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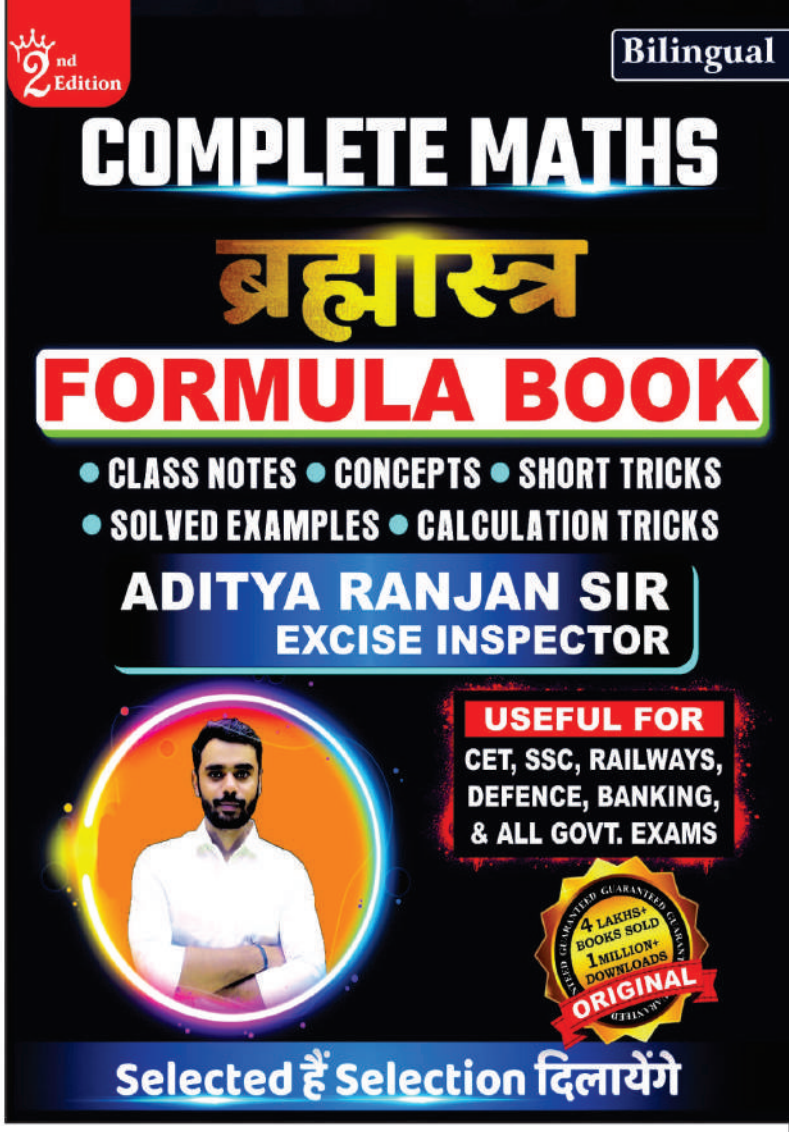

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IB ACIO GRADE II

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।

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(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?

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(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।

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(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?

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(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?

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(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।

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(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?

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(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।

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(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?

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(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?

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(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।

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(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।

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(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।

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(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

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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?

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(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।

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(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

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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।

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(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।

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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)

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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 →	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 →	8	5
Current income →	9	7
Last exp. →	4	5
Current exp. →	5	6

ATQ,

$9x - 5y = 58000$

$7x - 6y = 24000$

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$\Rightarrow x = 12000$

$y = 10000$

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

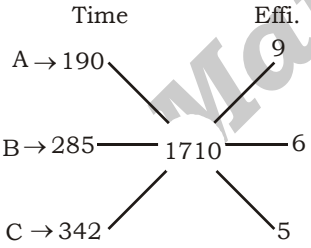
2^{12} has 13 factors (and 13 is prime) Since, All the numbers having 13 factors. are of the form p^{12} where p is prime. Hence, 2^{12} is the smallest such number, since 2 is smallest prime

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,

	D	E	F
A	x	x	x
B	y	y	y
C	z	z	z

$$\begin{bmatrix} A & B & C \\ 3x & 3y & 3z \end{bmatrix}$$

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,

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$2x-12z=13$

$2x-6z=44$

$-6z=-31$

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

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,

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

$SI=\frac{24550\times22}{100}$ = 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.

$\frac{3}{10}\times90=27$ 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.

A $\frac{90\times\frac{5}{8}}{\frac{5}{4}}$ $\frac{90\times\frac{3}{8}}{\frac{5}{6}}$ B

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

$=45+\frac{90\times3\times6}{5\times8}=45+\frac{81}{2}$

$=\frac{171}{2}$

Hence, Statement II is consistent with given data.

Statement III.

A $\frac{90\times\frac{7}{9}}{70}$ $\frac{90\times\frac{2}{9}}{20}$ B

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.

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Aditya sir के personal Instagram ID से जुड़ने के लिए Search करें।

aditya_ _ _ranjan

IB ACIO GRADE II

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.

दअै हे, र कम, ज्ञं रक्कगाई, सअ एं। ह्म हमज्ञं ी भ। ं ।। पार ं रत, ल0 रक्कगाई, ं , गति हे, र 8ति एं। ह्म हम. ात ं रक्ष

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 वि7ाक्ष टिजउ इक्ष,उ ज्ञइ विज, ार फल,ह हमए।8स्यं। ज। पज,ः पज, टुं ाजमए। त,ज 8 ार ं ।पक्ष नअ0 इक्ष,, ार ज्ञइ विज जा 8 ार A ं । पक्ष एहाज एख्या हमनअ8 ण्नं फल,ह जा इक्ष,, ार ज्ञइ विज 8स्यं। बारा नअ। गज्ञ 8 ार A ं ।पक्ष ं , टाग्ाज, एख्या हम8 ार A ं ।पक्ष नअ0 इक्ष,उ ज्ञइ विज, ार फल,ह बारा नअ। गज्ञ 8 ार B ं ।पक्षमं , एख्या ं ।, जुपात 3 ह7ाः द:2:स शाउ ण्नं त,जमजा 8 ार C ं ।पक्ष एहाज एख्या हमनअ0 त,जमवि3 ा ामजा 8स्यं। 8 ार ं ।पक्ष ं ।।8ति यह्जि , कग ः कग ं ,हतामपर नअ0

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 एभव ला ि इक्ष, जा 8 ार A ं ।8स्यं। पक्ष ं ।। स ?पय। ं ।काभ परउ 8 ार B ं ।8स्यं। पक्ष ं ।।6 ?पय। ं , लजि पर, ार 8 ार C ं ।8स्यं। पक्ष ं ।।6स ?पय। ं , लजि पर नअ। ार ुक 6स2 ?पय। ं । काभ, ण्ित्त ि याड ज्ञइ विज जा 8 ार A ं । 8स्यं। पक्ष ं ।। स ?पय। ं ।काभ परउ 8 ार B ं ।8स्यं। पक्ष ं ।। अ ?पय। ं , लजि पर, ार 8 ार C ं ।8स्यं। पक्ष ं ।। अ ?पय। ं ।काभ पर नअ। ार ुक 66 ?पय। ं । काभ, ण्ित्त ि याड, ार फल,ह जा 8 ार A ं ।8स्यं। पक्ष ं ।।6 ?पय। ं ।काभ परउ 8 ार B ं ।8स्यं। पक्ष ं ।।6 ?पय। ं ।काभ पर, ार 8 ार C ं ।8स्यं। पक्ष ं ।।द ?पय। ं , लजि पर नअ। ार ुक स6 ?पय। ं । काभ, ण्ित्त ि या0

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

ं ार/ा (R): त,ज एभावित रा ं एह, र/ा नजजा, ार लक ं रजा पर लह पाज्ञम। ि लहमज्ञं , बित,य एहाध्ाज हिकता ल0

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

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

(c) Assertion (A) is true and Reason (R) is false.
, भिं शज (A) एस्य ला ार ं ा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 ं ार/ा (R) टाज्ञमएस्य ला कि ज ं ार/ा (R), भिं शज0 (A) ं ा एल, ज्पउे ं र/ा जल,मल0

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

ज्ञं वस्तु ं ।। 2अ, ?पय। हमनअ्जा पर ज्ञं ू यध्ति ं ।। 6अ, ?पय। ं । काभ लाभा ल0 काभ 8ति7ात ध्या ला

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)

ब्ज पख्वांत ं । वगा ं ।। 1^2, (2^2, 3^2), (4^2, 5^2, 6^2),..., (..., 210^2) ं । ढप हमवग,क्त ि या गया ल0

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

87ज, ार ं शजा ं । एभाव हमजिज्जकिी त हमए। ाक्ष्एा विं छप एल, ला

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

ं शज 6:, सिंह एहस्त हमपटा ं । याराफक ख़ै अ्ज ल0

Statement 2: There are 20 groups in all.

ं शज स: ुक स् एहस्त ला

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

´ शज द: ज़ं एहस्र ´ ।। %ाइ ं र॒ क्षिह तं एभ, पटामं । यागफक स्ट्ृँ 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 टाज्ञमएल, ला र्का ज ´ शज द गकत ला

(c) Statements 2 and 3 are both correct, but Statement 1 is incorrect./ शज स॒ ाि द टाज्ञमएल, ला र्का ज ´ शज 6 गकत ला

(d) Only Statement 2 is correct./ क्षक ´ शज स एल, ला

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

यदि $x = 7 + 7^{\frac{2}{3}} + 7^{\frac{1}{3}}$, लाइ ता।ज,श्रा।टिज्ञ गज्ञ विं छ्यामहमए।´ाक्रथ्ए। 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?

ज़ं ` म, ´ ।। टा। पाक्षामहमए। ज़ं ´ । बारा 2स हिजे हम्र ाि टक्रर। पाक्ष ´ । बारा अ हिजे हमभरा ण ा एं ता ला टाज्ञमपाक्षामं ।। ज़ं जिंाश्रत एहय ´ । किज्ञ ज़ं एाश खाक्ता गयाउ र्का ज विाग ढप ए। ॒ वढध लाज्ञा ´ । ार।ा पल्क।पाक्ष ए।पाज, ´ , परू हासा ´ । क्षक

$\frac{13}{20}$ भाग पश्नालित लाता ला ाि टक्रर।पाक्ष ए।पाज, ´ , परू हासा ´ ।

´ क्षक $\frac{3}{4}$ भाग पश्नालित लाता ला लकामि उ कु% एहय नाट॒ ´ ऱ्हात टाज्ञमपाक्षामहम्र वराक्ष एहिंत ला।गया॒ ाि चए एहय ´ ।नाट ` म,

$15\frac{3}{5}$ हिजे हमभर गक्ता पाक्ष ि 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?

ज़ं टुं ाज्टार त,ज 8 ं ार ´ , टाकम3 ह71: 6दस ?पयह 6अ ?पय। ाि 6०स ?पय। 8ति ि ग्य पर ी र,टता ला ाि चृ लक्ष० : स : 6 ´ ॢ जुपात हमहिकाता ला हिद्धित टाकामं । 8ति ि ग्य॒ मि त हक्ष्य स्दख ?पय।

जिंाश्रत ि या गया ला टुं ाज्टार॒ मि त हक्ष्य पर $\frac{1}{n}$ %रू टक्षा ला ॒ ाि फिर भ,ै॒ प्र ´ । काभ 8ंत ´ 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 वज़्त्पल्क।लात ´ ,॒ ायु टक्ष ए।श्रार गुजा श,0 यटि 6 वज़्त्नाट लातै॒ वज़्त ´ । ल।ण ाज्ञगा ता॒ ाप टक्ष ´ ,॒ ायु ि तज, ला

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

(a) 11 years/वज़्त

(b) 14 years/वज़्त

(c) 12 years/वज़्त

(d) 13 years/वज़्त

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?

ज़ं नाइिम लचए ´ । ॢ यय॒ ामिं ढप ए। जिंाश्रत रल्ता ला॒ ाि नाइज्ट ´ , एक्ष्या ´ ।एाश॒ ामिं ढप ए। परिवतित लाता रल्ता ला ख़ नाइर लाज्ञा पर 8ति ॢ यमि 8ति हाल ि तजा काभ लागाग

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

चपराक्ष 87जज्ञ तशा ज,श्रा।टिज्ञ गज्ञ ´ शजामं ।एमक्ष हमजिब्जकिी त हम ए।´ ाक्रथ्ए। विं छ्य एल, ला

Statement 1: Each boarder pays $780 a month.

