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QUANT CHECKLIST

the PRACTICE PAPER

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1. SIMPLIFICATION AND APPROXIMATION

Direction: What value should come in place of the question mark (?) in the following question?

1. 62.5% of 384 + √625 = 3? + 25

A. 76

B. 78

C. 80

D. 82

E. None of these

2. $\frac{7}{8}$ of 256 + $\frac{3}{16}$ of 160 = 2? + 34

A. 110

B. 108

C. 112

D. 114

E. None of these

3. $(14^2 - 10^2) \div 4$ + 37.5% of 128 = $?^2$ + 8

A. 5

B. 6

C. 7

D. 8

E. None of these

4. 83.33% of 72 + 31.25% of 160 = 2? - 8

A. 54

B. 56

C. 58

D. 60

E. None of these

5. √729 + $\frac{2}{9}$ of 243 = $3?^3$

A. 2

B. 3

C. 4

D. 5

E. None of these

6. √2025 + $\frac{11}{16}$ of 320 = 5? + 10

A. 47

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B. 49

C. 51

D. 53

E. None of these

7. $\frac{14}{15}$ of 300 - 22.22% of 180 + 6^2 = 4? + 36

A. 60

B. 58

C. 62

D. 64

E. None of these

8. [($\frac{5}{12}$ of 288) + √576] ÷ 6 = ?

A. 18

B. 20

C. 22

D. 24

E. None of these

9. (68.75% of 640) ÷ ($\frac{2}{9}$ of 180) + 3^2 = ?

A. 18

B. 20

C. 22

D. 24

E. None of these

10. 16.66% of 144 + 85.71% of 140 = 3? + 12

A. 38

B. 40

C. 42

D. 46

E. None of these

11. $\sqrt[3]{5832}$ + $\frac{7}{9}$ of 360 - 12.5% of 160 = 2? + 18

A. 130

B. 126

C. 134

D. 138

E. None of these

12. $\frac{11}{12}$ of 240 - $\frac{1}{5}$ of 150 + √196 = 4?

A. 47

B. 49

C. 51

D. 53

E. None of these

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13. 32.5% of 400 + $\frac{4}{9}$ of 405 - $\frac{1}{15}$ of 450 = ? + 30

A. 238

B. 242

C. 246

D. 250

E. None of these

14. $15^2 \div 9 + \frac{8}{15}$ of 225 - 37.5% of 128 = 2? + 5

A. 42

B. 46

C. 50

D. 54

E. None of these

15. $\frac{6}{7}$ of 140 + $\frac{3}{8}$ of 160 - $(13^2 - 12^2)$ = ?

A. 147

B. 149

C. 151

D. 153

E. None of these

16. [($\frac{5}{16}$ of 512) + ($\frac{7}{12}$ of 288)] ÷ 8 = ? + 6

A. 35

B. 33

C. 37

D. 39

E. None of these

17. 56.25% of 320 + $\frac{2}{7}$ of 294 - 4^3 = ?

A. 192

B. 196

C. 200

D. 204

E. None of these

18. $(12^2 - 4^2) \div 8 + \frac{7}{12}$ of 240 = 4?

A. 33

B. 35

C. 37

D. 39

E. None of these

19. [($\frac{5}{8}$ of 256) + ($\frac{11}{12}$ of 240)] ÷ 4 = ? + 20

A. 71

B. 75

C. 79

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D. 83

E. None of these

20. √1764 + 62.5% of 256 + $\frac{1}{13}$ of 520 = 2? + 18

A. 104

B. 106

C. 108

D. 110

E. None of these

Answers:

1. C
2. A
3. D
4. E
5. B
6. C
7. A
8. D
9. B
10. E
11. A
12. C
13. D
14. B
15. E
16. A
17. C
18. D
19. B
20. E

Solutions:

1. 62.5% of 384 + √625 = 3 ? + 25

240 + 25 = 3 ? + 25

265 = 3 ? + 25

3 ? = 240

? = 80

2. $\frac{7}{8}$ of 256 + $\frac{3}{16}$ of 160 = 2 ? + 34

224 + 30 = 2 ? + 34

254 = 2 ? + 34

2 ? = 220

? = 110

3. $(14^2 - 10^2) \div 4 + 37.5\%$ of 128 = $?^2 + 8$

$(196 - 100) \div 4 + 48 = ?^2 + 8$

$96 \div 4 + 48 = ?^2 + 8$

$24 + 48 = ?^2 + 8$

$72 = ?^2 + 8$

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$?^2 = 64$

$? = 8$

4. 83.33% of 72 + 31.25% of 160 = 2 ? - 8

60 + 50 = 2 ? - 8

110 = 2 ? - 8

2 ? = 118

? = 59

5. $\sqrt{729} + \frac{2}{9}$ of 243 = 3 $?^3$

27 + 54 = 3 $?^3$

81 = 3 $?^3$

$?^3 = 27$

? = 3

6. $\sqrt{2025} + \frac{11}{16}$ of 320 = 5 ? + 10

45 + 220 = 5 ? + 10

265 = 5 ? + 10

5 ? = 255

? = 51

7. $\frac{14}{15}$ of 300 - 22.22% of 180 + 6^2 = 4 ? + 36

280 - 40 + 36 = 4 ? + 36

276 = 4 ? + 36

4 ? = 240

? = 60

8. [($\frac{5}{12}$ of 288) + $\sqrt{576}$] ÷ 6

= (120 + 24) ÷ 6

= 144 ÷ 6

= 24

9. (68.75% of 640) ÷ ($\frac{2}{9}$ of 180) + 3^2

= 440 ÷ 40 + 9

= 11 + 9

= 20

10. 16.66% of 144 + 85.71% of 140 = 3 ? + 12

24 + 120 = 3 ? + 12

144 = 3 ? + 12

3 ? = 132

? = 44

11. $\sqrt[3]{5832} + \frac{7}{9}$ of 360 - 12.5% of 160 = 2 ? + 18

18 + 280 - 20 = 2 ? + 18

278 = 2 ? + 18

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2 ? = 260

? = 130

12. $\frac{11}{12}$ of 240 - $\frac{1}{5}$ of 150 + √196 = 4 ?

220 - 30 + 14 = 4 ?

204 = 4 ?

? = 51

13. 32.5% of 400 + $\frac{4}{9}$ of 405 - $\frac{1}{15}$ of 450 = ? + 30

130 + 180 - 30 = ? + 30

280 = ? + 30

? = 250

14. $15^2 \div 9 + \frac{8}{15}$ of 225 - 37.5% of 128 = 2 ? + 5

225 ÷ 9 + 120 - 48 = 2 ? + 5

25 + 120 - 48 = 2 ? + 5

97 = 2 ? + 5

2 ? = 92

? = 46

15. $\frac{6}{7}$ of 140 + $\frac{3}{8}$ of 160 - $(13^2 - 12^2)$

= 120 + 60 - (169 - 144)

= 180 - 25

= 155

16. [($\frac{5}{16}$ of 512) + ($\frac{7}{12}$ of 288)] ÷ 8 = ? + 6

(160 + 168) ÷ 8 = ? + 6

328 ÷ 8 = ? + 6

41 = ? + 6

? = 35

17. 56.25% of 320 + $\frac{2}{7}$ of 294 - 4^3

= 180 + 84 - 64

= 200

18. $(12^2 - 4^2) \div 8 + \frac{7}{12}$ of 240 = 4 ?

(144 - 16) ÷ 8 + 140 = 4 ?

128 ÷ 8 + 140 = 4 ?

16 + 140 = 4 ?

156 = 4 ?

? = 39

19. [($\frac{5}{8}$ of 256) + ($\frac{11}{12}$ of 240)] ÷ 4 = ? + 20

(160 + 220) ÷ 4 = ? + 20

380 ÷ 4 = ? + 20

95 = ? + 20

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? = 75

20. √1764 + 62.5% of 256 + $\frac{1}{13}$ of 520 = 2 ? + 18

42 + 160 + 40 = 2 ? + 18

242 = 2 ? + 18

2 ? = 224

? = 112

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2. ARITHMETIC QUESTIONS

Q1: Sanjay and Deepak started a business by investing Rs. 8000 and Rs. 10000 respectively. After 3 months, Mohit joined them with a capital that was 25% more than Sanjay's capital. If the total profit at the end of one year was Rs. 20400, how much profit did Mohit receive?

संजय और दीपक ने क्रमशः Rs. 8000 और Rs. 10000 का निवेश करके एक व्यवसाय शुरू किया। 3 महीने बाद, मोहित उनसे जुड़ा और उसने संजय की पूंजी से 25% अधिक निवेश किया। यदि एक वर्ष के अंत में कुल लाभ Rs. 20400 था, तो मोहित को कितना लाभ प्राप्त हुआ?

(A) 5400
(B) 6600
(C) 6000
(D) 7200
(E) 5800

Q2: A delivery van travels a certain distance at a speed of 56 km/h and completes the journey in 9 hours. By how much should its speed be increased to cover the same distance in 7 hours?

