

KMAT Quantitative Ability

Sample Paper – 4

Duration: 40 Minutes

Maximum Marks: 40

Instructions

- This paper contains **40 Multiple Choice Questions (Single Correct Answer)**, modelled on the Quantitative Ability section of the **KMAT Karnataka** entrance examination.
- Each correct answer carries **+1 mark**. There is **no negative marking** for incorrect or unattempted answers – attempt every question.
- Only **one** option is correct per question. Choose carefully.
- Syllabus level: **MBA entrance – Arithmetic, Data Interpretation, Number System, Algebra, Ratio & Proportion, Geometry, Modern Mathematics, Trigonometry & Statistics.**
- Personal calculators, mobile phones, and other electronic gadgets are strictly prohibited inside the examination hall.
- The full KMAT paper is 120 questions in 120 minutes across three sections; there are **no sectional time limits** – allocate approximately 40 minutes to this Quantitative Ability section.

Q1. In an election, candidate A received 60% of the valid votes cast. Total votes cast were 5,000, of which 200 were invalid. How many valid votes did candidate A receive?

- (A) 3,000
- (B) 2,880
- (C) 2,400
- (D) 2,700

Q2. A number, when decreased by 20%, gives 80. What is the original number?



- (A) 64
- (B) 96
- (C) 100
- (D) 90

Q3. Two successive discounts of 20% and 10% are offered on an article. What is the equivalent single discount percentage?

- (A) 30%
- (B) 25%
- (C) 32%
- (D) 28%

Q4. An item costs Rs. 600 to produce. A retailer marks it up by 40% and then offers a 15% discount. What is the selling price?

- (A) Rs. 714
- (B) Rs. 720
- (C) Rs. 700
- (D) Rs. 735

Q5. A trader mixes 80 kg of sugar at Rs. 13.50 per kg with 120 kg at Rs. 16 per kg. At what price per kg should he sell the mixture to gain 20%?

- (A) Rs. 16 per kg
- (B) Rs. 18 per kg
- (C) Rs. 20 per kg
- (D) Rs. 15 per kg

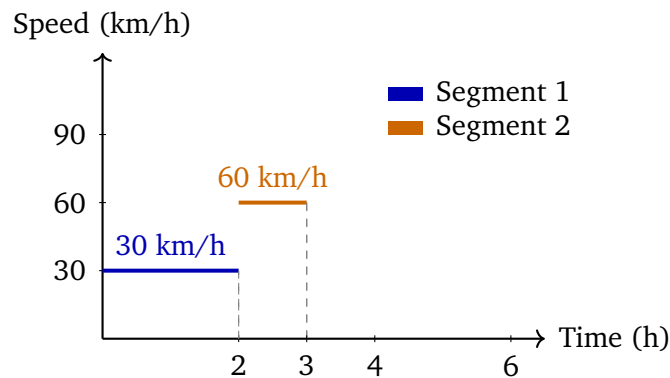
Q6. A person walks at 3 km/h and reaches his destination in 40 minutes. If he walks at 4 km/h, how long does he take?

- (A) 25 minutes



- (B) 35 minutes
- (C) 30 minutes
- (D) 20 minutes

Q7. A train covers the first 60 km at 30 km/h and the next 60 km at 60 km/h. What is the average speed for the entire journey?



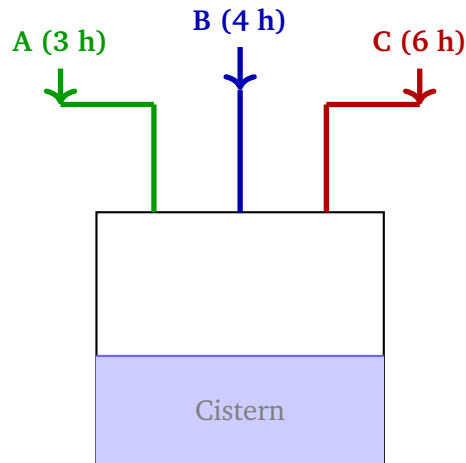
- (A) 45 km/h
- (B) 50 km/h
- (C) 35 km/h
- (D) 40 km/h

Q8. 12 men can complete a work in 18 days. How many men are required to complete the same work in 12 days?

- (A) 18 men
- (B) 15 men
- (C) 20 men
- (D) 24 men

Q9. A cistern has three inlet pipes A, B, and C which individually fill it in 3 hours, 4 hours, and 6 hours respectively. If all three are opened simultaneously, how long does the cistern take to fill?





- (A) 1 hour
- (B) 1 hour 20 min
- (C) 1 hour 30 min
- (D) 2 hours

Q10. A sum of money doubles itself in 10 years under simple interest. What is the annual rate of interest?

- (A) 5%
- (B) 8%
- (C) 10%
- (D) 12%

Q11. Find the compound interest on Rs. 5,000 at 8% per annum for 2 years.

