Society	Total number of people living in society	Number of men	Number of Women	Number of Children
Gokuldham	2700	960	1200	540
Aparnam	1980	650	670	660
Kalavati	2100	770	700	630
Madhubam	2400	900	780	720
Ramgopal	1920	840	600	480

Women in Rangmahal Society = 600

Women in Kalavati society = 700

Difference = 700 – 600 = 100

17. (b)

Name of Society	Total number of people living in society	Number of men	Number of Women	Number of Children
Gokuldham	2700	960	1200	540
Aparnam	1980	650	670	660
Kalavati	2100	770	700	630
Madhubam	2400	900	780	720
Ramgopal	1920	840	600	480

Children of gokuldham and aparnam society together = 540 + 660 = 1200

$$\% = \frac{1200}{1680} \times 100\% = 71.42\%$$

= 71.5%

18. (d)

We know,

$$SI = \frac{P \times R \times T}{100}$$

$$4016.25 = \frac{P \times 7 \times 5}{100}$$

$$P = \frac{401625}{35} = \text{Rs. } 11475$$

19. (a)

SI of 5 years = 40280 – 26980 = 13300

$$\text{SI of 1 year} = \frac{13300}{5} = 2660$$

SI of 3 years = 2660 × 3 = 7980 Rs

Principal = 26980 – 7980 = 19000

$$R\% = \frac{2660}{19000} \times 100 = 14\%$$

20. (d)

Length : Breadth = 3 : 2 = $3x : 2x$

$3x \times 2x = 3456$

$x^2 = 576$

$x = 24$m

L = 24 × 3 = 72m

B = 2 × 24 = 48m

Perimeter of rectangular field

= 2(L + B) = 2(72 + 48) = 240 m

Cost of 240 m = 240 × 3.5 = 120 × 7 = Rs. 840

IB ACIO GRADE-II

15/09/2013

25

Intelligence Bureau
खुफिया विभाग
India भारत

1. If increasing 20 by P percentage gives the same result as decreasing 60 by P percentage, what is P percentage of 70?
यदि अै हा,P` तिकत म,नज़ा,पर वई परिसाए ऍिी ता इला,0 हा,P` तिकत म,8.,पर ऍिी ता इलता,5 हा P` तिकत टया इल

IB ACIO Grade-II 15/09/2013

(a) 50 (b) 140
(c) 14 (d) 35

2. There are six tasks and six persons. Task 1 cannot be assingned to either person 1 or 2; task 2 must be assigned to either person 3 or person 4. Every person has to be assigned a task. In how many ways can the assignment be done?
उइ हाग्र सालउइ थ्यक्रि इला3 हाग्र 3 या अ थ्यक्रि हा,।ई णमाला 11 महता: अ हाग्र या ता,2 थ्यक्रि या श थ्यक्रि हा,माला 11। रूाइ?बे ृग्यह थ्यक्रि हा,?ह हाग्र माला 11। रूाइ?ब समात।एृ हिता,तर्हाएम,हिया 11 महता इल

IB ACIO Grade-II 15/09/2013

(a) 144 (b) 180
(c) 192 (d) 360

3. A number when divided by a divisor leaves a remainder of 24. When twice the original number is divided by the same divisor, the remainder is 11. What is the value of the divisor?
?ह मख्या हा,भा।ह म,विभाि त हरा,पर काइफी अ नरूता इला।न ऍी मख्या हा दागु।। /र्म भा।ह म,विभाि त हरा,पर काइफी 33 साता इलाभा।ह हा एा। टया इल

IB ACIO Grade-II 15/09/2013

(a) 13 (b) 59
(c) 35 (d) 37

4. In how many ways can 15 people be seated around two round tables with seating capacities of 7 and 8 people?
5 साल६ ीाग़ाएृह नला,ह ूएता वाी दा,गाी एा।एृह,रूाराएृसार 3६ ीाग़ाएृहा, हिता,तर्हाएम,नलाया 11 महता इल

IB ACIO Grade-II 15/09/2013

(a) $\frac{15!}{(8!)}$ (b) 7! × 8!
(c) $(^{15}C_8) \times 6! \times 7!$ (d) 15C8 × 8!