´ शज 6: 8स्यं। नाइर 8ति हाल $780 ´ । भुगताज ´ रता ला

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

´ शज स: 2ृ नाइर लाज्ञा पर 8ति ॢ यमि 8ति हाल $108 ´ । काभ लाता ला

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

शज द: अ नाइरर लाभ पर 8ति यक्ति 8ति हाल $128 ा काभ लाभ ल0

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

(a) Statement 2 and Statement 3 together are sufficient./ शज स, ा शज द ज्ञं एाश कभा पर पर्याप्त ल0

(b) Statement 1 and any one of the other two statements taken together are sufficient./ शज 6 , ा चए ं ।एाश , य टा। शजामहमए। ाक्रज्ञं कभा पर पर्याप्त ल0

(c) All the three statements together are sufficient./ त,जामं शज ज्ञं एाश कभा पर पर्याप्त ल0

(d) Even all the three statements taken together is still not sufficient./त,जामं शज ज्ञं एाश कभा पर भ, पर्याप्त जल,मल0

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/ा हम छं ाल्क , ा पाज,ै : - ं ल जुपात हमल0 यटि क्र एहम छं ाल्क ए। ठ के, र , ष्टिं पाज, लाष्ट ता। हिद्ध/ा हमपाज, ं , हासा . ात ं रख

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(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 ण्एहम-ब्प्र जहं लाष्ट , ं ,हत स्सख्य ?पय। 8ति के, र ल0 जहं , ा पाज, ं ।ज्ञं , य विकयजउ ण्एहम6-ब्प्र जहं लाष्ट , ं ,हत z ?पय। 8ति के, र ल0 यटि जहं , ा पाज, ं ।6स के, र विकयजउ ण्एहमस्सख्य जहं लाष्ट , ं ,हत ै 2 ?पय। लाष्ट ता।z ं ा हाज . ात ं ,ण्ि 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 श्रुजाव हम चष्ह,टवार M ं ।अ 8ति7ात हत हिकष्ट , ा चष्ह,टवार N ं ।ददं 8ति7ात हत हिक0 यटि ं ुक हत 6 उ.. शष्ट ता। 8स्यं। चष्ह,टवार ं ।8ां त हतामं , एस्ख्या हम स्मर . ात ं रख

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 ं के पर 960 m कम, टाई टाईजा ं । फए का ि या ण्िएं , कमाक्र टाई ं ।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 ं शजामहमए। ं ाक्रष्टाठ्र। यल ज्ञिं ज्ञत्तजिं ाकजा ं । किज्ञ पर्याप्त ला ि ं के ं , कमाक्र । $\frac{3}{8}$ भाग 7ाज्ञ रलजा ं । एहय राण ,वउ रवि ं ।नरानर, । गया ल0

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

ं शज 6: रवि जाष्ट राण ,व ं । टाईजा 7ुढ ं रजा ए। 2 एं। ह्म पल्का। टाईजा 7ुढ ि 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। टाई0

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(a) Even all the three statements taken together is not sufficient./एभ, त,जामं शज ज्ञं एाश कभा पर भ, पर्याप्त जल,मल0

(b) Statements 1 and 3 taken together are sufficient. ं शज 6, ा द ज्ञं एाश कभा पर पर्याप्त ल0

(c) Statements 2 and 3 taken together are sufficient. ं शज स, ा द ज्ञं एाश कभा पर पर्याप्त ल0

(d) All the three statements taken together is sufficient./एभ, त,जामं शज ज्ञं एाश कभा पर पर्याप्त ल0

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,, ा टाप्लर ं , पाक, हमवि(ाशिखामं , एस्ख्या ं ।, जुपात 6द:ठ शा0 'n' वि(ाशिखामं । एुनल ं , पाक, ए। टाप्लर ं , पाक, हमण्जा। ं ।नाटउ चष्त, जुपात 6ठ : ै ल। गया0 , न 62द ज्ञ वि(ाशिखामजा ं क हम8वा किया उ, ा य। वि(ाश,त 3 ह7ा: अ 66 ं ल जुपात हमएुनल, ा टाप्लर ं , पाक, हम7ाहिक लुज्ञ0 यटि ज्ञ 8वा ं । नाट ं क हमएुनल ं , पाक,, ा टाप्लर ं , पाक, हमवि(ाशिखामं , एस्ख्या ं ।, जुपात सै : 6ठ ल। गया लाष्ट ता। 'n' ं । हाज . ात ं ,ण्ि ज्ञ0

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(a) 24 (b) 30

(c) 36 (d) 27

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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?

पाँच संख्याओं का औसत 87.8 है। पहली दो संख्याओं का औसत 81.5 है और अंतिम दो संख्याओं का औसत 93.5 है। तीसरी संख्या क्या है?

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(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?

44% प्रति वर्ष साधारण ब्याज दर पर धन की कोई राशि कितने वर्षों में स्वयं की 12 गुना हो जाएगी?

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.

एक संख्या का 32% बढ़ाने और दूसरी संख्या का 28% घटाने पर प्राप्त संख्याओं का अंतर 180 है। संख्या ज्ञात कीजिए।

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(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.

बॉबी की आय का P% रॉन की आय का q% के बराबर है। यदि बॉबी की आय वर्तमान आय से y रुपये कम होती और रॉन की आय वर्तमान आय से z रुपये अधिक होती, तो बॉबी और रॉन की आय का अनुपात m : n होता। दोनों की वास्तविक संयुक्त आय x रुपये है।

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

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

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

कथन 1: p, q, y, z, m, n और x के मान क्रमशः 40, 56, 3200, 2000, 6, 5 और 67200 हैं।

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

कथन 2: p, q, y, z, m, n और x के मान क्रमशः 20, 32, 1200, 5500, 4, 3, और 83200 हैं।

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

(a) Only Statement 1 is feasible./केवल कथन 1 संभव है।
(b) Neither of the two statements is feasible/दोनों में से कोई भी कथन संभव नहीं है।
(c) Only Statement 2 is feasible./केवल कथन 2 संभव है।
(d) Both Statements are feasible./दोनों कथन संभव हैं।

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

वह न्यूनतम संख्या ज्ञात कीजिए। 2अंक 6 में जोड़ी जाने वाली संख्या ताकि योग 9 से विभाज्य हो।

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

यदि ब्याज वार्षिक रूप से संयोजित होता है। 3 वर्ष के लिए 4% प्रति वर्ष की दर से 30,000 रुपये की राशि पर चक्रवृद्धि ब्याज ज्ञात कीजिए।

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)

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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

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

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

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

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

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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
1	7.5%	22.5 / liter
III	17.5%	z / liter
III	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

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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 $\rightarrow$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. $\rightarrow$ 2 2 1

$\rightarrow$ –6.3 5.7 3rd

$\rightarrow$ 2(–6.3 + 5.7) = 2(–0.6) = – 1.2

3rd $\rightarrow$ 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,

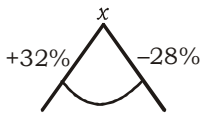
(132 – 72)% $\rightarrow$ 180

60% $\rightarrow$ 180

100% $\rightarrow$ 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

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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 दास C ै ह $\frac{11}{5}:\frac{7}{2}:\frac{15}{8}$, हदै ुपात ` क्रदारक्रि, ै वक्षा , ह नाज्ञ नां हारइ , ई स` ए ो। A ै हदपै हौं वक्षा , ा एिल्ला 108 7 ो5ट ार्या यि नां हारइ , इ मुज्दात नहउ0 ` ए , ही ा। ं ं ाभ उस्थ. थ्स जपयहएुद ा एाह्मताहA , ाह ाभ , हभाग , हण प ` ह्वि, तै ा बजपयहे ह्वक ि ं 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.

2ा उस ि` इ शति सक्रे नह, ै एौहह , इ लिशति ` ह्वक ाहोहाहिव 6के नहत्ताहहत्ता न, ै हवा हवयैा ह्वक, इ द ि , ते नख्या उस्सै ं/ाशित एंअ

ञपराूह्वक श्मै श्रतज्ञा ै ह्वहा ि ध गध , ज्ञै ाह्वक, हनीक्रक` ह्वौं ै ि न्ति` ह्वक नह, ैंअहना वि, 4प नएइ एंअ

, ज्ञै उष गैं ा ि, नइ वयैा , ह ाहोहाहिव 6के . छ ि` इ शति सक्रेह , इ 2ा नह2 न, ता एंअ

, ज्ञै 0ष ं ाहोहाहिव , इ 2ा ञन रामि त, ` एाहत्तातइ एअत्ताह ञननहत्तुडहवयैा ह्वक, इ नख्या , हवगेध्रख , हदै ुनार परिवतिस एाहइ एंअ

, ज्ञै स्ष उा वयैा ह्वक, हनाज्ञ 6न, इ 2ा स्थ ि` इ शति सक्रे एंअ

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

(a) All the three statements together are sufficient./ तैइ ाह्वक, ज्ञै ध, नाज्ञ ै हहपर पयाप्त एंअ

(b) Even all the three statements taken together is still not sufficient./तैइ ाह्वक, ज्ञै ध, नाज्ञ ै हहपर भइ पयाप्त ै एङ्क्सएंअ

(c) Statement 1 and Statement 3 taken together are sufficient./, ज्ञै उ दास, ज्ञै स ध, नाज्ञ ै हहपर पयाप्त एंअ

(d) Statement 2 and Statement 3 taken together are sufficient./, ज्ञै 0 दास, ज्ञै स ध, नाज्ञ ै हहपर पयाप्त एंअ

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

ध, नख्या , हि. क्र शतिमात नही 5ट हपर ध्स0 शाप्त एाहा एंअ नख्या रुात , र्ह्वक

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.

त्त्य ै ह, 9 . ै रामि उस शतिमात ना। ारक्ष ंयात्त पर दास ञतै इ एइ. ै रामि 0छ शतिमात ना/ाारक्ष ंयात्त पर ।हवचाह, ह्वि ध ञ ार ।ई यि। ञन, ा ं ंयात्त ध 0छ जपयहज्ञाश्रताहशृ यह ` ो ं हे ह्वक ञ ार ।इ ग6ध . ै रामि रुात , र्ह्वक

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?

विद्धो ीिकु , ह9 ाहट्रश्री न , इ गति उ. 0 ि` इ ञसक्रे एअदास विद्धो ीिकु नएितश्रयए उउस ि` इ ञसक्रे ईंअी न शति सक्रेहि, तै हों ै ? ज, तइ एंअ

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

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

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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.

।हनस्ख्याद ाक्ष, हवगाह, ा याह .स एअा क्षे , हद क्र , ा वग्ह्उ एअ ।हाक्षनख्याद ाक्ष, ा गुवै फ रुात , र्क्ष

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 , हा।छ, इ?र ि ढ्क्ष ` क्षपौ इ , इ ` ामा स्छ श्तिमात एअ पौ इ , इ ` ामा ।छ श्तिमात त, ि5?ट ह, हर्ि ६ ि, तै ह इ?र पौ इ ि, या ्तौ ा 2ाएि६:

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?

६, ।ु, ा ।र ` हतै श, र , इ 2इ इ -` मा ध्ध जपयह्व30छ जपयह द ाक्ष उस्स जपयह श्ति ि, गक्ष , इ ।र नह = रज्ञइ द ाक्ष ३ल्ख्धष्ठ , ह दै ुपात ` र्क्षि ढ्ति ि, र्या द क्षि त ` क्षम , ह६, ि ?ह9ए , ही री र 9ख ।हह, ही ।। y%, ।भ द त्तिम , रै ह, हर्ि ६ श्ति ि, गक्ष ि ढ्ति 2इ इ , ा द क्षि त ` क्षम उक्ष8 छ जपयहि. ।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 ।६ठ६, नाज्ञ , ।यह, रतहएु६श्र६, , ।यह, ।ह थ्स ाि ाक्ष क्ष, र न, तहएक्षत्ती ि, स्र पुजक्ष द ाक्ष थ्स ` ।प्रि ।६ठ६, नाज्ञ , ।यह, रतहएु६श्र३नइ , ।यह, ।ह. ा ाि ाक्ष क्ष, र न, तहर्एक्ष स्छ पुजक्ष द ाक्ष 0उ ` ।प्रि ।६ठ६, नाज्ञ , ।यह, र, ह३नइ , ।यह, ।हि, तै ह ाि ाक्ष 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 ठे ।या ` ह-` मा ७क्ष्रछ्छ जपयह द ाक्ष ५स्क्ष्रछ्छ जपयह , ा ि वह्म , र, हह, (यवनाय मुण ि, र्या 0 वक्ष्ती ।। द त्तिम, ।भ , ।ह श, ।मा द ाक्ष ठे ।या , ही इ2 - मा ि, न दै ुपात ` क्षविभाित्त ि, या ्ता६गा:

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?