एक डिलीवरी वैन 56 किमी/घंटा की गति से एक निश्चित दूरी तय करती है और यात्रा 9 घंटे में पूरी करती है। उसी दूरी को 7 घंटे में तय करने के लिए उसकी गति में कितनी वृद्धि करनी होगी?

(A) 12
(B) 14
(C) 18
(D) 16
(E) 20

Q3: The average age of 14 trainees in a workshop is 22 years. One trainee aged 30 years leaves the group and a new trainee joins. After this replacement, the average age becomes 21 years. Find the age of the new trainee.

एक कार्यशाला में 14 प्रशिक्षुओं की औसत आयु 22 वर्ष है। 30 वर्ष आयु का एक प्रशिक्षु समूह छोड़ देता है और उसकी जगह एक नया प्रशिक्षु जुड़ता है। इस परिवर्तन के बाद औसत आयु 21 वर्ष हो जाती है। नए प्रशिक्षु की आयु ज्ञात कीजिए।

(A) 14
(B) 15
(C) 17
(D) 18
(E) 16

Q4: The length and breadth of a rectangle are in the ratio 3:2. If the length is increased by 4 cm and the breadth is decreased by 4 cm, the area of the new rectangle becomes 336 sq cm. Find the new perimeter of the rectangle.

एक आयत की लंबाई और चौड़ाई का अनुपात 3:2 है। यदि लंबाई में 4 सेमी की वृद्धि कर दी जाए और चौड़ाई में 4 सेमी की कमी कर दी जाए, तो नए आयत का क्षेत्रफल 336 वर्ग सेमी हो जाता है। आयत का नया परिमाप ज्ञात कीजिए।

(A) 80
(B) 76
(C) 82
(D) 84
(E) 78

Q5: A shopkeeper marked an article 25% above its cost price. He sold it after allowing a 12% discount on the marked price. If he had allowed only a 4% discount, he would have earned Rs. 50 more. Find the cost price of the article.

एक दुकानदार ने किसी वस्तु का अंकित मूल्य उसके क्रय मूल्य से 25% अधिक रखा। उसने उस वस्तु को अंकित मूल्य पर 12% की छूट देकर बेचा। यदि वह केवल 4% की छूट देता, तो उसे Rs. 50 अधिक लाभ होता। वस्तु का क्रय मूल्य ज्ञात कीजिए।

(A) 480
(B) 500
(C) 450
(D) 520
(E) 550

Q6: Aman and Bhavesh together can complete a painting job in 5 days. Bhavesh is 25% more efficient than Aman. How many days will Bhavesh take to complete the same job alone?

अमन और भावेश मिलकर एक पेंटिंग का काम 5 दिनों में पूरा कर सकते हैं। भावेश, अमन से 25% अधिक कुशल है। वही काम भावेश अकेले कितने दिनों में पूरा करेगा?

(A) 6
(B) 8
(C) 10
(D) 9
(E) 12

Q7: Kavita borrowed Rs 20000 from two lenders at simple interest. One lender charged 8% per annum and the other charged 14% per annum. At the end of 1 year, the total interest paid was Rs 2200. How much money was borrowed at 14% per annum?

कविता ने 20000 रुपये दो उधारदाताओं से साधारण ब्याज पर लिए। एक उधारदाता ने 8% वार्षिक ब्याज लिया और दूसरे ने 14% वार्षिक ब्याज लिया। 1 वर्ष के अंत में कुल ब्याज 2200 रुपये था। 14% वार्षिक ब्याज पर कितनी राशि ली गई थी?

(A) 8000
(B) 12000
(C) 10000
(D) 9000
(E) 11000

Q8: A circular walkway is in the form of a ring. Its inner circumference is 176 cm and its outer circumference is 264 cm. If paving 40 sq cm of the walkway costs Rs 30, find the total cost of paving it. Take pi = 22/7.

एक वृत्ताकार पथ रिंग के आकार का है। उसकी भीतरी परिधि 176 सेमी और बाहरी परिधि 264 सेमी है। यदि 40 वर्ग सेमी क्षेत्रफल पर फर्श बिछाने की लागत 30 रुपये है, तो पूरे पथ पर फर्श बिछाने की कुल लागत ज्ञात कीजिए। pi = 22/7 लीजिए।

(A) 1980
(B) 2240
(C) 2100
(D) 2400

(E) 2310

Q9: A driver covers 50% of a journey at 72 kmph. He then covers 50% of the remaining distance at 60 kmph, and the rest at 45 kmph. What is his average speed for the whole journey?

एक चालक यात्रा का 50% भाग 72 किमी/घंटा की गति से तय करता है। फिर वह शेष दूरी के 50% भाग को 60 किमी/घंटा की गति से और बाकी दूरी को 45 किमी/घंटा की गति से तय करता है। पूरी यात्रा के लिए उसकी औसत गति क्या होगी?

(A) 60
(B) 54
(C) 58
(D) 62
(E) 56

Q10: Mixture A contains petrol and diesel and is 35% petrol. Mixture B contains petrol and kerosene and is 65% petrol. If x litres of Mixture A is mixed with 54 litres of Mixture B to form a new mixture that is 47% petrol, find x.

मिश्रण A में पेट्रोल और डीजल है तथा उसमें 35% पेट्रोल है। मिश्रण B में पेट्रोल और मिट्टी का तेल है तथा उसमें 65% पेट्रोल है। यदि मिश्रण A के x लीटर को मिश्रण B के 54 लीटर के साथ मिलाकर एक नया मिश्रण बनाया जाए जिसमें 47% पेट्रोल हो, तो x ज्ञात कीजिए।

(A) 72
(B) 81
(C) 90
(D) 69
(E) 75

Q11: The breadth of a rectangle is 15 cm and its area is 360 sq cm. The radius of a cylinder is 3 cm less than the length of the rectangle. If the volume of the cylinder is 27720 cubic cm, then the breadth of the rectangle is what percent of the height of the cylinder? Take pi = 22/7.

एक आयत की चौड़ाई 15 सेमी है और उसका क्षेत्रफल 360 वर्ग सेमी है। एक बेलन की त्रिज्या, आयत की लंबाई से 3 सेमी कम है। यदि बेलन का आयतन 27720 घन सेमी है, तो आयत की चौड़ाई, बेलन की ऊँचाई का कितने प्रतिशत है? pi = 22/7 लीजिए।

(A) 70

(B) 75
(C) 80
(D) 65
(E) 85

Q12: The length of Train A is x metres and the length of Train B is (x + 80) metres. Train B completely overtakes Train A in 35 seconds while both are moving in the same direction. If the speeds of Train A and Train B are 18 m/s and 30 m/s respectively, find the value of x.

ट्रेन A की लंबाई x मीटर है और ट्रेन B की लंबाई (x + 80) मीटर है। दोनों ट्रेनें एक ही दिशा में चल रही हैं और ट्रेन B, ट्रेन A को 35 सेकंड में पूरी तरह पार कर जाती है। यदि ट्रेन A और ट्रेन B की गति क्रमशः 18 मी/से और 30 मी/से है, तो x का मान ज्ञात कीजिए।

(A) 150
(B) 160
(C) 180
(D) 170
(E) 190

Q13: A person invested Rs 32000 in two schemes P and Q. Scheme P offers simple interest at 15% per annum for 2 years, while Scheme Q offers compound interest at 25% per annum for 2 years. If the interest earned from Scheme Q is Rs 750 more than the interest earned from Scheme P, find the amount invested in Scheme P.

एक व्यक्ति ने 32000 रुपये दो योजनाओं P और Q में निवेश किए। योजना P, 2 वर्षों के लिए 15% वार्षिक साधारण ब्याज देती है, जबकि योजना Q, 2 वर्षों के लिए 25% वार्षिक चक्रवृद्धि ब्याज देती है। यदि योजना Q से प्राप्त ब्याज, योजना P से प्राप्त ब्याज से 750 रुपये अधिक है, तो योजना P में निवेश की गई राशि ज्ञात कीजिए।

(A) 20000
(B) 22000
(C) 18000
(D) 24000
(E) 26000

Q14: Anita and Bhawna together can complete a piece of work in 18 days. Bhawna and Charu together can complete the same work in 12 days, and Anita and Charu together can complete it in 9 days. In how many days can all three together complete the work?

अनीता और भावना मिलकर किसी कार्य को 18 दिनों में पूरा कर सकती हैं। भावना और चारु मिलकर उसी कार्य को 12 दिनों में पूरा कर सकती हैं, और अनीता और चारु मिलकर उसे 9 दिनों में पूरा कर सकती हैं। तीनों मिलकर उस कार्य को कितने दिनों में पूरा करेंगी?

(A) 10
(B) 9
(C) 7
(D) 6
(E) 8

Q15: The time taken by a boat to travel 144 km upstream is 200% more than the time taken to travel the same distance downstream. If the total time taken to cover 144 km upstream and 144 km downstream is 32 hours, find the speed of the boat in still water.