5. What is the sum of all positive integers lying between 200 and 400 that are multiples of 7?
अै सालऐै ह,नरू ग्नित मर्भ ढा।6एह पुस्मह।एृहा याग़ टया इला,5 ह,गुसा इल

IB ACIO Grade-II 15/09/2013

(a) 8729 (b) 8700
(c) 8428 (d) 8278

6. The difference between the ages of two brothers is a prime number. Sum of their ages is also a prime number. If the elder brother is 28 years old, how many different values can the age of the younger brother take?
दा,भात्याएृह /ए4ह,नरू हा सार ?ह सभाष्य मख्या इल/।ह सायु हा याग़ भ ?ह सभाष्य मख्या इलयदि नछां भात्र अ वड़ हा इलता,उा,, भात्र ह सायु हिता, भिख्न एा। ी,महर्त इल

IB ACIO Grade-II 15/09/2013

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

7. Find the least five digit number which is divided by 12, 18, 21 and 28 leaves the same remainder 1.
पाक्ष सह।एृह वइ ख़ा।तए मख्या क्रत ह ि? ि म,3अ 3६7 अ तना अ म,विभाि त हरा, पर मएा। काइफी 3` ाथा इाता इला

IB ACIO Grade-II 15/09/2013

(a) 11019 (b) 10081
(c) 10059 (d) 10289

8. In what ratio should a 20% methyl alcohol solution be mixed with a 50% methyl alcohol solution so that the resultant solution has 40% methyl alcohol in it?
अैरु एिनात्ते स9हाइी 8ाी हा,ैरु एिनात्ते स9हाइी 8ाी ह,मान हिम स।ुपात एाएऍिी या 11। रूाइ? ताहि परिसाएं 8ाी एाऐैरु एिनात्ते स9हाइी इाज़

IB ACIO Grade-II 15/09/2013

(a) 1 : 2 (b) 2 : 1
(c) 1 : 3 (d) 2 : 3

9. A train covers certain distance between two places at a uniform speed. If the train moved 10 km/hr faster, it would take 2 hours less. And, if the train were slower by 10 km/hr, it would take 3 hours more than the scheduled time. Find the distance covered by the train.
?ह .क्त दा,ग्ना।एृह,नरू ?ह ि।क्रित दर् ?ह मएा। गति म,तय हर्त इलायदि .क्त 3 हिएँ8ाएा ता। रूो र्त7 ता,अ8ाएृ,हए ी गतब़सा यदि .क्त 3 हिएँ8ाएा र्ढएँ इार्त7 ता,ि।ढारित मएय म,2 8ाएृ,सढिह ी गतब़.क्त चरा तय ह गत्र दर् क्रत ह ि।?ब

IB ACIO Grade-II 15/09/2013

(a) 300 kms (b) 600 kms
(c) 800 kms (d) 1200 kms

10. In how many ways can the letters of the word ASSASSINATION be arranged so that all the S are together?
ASSASSINATION काव्द ह,स्ूराएृहा, हिता,तर्हाएम,थ्यवग्नित हिया 11 महता इलाहि मर्भ S ?ह मान इाज़

IB ACIO Grade-II 15/09/2013

(a) 10! (b) $\frac{14!}{(4!)}$
(c) 1,51,200 (d) 36,28,800

11. Direction: Study the pie – chart carefully and answers the given questions:
ि।द्रक्: पाह्ला्ू हा प्या।पृव्रह सप्रय। हरए सालदि? ग?`क्राएह,/श्नर दृए

Pie chart represents the percentage of girls and boys studying in different classes in a school.

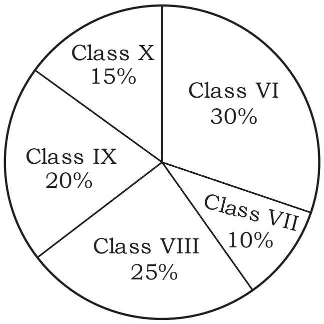
पाठ्र रू-़ ?ह ग्ह ि एएविभिन्न ह ृास एएएए पज्ञं ,वाी ,ी छंहि याएस ासी छंह ाएह ें तिकात हा ,दक्ााता इल

Total no. of students = 10,000

Each sector of pie-chart represents the percentage of students studying in different class.