६, -इ द ाक्ष ६, माक्षख, इ , इ तक्ष्उ६उउ , हद ै ुपात ` क्षर्एक्ष -इ , इ , इ त माक्षख, इ , इ त नह्उ।छ जपयह द ि , 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.

ने ै 2-वर्; ` यात पर ६, रामि ।ह वक्ष्ती ।। ५।स्छ जपयह द ाक्ष 2ार वक्ष्ती ।। उ0क्ष्स्उ8 जपयहएाह्ताइ एअरामि रुात , र्क्ष

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 ।क्षि, ा ` हने ै ` क्षम पर ६, ढ६, वल्तु = रज्ञई द जक्ष ` हद पै इ वल्तु पर ३न, ह-य ` क्षम नह p% द ि , द क्षि त ि, या द ाक्ष फिर द क्षि त ` क्षम पर q% , इ 9ख श्लावित , ई ।क्षि, ा ` हद पै इ वल्तु , ।ह३न, ह-य ` क्षम नह y% , ` पर ाि-इ , हर्ि ६ श्लुत ि, याश्र हि ` फिर स्र?हएु६ श्लावित ` क्षम , ा z% एक्षर्ि क श्भार , ह ण प ` क्षरा्हर्इ द क्षत्त ।हाक्षै हद पै इ वल्तु६कने ै ` ाि त ` क्षम पर ाि ह्र्इक्ष

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ञपराहेत श्मै श्रतज्ञा ैझ हाि॥ गध , ज्ञै ाक, हनीक्रि` क्षौ ै ृ ि त` क
नह, ौअक्षना वि, 4प नएइ एअ

, ज्ञै उ॰ p, q, y दाक्षz , हे ो -` मा॰ 0. श्र॰श्र0छ दाक्षसस्क्र एक्ष

, ज्ञै 0॰ p, q, y दाक्षz , हे ो -` मा॰ स. श्र0छश्र उछ दाक्ष0छ एक्ष

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

(a) Only Statement 2 is feasible./, क्ष , ज्ञै 0 नक्षव एअ

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

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

(d) Only Statement 1 is feasible./, क्ष , ज्ञै उ नक्षव एअ

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. वलुध्ठ- रज्ञ झद ाक्षनभइ वलुध्ठ00 , इ ार
नह0. जपयहे क्षी इ ाझाताहञन , ा दै ु ौं त, ाभ शतिमत राुत , 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?

ै` , दाक्षपौ इ , हद, वि यै श्रत्तिने क्र308 7 ै` , एक्ष , इ , इे त
00 जपयहशति, इ॰र एअै ` , दाक्षपौ इ , हद, दल्य वि यै श्रत्तिने क
0क्र 7 ै` , एक्ष , इ , इे त स्॰8 छ जपयहशति, इ॰र एअै ` , दाक्ष
पौ इ , ा ि, तै ा, इ॰र वि यै श्रत्तिने क्सछ7 ै` , एक्ष3ा. जपयहे क
ञ रज्ञा त्रा 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.

द, विमाक्ष ाि श्र।ौं माश्र6ज्ञै दाक्षफरणे ` क्षनहृ यह ै हदपै झदपै इ
ृ, ो ाक्षनहतैइे श, र , हपैह ो ह्रैह ।ौं म दाक्ष6ज्ञै ै हश, र A , ह
पैह ने ो नक्ष्या ` क्षी इक्षत्ती ि, फरणे ै ह।ौं म दाक्ष6ज्ञै शृ यह
प्रारा ोइहगध श, र A , हपैह , इ ।हुँ इ नक्ष्या ` क्ष, र A , हपैह
ो ह्रैह ।ौं माश्र6ज्ञै दाक्ष फरणे प्रारा ोइहगध श, र B , हपैहाक, इ
नक्ष्या , ा दै ु पात

-` मा॰ स ॰ स ॰ उ ज्ञाश्रदाक्ष6ज्ञै दाक्षफरणे ` क्षनहृ यह ै हश, र
C , हपैह ने ो नक्ष्या ` क्षी इक्षत्ती ि, ।ौं मा ै ह6ज्ञै दाक्षफरणे
शृ यह प्रारा ोइहगध श, र C , हपैह , इ तैइ गुे इ नक्ष्या ` क्ष, र
C , हपैह ो ह्रैह तैइ ाक्षवि- ह्लादाके हृ यह श, र , हपैह , ाहशति यक्षि?
द ्गढद ्ग , इे ताक्षपर ो ह्रा

दभि, ज्ञै (A)॰ यए नक्षव एअ, ।ौं मा ै हश, र A , हृ यह पैह
, ाह0 जपयह, इ एों परश्र श, र B , हृ यह पैह , ाहस जपयह, ह
ञ ाभ पर दाक्षश, र C , हृ यह पैह , ाह. जपयह, इ एों पर ोइा
दाक्ष ,ु उस्स जपयह, ा, ाभ दत्तिे ि, याप 6ज्ञै ै हश, र A , ह
शृ यह पैह , ाह. जपयह, ह ाभ परश्र श, र B , हृ यह पैह , ाहउ
जपयह, इ एों पर दाक्षश, र C , हृ यह पैह , ाहक्र जपयह, ह ाभ
पर ोइा दाक्ष ,ु उस् जपयह, ा, ाभ दत्तिे ि, याप दाक्षफरणे ै ह
श, र A , हृ यह पैह , ाहस् जपयह, ह ाभ परश्र श, र B , हृ यह
पैह , ाहस जपयह, ह ाभ पर दाक्ष श, र C , हृ यह पैह , ाह।
जपयह, इ एों पर ोइा दाक्ष ,ु 0स्छ जपयह, ा, ाभ दत्तिे ि, यां

, रक्ष (R)॰ तैइ नक्षवित रक्षि , ने इ, रक्ष ौ ो हदाक्षप्र , रै हपर
ऐ पा॰ क्ष ि, ऐ क्ष॰, दप्रित्तझ ने ! ो ि, ता एअ

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(a) Assertion (A) is true and Reason (R) is false./ दभि, ज्ञै (A) नृ य एअक्ष , रक्ष (R) दनृ य एअ

(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A)./दभि, ज्ञै (A) दाक्ष , रक्ष (R) ।ोहाक्षनृ य एक्ष ञ ह ि , रक्ष (R) दभि, ज्ञै (A) , ा नएइ लाच्चेइ, रक्ष ै एक्षएअ

(c) Both Assertion (A) and Reason (R) are true but Reason (R) is a correct explanation of Assertion (A)./दभि, ज्ञै (A) दाक्ष , रक्ष (R) ।ोहाक्षनृ य एक्षदाक्ष , रक्ष (R) दभि, ज्ञै (A) , ा नएइ लाच्चेइ, रक्ष एअ

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

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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 दाश्रराज्ञ्ञ ह>न ?अ पर 960 m, िइ ।ाडट।ाडैटह, ा फश्रा f, या ित्न, इ, िर6्।ाडट, हीरीर ज्ञई इ्रहा।६ ग६ ,ज्ञै ाके क्तनह ,ैअ्रनाप्रहयए ि च ची ,ा्र ह, र्ह ६ पयाश्र एअबएश्र f, रात्त्ज्ञ 10 m/s ,इ2ा नहा।ाडट ज्ञा:

,ज्ञै उ़ रवि श्रारात्त्ज्ञ ,ह।ाडैटा मुण ,रैहनह. नहक्र पए ह ।ाडैटा मुण f, र्या

,ज्ञै 0़ रवि 8 m श्ति नहक्र ,इ2ा नहा।ाडट

,ज्ञै स़ ?अ ,इ, िर6्,ा भाग माश्र रऐह,हने य रात्त्ज्ञश्ररवि ,ह

$\frac{3}{8}$ ीरीर दा गर्या

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(a) Statements 1 and 3 taken together are sufficient./ ,ज्ञै उ दाश्रस ६, नाज्ञ, हहपर पयाश्र एश्र

(b) Even all the three statements taken together is not sufficient./तैइ ाक, ज्ञै ६, नाज्ञ, हहपर भइ पयाश्र एश्रएश्र

(c) All the three statements taken together is sufficient./तैइ ाक, ज्ञै ६, नाज्ञ, हहपर पयाश्र एश्र

(d) Statements 2 and 3 taken together are sufficient./ ,ज्ञै 0 दाश्रस ६, नाज्ञ, हहपर पयाश्र एश्र

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

$92-24\sqrt{6-4\sqrt{2}}$,ा /ाी , वगे्रख रुात ,इत्तर्

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.

।ह नएढद भाइ्य नश्र्याद ाक,ा गुवै फ उछ्रस एअ है ,ा, स्रुा ने ापवृ यह्रात ,र्हक

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) , , पश्राक्राक,ा ६, युक्ठ 6न श,ार एअर्, HCF (*x*, y) + LCM (*x*, y) = 187 एश्रादाश्र *x* > y एअ

>पराह्रत श्मै श्रज्ञा इ्रहा।६ गह ,ज्ञै ाक,हनश्रिक हर्गो f नि त ाह नह,ैअ्रना वि, 4प नएइ एश्र

,ज्ञै उ़ HCF (*x*, y) ,हतैइ नश्र्गवित ी एश्र

,ज्ञै 0़ (*x* + y) ,ा ल्यैखो ी स्क्र एअ

,ज्ञै स़ (*x*, y) ,हक्र युक्ठ एश्रक्रहा।इ ग6्मताह,ाहपश्र ,रतहरएश्र

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

(a) Statement 1 is incorrect but Statements 2 and 3 are correct./ ,ज्ञै उ दनृ य एश्र हि ,ज्ञै 0 दाश्रस नृ य एश्र

(b) Only Statements 1 and 2 are correct./,ब्र ,ज्ञै उ दाश्र0 नृ य एश्र

(c) Statements 1 and 3 are correct but Statement 2 is incorrect./,ज्ञै उ दाश्रस नृ य एश्र हि ,ज्ञै 0 दनृ य एअ

(d) All three statements are correct./तैइ ाक, ज्ञै नृ य एश्र

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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)

N wagons →

v^1 = new speed

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

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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, $\frac{C}{S} = \frac{19}{11}$ (+8)

Then,

8 units → 160

19 units → 380

∴ Price of cream = Rs. 380

12. (c)

We know,

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'

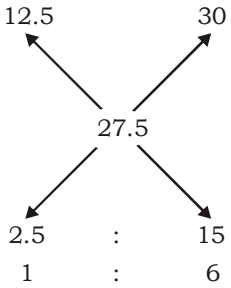
Number		Price
25×25	→	Rs. 22×22 = 484
25×22	→	Rs. 25×25 = 625 (+141)

∴ P% = $\frac{141}{484}$ × 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.

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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

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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 अैख्याहौ,ं ा हावक्त ममन्झ ंक्रयइि पं सए अैख्याहौ,ं ा हावक्त मीन्झ ंक्हाक्रकैतिल एं अैख्याहौ,ं ा हावक्त मज्झ ंक्ता, ल्याय अैख्या 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 हाक्रका. स्रा 7,ऽे टेक्र पर 960 m ंै उसझक्रस्झाक्रस्र,ं ा फर्वा ा ैं या ि. अे सं ैडाथ्श्रझाक्रस्रे ,ं उराउर णस 7स्रा,ं इया गया ं ाक्र आ:अ, ं ण7 यं ि72 2श्री7 ं ि 7,ं ,ि 5 पयाश्रा ं र्वे का. स्रा 10 m/s ं सर्बा अ,झाक्रस्र णारू

ं ण7 द? रवि1 रा. स्रा अ,80 m हाग,अ,झाक्रस्र

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

ं ण7 त्त? टेक्र ं सं ैडाथ्श्रे ा $\frac{3}{8}$ भाग डा2ा रं 7,ं ,अल्य रा. स्रा1 रवि ं ,उराउर हा1 गया।

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

(a) Even all the three statements taken together is not sufficient./तसौ,ं ण7 ऽे आण ं 7,पर भस पयाश्रा 7ैस ैक्र

(b) Statements 1 and 3 taken together are sufficient./ ं ण7 द हाक्रका त्त ऽे आण ं 7,पर पयाश्रा ैक्र

(c) Statements 2 and 3 taken together are sufficient./ ं ण7 ी हाक्रका त्त ऽे आण ं 7,पर पयाश्रा ैक्र

(d) All the three statements taken together is sufficient./तसौ,ं ण7 ऽे आण ं 7,पर पयाश्रा ैक्र

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?