किसी नाव को 144 किमी धारा के विपरीत जाने में, उतनी ही दूरी धारा के अनुकूल जाने की तुलना में 200% अधिक समय लगता है। यदि 144 किमी धारा के विपरीत और 144 किमी धारा के अनुकूल जाने में कुल 32 घंटे लगते हैं, तो शांत जल में नाव की गति ज्ञात कीजिए।

(A) 10
(B) 12
(C) 14
(D) 8
(E) 16

Q16: A delivery rider increases his speed from 40 km/h to 56 km/h and saves 1 hour while covering a certain distance D. How many minutes will he take to cover 150% of D at his original speed?

एक डिलीवरी राइडर अपनी गति 40 किमी/घंटा से बढ़ाकर 56 किमी/घंटा कर देता है और किसी निश्चित दूरी D को तय करने में 1 घंटे की बचत करता है। अपनी मूल गति से D की 150% दूरी तय करने में उसे कितने मिनट लगेंगे?

(A) 300
(B) 315
(C) 330

(D) 345
(E) 360

Q17: A boat covers 24 km upstream in 2 hours. If the ratio of the speed of the boat in still water to the speed of the stream is 5:1, how far will the boat travel downstream in 3 hours?
एक नाव 24 किमी धारा के प्रतिकूल 2 घंटे में तय करती है। यदि शांत जल में नाव की गति और धारा की गति का अनुपात 5:1 है, तो नाव 3 घंटे में धारा के अनुकूल कितनी दूरी तय करेगी?
(A) 48
(B) 52
(C) 60
(D) 54
(E) 58

Q18: Naina spends 20% of her monthly salary on rent and 35% on food. She then gives 50% of the remaining amount to her parents. If she is left with Rs 13,500, find her monthly salary.
नैना अपनी मासिक वेतन का 20% किराए पर और 35% भोजन पर खर्च करती है। इसके बाद वह शेष राशि का 50% अपने माता-पिता को दे देती है। यदि उसके पास Rs 13,500 बचते हैं, तो उसका मासिक वेतन ज्ञात कीजिए।
(A) Rs 60,000
(B) Rs 54,000
(C) Rs 48,000
(D) Rs 64,000
(E) Rs 72,000

Q19: Arun, Bhavna and Chirag invested equal amounts in a business. After 4 months, Arun withdrew his entire investment, Bhavna doubled her investment, and Chirag withdrew 25% of his investment. If the total profit at the end of the year was Rs 6,800, find Chirag's share of the profit.
अरुण, भावना और चिराग ने एक व्यवसाय में समान राशि का निवेश किया। 4 महीने बाद, अरुण ने अपना पूरा निवेश निकाल लिया, भावना ने अपना निवेश दोगुना कर दिया, और चिराग ने अपने निवेश का 25% निकाल लिया। यदि वर्ष के अंत में कुल लाभ Rs 6,800 था, तो

चिराग का लाभांश ज्ञात कीजिए।

(A) Rs 1,800
(B) Rs 2,200
(C) Rs 2,400
(D) Rs 1,600
(E) Rs 2,000

Q20: The perimeter of a rectangle is 4 meters more than the perimeter of a square. The side of the square is 2 meters more than the breadth of the rectangle. If the ratio of the length to the breadth of the rectangle is 4:3, find the length of the rectangle.

एक आयत का परिमाप एक वर्ग के परिमाप से 4 मीटर अधिक है। वर्ग की भुजा, आयत की चौड़ाई से 2 मीटर अधिक है। यदि आयत की लंबाई और चौड़ाई का अनुपात 4:3 है, तो आयत की लंबाई ज्ञात कीजिए।

(A) 18
(B) 20
(C) 24
(D) 22
(E) 26

Answers:

1. C
2. D
3. E
4. A
5. B
6. D
7. C
8. E
9. A
10. B
11. B
12. D
13. A
14. E
15. B
16. B
17. D
18. A
19. E
20. C

CHECKLIST BY AASHISH ARORA

Solutions:

1. Option C
In partnership, profit is divided in the ratio of capital × time.

Sanjay invested Rs. 8000 for 12 months.
So, his capital-months = 8000 × 12 = 96000

Deepak invested Rs. 10000 for 12 months.
So, his capital-months = 10000 × 12 = 120000

Mohit joined after 3 months, so he worked in the business for 9 months.
His capital was 25% more than Sanjay's capital.

Mohit's capital = 8000 + 25% of 8000
= 8000 + 2000
= 10000

So, Mohit's capital-months = 10000 × 9 = 90000

Now the profit-sharing ratio becomes:
96000 : 120000 : 90000

Divide by 6000:
16 : 20 : 15

Total ratio units = 16 + 20 + 15 = 51

Value of 1 ratio unit = 20400 ÷ 51 = 400

Mohit's profit = 15 × 400 = 6000

2. Option D
Speed of the van = 56 km/h
Time taken = 9 hours

Distance covered = 56 × 9 = 504 km

Now the same distance has to be covered in 7 hours.

Required speed = 504 ÷ 7 = 72 km/h

Increase in speed = 72 − 56 = 16 km/h

3. Option E
Average age of 14 trainees = 22 years

Total age of 14 trainees = 14 × 22 = 308 years

One trainee of age 30 years leaves the group.
Remaining total age = 308 − 30 = 278 years

Now a new trainee joins, and the number of trainees again becomes 14.

New average age = 21 years
So, new total age = 14 × 21 = 294 years

Age of the new trainee = 294 − 278 = 16 years

4. Option A
Let the original length and breadth be 3x and 2x respectively.

According to the question:
New length = 3x + 4
New breadth = 2x − 4

Given area of the new rectangle = 336 sq cm

So,
$(3x + 4)(2x - 4) = 336$

Expand:
$6x^2 - 12x + 8x - 16 = 336$
$6x^2 - 4x - 16 = 336$
$6x^2 - 4x - 352 = 0$

Divide by 2:
$3x^2 - 2x - 176 = 0$

Factorize:
$3x^2 - 24x + 22x - 176 = 0$
$3x(x - 8) + 22(x - 8) = 0$
$(3x + 22)(x - 8) = 0$

So, x = 8

Original length = 3 × 8 = 24 cm
Original breadth = 2 × 8 = 16 cm

New length = 24 + 4 = 28 cm
New breadth = 16 − 4 = 12 cm

CHECKLIST BY AASHISH ARORA

New perimeter = 2(28 + 12)
= 2 × 40
= 80 cm

5. Option B
Let the cost price of the article be Rs. x

Marked price = 25% above cost price
So, marked price = 125% of x

If the shopkeeper gives 12% discount, but instead gives only 4% discount, then the discount is reduced by 8%.

This means the selling price rises by 8% of the marked price.
That increase in selling price is equal to the extra profit, which is Rs. 50.

So,
8% of marked price = 50

Marked price = 125% of x
Therefore,
8% of 125% of x = 50

That means,
10% of x = 50

So,
x = 50 ÷ 10 × 100
x = 500

6. Option D
Bhavesh is 25% more efficient than Aman.
So, if Aman's efficiency is 4 units, then Bhavesh's efficiency will be 5 units.
Hence, their combined efficiency = 4 + 5 = 9 units.
They complete the work together in 5 days.
So, total work = 9 × 5 = 45 units.
Bhavesh alone does 5 units per day.
Therefore, time taken by Bhavesh alone = 45 ÷ 5 = 9 days.

7. Option C

Let the amount borrowed at 14% be x.

Then the amount borrowed at 8% will be 20000 − x.

Since time is 1 year, the total interest equation becomes:

14% of x + 8% of (20000 − x) = 2200

So,

14x/100 + 8(20000 − x)/100 = 2200

Multiply by 100:

14x + 160000 − 8x = 220000

6x = 60000

x = 10000

8. Option E

Use the circumference formula:

Circumference = 2 × pi × radius

Inner circumference = 176

So, inner radius = 176 ÷ (2 × 22/7)

= 176 ÷ (44/7)

= 176 × 7 ÷ 44

= 28 cm

Outer circumference = 264

So, outer radius = 264 ÷ (2 × 22/7)

= 264 × 7 ÷ 44

= 42 cm

Area of the ring = pi(R^2 − r^2)

= 22/7 × (42^2 − 28^2)

= 22/7 × (1764 − 784)

= 22/7 × 980

= 3080 sq cm

Given, paving 40 sq cm costs Rs 30

So, paving 3080 sq cm costs:

3080 ÷ 40 × 30

= 77 × 30

= 2310

CHECKLIST BY AASHISH ARORA

9. Option A

This is a weighted average speed question based on different parts of the distance.

Let the total distance be 720 km.

Then:

50% of 720 = 360 km

Remaining distance = 360 km

50% of remaining = 180 km

So the last part is also 180 km

Now calculate time taken in each part:

Time for first 360 km at 72 kmph = 360 ÷ 72 = 5 hours

Time for next 180 km at 60 kmph = 180 ÷ 60 = 3 hours

Time for last 180 km at 45 kmph = 180 ÷ 45 = 4 hours

Total distance = 720 km

Total time = 5 + 3 + 4 = 12 hours

Average speed = Total distance ÷ Total time

= 720 ÷ 12

= 60 kmph

10. Option B

Mixture A has 35% petrol.

Mixture B has 65% petrol.

The final mixture has 47% petrol.