- (A) Rs. 800
- (B) Rs. 816
- (C) Rs. 824
- (D) Rs. 832

Q12. 40 litres of milk priced at Rs. 25 per litre is mixed with 10 litres of water. At what price per litre should the mixture be sold to earn a 20% profit?

- (A) Rs. 24 per litre



- (B) Rs. 26 per litre
- (C) Rs. 28 per litre
- (D) Rs. 30 per litre

Q13. An article is sold at Rs. 450 at a profit of 12.5%. What was the cost price?

- (A) Rs. 380
- (B) Rs. 400
- (C) Rs. 420
- (D) Rs. 440

Directions (Q14–Q17): The bar chart below shows the Import and Export figures (in Rs. crore) of a country for five years. Study it carefully and answer the questions that follow.



Q14. In which year was the trade deficit (Import – Export) the highest?

- (A) 2019
- (B) 2021
- (C) 2020
- (D) 2022



Q15. What is the total value of exports over all five years?

- (A) Rs. 900 crore
- (B) Rs. 980 crore
- (C) Rs. 1,000 crore
- (D) Rs. 1,040 crore

Q16. What is the percentage increase in imports from 2019 to 2023?

- (A) 60%
- (B) 50%
- (C) 70%
- (D) 80%

Q17. In which year was the increase in exports from the previous year the highest?

- (A) 2021
- (B) 2022
- (C) 2023
- (D) 2020

Directions (Q18–Q21): The table below shows production and pricing data for four products A, B, C, and D. Study it carefully and answer the questions that follow.

Product	Units Produced	Cost/Unit (Rs.)	Selling Price/Unit (Rs.)	Revenue
A	500	20	25	12,500
B	800	15	18	14,400
C	300	30	36	10,800
D	600	25	28	16,800

Q18. Which product generates the highest revenue?



- (A) Product A
- (B) Product B
- (C) Product D
- (D) Product C

Q19. What is the total profit earned from Product A?

- (A) Rs. 1,000
- (B) Rs. 1,500
- (C) Rs. 2,000
- (D) Rs. 2,500

Q20. Which product has the highest profit percentage?

- (A) Product A
- (B) Product B
- (C) Product C
- (D) Product D

Q21. What is the total revenue from all four products combined?

- (A) Rs. 52,000
- (B) Rs. 54,500
- (C) Rs. 56,000
- (D) Rs. 58,500

Q22. How many perfect square numbers are there between 1 and 100 (inclusive)?

- (A) 8
- (B) 9
- (C) 10
- (D) 11



Q23. Find the smallest number exactly divisible by 4, 5, and 6.

- (A) 30
- (B) 40
- (C) 48
- (D) 60

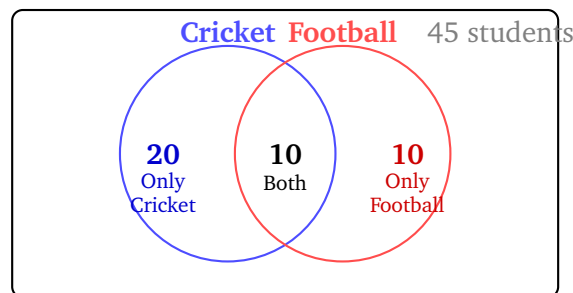
Q24. Express 0.625 as a fraction in its lowest terms.

- (A) $\frac{5}{8}$
- (B) $\frac{3}{5}$
- (C) $\frac{7}{10}$
- (D) $\frac{4}{7}$

Q25. The product of two numbers is 120 and their HCF is 4. Find their LCM.

- (A) 20
- (B) 30
- (C) 40
- (D) 48

Q26. In a class of 45 students, 30 play cricket, 20 play football, and 10 play both. How many play only cricket?



- (A) 15
- (B) 25



(C) 20

(D) 10

Q27. The sum of five consecutive integers is 85. What is the largest integer?

(A) 15

(B) 17

(C) 18

(D) 19

Q28. If the sum of two numbers is 8 and their product is 15, find the value of the sum of their squares.

(A) 34

(B) 49

(C) 64

(D) 30

Q29. Find the 10th term of the AP: 2, 5, 8, 11, ...

(A) 26

(B) 29

(C) 32

(D) 35

Q30. Solve: $3x + 2y = 16$ and $x - y = 2$. Find the product xy .

(A) 6

(B) 10

(C) 8

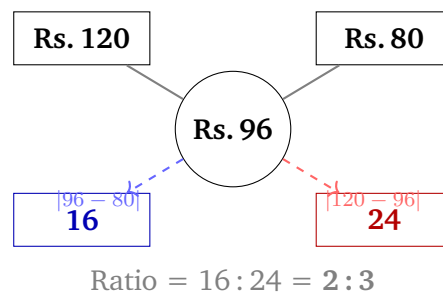
(D) 12

Q31. Two numbers are in the ratio 7 : 5 and their difference is 14. Find the larger number.