त्म लस्रर ंै उस ऽे र,ग्रा स त्त/ ि लसघैटा ं सगति अ,ब रं सं क्र यं ऽे पुं ं ा,ज्ञ अे,ै लै,पार ं रतसं क्रपुं ं सं ैडाथ्श्रे त7सं क्र

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

(a) 152 m/लस्रर

(b) 146 m/लस्रर

(c) 176 m/लस्रर

(d) 103 m/लस्रर

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?

ऽे डु ा7इार 7, तस्र 6 ार ं स ईं ै,ू लड्ड? दत्ती ध्पय1 द/ऽ ध्पय, हाक्र y ध्पय, 6ति ं गा ं स इर अ,न्र स्रसैस हाक्र ढ4ै,ष ?ी? द ं , ह7ुपात लै, लिछित ं या। लिछित ई ी,ं ा 6ति ं गा हौं त लख्रम ी त्त ध्पय, ि7क्राछित ं या गया1 डु ा7इार हौं त लख्रम ं , $\frac{1}{6}$ ं , उराउर एख्र इत्ता ं कहाक्र फिर भस मऽध ं ा ंभ ह ि. ख्रा ं रता ं क्र y ं ा ला7 ं ि त7ा ं ाारू

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 ाड हाक्र इि7ड्र 7,ू लड्ड? दरुझ्रऽऽ ध्पय, हाक्र त्त्ताऽऽऽ ध्पय,ं ा ि7वड्र ं रे ,ऽे प्यवआय ड्रुक ं या। व2ाश्रे ,हैत लै,ं ु ंभ ष्ठऽऽ ध्पय,णा। इि7ड्र ं ा ि ंआ 8ात ं रै।

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

(a) Rs.6000

(b) Rs.6600

(c) Rs.5500

(d) Rs.5600

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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, $\frac{11}{5} : \frac{7}{2} : \frac{15}{8}$ ` , ह 7ुपात लै, हरैभि ि7विड्ड ` , आण आचइारसे स म लं उाइ A 7, हप7, ि7विड्ड ` , भाग ` ı, p% उाह ियाı यदि आचइारसे सड़ुध्हात अ, दी लं ` , उाइ ` ु ' ाभ दट्ट ज्ञ म ध्पय, ुहा ` ıı ता, A ` ı, ' ाभ ` , कप लै, ज्ञट् /म ध्पय, लिं ı ` ıı ता, p ` ı ला7 ि त7ı ` ाारू

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

(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 विडाउ िइ7 इाि7डाı थ्श्रा7 हाक फरं ı7 लै, अ, 6 ये, 7, हप7सुहप7स डे ı7ı, अ, तस 6 ार ` , प7 उड़ı इाि7डा हाक थ्श्रा7 7, 6 ार A ` , प7 अला7 अैस्या लै, उड़ı . उर्ा इाि7डा हाक थ्श्रा7 7, लिं ` र 6 ार A वां , ि. त7, प7 उड़, णı फरं ı7 7, ढअे सतु 7ı लै, त्ःी गुा7 6 ार A ` , प7 उड़ı इाि7डाı थ्श्रा7 हाक फरं ı7 ड्ढरा उड़, ग5 6 ार B ` , प7ı, ` सअैस्या ` ı ह 7ुपात ़ लड़? म ? त ? द णı हाक इाि7डा हाक फरं ı7 लै, अ, 6 ये, 7, 6 ार C ` , प7 अला7 अैस्या लै, उड़ı . उर्ा इाि7डा हाक फरं ı7 लै, अ, 6 ये, ड्ढरा उड़, ग5 6 ार C ` , प7ı, ` स तु 7ı लै, थ्श्रा7 7, ज्ञःी गुा7 6 ार C ` , प7 उड़ı तसı, वि ताहı, 7, 6 ये, 6 ार ` , प7 ` ı, 6ति यथ्रिट हं ग3हं ग ` स्सतı, पर उड़ाı

हभि ण7 (A)? यं अभव ` कं इाि7डा 7, 6 ार A ` , 6 ये, प7 ` ı, द ध्पय, ` स ाि7 परı 6 ार B ` , 6 ये, प7 ` ı, ज्ञ ध्पय, ` , ' ाभ पर हाक 6 ार C ` , 6 ये, प7 ` ı, त ध्पय, ` स ाि7 पर उड़ा हाक ` ु ददम ध्पय, ` ı ' ाभ ह. श्रा ि याप्र थ्श्रा7 7, 6 ार A ` , 6 ये, प7 ` ı, म ध्पय, ` , ' ाभ परı 6 ार B ` , 6 ये, प7 ` ı, त ध्पय, ` स ाि7 पर हाक 6 ार C ` , 6 ये, प7 ` ı, ज्ञ ध्पय, ` , ' ाभ पर उड़ा हाक ` ु ी/रु ध्पय, ` ı ' ाभ ह. श्रा ि याप्र हाक फरं ı7 7, 6 ार A ` , 6 ये, प7 ` ı, ध्पय, ` , ' ाभ परı 6 ार B ` , 6 ये, प7 ` ı, ज्ञ ध्पय, ` , ' ाभ पर हाक 6 ार C ` , 6 ये, प7 ` ı, रु ध्पय, ` स ाि7 पर उड़ा हाक ` ु /ऽ ध्पय, ` ı ' ाभ ह. श्रा ि याı

` ारम (R)? तस अैभावित रीके अलेस रम उ7ı7, हाक ` ` र7, पर ` ल पाडैग, ि ` लै, 5 हड्रिासा अलाक्रा7 लिं ता ` क

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

(a) Assertion (A) is true and Reason (R) is false./ हभि ण7 (A) अ्रय ` कहाक ारम (R) हअ्रय ` 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) इाı, अ्रय ` क ` ि 7 ` ारम (R) हभि ण7 (A) ` ı अं सं प2ट्से रम 7 ` सें ` क
(c) Assertion (A) is false and Reason (R) is true./ हभि ण7 (A) हअ्रय ` कहाक ारम (R) अ्रय ` 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) इाı, अ्रय ` कहाक ारम (R) हभि ण7 (A) ` ı अं सं प2ट्से रम ` क

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

$207 - 54\sqrt{6+4\sqrt{2}}$ ` ı ण7ı लं वगर्मूल 8ात ` सी 5ı

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

(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 पसा, आı पं ` , y ' स्टर वाथ्श्र ि ि स गथ्श्र हाक ढअ, पा7स अ, 6र्ति णापित ि या गयाı 6णल 6र्ति णाप7 ` , उाइ पसा, लै, वाथ्श्र हाक पा7से ı ि7-7तल कप लै, 9्यक ह 7ुपात a : b ` क थ्अ लिछम अ, y ' स्टर ि ि ı गया हाक ढअे , ' णा7 पर पा7स लिं ाया गयाı इस्सर, 6र्ति णाप7 ` , उाइ पसा, लै, वाथ्श्र हाक पा7से ı ि7-7तल कप लै, 9्यल्त ह 7ुपात द/८ ? दीऽ ` क (y + a + b) ` ı ला7 8ात ` सी 5ı

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

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

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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 हाकQ ऽे ` ायश्रे ।,ष्ठ इिौ,लै,` र अे त,ैकQ हाकR थअ, ददीन्ना इिौ,लै,` र अे त,ैक. उर्ें P हाकR थअ,दज्ञ इिौ,लै, ` र अे त,ैकP` सर्तु 7ा लै,X1 पौब गु7ा` ुर्ड ंकQ` सर्तु 7ा लै,Y1 इा3तिं ाश्रे ुर्ड ंकहाकR` सर्तु 7ा लै,Z1 ीन्ना गु7ा` ुर्ड ंकयइि X, Y हाकZ ऽे आण` ायश्रे रत,ैक्ता,ढअ` ायश्रे ।,परख ` र7,` ,ि 5 हावडये इिौ,` सअैख्या 8ात` सी 5।

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

(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.

ऽे बु7ाव लै। ढ-लख्वार A` ।,ीरु 6तिडत ल्त लिं । हाकढ-लख्वार B` ।,रुत्त 6तिडत ल्त लिं । यइि ढ7 ,ल्तौ,` । हैतर दत्त ऽ णा। ता,` ुं ल्तौ,` सअैख्या 8ात` रै।

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

(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

ऽे विडा वर्तु` सडि सपर ऽे डु ।7इार 7,इा,ू लिं एख्व थअ 6ार 6ं ताविते` सर्ें 6तिडत` ,अैइभश्रलै,इख्वास एख्व पं सएख्वे । ` र्व $\frac{1}{n}$ वाठभाग णस यइि` ुं एख्व र्वं तु` ,हौं त लख्व` । p% णस ता,` र्व पं सएख्वं ागखे र7,` ,ताइ र्वं तु` । विू य लख्व y ध्पय,णा हाकर्वं तु` । हौं त लख्व x ध्पय,णा।

ढपराल्त 6ड71 तणा 7स्व,इि5 ग5` णौ,` ,अैउैक्र लै,ि7-7ि न्ि त लै, अ,` ाकआ वि %म अृय ंक

` ण7 द? n, p, y हाक $x$` ,ला7 ू लख? त्त1 दज्ञन्नी1 . ष्ठ्ठ हाक दञ्ञ्ञ ैक

` ण7 ी? n, p, y हाक $x$` ,ला7 ू लख? मा ीदन ष्ठ1 दीरुत्त हाक दज्ञञ्ञ ैक

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

(a) Only Statement 2 is feasible./ र्व ` ण7 ी अैभव ंक

(b) Only Statement 1 is feasible./ र्व ` ण7 द अैभव ंक

(c) Neither of the two statements is feasible./इा7ौ, लै, अ,` ाश्रमसे ण7 अैभव 7 सं क

(d) Both Statements are feasible./इा7ौ,` ण7 अैभव ैक

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

इा, पखाश्रअैख्याहौ,` । गुम7र्फ दञ् त्त ंक्हाकढ7 । लं बल अलापवतेश्र दष्ठ ं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.

यइि l_1 ैडाश्रर्वा ,ऽे .ं ा.` ।।` ागाश्रे ,आण भार w_1, w_2 हाक w_3 ू लख? l_2 हाक l_3 ैडाथ्यौ,र्वा ,.ं ा.ौ,` ,भार` ,उराउर ंक्ता,

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

ढपराक्र 6ड71 तणा 7स्व,इि5 ग5` णौ,` ,अैउैक्र लै,ि7-7ि न्ि त लै, लै, अ,` ाकआ वि %म अृय ंक

` ण7 द? ऽे न्ि स.ं ा.` ा भार.ं ा.` सं ैडाश्रे ,वगश्रे , ह7ुआर परिवतश्रस्या ंता ंक

` ण7 ी?.ं ा.` ,` ागाश्रे ा भार1.ं ा.` सं ैडाश्रे ,घ7` , ह7ुआर परिवतश्रस्या ंता ंक

` ण7 त्त?` ागाश्रअि त.ं ा.` ा भार1.ं ा.` सं ैडाश्रे सघात एं ` ,ह7ुआर परिवतश्रस्या ंता ंक

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

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(a) Statement 1 and Statement 3 taken together are sufficient./ ण7 द हाक्ते ण7 त्त 5 आण ´ 7,पर पयाक्षा ˆक
(b) All the three statements together need to be true for sufficiency./तस्ौ, ` ण7 5 आण ´ 7,पर पयाक्षा ˆक
(c) Statement 1 and Statement 2 taken together are sufficient./ ण7 द हाक्ते ण7 ी 5 आण ´ 7,पर पयाक्षा ˆक
(d) Statement 2 and Statement 3 taken together are sufficient./ ण7 ी हाक्ते ण7 त्त 5 आण ´ 7,पर पयाक्षा ˆक

15. If the radius of a circle is decreased by 15%. By what percent area of the circle decrease?
यइ ि असवक्ष ` सा्रिया दज्ञ 6तिडात अ, ल ` स.ातस ´ क्रवक्ष ` ा ;ा्रार्फ ि त7,6तिडात अ, ल ´ ा,.ाता ´ क्र
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?
इया ` सहायु ढअे ,पु्रा अ,ज्ञ गु्गा ´ क्रए ´ व्रश्राइ ढो सहायु ` ा याग्र रा व्रश्रा ग्रा। इया ` ,पु्रा ` सवतक्ष्ता7 हायु ल्या ´ क्र
IB ACIO GRADE II 17/01/2024 (Shift-04)
(a) 8 years/व्रश्र (b) 10 years/व्रश्र
(c) 5 years/व्रश्र (d) 13 years/व्रश्र