Apply alligation:

Ratio of Mixture A : Mixture B

= (65 − 47) : (47 − 35)

= 18 : 12

= 3 : 2

So, Mixture A : Mixture B = 3 : 2

Given Mixture B = 54 litres

That means 2 parts = 54 litres

So, 1 part = 27 litres

Therefore, Mixture A = 3 parts = 3 × 27 = 81 litres

Hence, x = 81 litres.

CHECKLIST BY AASHISH ARORA

11. Option B

Given:

Breadth of rectangle = 15 cm

Area of rectangle = 360 sq cm

So, length of rectangle = Area ÷ Breadth

= 360 ÷ 15

= 24 cm

Now, radius of cylinder is 3 cm less than the length of rectangle.

So, radius of cylinder = 24 - 3 = 21 cm

Volume of cylinder = pi × r squared × h

27720 = 22/7 × 21 × 21 × h

First simplify:

22/7 × 21 × 21 = 1386

So,

27720 = 1386 × h

h = 27720 ÷ 1386

h = 20 cm

Now we need breadth of rectangle as a percentage of height of cylinder.

Required percentage = 15/20 × 100

= 75%

12. Option D

When one train overtakes another train moving in the same direction, the relative speed is taken.

Relative speed = 30 - 18

= 12 m/s

Time taken to overtake = 35 seconds

So, total distance covered in overtaking = Relative speed × Time

= 12 × 35

= 420 metres

This 420 metres is equal to the sum of the lengths of both trains.

So,

x + (x + 80) = 420

2x + 80 = 420

2x = 340

x = 170

13. Option A

Let the amount invested in Scheme P be Rs x.

Then the amount invested in Scheme Q = Rs (32000 - x)

Interest from Scheme P:

Rate = 15% p.a.

Time = 2 years

So simple interest = x × 15 × 2 ÷ 100

= 30x/100

= 3x/10

Interest from Scheme Q:

Rate = 25% p.a. compound interest for 2 years

Amount after 2 years = Principal × 125/100 × 125/100

So compound interest for 2 years = Principal × 9/16

Therefore, interest from Scheme Q = 9/16 × (32000 - x)

Given that interest from Scheme Q is Rs 750 more than interest from Scheme P.

So,

9/16 × (32000 - x) = 3x/10 + 750

Take LCM and multiply by 80:

45(32000 - x) = 24x + 60000

1440000 - 45x = 24x + 60000

1440000 - 60000 = 24x + 45x

1380000 = 69x

x = 1380000 ÷ 69

x = 20000

14. Option E

Let the 1-day work of Anita, Bhawna and Charu be A, B and C respectively.

Then,

A + B = 1/18

B + C = 1/12

A + C = 1/9

Add all three equations:

(A + B) + (B + C) + (A + C) = 1/18 + 1/12 + 1/9

2(A + B + C) = 1/18 + 1/12 + 1/9

Take LCM = 36
2(A + B + C) = 2/36 + 3/36 + 4/36
2(A + B + C) = 9/36
2(A + B + C) = 1/4
A + B + C = 1/8
So, all three together can complete the work in 8 days.

15. Option B
Let the time taken downstream be x hours.
According to the question, upstream time is 200% more than downstream time.
This means upstream time = x + 200% of x = 3x
Total time for both journeys = 32 hours
So,
x + 3x = 32
4x = 32
x = 8
Therefore,
Downstream time = 8 hours
Upstream time = 24 hours
Now calculate speeds:
Downstream speed = Distance ÷ Time
= 144 ÷ 8
= 18 km/h
Upstream speed = 144 ÷ 24
= 6 km/h
Speed of boat in still water = (Downstream speed + Upstream speed) ÷ 2
= (18 + 6) ÷ 2
= 24 ÷ 2
= 12 km/h
Hence, the speed of the boat in still water is 12 km/h.

16. Option B
Let the distance be D km.
According to the question, time taken at 40 km/h minus time taken at 56 km/h = 1 hour.
So, D/40 − D/56 = 1

Take LCM 280:
7D − 5D = 280
2D = 280
D = 140 km
Now 150% of D = 1.5 × 140 = 210 km
Time taken to cover 210 km at original speed 40 km/h = 210/40 = 5.25 hours
Convert into minutes:
5.25 × 60 = 315 minutes

17. Option D
Solution: Let the speed of the boat in still water and the speed of the stream be 5x and x respectively.
Then upstream speed = 5x − x = 4x
Given, the boat covers 24 km upstream in 2 hours.
So upstream speed = 24/2 = 12 km/h
Therefore,
4x = 12
x = 3
So, speed in still water = 15 km/h and speed downstream = 15 + 3 = 18 km/h
Distance travelled downstream in 3 hours = 18 × 3 = 54 km
Hence, the required distance is 54 km.

18. Option A
Let the monthly salary be Rs x.
Rent = 20% of x
Food = 35% of x
Total spent = 55% of x
So remaining amount = 45% of x
She gives 50% of this remaining amount to her parents.
Therefore, she is left with only 50% of 45% = 22.5% of x
Now,
22.5% of x = 13,500
x = 13,500 × 100 / 22.5
x = 60,000

19. Option E

Let the initial investment of each person be x.

Profit is divided in the ratio of money-months.

Arun invested x for 4 months only.

So Arun's money-months = 4x

Bhavna invested x for 4 months and then 2x for the next 8 months.

So Bhavna's money-months = 4x + 16x = 20x

Chirag invested x for 4 months and then 75% of x, that is 3x/4, for the next 8 months.

So Chirag's money-months = 4x + 8 × 3x/4 = 4x + 6x = 10x

Thus, profit-sharing ratio = 4x : 20x : 10x = 2 : 10 : 5

Total parts = 2 + 10 + 5 = 17

Chirag's share = 5/17 of 6,800

= 6,800 × 5 / 17

= 2,000

20. Option C

Let the length and breadth of the rectangle be 4x and 3x respectively.

Then the side of the square = 3x + 2

Perimeter of rectangle = 2(4x + 3x) = 14x

Perimeter of square = 4(3x + 2) = 12x + 8

Given, perimeter of rectangle is 4 meters more than perimeter of square.

So,

14x = 12x + 8 + 4

14x = 12x + 12

2x = 12

x = 6

Therefore, length of rectangle = 4x = 24 meters

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3. Quadratic Equations

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In each of the following questions, there are two equations. You have to solve both equations and mark the correct answer.

(a) x > y

(b) x < y

(c) x = y or the relationship cannot be established

(d) x ≥ y

(e) x ≤ y

1.) I. $2x^2 - 27x + 88 = 0$

II. $2y^2 + y - 66 = 0$

2.) I. $3x^2 - 34x + 91 = 0$

II. $2y^2 + 5y - 33 = 0$

3.) I. $x^2 - 29x + 208 = 0$

II. $y^2 - 37y + 340 = 0$

4.) I. $x^2 + 5x - 204 = 0$

II. $y^2 - 33y + 252 = 0$

5.) I. $2x^2 - 21x + 54 = 0$

II. $2y^2 + 7y - 72 = 0$

6.) I. $x^2 = 1600$

II. $y = \sqrt[3]{64000}$

7.) I. $2x^2 + 7x - 99 = 0$

II. $y^2 - 13y + 42 = 0$

8.) I. $2x^2 - 29x + 99 = 0$

II. $2y^2 + 13y - 45 = 0$

9.) I. $x^2 - 17x + 84 = 18$

II. $y^2 - 31y + 275 = 55$

10.) I. $x^2 + 13x - 90 = 0$

II. $y^2 - 23y + 112 = 0$

11.) I. $2x^2 - 19x + 44 = 0$

II. $4y^2 + y - 39 = 0$

12.) I. $x^2 = 1681$

II. $(y + 41)^2 = 0$

13.) I. $x^2 - 23x + 120 = 0$

II. $y^2 - 21y + 90 = 0$

14.) I. $4x^2 - 17x + 18 = 0$

II. $2y^2 - 19y + 42 = 0$

15.) I. $2x^2 - 67x + 551 = 0$

II. $y^2 - 16y + 63 = 0$

16.) I. $x^4 = 1048576$

II. $y = \sqrt{625} + \sqrt{64}$

17.) I. $x^2 - 20x + 96 = 0$

II. $y^2 - 21y + 98 = 0$

18.) I. $x^2 - 13x + 36 = 0$

II. $y^2 - 21y + 108 = 0$

19.) I. $x^2 - 22x + 112 = 0$

II. $y^2 + 7y - 120 = 0$

20.) I. $x^2 - 20x + 100 = 0$

II. $4y^2 + 3y - 52 = 0$

Answers:

1. D
2. A
3. B
4. E
5. D
6. E
7. B
8. A
9. E
10. B
11. A
12. D
13. C
14. B
15. A
16. B

17. C

18. E

19. D

20. A

Solutions:

(1) x = 8, $\frac{11}{2}$

y = $\frac{11}{2}$, -6

(2) x = 7, $\frac{13}{3}$

y = 3, -$\frac{11}{2}$

(3) x = 16, 13

y = 20, 17

(4) x = 12, -17

y = 21, 12

(5) x = 6, $\frac{9}{2}$

y = $\frac{9}{2}$, -8

(6) x = 40, -40

y = 40

(7) x = $\frac{11}{2}$, -9

y = 7, 6

(8) x = 9, $\frac{11}{2}$

y = $\frac{5}{2}$, -9

(9) x = 11, 6

y = 20, 11

(10) x = 5, -18

y = 16, 7

(11) x = $\frac{11}{2}$, 4

y = 3, -$\frac{13}{4}$

(12) x = 41, -41

y = -41

(13) x = 15, 8

y = 15, 6

(14) x = $\frac{9}{4}$, 2

y = 6, $\frac{7}{2}$

(15) x = 19, $\frac{29}{2}$

y = 9, 7

(16) x = 32, -32

y = 33

(17) x = 12, 8

y = 14, 7

(18) x = 9, 4

y = 12, 9

(19) x = 14, 8

y = 8, -15

(20) x = 10, 10

y = $\frac{13}{4}$, -4

4. WRONG NUMBER SERIES

(1) 6, 13, 43, 164, 921, 5551

(a)921

(b)164

(c)13

(d)5551

(e) None of these

(2) 3354, 1701, 602, 165, 48, 20

(a)48

(b)165

(c)3354

(d)602

(e) None of these

(3) 5, 7, 13, 37, 139, 877

(a)139

(b)877

(c)13

(d)37

(e) None of these

(4) 8, 26, 34, 129, 634, 3791

(a)3791

(b)634

(c)26

(d)34

(e) None of these

(5) 14, 20, 35, 70, 147, 312

(a)70

(b)147

(c)20

(d)14

(e) None of these

(6) 10, 23, 53, 89, 169, 349

(a)53

(b)169

(c)23

(d)349

(e) None of these

(7) 640, 336, 176, 92, 39, 25

(a)176

(b)336

(c)25

(d)39

(e) None of these

(8) 11, 13, 23, 37, 121, 251

(a)121

(b)37

(c)11

(d)23

(e) None of these

(9) 18, 46, 66, 123, 230, 435

(a)435

(b)123

(c)46

(d)18

(e) None of these

(10) 10, 17, 32, 63, 126, 281

(a)17

(b)63

(c)10

(d)126

(e) None of these

(11) 15, 19, 39, 53, 102, 223

(a)39

(b)15

(c)223

(d)102

(e) None of these

(12) 7, 9, 17, 41, 91, 265

(a)265

(b)17

(c)7

(d)91

(e) None of these

(13) 200, 198, 194, 173, 157, 32

(a)157

(b)173

(c)198

(d)32

(e) None of these

(14) 11, 22, 26, 56, 116, 221

(a)221

(b)56

(c)22

(d)11

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(e) None of these

(15) 229.5, 165, 100.5, 45, 21, 10

(a)229.5

(b)45

(c)10

(d)165

(e) None of these

(16) 12, 17, 25, 38, 71, 93

(a)25

(b)12

(c)38

(d)71

(e) None of these

(17) 8, 17, 42, 107, 172, 293

(a)107

(b)172

(c)17

(d)293

(e) None of these

(18) 300, 296, 287, 262, 213, 74

(a)296

(b)300

(c)262

(d)213

(e) None of these

(19) 1, 3, 10, 51, 377, 3939

(a)51

(b)377

(c)10

(d)1

(e) None of these

(20) 6, 17, 61, 132, 380, 1115

(a)1115

(b)132

(c)61

(d)17

(e) None of these

Answers:

(1)b

(2)d

(3)a

(4)c

(5)e

(6)a

(7)d

CHECKLIST BY AASHISH ARORA

(8)b

(9)c

(10)e

(11)a

(12)d

(13)b

(14)c

(15)e

(16)d

(17)a

(18)e

(19)b

(20)c

Solutions:

(1)*2+1^2, *3+2^2, *4+3^2, *5+4^2, *6+5^2

(2) ÷2+24, ÷3+21, ÷4+18, ÷5+15, ÷6+12

(3)+2!, +3!, +4!, +5!, +6!

(4)*2-3, *3-5, *4-7, *5-11, *6-13

(5)+2*3, +3*5, +5*7, +7*11, +11*13

(6)*2+3, *2-5, *2+7, *2-9, *2+11

(7) ÷2+16, ÷2+8, ÷2+4, ÷2+2, ÷2+1

(8)+(1^3+1), +(2^3+2), +(3^3+3), +(4^3+4), +(5^3+5)

(9)*2-1^2, *2-2^2, *2-3^2, *2-4^2, *2-5^2

(10)+2^3-1, +2^4-1, +2^5-1, +2^6-1, +2^7-1

(11)+2^2, +3^2, +5^2, +7^2, +11^2

(12)+1*2^1, +2*2^2, +3*2^3, +4*2^4, +5*2^5

(13)-(1!+1), -(2!+2), -(3!+3), -(4!+4), -(5!+5)

(14)+(1*2*3) ÷2, +(2*3*4) ÷2, +(3*4*5)÷2, +(4*5*6)÷2, +(5*6*7)÷2

(15) ÷1.5+12, ÷2+10, ÷2.5+8, ÷3+6, ÷3.5+4

(16)+5, +8, +13, +21, +34

(17)+3^2, +5^2, +7^2, +9^2, +11^2

(18)-2^2, -3^2, -5^2, -7^2, -11^2

(19)*2+1, *3+1, *5+1, *7+1, *11+1

(20)*3-1^2, *3-2^2, *3-3^2, *3-4^2, *3-5^2

CHECKLIST BY AASHISH ARORA

5. MISSING NUMBER SERIES

(1) 132, 139, 153, ?, 237, 349
(a) 177
(b) 181
(c) 185
(d) 189
(e) None of these

(2) 21, 27, ?, 77, 154, 297
(a) 42
(b) 40
(c) 44
(d) 46
(e) None of these

(3) 1662, ?, 284, 75, 18, 5
(a) 831
(b) 835
(c) 839
(d) 837
(e) None of these

(4) 8, 18, 42, 96, ?, 454
(a) 214
(b) 216
(c) 212
(d) 218
(e) None of these

(5) 51, ?, 61, 45, 73, 80
(a) 20
(b) 18
(c) 22
(d) 24
(e) None of these

(6) 33, 38, 48, ?, 91, 128
(a) 61
(b) 63
(c) 67
(d) 65
(e) None of these

(7) 210, 205, 197, 184, ?, 129
(a) 165
(b) 161
(c) 163
(d) 167
(e) None of these

(8) 10, 21, ?, 101, 218, 461
(a) 44
(b) 46
(c) 48
(d) 50
(e) None of these

(9) 14, 26, 52, ?, 140, 164
(a) 70
(b) 68
(c) 72

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(d) 74
(e) None of these

(10) 200, ?, 176, 155, 128, 95
(a) 193
(b) 189
(c) 195
(d) 191
(e) None of these

(11) 12, 27, 62, 125, ?, 367
(a) 224
(b) 220
(c) 222
(d) 226
(e) None of these

(12) 20, 22.5, ?, 32, 39, 47.5
(a) 25.5
(b) 26
(c) 27
(d) 26.5
(e) None of these

(13) 12, 36, 80, ?, 252, 392
(a) 148
(b) 152
(c) 150
(d) 154
(e) None of these

(14) 50, 54, 45, 61, ?, 72
(a) 34
(b) 36
(c) 38
(d) 40
(e) None of these

(15) 6, 9, 18, ?, 69, 76
(a) 21
(b) 25
(c) 27
(d) 23
(e) None of these

(16) 50, ?, 94, 89, 178, 171
(a) 47
(b) 45
(c) 49
(d) 51
(e) None of these

(17) 13, 7, 26, ?, 52, 40
(a) 16
(b) 20
(c) 18
(d) 22
(e) None of these

(18) 12, ?, 27, 29.5, 59, 62.5
(a) 13.5
(b) 12.5
(c) 14.5
(d) 15.5
(e) None of these

(19) 20, 44, ?, 72, 52, 124
(a) 28
(b) 32
(c) 34
(d) 30
(e) None of these

(20) 10, 29, 66, ?, 218, 345
(a) 123
(b) 127
(c) 129
(d) 131
(e) None of these

CHECKLIST BY AASHISH ARORA

Answers:

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

Solutions:

(1) +7, +14, +28, +56, +112

(2) +2×3, +3×5, +5×7, +7×11, +11×13

(3) ÷2+6, ÷3+5, ÷4+4, ÷5+3, ÷6+2

(4) ×2+2, ×2+6, ×2+12, ×2+20, ×2+30

(5) Odd positions: +10, +12; even positions: +25, +35

(6) +5, +10, +17, +26, +37

(7) -5, -8, -13, -21, -34

(8) $\times 2+1^2$, $\times 2+2^2$, $\times 2+3^2$, $\times 2+4^2$, $\times 2+5^2$

(9) +12, ×2, +18, ×2, +24

(10) -9, -15, -21, -27, -33

(11) +15, +35, +63, +99, +143

(12) +2.5, +4, +5.5, +7, +8.5

(13) Terms are: $2^2\times 3$, $3^2\times 4$, $4^2\times 5$, $5^2\times 6$, $6^2\times 7$, $7^2\times 8$