ह ि मच्छ्या विम ान्त्रियाएह ँ मच्छ्या - ३ ैं ँ ँ

पाट्रद्धरू-़ हा ें व्यह मट्र.र विभिन्न ह ृा एए पज्ञं ,वाी ,उाबाएह ें तिकात हा ,दक्ााता इल

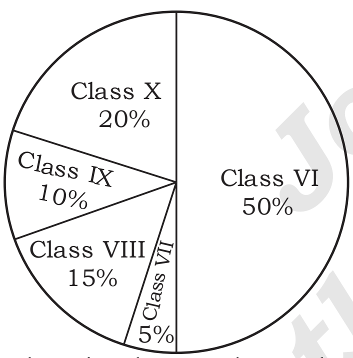


Total no. of students got promoted = 4500

ह ि मच्छ्या पदाग्नत ड ु? विम ान्त्रियाएह ँ मच्छ्या - श्ृैं ँ

Each sector represent the percentage of students got promoted from each class.

ें व्यह ृाव्रें व्यह ह ृा म ,पदाग्नत ड ु? उाबाए ह ें तिकात हा ें तिाीढिब्न हरता इल



What is the total number of students in class VI and VII together?

ह ृा VI स ास VII एएविम ान्त्रियाएह ँ ह ि मच्छ्या हि तां इल

IB ACIO Grade-II 15/09/2013

(a) 3000 (b) 4000
(c) 4500 (d) 5000

12. Find the average of students who got promoted from class IX, X and VI.

ह ृा IX, X स ास VI म ,पदाग्नत ड ु? उाबाए हा स ासात क्नात ह ँ ाि ?ब

IB ACIO Grade-II 15/09/2013

(a) 1200 (b) 1400
(c) 1600 (d) 1800

13. What is the ratio of promoted students from class X to class IX?

दमर्व ण्ह ृा म ,ाार्लाण्ह ृा तह पदाग्नत उाबाए हा स ु्पात टया इल

IB ACIO Grade-II 15/09/2013

(a) 2 : 1 (b) 2 : 3
(c) 3 : 4 (d) 5 : 6

14. What is the ratio of the total number of students to the total number of students who do not get promoted?

उाबाएह ँ ह ि मच्छ्या हा पदाग्नत । इाा ,वाी ,उाबाएह ँ ह ि मच्छ्या म ,स ु्पात टया इल

IB ACIO Grade-II 15/09/2013

(a) 33 : 23 (b) 20 : 11
(c) 11 : 67 (d) 23 : 35

15. The number of students who got promoted from class VI is what percent of the total number of students in that class.

ह ृा VI म ,पदाग्नत ड ु? उाबाएह ँ मच्छ्या /म ह ृा एएउाबाएह ँ ह ि मच्छ्या हा हि ता ा ें तिकात इल

IB ACIO Grade-II 15/09/2013

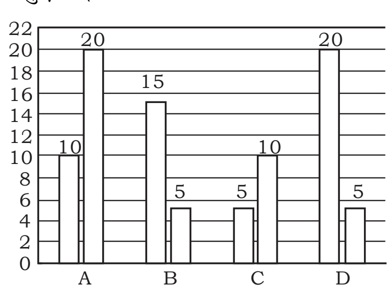
(a) 75% (b) 25%
(c) 45% (d) 65%

16. Directions: Read the data carefully and answer the following questions.

ाि द्रक्ष छ,ा हा ,प्रया ापृव्रह पज्ञं स ासाि ला ाि ठित ें क्षाएह ,/ श्नर दक्ष

Bar graph shows that 2 successive discounts allowed on four different articles.