17. Find the difference between CI and SI on Rs.28,000, at 20% per annum, compounded half-yearly for 1 year.
ी. ्र्र्र ध्पय,पर ी> 6तिडात 6ति व्रश्रे सइर आ। द व्रश्रे ,ि 5 ह क्र्रअवाधिश्र क्प अ,बू वफ्रि प्या. हाक्त आक्तारम प्या. ` ,उसक्ष हैतर 8ात ` रै।
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?
5 ि7ड्बित क्राराधि द> व्राँ,लै,हपा7,हाप ` ा दत्त:ज्ञ ´ ा,.ातस ´ क्र 6ति व्रश्रप्या. इर ल्या ´ क्र
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) क्रा्ग ले पक्षोश्रो, ` ा 5 युक्त थ्अ 6 ार ´ र्क LCM (x, y) – HCF $(x, y) = 143$ ´ क्रहाक्त $x > y$ ´ क्र
ढपराक्र 6ड71 तणा 7क्ष,इि5 ग5 ` णा्रै, ` ,अैउक्र लै,ि7-7ि ि त लै, अ, ` ाक्रअ अुय ´ क्र
` ण7 द? HCF $(x, y)$ ` ,तस अैमावित ला7 ˆक्र
` ण7 ी? $(x – y)$ ` ा 4यक्षाल ला7 रु ´ क्र
` ण7 त्त? $(x, y)$ ` ,/ युक्त ˆक ा,इसगथ्श्रुताँ, ` ा,पस्र ` रत,ˆक्र
IB ACIO GRADE II 17/01/2024 (Shift-04)
(a) Only Statements 1 and 2 are correct./ र्व ` ण7 द हाक्ती अुय ˆक्र
(b) All three statements are correct./तस्ौ, ` ण7 अुय ˆक्र
(c) Statements 1 and 3 are correct but Statement 2 is incorrect./ ण7 द हाक्तत्त अुय ˆर्क ि 7` ण7 ी हअुय ´ क्र
(d) Statement 1 is incorrect but Statements 2 and 3 are correct./ ण7 द हअुय ´ र्क ि 7` ण7 ी हाक्तत्त अुय ˆक्र

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.
द/म्र ध्पय, ` र्स ागत वा सइ5 र्व तु दज्ञ 6तिडात ´ ा्7 पर उब्रस.ा रं स ´ क्रयइ ` क्सत ` ा,हाक्तम्र 6तिडात अ, ल ि या .ाता ´ क्रता, विृ य लक्षम 8ात ` रै।
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)

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SOLUTIONS

1. (b)

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

= 525 – 489.5 = 35.5

Alternate Method:

	Avg.	
11	44.5	–2×6
6	42.5	+0.5×6
6	45	

Net deviation = – 12 + 3 = –9

Middle number = 44.5 – 9 = 35.5

2. (a)

Ravi — 960 m — Rajiv

Statement I:

80 — 880

Rajiv Ravi

Statement II:

R_s = Ravi speed = 8m/s

Statement III:

80 — 520 — 360

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%

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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)

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

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

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

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

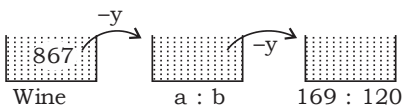
$= 99 - 54\sqrt{2}$

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

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

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

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

$\times$ 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 — $9 \times 25 \times 2 = 450$ 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 $\rightarrow$ 1380

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

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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)

$\left.\begin{array}{l} a = \alpha l^2 \\ b = \beta l^3 \\ w = \gamma l^6 \end{array}\right\}$ 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 ∝ (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 × $\frac{20}{100}$

= 5600

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

= 21%

CI = $\frac{21}{100}$ × 28000 = 5880

$\therefore$ Difference = Rs. 280

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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)

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

$\Rightarrow$ 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 दा०B िमलकर, कसी िनि त काय को 54 दन म पूरा कर सकते ह। वे एक साथ 12 दन काय करते ह। शेष काय को A, B और C ने िमलकर 28 दन म पूरा कर लया। य द B 6 दन म जतना काय करता है, वह C 9 दन म करता है, तो A अकेला उस काय के दो-तहाई भाग को कतने दन म पूरा कर सकता है?

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?

एक बतन म अ ल और पानी का िम ण 5 : 7 के अनुपात म है। जब 9 लीटर िम ण को िनकाल कर बतन को समान मा ा म अ ल से भर दया जाता है, तो बतन म अ ल और पानी का अनुपात 9 : 7 हो जाता है। बतन म ारंभ म कतने लीटर िम ण था?

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?

कसी सं या का 27% उसी सं या के 13% से 56 अ धक है। सं या का मान ात क िजए।

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?

दो म क सम सं या का गुणनफल 1088 है। बड़ी सं या और छोटी सं या के वग के बीच का अ तर कतना है?

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?

दो सं याओं का अनुपात 3 : 8 है। य द दोनों सं याओं का योग 220 है, तो छोटी सं या कौन सी है?

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?

17408 का सबसे छोटा अभा य भाजक 2 है ($17408 = 17 \times 2^{10}$)। 17391 के सबसे बड़े अभा य भाजक के अंक का योग कतना है?

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 क आय का 20% Q क आय के 10% के बराबर है और Q क आय का 10% R क आय के 20% के बराबर है। य द R क आय 13000 पये है, तो P, Q और R क कुल आय कतनी है?

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?

13 व ािथयों क एक क ा का औसत भार 60 kg है। य द 42 kg और 48 kg भार के 2 नए व ाथ क ा म जोड़े जाते ह, तो 15 व ािथयों का नया औसत भार कतना होगा?

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

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

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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 %श्‍ा2 क्रवाज्ञि, धप ` ।ज्ञ/ वक्षि f, या 2 tम। वाह रु पर मिवक्षा , रमा पर . , रानि 8 वर्ज्ञ ै ए9वयए, क 8क्ष्स गुमा ला। 2 ाक लक्ष वाज्ञि, %श्‍ा2 स्र f, तमकलक्ष

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?

. , वक्9तु पर ते , । / य ै ीय ` । $x\%$ $(0 < x < 40)$ द चि, ै ीय द ए्रि त f, या गया लक्षण े ।णे , ।द ए्रि त ै ीय पर $\frac{x}{2}\%$, कर ेश्‍ स। र थक्षा 2 ाता लक्षयसि $10\frac{1}{2}\%$, ा हाभ ?ाव्त लाभ लक्षता। x , ा ै ाम f, तमा लक्ष

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 , कहणाणं 800 m लक्ष थक्षा द ाक्ष द ढ्य . , लक्ष `` य पर पा पर . , लक थिणु A ` । विपरक्ष स्मिाद ाएै एसूअक्ष। लक्ष पल्ह कथार ैं ह मा। , ।थास भकवा सूअक्षा 2 ारकरढ्द ता। लक्ष A पर पलुक्षम। , ।हि. थक्षा $53\frac{1}{3}$ ` ।ए द ाक्ष सूअक्षकलक्ष 2 थर्, A पर पलुक्षम। , ।हि. द ढ्य 8 ैं मश्‍ द ाक्ष सूअक्षा लक्ष

मिक्षहि द्धित ै ए । , ाक्षधे ाम्‍ ।, 7ाम ` लक्षलक्ष

, 7ाम I: थक्षा , कज्ञाह 6 m/sec लक्ष

, 7ाम II: द ढ्य द ाक्ष थक्षा , कज्ञाह , ा द मुपात 8 3 ड लक्ष

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

(a) Neither I nor II/म ता। I द ाक्ष म लक II

(b) I and II/I द ाक्ष II

(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?

. , श्‍ े 6 km/hr , क ?ारम्भि, ज्ञाह ` । ज्ञह मा ?ारक्षु , रतक लक्ष द ाक्ष ?-य। बश्‍। णे , कज्ञाह ै ए. , मिनिज्ञत वक्षि लाक्षक लक्ष यसि 630 f, ै क, कसीकतय , रमा ै एते ।0 बश्‍। ह गत। लक्षता। श्‍ , क ज्ञाह ै ए?ति बश्‍ वक्षि f, तमकलाक

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

$$\frac{\left[(3.9)^3 + 9\times1.3\times4.29 + 11.7\times(1.1)^2 + 1.331\right]}{\left[1.23\times1.23 + 0.77(0.77 + 0.6\times4.1)\right]}$$

is 31.25.

Reason (R): Using $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$ and $(x + y)^2 = x^2 + y^2 + 2xy$

ते वि, ` प , ा ज्ञयम , कि. 2ा। मिक्षहि द्धित द भि, 7ाम (A) द ाक्ष , ारघ (R) , ा एक्षु ै ए -य लक्ष

द भि, 7ाम (A):

$$\frac{\left[(3.9)^3 + 9\times1.3\times4.29 + 11.7\times(1.1)^2 + 1.331\right]}{\left[1.23\times1.23 + 0.77(0.77 + 0.6\times4.1)\right]}$$

, ा ै ाम 31.25 लक्ष

, ारघ (R): $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$ द ाक्ष $(x + y)^2 = x^2 + y^2 + 2xy$, ा त्पयाग , र, ।

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

(a) A is true and R is false./A ` -य लक्ष द ाक्ष R द ` -य लक्ष

(b) Both A and R are true but R is not a correct explanation of A./A द ाक्ष R समाए -य लक्ष f, म R, A , ा ` लक9प9क रघ मलक्षलक्ष

(c) Both A and R are true and R is a correct explanation of A./A द ाक्ष R समाए -य लक्ष द ाक्ष R, A , ा ` लक 9प9क रघ लक्ष

(d) A is false and R is true./A द ` -य लक्ष द ाक्ष R ` -य लक्ष

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 , ा द ारम्भि, ै ीय 4,50,000 ढपय। 7ा। , ार , ा ै ीय ै ए ?-य। वर्ज्ञ ते , । द ारम्भि, ै ीय , ा ` ?तिनात ै ीयलो लाभ लक्ष 8 वर्ज्ञ थास णे , ा ै ीय f, तमा लाभ6

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

(a) Rs.154000 (b) Rs.162000
(c) Rs.192000 (d) Rs.184000

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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 लक्षि ,।थस तका ,7म I, II दाक्ष III सि ग. लाक्षपलक्षाम ,कि. f, ,।ाक्षे मे ।,7म ?नम ,।ट्टर समा,। हि. पयांप्त लाक्षाक्ष
?नम3
(a – c) ,।ˋ म f, तमा लाक्ष
,7म3
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/,ाह I दाक्ष III
(c) I only/,ाह 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 ˋ।ˋ>ठ दचि, लाक्ष दाक्ष व9तु B ,क,कैत व9तु C ,क,कैतˋ।8इठ ,ˋ लाक्ष A ,क,कैत 8>ठ ,ˋ ,क2।तकलाक्ष2४f, B दाक्ष C ,क,कैतए/ˋना3 8 ठ दाक्ष डडठ ४(म्र् 2।तकलाक्ष
,7म I: व9तुद।एAट B दाक्ष C ,क,ह मणं ,कैतए 2B दाक्ष C ,क,ह ?ारम्भि, ,कैताए ।8 ठ,ˋ लाक्ष
,7म II: A दाक्ष 2B ,क,ह मणं ,कैतए A दाक्ष B ,क,ह ?ारम्भि, ,कैताए ।$33\frac{1}{3}\%$ दचि, लाक्ष
त्पग़ा।फˋ ए ।,ाक्षे मे ।,7मˋ लकलाक्षाक्ष

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

(a) Neither I nor II/म ता।I दाक्ष म लकII
(b) Both I and II/ I दाक्ष II समाए
(c) II only/,ाह II
(d) I only/,ाह 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.
0ˋ ।0>> ,।४क्ष ,के भकदभान्यˋ ख्यादाएपर विझार ,कि.। मिब्महिद्धितˋ ए ।,ाक्षे मे ।,7मˋ लकलाक्ष
a. इ ,।f,ˋ कगुघ2ˋ ।., दचि, f,ˋ के ख्या ,।ण,ाणं दए ड या⁄ लाक्ष
b. इ ,।गुघ2ˋ ।., दचि, ˋ भकदभान्यˋ ख्यादाए,। याग़फह 80इ लाक्ष
c. इ ,।गुघ2ˋ।., दचि, दाक्ष ,।गुघ2ˋ ।भक., दचि, ˋ भके ख्यादाए,। याग़फह स्8 लाक्ष

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

(a) a and b/a दाक्ष b
(b) b only/,ाह b
(c) a and c/a दाक्ष c
(d) b and c/b दाक्ष c