(14) $+2^2$, -3^2, $+4^2$, -5^2, $+6^2$

(15) +3, ×2, +5, ×3, +7

(16) -3, ×2, -5, ×2, -7

(17) Odd positions: ×2; even positions: +11, +22

(18) +1.5, ×2, +2.5, ×2, +3.5

(19) ×2+4, ÷2+8, ×2+12, ÷2+16, ×2+20

CHECKLIST BY AASHISH ARORA

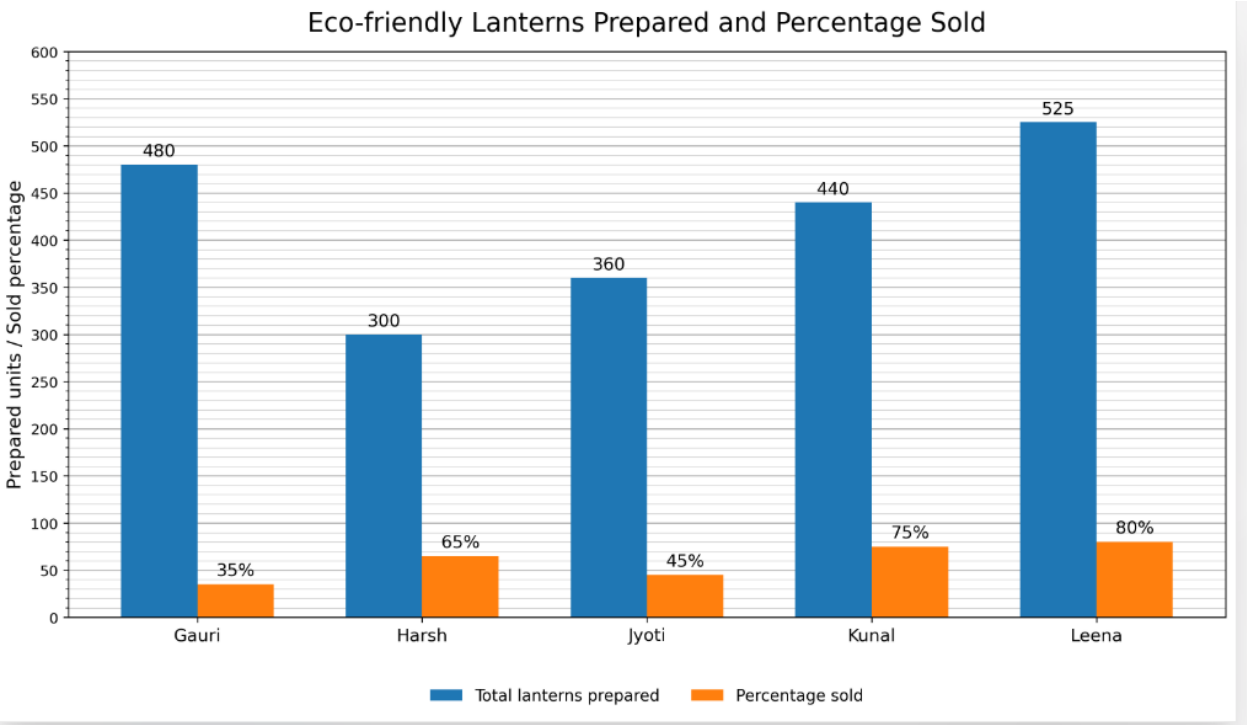
(20) Terms are: 2^3+2, 3^3+2, 4^3+2, 5^3+2, 6^3+2, 7^3+2

CHECKLIST BY AASHISH ARORA

6. DATA INTERPRETATION

Set 1: The bar graph shows the total number of eco-friendly lanterns prepared and the percentage of lanterns sold by five festive stalls during a Diwali fair. Read the data carefully and answer the following questions.

बार ग्राफ दीवाली मेले के दौरान पाँच उत्सवी स्टॉलों द्वारा तैयार की गई इको-फ्रेंडली लालटेनों की कुल संख्या तथा बेची गई लालटेनों का प्रतिशत दर्शाता है। दिए गए आँकड़ों को ध्यान से पढ़कर निम्नलिखित प्रश्नों के उत्तर दीजिए।



Q1: The total number of unsold lanterns in Harsh stall is what percent of the total number of lanterns sold by Leena stall?

हर्ष स्टॉल में बिना बिकी लालटेनों की कुल संख्या, लीना स्टॉल द्वारा बेची गई कुल लालटेनों की संख्या का कितने प्रतिशत है?

(A)25

(B)20

(C)30

(D)35

(E)40

Q2: Find the ratio of the total number of lanterns prepared by Gauri and Kunal together to the total number of unsold lanterns in Kunal and Leena together. If the ratio in lowest terms is a:b, then find the value of a+b.

गौरी और कुणाल द्वारा मिलाकर तैयार की गई लालटेनों की कुल संख्या तथा कुणाल और लीना में मिलाकर बिना बिकी लालटेनों की कुल संख्या का अनुपात ज्ञात कीजिए। यदि यह अनुपात न्यूनतम रूप में a:b है, तो a+b का मान ज्ञात कीजिए।

(A)219
(B)223
(C)231
(D)227
(E)239

Q3: The total number of lanterns prepared by another stall Naveen is 20% more than that of Harsh stall. If the number of unsold lanterns in Naveen and Jyoti stalls is in the ratio 5:11 respectively, then find the total number of lanterns sold by Gauri and Naveen together.

किसी अन्य स्टॉल नवीन द्वारा तैयार की गई लालटेनों की कुल संख्या, हर्ष स्टॉल की कुल संख्या से 20% अधिक है। यदि नवीन और ज्योति स्टॉलों में बिना बिकी लालटेनों की संख्या का अनुपात क्रमशः 5:11 है, तो गौरी और नवीन द्वारा मिलाकर बेची गई लालटेनों की कुल संख्या ज्ञात कीजिए।

(A)428
(B)438
(C)448
(D)458
(E)468

Q4: In Kunal stall, 35% of the total lanterns prepared are brass lanterns and the remaining are paper lanterns. If 4/7 of the brass lanterns are sold, then find the number of unsold paper lanterns in Kunal stall.

कुणाल स्टॉल में तैयार की गई कुल लालटेनों में से 35% पीतल की लालटेन हैं और शेष कागज़ की लालटेन हैं। यदि पीतल की लालटेनों में से 4/7 बिक जाती हैं, तो कुणाल स्टॉल में बिना बिकी कागज़ की लालटेनों की संख्या ज्ञात कीजिए।

(A)36
(B)40
(C)48
(D)52
(E)44

Q5: Find the difference between the total number of unsold lanterns in Kunal and Harsh together and the total number of lanterns sold by Jyoti and Leena together.
कुणाल और हर्ष स्टॉलों में मिलाकर बिना बिकी लालटेनों की कुल संख्या तथा ज्योति और लीना द्वारा मिलाकर बेची गई लालटेनों की कुल संख्या के बीच का अंतर ज्ञात कीजिए।
(A)351
(B)359
(C)367
(D)375
(E)385

Solutions:

Stall	Prepared	Sold %	Sold	Unsold
Gauri	480	35%	168	312
Harsh	300	65%	195	105
Jyoti	360	45%	162	198
Kunal	440	75%	330	110
Leena	525	80%	420	105
Total	2105	-	1275	830

1. Option A

Unsold lanterns in Harsh = 35% of 300 = 105
Sold lanterns in Leena = 80% of 525 = 420
Required percentage = 105/420 × 100 = 25

2. Option D
Total lanterns prepared by Gauri and Kunal = 480 + 440 = 920
Unsold lanterns in Kunal = 25% of 440 = 110
Unsold lanterns in Leena = 20% of 525 = 105
Total unsold lanterns in Kunal and Leena = 110 + 105 = 215

Required ratio = 920 : 215 = 184 : 43
a + b = 184 + 43 = 227

3. Option B
Total lanterns prepared by Naveen = 120% of 300 = 360
Unsold lanterns in Jyoti = 55% of 360 = 198
Given unsold lanterns in Naveen : Jyoti = 5 : 11
Unsold lanterns in Naveen = 5/11 × 198 = 90
Sold lanterns in Naveen = 360 - 90 = 270
Sold lanterns in Gauri = 35% of 480 = 168
Total sold by Gauri and Naveen = 168 + 270 = 438