नार गम्फ म ,पता रूी ता इलहि रूार स ी गद्धरी ग वग्तुस ाएपर अ ी गातार उ्. ह ँ स ुएति इल



If the ratio of marked price of A to B is 2 : 3 and difference between selling piece of both the article is 1198.65, find difference between marked prices of article A and B

यदि A म ,B ह ,स हित एएय हा स ु्पात अ्2 इलस ास दा ाएवग्तुस ाएह ँ नि(ँ ह ,न ँरू हा स सार 33)घ्ए६ इल ाता, वग्तु A स ास B ह ,स हित एएयाएह ,न ँरू स सार क्नात ह ँ ाि ?ब

IB ACIO Grade-II 15/09/2013

(a) 820 (b) 1220
(c) 1020 (d) 1100

17. Marked price of D is 20% less than that of A and sum of selling price of both the articles is 3984 and loss on D is 20% and profit on A is 20%. Find the ratio of cost price of D to that of A.

D हा स हित एएय A ह ,स हित एएय म , अैरु हए इलस ास दा ाएवग्तुस ाएह ,वि(य एएय हा याग़ 2)घ्श इलस ास D पर इाि अैरु इलस ास A पर ी ाभ अैरु इल ाD ह ँ ी ागत एएय हा A ह ँ ी ागत एएय म ,स ु्पात क्नात ह ँ ाि ?ब

IB ACIO Grade-II 15/09/2013

(a) 15 : 17 (b) 17 : 10
(c) 10 : 17 (d) 19 : 15

18. If the ratio of selling price of B to D is 5 : 8, then find the ratio of marked price of B to D.

यदि B स ास D ह ,वि(य एएय हा स ु्पात ६ ़ घ इल ाता, B स ास D ह ,स हित एएय हा स ु्पात क्नात ह ँ ाि यब्र

IB ACIO Grade-II 15/09/2013

(a) 578 : 176 (b) 323 : 190
(c) 109 : 177 (d) 190 : 323

19. If second discount on A is increased by 20%, then the selling price of the articles decreased by 108 and selling price of C is Rs.120 less than that of A. Find the marked price of C.

यदि A पर दमर्त उ. अैरु नज्ञं ाार्त इल ाता, वग्तुस ाएहा वि(य एएय ३ घ हए इा, ाा ता इलस ास C हा वि(य एएय A ह ँ ति ाा एए ३अै ;पय,हए इा, ाा ता इल ाC हा स हित एएय क्नात ह ँ ाि ?ब

IB ACIO Grade-II 15/09/2013

(a) Rs 2578 (b) Rs 2456
(c) Rs 2386 (d) Rs 1988

20. Ratio of selling price of A to B is 5 : 2 and sum of marked price of both the article is Rs. 61000. Find the difference between Selling price of both the articles.

A म ,B ह ,वि(य एएय हा स ु्पात ६ृ अ इलस ास दा ाएवग्तुस ाएह ,स हित एएय हा याग़ 03ै ँ ँ ;पय,इल ादा ाएवग्तुस ाएह ,वि(य एएय ह ,न ँरू स सार क्नात ह ँ ाि ?ब

IB ACIO Grade-II 15/09/2013

(a) 15,500 (b) 19,480
(c) 45,700 (d) 22,600

ANSWER KEY

1.(c)	2.(a)	3.(d)	4.(c)	5.(a)	6.(b)	7.(b)	8.(a)	9.(b)	10.(c)
11.(b)	12.(a)	13.(a)	14.(b)	15.(a)	16.(b)	17.(d)	18.(d)	19.(c)	20.(b)

SOLUTIONS

1. (c)
ATQ,
$20 + p\% = 60 - p\%$
$2p\% = 40$
$p\% = 20\%$
$\Rightarrow 70 \times p\% = 70 \times 20\% = 14$

2. (a)
Based on the given constraints there with be two cases in which task 1 is either assigned to one among person 3 or 4 or to one among person 5 or 6.
Case I.
Assign task 1 to either person 3 or 4.
Number of ways of assigning task 1 = 2 ways
Number of ways assigning task 2 = 1 ways the remaining 4 task can be assigned among the remaining 4 persons in 4! ways
Total number of ways = $2 \times 1 \times 4! = 48$
Case-II
Assign task 2 to either person 5 or 6 number of ways of assigning task 1 = 2 ways Number of ways of assigning task 2 = 1 way The remaining 4 task can be assigned among the remaining 4 person in 4! ways
Total number of ways = $2 \times 2 \times 4! = 96$
Total number of possible arrangements is 48 + 96 = 144.