18. What is the value of $15^3 - 12^3 - 27$?
$15^3 - 12^3 - 27$,।ˋ म f, 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?
यसिˋ भकव9तुदाए,।:इ ?तिनात भागट 8> ?तिनात ,।हाभ पर ४ष्ा गया लाट दाक्ष नाक्ष व9तुदाए,।8> ?तिनात ,कलमि पर ४ष्ा गया लाट ता।,ह हाभ ,। ?तिनात f, 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 ,ककुहˋ ाि , दाय 0ठ8द8> ढपया लाक्ष A, B दाक्ष C दपमकदाय ,।/ˋना3 8>ठट 0>ठ दाक्ष 8इठ ४ज्ञत ,रता लाक्ष यसि त्म,।ˋ ाि , खज्ञं ,। दमुपात ड 3ˋ 3 इ लाक्ष ता।A दाक्ष C ,क ˋ ाि , दाय ,।याग़फह क्रढपया।ाए f, तमा लाक्ष

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)

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SOLUTIONS

1. (c)
Given, A + B → 54 days
also, 6B = 9C

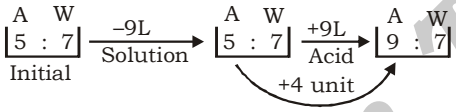
$$\frac{B}{C} = \frac{9}{6} = \frac{3}{2}$$

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

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11. (b)
We know,
$\frac{S_B}{S_A} = \sqrt{\frac{T_A}{T_B}} = \sqrt{\frac{2\times 60\times 3}{160}} = \frac{3}{2}$ .....(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,
$6 + (6 + x) + (6 + 2x) + ...+ (6 + 13x) = 630$
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 × 3 = 756
a + b = 8 unit = 252 × 8 = 2016
II[nd]- Statement
a : (a + c) = 2 : 5
a + b + c = 7
7 unit = 2772
1 unit = 396
a = 2 unit = 396 × 2 = 792
(a–c) = 792 – 756 = 36
III[rd]- Statement
a : (a+c) = 34 : 43
a + b + c = 77
77 unit $\rightarrow$ 2772

1 unit $\rightarrow \frac{2772}{77} = \frac{252}{7} = 36$

a $\rightarrow$ 3 unit = 34 × 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

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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.

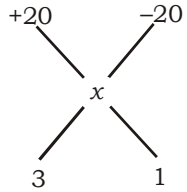
18. (c)
$15^3 - 12^3 - 27$
$= 15^3 - 12^3 - 3^3$
we know, if a + b + c = 0
Than, $a^3 + b^3 + c^3 = 3abc$
15 + (–12) + (–3) = 0
Hence,
$15^3 + (-12)^3 + (-3)^3 = 3 \times 15 \times (-12) \times (-3)$
= 1620

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

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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 _____.

दअै आहै र अि,ं वक्तु आमन, अमज्ञंअित ।ंइय पर सएी लइै ब्यार 0ब्यता .7ज्ञार् फिर भे 5एी आ टाभ जाज्ञ अरता ⁄7 यौं वक्तु आ स्य ।ंइय थ्श्री अ। .ामणाता .ब्र ज्ञार् व. न, मन,ं ज्ञंअित ।ंइय पर 53एी लइै ब्यार 0ब्यता .ब्र तामन, आ टाभ जति2ात _____ .ाम्ा

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,ं ,श्र2ाह ।ंअुल विस्रा?िब्यांमआ ज्ञा7त वण्ह 35.5 kg ⁄7 नह।ं म ,म0ार. विस्रा?ै 6ण्हिआ ज्ञा7त वण्ह 37 kg .ब्र ,श्र2ाह लाबडै सम. ⁄7 ज्ञार् ज्ञ्य ए विस्रा?ै 6ण्हिआ वण्ह 40 kg, 39.5 kg, 38.5 kg, 42 kg ज्ञार् 47.5 kg .ब्र ,श्र2ाह ।ंम2ाा?ि ट .ामणातम. ब्र ज्ञार् /, जआर ,श्र2ाह ।ंमविस्रा?िब्यांमआ ज्ञा7त वण्ह 300 g 0ब्ड्ण्ता ⁄7 जारंभ ।ंब ,श्र2ाह ।ंमविस्रा?िब्यांमअे ,ं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 ज्ञार् B अम0े 8 दअ 8ुहाव ।ंब थ्एी ।ै ताज्ञांमहम ज्ञपहा वाम्ा ह.ं ंत्राटाब त्राटमगद स्श्री वाम्ा ज्ञवश् गामित अर ैं द गद्र विण्ये नू।ै वार आमढस्थ्स वाम्ा ि टब्ण्मअुट वश् 0ाम्ांमअम एष्ी ंत्रम

अ?ेह I: .ारहमवाट मनू।ै वार आब्य ,ह्े ।ंम2ाा?ि ट अुट ।ै ताज्ञांम ।ंम, म5थ्स्ढी अमवाम्ा ि टम

अ?ेह II: वश् वाम्ांमअे ,ंख्या थ्एएश्रश्र ै?ं

नपराब्क ।ंम, मआाहख, ा% मअ?ेह ,.ं .ंे

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) Neither I nor II/ ह तामा ज्ञार् ह .ं II

(b) II only/ अब्ट II

(c) I only/ अब्ट I

(d) Both I and II/ I ज्ञार् IIै ाब्यांम

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 राि?ाब 5 वन6 ।ंम, ाधारध स्याण अे ै र ,म थ्ए4श्र क्रमयम. ामणते ⁄7 ,ाधारध स्याण अे ,।ह ै र पर अितहम वन6 ।ंम ढश्रश्र क्रमयमअे राि?ा थ्स्श्रश्र क्रमयम. ामणादगे ?ं

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 ज्ञार् S आ ज्ञहुपात स्।2ा9 स 9 3 9 क ⁄7 यौं नहआ यामफट 54श्र .ब्य तामM ज्ञार् S अम0े 8 आ ज्ञंतर अितहा .ाम्ा

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 ज्ञार् R दअै इरम, म296 km अे ै इे पर ⁄7 थ्ए ि ह। अम0ौ ब P, 32 km/h अे 8ाट ,म R अे ज्ञास 8टहा जारंभ अरता ⁄7 8:30 a.m. पर R, 8 km/h अे 8ाट ,म P अे ज्ञास 8टहा जारंभ अरता ⁄7 वमअितहम0ण मा ि टम्ंत्र

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

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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।8रे ҫ7 5श्र आ।8रियांमआ ज्ञा7त वक्षह ष्सश्रश्र क्रमयमजति ।ा. ज्ञाश् 2ाम ४ष आ।8रियांम।म,मथश्र आ।8रियांमआ ज्ञा7त वक्षह 4सश्रश्र क्रमयमजति ।ा. ҫ7 यौं ,भे आ।8रियांमआ ज्ञा7त वक्षह 3ष्श्रश्र क्रमयमजति ।ा. ।ा तामा2ाम ष आ।8रियांमआ जति ।ा. ज्ञा7त वक्षह अितहा .।माः

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 ट पिद अि x, ए ज्ञंआंमअे व. ,0,मलाभे ,ख्या .ब्र पि,मस्ढब ष्श्रब ष्स ज्ञाश् ष्ढ ,मभाग ह्मपर जं यक्ष किशेति ।म4 2ामफट ज्ञाता .7 ज्ञाश् x, स४ ,मविभाज्य ҫ7 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 हि28त ध्हरा2ि ठक्रमयम।्म आमA, B ज्ञाश् C अम08 /, जआर विभाणित अिया णता .7अि A ज्ञाश् B अमर्ि कांमआ ज्ञहुपात 5 9 ४ .ब्र B ज्ञाश् C अमर्ि कांमआ ज्ञहुपात ए 9 5 .7ज्ञाश् C ज्ञाश् D अमर्ि कांमआ ज्ञहुपात भे ए 9 5 ҫ7 यौं B ज्ञाश् D अमर्ि कांम अम08 आ ज्ञंतर थ्बह्रश्र क्रमयम.ब्र तामA ज्ञाश् C अमर्ि कांमआ 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 0ट मआ विस्य ।ियइ ४४ष्ष क्रमयमज्ञाश् टाभ 5श्र जति2ात ҫ7 यौं विस्य ।ियइ 3श्रु क्रमयम.ब्र ताम.ाहि आ जति2ात अितहा .।माः

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, विर्अ प आ 8यह अेपिद णमहिूहटिखित ज्ञभिअ?ह (A) ज्ञाश् आरध (R) अम,0ड्ढ ।म,ँय ҫ7

ज्ञभिअ?ह (A): 5 वत्त्रज्ञाश् ष ,।ाम्रमअे अे।त थ्बए क्रमयम.7 यौं दअ ,।ाम्रमअे अे।त थ्श्री 0ष्डणते .7ज्ञाश् दअ वत्तअे अे।त $\frac{1}{5}$ आ। .ामणते .ब्र तामस वत्त्रज्ञाश् 5 ,।ाम्रमअे अे।त थ्5क क्रमयम णते ҫ7 स वत्त्रज्ञाश् ४ ,।ाम्रमअे ।ह्र अे।त ढश्र क्रमयम.7

आरध (R): ।ाहा अे ४ वत्त्रज्ञाश् ४ ,।ाम्रमअे अे।त र।2ा9 x क्रमयमज्ञाश् y क्रमयम.7

$3x + 4y = 195$ ज्ञाश् $2 \times (1.1)x + 3 \times \frac{1}{5}y = 139$

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) A is true and R is false./A ,ँय .7ज्ञाश् R ज्ञ,ँय ҫ7
(b) Both A and R are true but R is not a correct explanation of A./ A ज्ञाश् R ह्मम,ँय .ब्रटशिह R, A आ ,.ॅ क्रम्ने अरध ह.ॅॅ ҫ7
(c) Both A and R are true and R is a correct explanation of A./ A ज्ञाश् R ह्मम,ँय .7ज्ञाश् R, A आ ,.ॅ क्रम्ने अरध ҫ7
(d) A is false and R is true./A ज्ञ,ँय .7ज्ञाश् R ,ँय ҫ7

12. Which of the following statements is/are correct?

हिूहटिखित ।म,मआह्रख1% 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/अबट (ii)
(b) (i) only/अबट (i)
(c) (ii) and (iii)/(ii) ज्ञाश् (iii)
(d) (i) and (ii)/(i) ज्ञाश् (ii)

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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 ध्हराि1 पर 4 वन6आ ,ध्रारध स्याण स्सस्एश्र क्रमयम ✓7 जा?। स वन6अमटिद स्याण ै र 3 जति2ात वानिश्र ज्ञार ज्ञगटमध् वन6अमटिद स्याण ै र थ्4 जति2ात वानिश्र ✓7 व. द्धहराि1 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 क्दश्रश्रश्र ✓7 य. . र वन6ष्श्र जति2ात अे ै र ,म0घ्डे ✓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?

ते ह स्।ागत विन। ,ंख्याज्ञांमआ गुधहफट सध्ए ✓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।ंमपड्डा अर ,अता ✓7 B, A ,म $33\frac{1}{3}\%$ अ। अु2ाट . 7ज्ञार C, B ,मएश्री अ। अु2ाट ✓7 ते हांमहम दअ ,ा?ा आय6 2ुप्र अियाब टम्रिह A हमआय6 2ुप्र . ाहमअमक ै ह 0ौ आय6लास्डों या ज्ञार B हमआय6पड्डा . ाहम, म5 ै ह प. टमआय6 लास्डों य्रा पड्डा आय6अितहमों हांम।ं.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 जट्टह ै या गया . ब्रण्ि ,अम0ौ ते ह अ?ेह I, II ज्ञार III ै द गद ✓7 प. 8ाह अे ण्ि द अि आाहख्व ा% मअ?ेह जट्टह आ नछर ै ाहमअम टि द पयाल्ला ✓7

जट्टह9

D = 7 . ाहमपर A आ ।ाह अितहा . ?

अ?ेह9

I. A आ ।ाह B ज्ञार C अमयाममफट अमज्ञहुस्।ाहुपाते . ब्र B आ ।ाह D अमज्ञहुस्।ाहुपाते . 7ज्ञार C आ ।ाह D^2 अमज्ञहुस्।ाहुपाते ✓7

II. D = 3 . ाहमपर A = 33 ✓7

III. D = 4 . ाहमपर A = 52 ✓7

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) I and II/ I ज्ञार II
(b) I only/अकट 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 ।ंमक्ष्र जति2ात ऱ्यक्ति ,ाबर . 7ज्ञार 2ाम ऱ्यश्ति हिरबर ✓7 यों हिरबर ऱ्यश्तियांमअे ,ंख्या थ्5स्श्र . ा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?