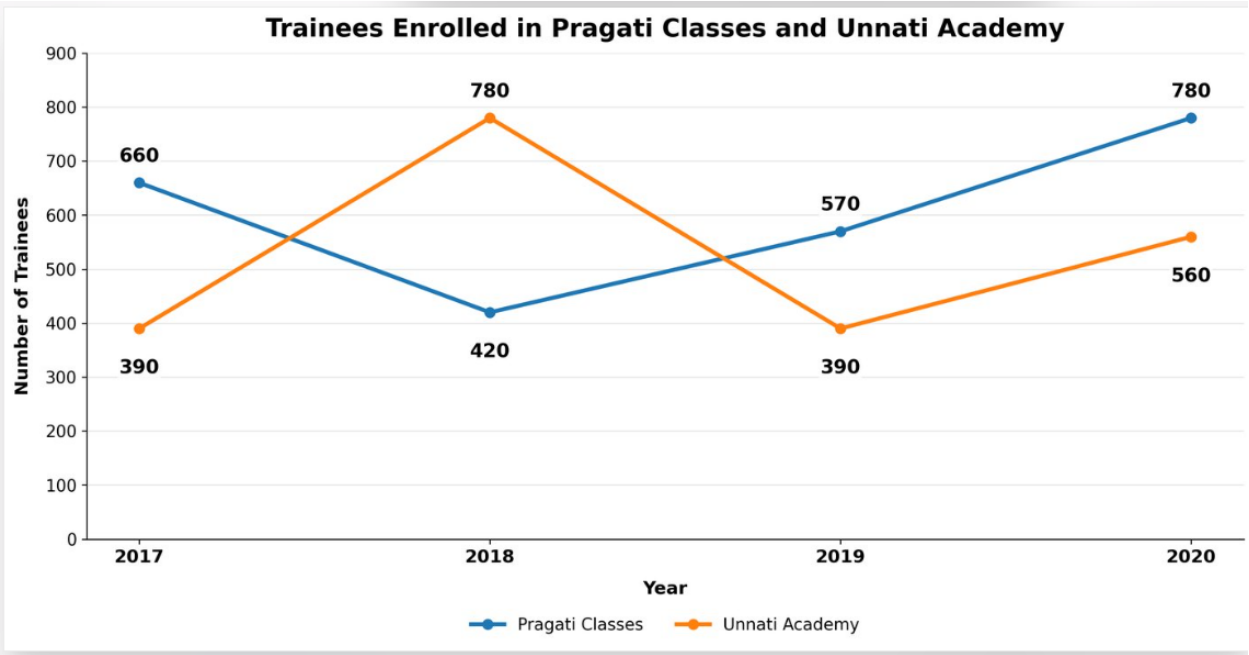
4. Option E
Total lanterns in Kunal = 440
Total sold in Kunal = 75% of 440 = 330
Brass lanterns = 35% of 440 = 154
Paper lanterns = 440 - 154 = 286
Sold brass lanterns = 4/7 of 154 = 88
Sold paper lanterns = 330 - 88 = 242
Unsold paper lanterns = 286 - 242 = 44

5. Option C
Unsold lanterns in Kunal = 110
Unsold lanterns in Harsh = 105
Total unsold in Kunal and Harsh = 215
Sold lanterns in Jyoti = 45% of 360 = 162
Sold lanterns in Leena = 80% of 525 = 420
Total sold in Jyoti and Leena = 582
Difference = 582 - 215 = 367

CHECKLIST BY AASHISH ARORA

Set 2: The line graph shows the total number of trainees enrolled in two different coaching institutes, Pragati Classes and Unnati Academy, in different years from 2017 to 2020. Read the information carefully and answer the following questions.

रेखा-ग्राफ 2017 से 2020 तक दो अलग-अलग कोचिंग संस्थानों, प्रगति क्लासेस और उन्नति अकादमी, में नामांकित कुल प्रशिक्षुओं की संख्या को दर्शाता है। जानकारी को ध्यानपूर्वक पढ़िए और निम्नलिखित प्रश्नों के उत्तर दीजिए।



Q1: Find the ratio of the number of trainees enrolled in Pragati Classes in 2017 to the number of trainees enrolled in Unnati Academy in 2018. If the simplified ratio is a:b, find a + b.

2017 में प्रगति क्लासेस में नामांकित प्रशिक्षुओं की संख्या और 2018 में उन्नति अकादमी में नामांकित प्रशिक्षुओं की संख्या का अनुपात ज्ञात कीजिए। यदि सरलतम अनुपात a:b हो, तो a + b ज्ञात कीजिए।

(A)22
(B)24
(C)20
(D)26
(E)28

Q2: The number of trainees enrolled in Pragati Classes in 2018 is what percent of the total number of trainees enrolled in Pragati Classes in 2017 and Unnati Academy in 2019 together?

2018 में प्रगति क्लासेस में नामांकित प्रशिक्षुओं की संख्या, 2017 में प्रगति क्लासेस और 2019 में उन्नति अकादमी में कुल मिलाकर नामांकित प्रशिक्षुओं की संख्या का कितने प्रतिशत है?

(A)35
(B)45
(C)30
(D)40
(E)50

Q3: What is the difference between the average number of trainees enrolled per institute in 2017 and the average number of trainees enrolled per institute in 2019?

2017 में प्रति संस्थान नामांकित प्रशिक्षुओं की औसत संख्या और 2019 में प्रति संस्थान नामांकित प्रशिक्षुओं की औसत संख्या के बीच अंतर ज्ञात कीजिए।

(A)45
(B)35
(C)50
(D)40
(E)55

Q4: In another institute, Sankalp Gurukul, the total number of trainees enrolled in 2020 is half of the total number of trainees enrolled in Pragati Classes in 2019, and out of that 20% are girls. Find the difference between the number of boys and girls enrolled in Sankalp Gurukul in 2020.

एक अन्य संस्थान, संकल्प गुरुकुल, में 2020 में नामांकित कुल प्रशिक्षुओं की संख्या, 2019 में प्रगति क्लासेस में नामांकित कुल प्रशिक्षुओं की संख्या का आधा है, और उनमें से 20% लड़कियाँ हैं। 2020 में संकल्प गुरुकुल में नामांकित लड़कों और लड़कियों की संख्या के बीच अंतर ज्ञात कीजिए।

(A)165
(B)168
(C)175
(D)180
(E)171

Q5: Consider the following statements:

I. The number of trainees enrolled in Unnati Academy is less than that in Pragati Classes in three years.

II. The average number of trainees enrolled in Unnati Academy in all the given years is 530.

III. The total number of trainees enrolled in 2019 is 960.

How many of the above statements are correct?

निम्नलिखित कथनों पर विचार कीजिए:

I. उन्नति अकादमी में नामांकित प्रशिक्षुओं की संख्या, प्रगति क्लासेस की तुलना में तीन वर्षों में कम है।

II. दिए गए सभी वर्षों में उन्नति अकादमी में नामांकित प्रशिक्षुओं की औसत संख्या 530 है।

III. 2019 में नामांकित कुल प्रशिक्षुओं की संख्या 960 है।

उपरोक्त में से कितने कथन सही हैं?

(A) Only I

(B) Only I and II

(C) All I, II, and III

(D) Only II

(E) Only III

Solutions:

Year	Pragati Classes trainees	Unnati Academy trainees	Total trainees
2017	660	390	**1050**
2018	420	780	**1200**
2019	570	390	**960**
2020	780	560	**1340**
Total	**2430**	**2120**	**4550**

1. Option B

Required ratio = 660 : 780

Divide by 60

Ratio = 11 : 13
a + b = 11 + 13 = 24

2. Option D
Required percent = 420 / (660 + 390) × 100
= 420 / 1050 × 100
= 40

3. Option A
Average in 2017 = (660 + 390) / 2 = 525
Average in 2019 = (570 + 390) / 2 = 480
Difference = 525 - 480 = 45

4. Option E
Total trainees in Sankalp Gurukul in 2020 = 570 / 2 = 285
Girls = 20% of 285 = 57
Boys = 285 - 57 = 228
Difference = 228 - 57 = 171

5. Option C
Statement I: True, because 390 < 660, 390 < 570, and 560 < 780
Statement II: Average of Unnati Academy = (390 + 780 + 390 + 560) / 4 = 2120 / 4 = 530
Statement III: Total trainees in 2019 = 570 + 390 = 960
So, correct statements = All I, II and III

CHECKLIST BY AASHISH ARORA

Set 3: The table chart shows the total number of instructors and assistants in four different performing arts institutes. Read the table carefully and answer the following questions.

तालिका चार्ट चार अलग-अलग performing arts institutes में कुल प्रशिक्षकों और सहायकों की संख्या दर्शाता है। तालिका को ध्यानपूर्वक पढ़िए और निम्नलिखित प्रश्नों के उत्तर दीजिए।

Note:

(I) Total number of instructors and assistants together in Tarang is 240.

(II) X is 37.5% less than Y.

नोट:

(I) तरंग में प्रशिक्षकों और सहायकों की कुल संख्या 240 है।

(II) X, Y से 37.5% कम है।

Institute	Total instructors	Total assistants
Nupur	6X	110
Ragini	280	X + Y
Sargam	225	160
Tarang	2Y	80

Q1: If the simplest ratio of the number of assistants in Ragini and Tarang together to the number of instructors in Sargam is a : b, then find the value of a + b.

यदि रागिनी और तरंग में सहायकों की कुल संख्या तथा सरगम में प्रशिक्षकों की संख्या का सरलतम अनुपात a : b है, तो a + b का मान ज्ञात कीजिए।

(A) 27

(B) 29

(C) 31

(D) 33

(E) 35

Q2: If the number of instructors in Udaan is (X/2)% more than that in Tarang and the number of assistants in Udaan is 62.5% of the assistants in Sargam, then the total number of instructors and assistants together in Udaan is how many more than that in Tarang?