3. (d)
(I) Let x and a be the number and divisor respectively
Divided = divisor × Quotient + Remainder
$x = d \times a_1 + 24$
ATQ,
$2x = d \times a_2 + 11$
$2(a \times a_1 + 24) = a \times a_2 + 11$
$a(a - 2a_1) = 37$
$a = \dfrac{37}{(a_2 - a_1)}$
since 37 is a prime number, then $(a_2 - 2a_1) = 37$ or 1
Therefore, the divisor, d = 37 or 1
(II)
$x = m.n + 24$
$2x = m.p + 11$
$\Rightarrow m.p + 11 = 2mn + 48$
$\Rightarrow m.p = 2mn + 37$
$\Rightarrow m(p - 2n) = 37$
$\therefore m = \dfrac{37}{p - 2x}$
$\therefore$ 37 is prime number and m is integer.
$\therefore$ m = 37 or 1
$\therefore$ m = 37 (Divisor)

4. (c)
The number of all combinations n things, taken r at a time is:
$${}^{n}C_{r} = \frac{n!}{[r!(n-r)!]}$$
The number of ways in which 8 persons can be selected from 15 persons = ${}^{15}C_8$ Now, 8 persons can be seated around a circular table in 7! ways
Now, the remaining 7 persons can be seated around a circular table in 6! ways.
Required number of ways = ${}^{15}C_8 \times 7! \times 6!$

5. (a)
The numbers lying between 200 and 400, which are divisible by 7, are 203, 210, 217 399
first term, (a) = 203
Common difference, d = 7
Let the number of terms of the AP is n.
$an = a + (n - 1)d$
$399 = 203 + (n - 1)7$
$n - 1 = 28$
$n = 29$
$S_n = \dfrac{n}{2}[a + 2]$
$S_{29} = \dfrac{29}{2}[203 + 399]$
$= \dfrac{29}{2} \times 602 = 8729$
The required sum is 8729.

6. (b)
Age of elder Brother is 28
Prime Number between 1 to 28 is 2, 3, 5, 7, 11, 13, 17, 19, 23

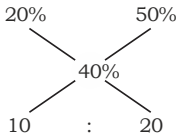
Age of elder Brother	The difference between the ages of two brothers is a prime numbers x	Age of younger Brother	Sum of there is Ages is also a Prime number y	Both (x) And (y) are prime number
28	2	26	54	No
28	3	25	53	Yes
28	5	23	51	No
28	7	21	49	No
28	11	17	45	No
28	13	15	43	Yes
28	17	11	39	No
28	19	9	37	Yes
28	23	5	33	No

Different value of age of the younger Brother take are 25, 15 and 9.
So, There are 3 different value of age the younger brother can take such that the given conditions in the question is satisfied.
Hence, "3" is the correct answer.

7. (b)
LCM of 12, 18, 21 and 28 is = 252
When we divide 10000 by 252 we get 172 as remainder.
$\Rightarrow$ Smallest five digits number which is divisible by 18, 18, 21 and 28 = 10000 – 172 + 252 = 10080

∴ Smallest five digits number which is divisible by 12, 18, 21 and 28 leaves the same remainder 1= 10080 + 1 = 10081.

8. (a)



Required ratio = 10 : 20 = 1 : 2

9. (b)

Let distance d speed of train x km/h

ATQ,

$$\frac{d}{x} - \frac{d}{(x+10)} = 2$$

$$d = \frac{2x(x+10)}{10} \quad \ldots(i)$$

$$\frac{d}{(x-10)} - \frac{d}{x} = 3$$

$$d = \frac{3x(x-10)}{10} \quad \ldots(ii)$$

from equation (i) and (ii)

$$\frac{2x(x+10)}{10} = \frac{3x(x-10)}{10}$$

$x = 50$

Speed of train is 50 km/hr

from equation (i)

$$d = \frac{2 \times 50(50+10)}{10} = 600 \text{ km.}$$

∴ The distance covered by train is 600 km.