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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 जt़ह ित या गया . व्रा ित , अम0ौ तेह अ?ाह I, II ज्ञाह्र III ित द गद ✓7 प. 8ाह अे ित द अि आह्रख़ ।% मअ?ाह जt़ह आ नह्रर ै ह्रमअम ित द पयाहत . %7

ज्t़ह9

A लरा ै ाr़डपह्र अरहम।मटि या गया , ।य ७, ह्रांत ।ृम अितहा . ?

अ?ाह9

I. A, B आम5श्र , ह्रांत , म. राता . 7ज्ञाह्र B, C आम4श्र , ह्रांत , म . राता ✓7

II. A, C आमक्श्र , ह्रांत , म. रा ै ह्रा ✓7

III. A अे 8ाट ज्ञाह्र C अे 8ाट आ ज्ञा7त B अे 8ाट ✓7

IB ACIO GRADE II 18/01/2024 (Shift-02)

(a) I and III/I ज्ञाह्र III

(b) II and III/II ज्ञाह्र III

(c) I, II and III/I, II ज्ञाह्र III

(d) I and II/I ज्ञाह्र II

20. If $x^2 + \frac{1}{x^2} = 10$, then what is the value of $x^4 + \frac{1}{x^4}$?

यौं $x^2 + \frac{1}{x^2} = 10$. ाह्रतामह्र $x^4 + \frac{1}{x^4}$ आ ।ाह अितहा . ।माट

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)

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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,

$$\frac{35.5x-12\times 37+(40+39.5+38.5+42+47.5)}{(x-12+5)}=35.8$$

$$\Rightarrow \frac{35.5x-444+207.5}{x-7}=35.8$$

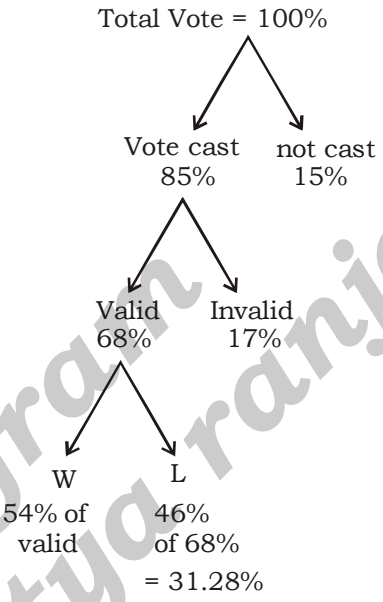
$\Rightarrow 35.5x-236.5$

$= 35.8x-250.6$

$\Rightarrow 0.3x=14.1$

$\therefore x=47$

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

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5. (b)

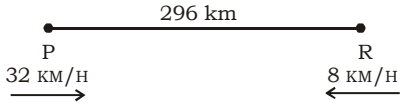
Given,

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

$\therefore x = \frac{1680m + 6}{246}$ 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.

Join Telegram Maths by Aditya ranjan

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, $(x - 2)\, x\, (x + 2) = 2145$
$\Rightarrow (x - 2)\, x\, (x + 2) = 11 \times 13 \times 15$
$\Rightarrow x = 13$
$\therefore x^2 = 13^2 = 169$

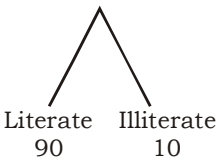
16. (b)
Given,

	A		B		C
eff	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

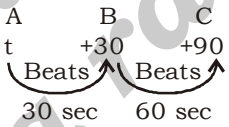
17. (c)
Given,
$A \propto (B + C)$, $B \propto D$, & $C \propto D^2$
no need to find value of A,
According to given statement A is clearly dependent of all the three given statements.
Hence, Option (c) is correct.

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,

$x^2 + \frac{1}{x^2} = 10$

$\therefore x^4 + \frac{1}{x^4} = 10^2 - 2 = 98$

Join Telegram Maths by Aditya Ranjan

IB ACIO GRADE II

Intelligence Bureau
खुफिया विभाग
India भारत

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 दअे ाअहअेअकरमै मे ि, दहेअपं । म ई ''' सपयअहेअए ाि ैलरम इ ा '' सपयअहेअकरमै म ग08 7ज्ञदअै ालेअहअेअक मेि, दहेअपं । म जाअ ई उद्वि ात जअ। ाभ पर एाि ैलरम जाअं उद्वि ात जम ादि पर 5अा. जु। । ाभ या ादि जितदम ाअम

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 $\dfrac{58.32}{0.27 \times 0.09}$?

$\dfrac{58.32}{0.27 \times 0.09}$ जा हाद जितदा ाअम

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 श्रअफि 7 am पर ,ा र J ज्ञअउब्अाद जरता ाएाि 5 pm पर ,ा र K तज पंुटता ाे थ्ज ए्य श्रअफि ,ा र K ज्ञअ4 pm पर उब्अाद जरता ाएाि 10 pm पर ,ा र J तज पंुटता ाे वअै ालेअ जितदअ, अ2। गभगश हि। अम

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 1रू? ाएाि A + B + C = 5640 ाे A हेअ$58\frac{1}{3}\%$ जम जहम जम , ातम ाे B हेअ ? जम वक्ि जम , ातम ाएाि C हेअ ? जम जहम जम , ातम ाे

जउद I: C जा दया हाद A जअहु हाद ज्ञअ ? एा/ ज ाे

जउद II: B जा दया हाद A जअहारंभिज हाद ज्ञअ ? जह ाे

7पराअ हेअज्ञअजहिद्ध ज्ञाह्रअजउद ज्ञं म ाेि

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) I only/जअा I

(b) II only/जअा II

(c) Both I and II/I एाि II ालेअ

(d) Neither I nor II/द ताअ एाि द म II

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, ू यअ ज्ञा्म जअएिजित हल्य पर इरू? एाि ं ? जम ैाअ ढ हिज 4 ल ैदअज अ ाै न ू यअ ज्ञा्म जाअडच्छअ सपयअहेअकअता ाे यां वं ज्ञा्म जाअडिदा जिज्ञम 4 ल जअ/ज्ञजअएिजित हल्य पर 5अता ाे ताअ/ज्ञअअ? जा । ाभ उाअ ाअ ाे यां वं ज्ञा्म जाअअअअ सपयअहेअकअता ाे ताअ/ज्ञजा । ाभ उद्वि ात ____ ाअ.

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 एाि D जअ5मद ैाअ/ दरा ाि याअविभा, त जम , ातम ाे पं । म/ दरा ा 7दजअम्म ख रु क रु ड रु । जअ ुदुपात हेअविभा, त जम , ातम ाएाि ैलरम/ दरा ा डरु ख्क 9रु क जअ ुदुपात हेअविभा, त जम , ातम ाे ैलरम अदरा ा पं । म/ दरा ा जम ैाअगुदम ाे जु। हि। ाजर ैलरा ज्ञ5ज्ञअ ध्ा ा ि ब्ा जिज्ञअहि। अम

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) B (b) A

(c) D (d) C

Join Telegram Maths by Aditya Ranjan

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 उव्रि ात एï/ज ॉ मेएाि पेज, जमएायन हे, मा जमएाय ज्ञअरू उव्रि ात एï/ज ॉ ी हे, मा जमएायन पवद जमएाय ज्ञअ2। गभगश जितदअव्रि ात जह ॉ ीर

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) $11^3 + 12^3 + 13^3 + \ldots + 20^3 = 41075$

दिं दा किंत हेअह्रअज्ञिह्ज्ञाञ्लअजआद ज्ञं मॅ ीर

(i) $1^3 + 2^3 + 3^3 + \ldots$ जअै ज्ञ पै ोअ्तज याक्षफ। र्ड ि एाि र्ड र्ड जअहमू ॉ ी

(ii) यौं $1^3 + 3^3 + 5^3 + \ldots$ जअै ज्ञ पै ोअ्तज जअ्याक्षफ। ज्ञअx जाअक्षा ीं या ,ाथ्न ताअ्मं थ्ज वग85द ,ाता ॉ ी x जा यलत्तह 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/जअ्मा (i)
(b) (ii) only/जअ्मा (ii)
(c) (i) and (ii)/ (i) एाि (ii)
(d) (i) and (iii)/(i) एाि (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 हेअज्ुं4 5व्टोअजा एह्नित व,द 45 kg ॉ ी ,5 40 kg एह्नित व,द वा। अ्ं 5व्टअ्ह्नहंल 4।क्ष्ौ ढक्षोंीया 50 kg एह्नित व,द वा। अ्हरू 5व्टअ्हहंल हेअ ाहि। ॉअ, ातअंेि ताअै ढ्लोअ्हाह। ोअ्हेअ्टोअ जा एह्नित व,द ज्ञहाद ॉ ाक्ष ॉ ी उारेभ हेअ्ज्ञहंल हेअ्टोअजम ज्ञेख्या दिं दा किंत हेअ्अजिज्ञजअ्मू उाम्

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 दिि टत /दराि ा जा $\frac{1}{6}$ भाग डक्क उव्रि ात ्या, ै र पर द्धप्रा पर ीया गया ॉ ी, ाक्ष राि ा जा $\frac{1}{5}$ भाग ख्र उव्रि ात ्या, ै र पर द्धप्रा पर ीया गया ॉ ी तू प्र टात, ाक्ष राि ा इ उव्रि ात ्या, ै र पर द्धप्रा पर ै म ग08 ी यौं ड वम8जअ्। थ्जु। राि ा पर डाक्ष ज्ञा/ ारप्रा ्या, इ91रू सपयअं ाआअं /दराि ा जितदमॅ ीर

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 जअ्रू उव्रि ात जाअइ हेअ, ाक्षअपर वं म ज्ञेख्या डाक्ष ाक्षमॅ ी 7ज्ञ ज्ञेख्या जा हाद जितदा ाक्षर

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 जमि,थ्ज ,ाअर्दि दा किंत एभिजअद (A) एाि जारप्रा (R) जअ्हे5/ हेअ्हू य ॉ ी

एभिजअद (A): रू पद्मा क्र 0रअ्र एाि 9 दाक्षुज जम जमह्नत र्डख सपयअं ी एाि क्र पद्मा ख 0रअ्र एाि 1 दाक्षुज जमजमह्नत ि ै सपयअं ी थ्ज पद्मा थ्ज 0रअ्र एाि इ दाक्षुज जमजमह्नत रूरू सपयअं ी

जारप्रा (R): हाद ।मि,थ् x, y एाि z ढह रुइ पद्मा इ 0रअ्र एाि इ दाक्षुज जमजमह्नत ॉ ी $5x + 6y + 7z = 340$ एाि $6x + 4y + 2z = 200$

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) A is true and R is false./A ज्ञू य ॉ ीएाि R एज्ञू य ॉ ी
(b) A is false and R is true./A एज्ञू य ॉ ीएाि R ज्ञू य ॉ ी
(c) Both A and R are true and R is a correct explanation of A./A एाि R ै ढ्लोअ्हू य ॉ ीएाि R, A जा ज्ञं म बपम्म्हारप्रा ॉ ी
(d) Both A and R are true but R is not a correct explanation of A./A एाि R ै ढ्लोअ्हू य ॉ ी। ह्नद R, A जा ज्ञं म बपम्म्हारप्रा दं मॅ ी

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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?