यदि उड़ान में प्रशिक्षकों की संख्या, तरंग की तुलना में (X/2)% अधिक है और उड़ान में सहायकों की संख्या, सरगम के सहायकों की 62.5% है, तो उड़ान में प्रशिक्षकों और सहायकों की कुल संख्या, तरंग से कितनी अधिक है?

(A) 40
(B) 50
(C) 70
(D) 60
(E) 80

Q3: The number of senior instructors in Sargam is 35 less than the average number of assistants in Sargam and Nupur. The number of instructors in Sargam is what percent of the number of senior instructors in Sargam?

सरगम में वरिष्ठ प्रशिक्षकों की संख्या, सरगम और नूपुर में सहायकों की औसत संख्या से 35 कम है। सरगम में प्रशिक्षकों की संख्या, सरगम के वरिष्ठ प्रशिक्षकों की संख्या का कितने प्रतिशत है?

(A) 225
(B) 250
(C) 200
(D) 240
(E) 275

Q4: The number of male and female instructors in Ragini are equal, and the number of female assistants in Ragini is X less than the number of female instructors in Ragini. Find the total number of male instructors and male assistants in Ragini.

रागिनी में पुरुष और महिला प्रशिक्षकों की संख्या समान है, तथा रागिनी में महिला सहायकों की संख्या, महिला प्रशिक्षकों की संख्या से X कम है। रागिनी में पुरुष प्रशिक्षकों और पुरुष सहायकों की कुल संख्या ज्ञात कीजिए।

(A) 170
(B) 190
(C) 180
(D) 160
(E) 200

Q5: The ratio of trainee assistants to permanent assistants in Nupur is 4 : 7 respectively. The number of permanent assistants in Nupur is what percent less than the number of instructors in Ragini?

नूपुर में प्रशिक्षु सहायकों और स्थायी सहायकों का अनुपात क्रमशः 4 : 7 है। नूपुर में स्थायी सहायकों की संख्या, रागिनी में प्रशिक्षकों की संख्या से कितने प्रतिशत कम है?

(A) 65
(B) 70
(C) 80
(D) 85
(E) 75

Solutions:

Solved values: X = 50 and Y = 80

Institute	Instructors	Assistants	Total staff
Nupur	300	110	410
Ragini	280	130	410
Sargam	225	160	385
Tarang	160	80	240

1. Option B
From note (I), 2Y + 80 = 240
2Y = 160
Y = 80
From note (II), X = 5/8 of Y
X = 50
Assistants in Ragini = X + Y = 130
Assistants in Tarang = 80
Instructors in Sargam = 225
Required ratio = 210 : 225 = 14 : 15
a + b = 29

2. Option D
Instructors in Tarang = 2Y = 160
Instructors in Udaan = 25% more than 160 = 200
Assistants in Sargam = 160

Assistants in Udaan = 62.5% of 160 = 100
Total in Udaan = 200 + 100 = 300
Total in Tarang = 240
Difference = 300 - 240 = 60

3. Option A
Assistants in Sargam = 160
Assistants in Nupur = 110
Average = (160 + 110)/2 = 135
Senior instructors in Sargam = 135 - 35 = 100
Instructors in Sargam = 225
Required percentage = 225/100 × 100 = 225

4. Option C
Instructors in Ragini = 280
Male instructors = Female instructors = 140
X = 50
Female assistants in Ragini = 140 - 50 = 90
Total assistants in Ragini = 130
Male assistants in Ragini = 130 - 90 = 40
Required total = 140 + 40 = 180

5. Option E
Assistants in Nupur = 110
Trainee : Permanent = 4 : 7
Permanent assistants = 7/11 of 110 = 70
Instructors in Ragini = 280
Required percent less = (280 - 70)/280 × 100 = 75

CHECKLIST BY AASHISH ARORA

Set 4: The data is about the number of chocolate cakes, vanilla cakes and fruit cakes sold by a bakery in three different quarters of a year. In the first quarter, the total number of cakes sold was 1062. The number of vanilla cakes sold in the first quarter was equal to the number of fruit cakes sold in the second quarter. The average number of chocolate cakes and vanilla cakes sold in the first quarter was 315. In the second quarter, the total number of chocolate cakes and fruit cakes sold was 798. The ratio of fruit cakes sold in the first quarter to those sold in the second quarter was 8 : 7. The number of vanilla cakes sold in the second quarter was equal to the number of vanilla cakes sold in the third quarter. In the third quarter, the sum of chocolate cakes and vanilla cakes sold was 84 less than the number of fruit cakes sold. The total number of cakes sold in the third quarter was 1344. The number of chocolate cakes sold in the third quarter was 33.33% more than the number of chocolate cakes sold in the first quarter.

दिया गया डेटा एक बेकरी द्वारा वर्ष की तीन अलग-अलग तिमाहियों में बेचे गए चॉकलेट केक, वनीला केक और फ्रूट केक की संख्या के बारे में है। प्रथम तिमाही में बेचे गए केकों की कुल संख्या 1062 थी। प्रथम तिमाही में बेचे गए वनीला केकों की संख्या, द्वितीय तिमाही में बेचे गए फ्रूट केकों की संख्या के बराबर थी। प्रथम तिमाही में बेचे गए चॉकलेट केक और वनीला केकों की औसत संख्या 315 थी। द्वितीय तिमाही में बेचे गए चॉकलेट केक और फ्रूट केकों की कुल संख्या 798 थी। प्रथम तिमाही और द्वितीय तिमाही में बेचे गए फ्रूट केकों की संख्या का अनुपात 8 : 7 था। द्वितीय तिमाही में बेचे गए वनीला केकों की संख्या, तृतीय तिमाही में बेचे गए वनीला केकों की संख्या के बराबर थी। तृतीय तिमाही में बेचे गए चॉकलेट केक और वनीला केकों का योग, फ्रूट केकों की संख्या से 84 कम था। तृतीय तिमाही में बेचे गए केकों की कुल संख्या 1344 थी। तृतीय तिमाही में बेचे गए चॉकलेट केकों की संख्या, प्रथम तिमाही में बेचे गए चॉकलेट केकों की संख्या से 33.33% अधिक थी।

Q1: Find the difference between the total number of vanilla cakes sold in all three quarters and the total number of fruit cakes sold in all three quarters.

तीनों तिमाहियों में बेचे गए वनीला केकों की कुल संख्या और फ्रूट केकों की कुल संख्या के बीच का अंतर ज्ञात कीजिए।

(A) 546

(B) 558

(C) 570

(D) 582

(E) 594

Q2: Find the difference between the number of vanilla cakes sold in the first quarter and the number of chocolate cakes sold in the second quarter.
प्रथम तिमाही में बेचे गए वनीला केकों की संख्या और द्वितीय तिमाही में बेचे गए चॉकलेट केकों की संख्या के बीच का अंतर ज्ञात कीजिए।
(A) 18
(B) 24
(C) 30
(D) 36
(E) 42

Q3: If the simplified ratio between the number of vanilla cakes sold in the third quarter and the number of chocolate cakes sold in the second quarter is x : y, then find the value of x + y.
यदि तृतीय तिमाही में बेचे गए वनीला केकों की संख्या और द्वितीय तिमाही में बेचे गए चॉकलेट केकों की संख्या का सरलतम अनुपात x : y है, तो x + y का मान ज्ञात कीजिए।
(A) 13
(B) 14
(C) 15
(D) 17
(E) 19

Q4: Find the average number of chocolate cakes sold in the second quarter and the third quarter.
द्वितीय तिमाही और तृतीय तिमाही में बेचे गए चॉकलेट केकों की औसत संख्या ज्ञात कीजिए।
(A) 342
(B) 360
(C) 378
(D) 396
(E) 414

Q5: Find 33.33% of 300% of the number of vanilla cakes sold in the first quarter.
प्रथम तिमाही में बेचे गए वनीला केकों की संख्या के 300% का 33.33% (अर्थात 1/3) ज्ञात

कीजिए।
(A) 378
(B) 392
(C) 406
(D) 420
(E) 434

Solutions:

Quarter	Chocolate cakes	Vanilla cakes	Fruit cakes	Total
First quarter	252	378	432	**1062**
Second quarter	420	294	378	**1092**
Third quarter	336	294	714	**1344**
Total	**1008**	**966**	**1524**	**3498**

1. Option B
Vanilla cakes in all three quarters = 378 + 294 + 294
= 966
Fruit cakes in all three quarters = 432 + 378 + 714
= 1524
Difference = 1524 - 966
= 558

2. Option E
Difference = 420 - 378
= 42

3. Option D
Required ratio = 294 : 420
Divide by 42
= 7 : 10
x + y = 7 + 10

= 17

4. Option C
Average = (420 + 336)/2
= 756/2
= 378

5. Option A
300% of 378 = 1134
33.33% (1/3) of 1134 = 1134/3
= 378

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