10. (c)

Considering all the s' together we get

AAANNIITO (SSSS)

The above alphabets in which repetition of A is 3 times, N is 2 times and I is 2 times, cab be arranged in.

$\frac{10!}{3!2!2!}$ ..... where all the s' remain as a pack = 151200 ways.

11. (b)

Number of students in each class.

Classes VI VII VIII IX X Total number of students 3000 1000 2500 2000 1500 10000

Number of students promoted in each class.

Classes	VI	VII	VIII	IX	X	Total
No. of Students	2250	225	675	450	900	4500

Total number of students in class VI and VII = 3000 + 1000 = 4000

12. (b)

Number of students in each class.

Classes VI VII VIII IX X Total number of students 3000 1000 2500 2000 1500 10000

Number of students promoted in each class.

Classes	VI	VII	VIII	IX	X	Total
No. of Students	2250	225	675	450	900	4500

Students who got promoted from class IX, X and VI

= 450 + 900 + 2250 = 3600

$$\text{Average} = \frac{3600}{3} = 1200$$

13. (a)

Number of students in each class.

Classes VI VII VIII IX X Total number of students 3000 1000 2500 2000 1500 10000

Number of students promoted in each class.

Classes	VI	VII	VIII	IX	X	Total
No. of Students	2250	225	675	450	900	4500

The ratio of promoted students from class X to class IX.

= 900 : 450 = 2 : 1

14. (b)

Number of students in each class.

Classes VI VII VIII IX X Total number of students 3000 1000 2500 2000 1500 10000

Number of students promoted in each class.

Classes	VI	VII	VIII	IX	X	Total
No. of Students	2250	225	675	450	900	4500

∴ Total number of students = 10000

Promoted students = 4500

Non-promoted students = 10000 – 4500 = 5500

Ratio = 10000 : 5500 = 20 : 11

15. (a)

Number of students in each class.

Classes VI VII VIII IX X Total number of students 3000 1000 2500 2000 1500 10000

Number of students promoted in each class.

Classes	VI	VII	VIII	IX	X	Total
No. of Students	2250	225	675	450	900	4500

Promoted student from class VI = 2250

Total students from class VI = 3000

$$\% = \frac{2250}{3000} \times 100\% = 75\%$$

16. (b)

A : B = 2 : 3 = 200 : 300

$$\text{SP of A} = 200 \times \frac{9}{10} \times \frac{4}{5} = 144$$

$$\text{SP} = \text{B} = 300 \times \frac{85}{100} \times \frac{95}{100}$$

$$= \frac{255 \times 95}{100} = 242.25$$

ATQ,

(242.25 – 144) = 1198.25

difference between MP of A and B

$$(300 - 200) = \frac{1198.25}{98.25}$$

$$\text{difference} = \frac{1198.25}{98.25} \times 100 \simeq 1220$$

17. (d)

Let, MP of A is $500x$

$$\text{MP price of D is} = 500x \times \frac{80}{100} = 400x$$

$$\text{SP of A} = 500x \times \frac{90}{100} \times \frac{80}{100} = 360x$$

$$\text{SP of D} = 400x \times \frac{80}{100} \times \frac{95}{100} \; 304x$$

ATQ,

$360 + 304x = 3984$

$x = 6$

$$\text{CP of A} = 360 \times 6 \times \frac{5}{6} = 1800$$

$$\text{CP of D} = 304 \times 6 \times \frac{100}{80} = 2280$$

$$\text{Ratio} = \frac{2280}{1800} = \frac{19}{15} = 19 : 15$$

18. (d)

Let the MP of B is x and D is y.

$$\text{SP of B} = x \times \frac{85}{100} \times \frac{95}{100} = \frac{8075x}{10,000}$$

$$\text{SP of D} = y \times \frac{85}{100} \times \frac{95}{100} = \frac{7600y}{10,000}$$

ATQ,

$$\frac{8075x}{10000} \div \frac{7600y}{10,000} = \frac{5}{8}$$

$x : y = 190 : 323$

19. (c)