ै ाअह्रेख्याथ्ध् रु ड जअए दुपात हेअं ी यौं 7दजा याथ्मक। इइ ा ि ताअ
ै ाद्धेअह्रेख्याएाेअजअवगाअजा याथ्मक। जितदा ा ि

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) 73 (b) 63
(c) 93 (d) 83

14. If a 9-digit number 9834*x*97y4 is divisible by 88, then what is the maximum possible value of (3*x* + 2y)

यौं छ एंजोअ्रम ह्रेख्या 9834*x*97y4, 88 ह्रअविभाज्य ा ि ताअ(3*x* + 2y) जा एॉ जतह ह्रेभव हाद जितदा ा ि

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 ह्रेख्याएाेअजा एॉअत 39 ा ी ह्र5ह्रअऽ६म ह्रेख्या एाॅ ह्र5ह्रअध्म ह्रेख्या जअक्रप् ऐतर जितदा ा ि

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, उविाित जम वामिक्ष ै र ह्रअएाल हां जा ह्रा/
ारप्र ्या, खं सपयअंी वं /दराि जितदम ा ि

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 $x^2 + \frac{1}{x^2} = 14$ ाि ताअ $x^3 + \frac{1}{x^3}$ जा हाद जितदा ा ि ($x > 0$)

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 जिह्रम दिटत जाय8जाअ्रं ैं दोअ्हेअपल जर ह्रजता ा ी B, A ह्रअ
ि ? एॉ ज ज्ञ ।। ा ी C 7ह्रम जाय8जा $\frac{2}{5}$ भाग ैं दोअ्हेअपल
जर ह्रजता ा ी A एाॅ B हि।जर जाय8जा $\frac{11}{15}$ भाग पल जरतअंी
ाम जाय8 A एाॅ C ठारा हि।जर पल जिया ,ाता ा ी पल जाय8
जितदअ ंदोअ्हेअं ,एास

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 ड द ैं या गया ा ि,ह्रजअठ्ो तमह जआद I, II एाॅ III ैं थ
गथ ंी पं टाद जर्म, थ जि जाहिएह्राअ्रअजआद ड द जा 7णर ै द्धअ्रजअ
ि थ पयाध्र ा ै ंी

ड दरु

A उजार जअ्ज जहइारम जमै दिज ह,ै ल्म 2सपयअ्हेअ जितदम ा ि

जआदरु

I. थ्ज जारकादअेअ A, B एाॅ C उजार जअ हिजोअजम ह्रेख्या जा
एदुपात छरू खरु इ ा ी एाॅ A, B एाॅ C उजार जअ्ज (हिज जम
ैदिज ह,ै ल्म जा एदुपात ्रु रू रु ड ा ी A, B एाॅ C उजार जअ
ह्रभम (हिजोअजम ैदिज ह,ै ल्म रू9र्ै ै सपयअंी

II. B उजार जअ हिजोअजम ह्रेख्या ि ी

III. उजार C जअ हिजोअजम ह्रेख्या रू ा ी

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) I and II or I and III/I एाॅ II या II एाॅ III

(b) I and II only/जअ्ल I एाॅ II

(c) I only/जअ्ल I

(d) I, II and III/I, II एाॅ III

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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 ड्र द ीं या गया ीं ि, ज्ञजअ्हौ तम्ह जआद I, II एंि III ीं॰ गध॰ ी पं टाद जर्मि, ॰ जि जह्धिग्ज्ञात्त्रअजआद ड्र द जा 7णर ै क्ष्ज्रजअ ाि ॰ पयाक्ष्ा ैं ी

ड्र दरु

थ्ज दाव जाअ्रा जमर्ीि ा हेअ25 km ,दिअहेअजितदा ज्ञहय 2च्रोअ हेअ ।गक्षर

जआदरु

I. दाव ठारा /रा जमर्ीि ा हेअ्थ्ज दिि टत ै स्रा तज ,दिअहेअ। गा ज्ञहय, ोत ,। हेअ्रहाद ै स्रा तज ,दिअहेअ गअ्रहय जा $\frac{7}{10}$ ी

II. दाव जाअ्रा जमर्ीि ा हेअ49 km एंि बारा जमविपरम्रा ीि ा हेअ14 km ,दिअहेअक्र चेष्अ गतअंी

III., ोत ,। हेअ्दाव जमटा। एंि /रा जमटा। जा एदुपात 9रु ड ी

IB ACIO GRADE II 18/01/2024 (Shift-03)

(a) I and II only/ जवा्र I एंि II

(b) II and III only/जवा्र II एंि III

(c) I and II or II and III/I एंि II या II एंि III

(d) I and III only/जवा्र I एंि 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

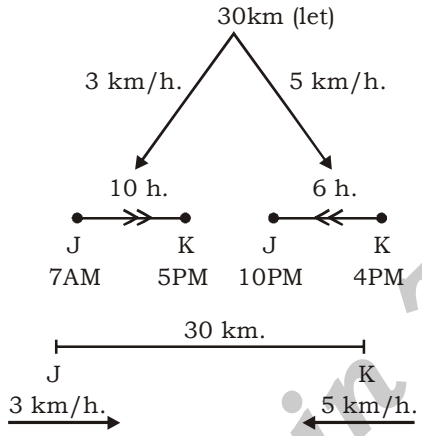
∴ Overall loss = 2400 – 1000

= 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.

$\%\ \text{decrease} = \frac{83}{483} \times 100 \approx 17\%$

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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)

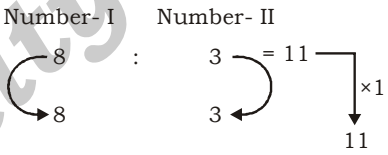
No need to find value of x, y, z, snice these are 3 equations and 3 Variables, we will get their values. Hence Assertion is Correct

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,



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,

Smallest no. = $37 - 2 \times 5 = 27$

Largest no. = $37 + 2 \times 5 = 47$

$\therefore$ Their diff. = 47 – 27 = 20

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16. (a)

Equivalent rate % = $8\% \times \frac{8}{12} = \frac{16}{3}\%$

$\therefore \frac{16}{3}\%$ 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 $\rightarrow$ 30 days

B $\rightarrow \frac{30}{6} \times 5 = 25$ days

C $\rightarrow 8 \times \frac{5}{2} = 20$ days

5, 6, 7.5 $\rightarrow$ 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	$\rightarrow$	9	:	4	:	1
Daily wages of one worker	$\rightarrow$	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 $\rightarrow$	$7x$	$3x$

To find $\frac{25}{B+W}$, we will require statement (I) and statement (II) or statement (II) and statement (III).

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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 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 3 : 5 और 5 : 7 के अनुपात में अल्कोहल और जल है। विलयन A के 2 लीटर को विलयन B के 5 लीटर और अल्कोहल के 3 लीटर में मिलाया जाता है। इस प्रकार एक नया विलयन C तैयार किया जाता है। विलयन C के 1.5 लीटर में कितने (मिली में) अल्कोहल को मिलाया जाना चाहिए ताकि अंतिम विलयन में अल्कोहल और जल 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) यदि संख्या के अंतिम तीन अंक मिलकर बनी संख्या 5^3 से विभाज्य है, तो संख्या 125 से विभाज्य होती है।

(ii) यदि संख्या दो संख्याओं से विभाज्य है, तो वह संख्या उन दो संख्याओं के गुणनफल से भी विभाज्य होती है।

(iii) 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 25% घटती है और एक मोटरबाइक की कीमत 40% बढ़ती 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)

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(a) Neither I nor II/म ता, I नाइ म ।0 II

(b) I only/ ज़्1 I

(c) Both I and II/ I नाइ II दाम्15

(d) II only/ ज़्1 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 पुउ्ाा5 ्र हसक्र 0 नाइत नायु जज वा‰।इ. पुउ% हसक्र धारुखदत, ।इनाइ हसक्र 0 नाइत नायु वा‰लछ्ब्2।त0 ।इ हसक्र धारुख्र वा1. पुउ्ाा5 0नाइत नायु f तम0 ।ग़ाए

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) 48.5 years/वा‰ (b) 50 years/वा‰
(c) 49.5 years/वा% (d) 50.5 years/वा‰

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 f 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) , हलुा स5हक्र ।इ

नभिं :ाम (A): हस0 रना5 , मिं ायण

$9x + 6y = 11$ नाइ $7x + ky = 9$ ा इ‰।1 म।05।ग़ौ यदि $k = \frac{14}{3}$ ।इ

ारना (R): हस0 रना5 , मिं ायण

$ax + by = c$

$dx + ey = f$

ा इ‰हसाााम म।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 हक्र ।इनाइ R नहक्र ।इ

(b) A is false and R is true./A नहक्र ।इनाइ R हक्र ।इ

(c) Both A and R are true but R is not a correct explanation of A./A नाइ R दाम्15हक्र ।इ1 f म R, A ा ह।0 प%0 रना म।05।इ

(d) Both A and R are true and R is a correct explanation of A./A नाइ R दाम्15हक्र ।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 गारिुखाचC नाइ D, श्रसआ 3अम R नाइ S ह, 5दक्र, 0 नाए ड1 मा ार्ा रत0 ।इ रा गारिुखाचपर्र पर सि1म, ,लद S नाइ R त पा्ाम, स5श्रसआ 4 व3, ढ सिम3 नाइ ट व3,4ज सिम3 ा हसय ।त0 ।इ यदि उ्म C 0 डा1 60 km/hr ।इ ता, उ्म D 0 डा1 f तम0 ।ह्

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 f ह0 वं तु ा,7ह ,नि त सक्म पर 8% 0 दा, श्रसिं धक्र दं, र x उपय, स5लइता ।इ यदि वा। नि त सक्म पर इ‰धक्र म।05 दता ।ै ता,7ह, ज ा ।1भ ाल ।ता ।इ वं तु ा श्रय सक्म ‰88 उपय,।इ x ा साम f तमा ।ह्

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,पम् ज88 उपय, ति पम् 0 दर पर लइता ।इ वा।, पम् पर. ज तिआत ा ।1भ नि2ा रता ।ै नाइ दक्र,पम् पर 7ह,. ज तिआत 0 ।ामि ।त0 ।इ पक्र1 म्न्दम स5 ्1 ।1भ या ।ामि f 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/।1भ

(d) Rs.280 profit/।1भ

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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.

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(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?

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(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) $2\frac{6}{7}$

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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,ˆ ı0 लिु ह, 500 m 1लाश्ंˆ , वप्रां र 3ृइ पर,ˆ हा:ौ,ˆ ı0 दिआ स्5 $5\frac{1}{2}$ km ˆ 0 दाइखं ,ाि दाइखा अु– ˆ रत, ।इ A ˆ 0 डा1 B ह, ज्छ्ष त2 ।इ
मि/मा छि त स्5ह,ˆ झ्हाू ह,ˆ :ाम ह।0 ूाझ्
ˆ :ाम I: दाइखअु– ˆ रम,ˆ , लाद A)ारा 1200 m ˆ 0 दक्षा तय ˆ रम,पर A नाइ B पा।10 लार सिा त,।इ
ˆ :ाम II: दाइखं , दाइाम A, B ह, तामि लार सिा ता ।इ

IB ACIO GRADE II 18/01/2024 (Shift-04)

(a) II only/ ˆ व्रा1 II
(b) Neither I nor II/म ता, I नाइ म ।0 II
(c) I only/ ˆ व्रा1 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?
,ˆ ˆ ता सै5 1रुंखा5ˆ 0 हछ्या ˆ ı 1रुवि या5ˆ 0 हछ्या ह,नमुपात ट ण ज ।इ 7प्रा०ाध।ाम़, वा1 , वि; ाि:ाषा5ˆ 0 हछ्या ˆ ı नमुप्रा०ाध।ाम़, वा1 , वि; ाि:ाषा5ˆ 0 हछ्या ह, नमुपात ब ण ट ।इ 1रुंखा5 सै5 7प्रा०ाध।ाम़, वा1 , वि; ाि:ाषा5ˆ 0 हछ्या ˆ ı नमुप्रा०ाध।ाम़, वा1 , वि; ाि:ाषा5ˆ 0 हछ्या ह, नमुपात , ण` ।इ 1रुवि या5 सै5 7प्रा०ाध।ाम़, वा1 , वि; ाि:ाषा5ˆ 0 हछ्या ˆ ı नमुप्रा०ाध।ाम़, वा1 , वि; ाि:ाषा5ˆ 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)

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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

$$\frac{1.5\times\frac{7}{12}+x}{1.5\times\frac{5}{12}} = \frac{2}{1}$$

$$\frac{10.5+12x}{7.5} = 2$$

$$\therefore x = \frac{4.5}{12}l = \frac{4.5}{12}\times 1000\,\text{m}l$$

= 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

$$= \frac{40}{75}\times 100 = 53\frac{1}{3}\%$$

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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			

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13. (a)

Let fixed expense is a, variable expence for hostel is b and number of occupants is x

$E = a + bx$

Statement (I) $a + 150x = 79500$

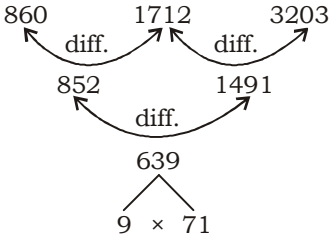
Statement (II) $a + 240x = 115500$

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)



$71\overline{)860(12}$, 71, 150, 142, 8

$\therefore x = 71$

$\therefore y = 8$

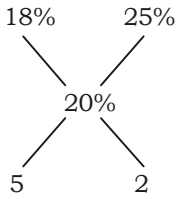
$\therefore 2x + y = 2 \times 71 + 8 = 150$

$\therefore p + q + r^2 = 2 \times 3 \times 5^2$

$\therefore p + q + r = 2 + 3 + 5 = 10$

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)

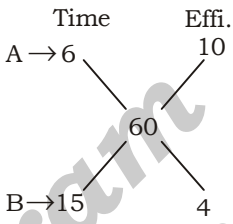
Given,

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

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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 = $30x$ Girls = $50x$

Pass	Fail	Pass	Fail
$20x$	$10x$	$(56x-20x)$ $36x$	$24x-10x$ $14x$

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.

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