Let the MP of A is 500

SP of A = $500 \times \frac{9}{10} \times \frac{4}{5} = 360$

When second discount increased by 20% then

$500x \times \frac{90}{100} \times \frac{76}{100} = 342x$

$\Rightarrow 360x - 342 = 18$

$\Rightarrow 18x = 108$

$\Rightarrow x = 6$

SP of C = $360 \times 6 - 120$ = Rs. 2040

MP of C = $2040 \times \frac{20}{19} \times \frac{10}{9}$

$= \frac{136000}{57} \simeq$ Rs. 2386

20. (b)

Let he MP of A and B is x and y

SP of A = $x \times \frac{9}{10} \times \frac{4}{5} = \frac{18x}{25}$

SP of B = $y \times \frac{17}{20} \times \frac{19}{20}$

ATQ,

$$\frac{\frac{18x}{25}}{\frac{y \times 17 \times 19}{400}} = \frac{5}{2}$$

$\frac{x}{y} = \frac{45}{16}$

MP of A = 45000

MP of B = 16000

SP of A = 45000×0.72 = 32400 Rs

SP of B = 16000×0.8075 = Rs. 12920

Difference = 32400 – 12920

= Rs. 19480

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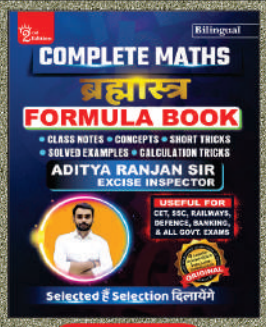

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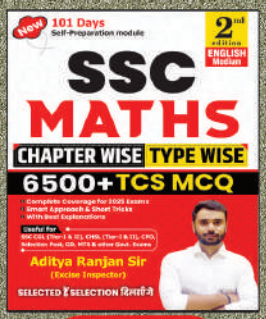

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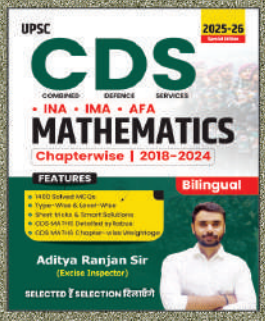

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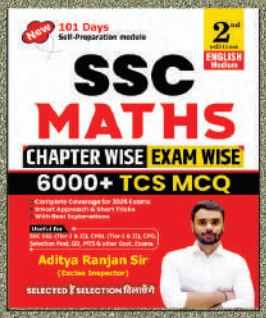

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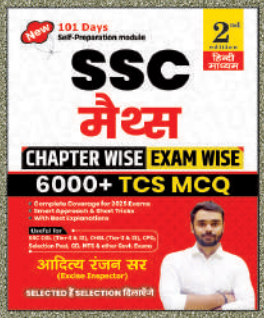

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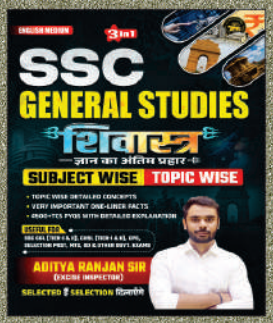

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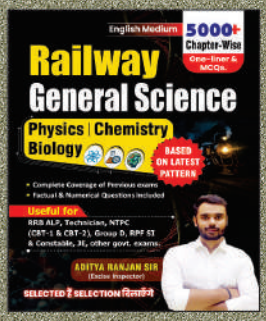

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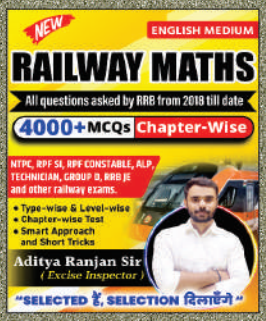

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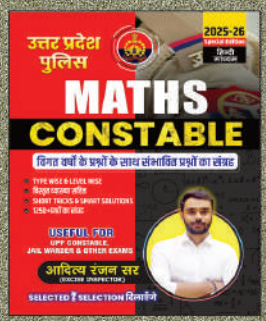

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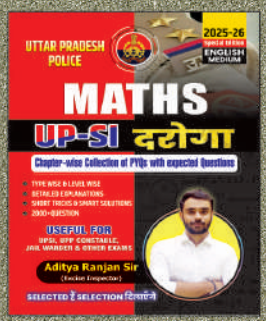

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