- (A) 35
- (B) 42
- (C) 56
- (D) 49

Q32. Tea at Rs. 120 per kg is mixed with tea at Rs. 80 per kg to obtain a blend at Rs. 96 per kg. What is the ratio of the first variety to the second?



- (A) 2 : 3
- (B) 3 : 2
- (C) 1 : 2
- (D) 2 : 1

Q33. A starts a business with Rs. 5,000. After 6 months, B joins with Rs. 8,000. After another 2 months, C joins with Rs. 12,000. The year-end profit is Rs. 6,500. Find B's share of the profit.

- (A) Rs. 1,500
- (B) Rs. 2,000
- (C) Rs. 2,500
- (D) Rs. 3,000

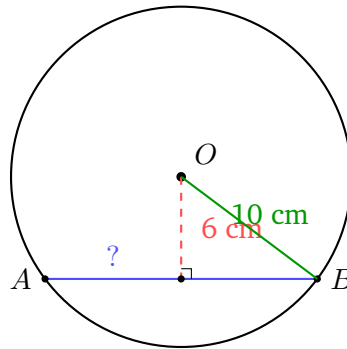
Q34. The ratio of a father's age to his son's age is currently 9 : 2. After 12 years, the ratio will be 3 : 1. Find the son's current age.

- (A) 8 years



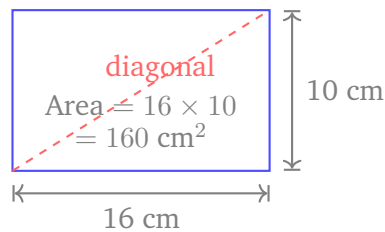
- (B) 12 years
- (C) 16 years
- (D) 20 years

Q35. A chord of a circle is at a distance of 6 cm from the centre. If the radius of the circle is 10 cm, find the length of the chord.



- (A) 8 cm
- (B) 12 cm
- (C) 14 cm
- (D) 16 cm

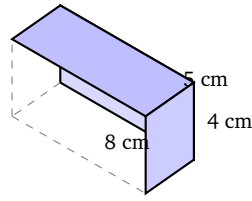
Q36. The perimeter of a rectangle is 52 cm and its length is 16 cm. Find the area of the rectangle.



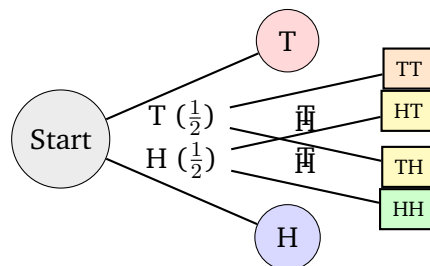
- (A) 160 cm^2
- (B) 176 cm^2
- (C) 192 cm^2
- (D) 208 cm^2



- Q37.** A cuboid has length 8 cm, breadth 5 cm, and height 4 cm. Find its total surface area.



- (A) 160 cm^2
 (B) 184 cm^2
 (C) 200 cm^2
 (D) 220 cm^2
- Q38.** A cricket team of 11 players is to be selected from a squad of 15. In how many ways can this be done?
- (A) 105
 (B) 455
 (C) 1,365
 (D) 3,003
- Q39.** Two unbiased coins are tossed simultaneously. What is the probability of getting exactly one tail?



Outcomes with
exactly 1 tail:
HT, TH

- (A) $\frac{1}{4}$
 (B) $\frac{3}{4}$



- (C) $\frac{1}{3}$
 (D) $\frac{1}{2}$

Q40. The angle of elevation of the top of a tower from a point 30 m away from its base is 30° . What is the height of the tower?

- (A) $10\sqrt{3}$ m
 (B) $15\sqrt{3}$ m
 (C) $20\sqrt{3}$ m
 (D) $30\sqrt{3}$ m



Detailed Solutions

Q1.

Solution

Concept — Percentage of a subset: First find valid votes, then apply the percentage. **Step 1 — Find valid votes:** Total votes = 5,000; Invalid = 200. Valid votes = $5000 - 200 = 4,800$. **Step 2 — Find candidate A's votes:** 60% of $4800 = \frac{60}{100} \times 4800 = 2,880$. **Why other options are wrong:**

- Option A: 3,000 — applies 60% to total 5,000 without removing invalid votes.
- Option B: 2,880 — **correct**.
- Option C: 2,400 — applies 60% to only the invalid votes (incorrect base).
- Option D: 2,700 — applies 56.25% to 4,800; wrong percentage.

Final Answer: Candidate A received 2,880 valid votes $\Rightarrow$ B

Answer: (B) [Go Back to Q1](#)

Q2.

Solution

Concept — Reverse percentage: If x decreased by 20% gives 80, then $0.80x = 80$. **Step 1 — Set up equation:** $x \times (1 - 0.20) = 80 \Rightarrow 0.80x = 80$. **Step 2 — Solve:**

$x = \frac{80}{0.80} = 100$. **Why other options are wrong:**

- Option A: 64 — this is 20% less than 80, not the original.
- Option B: 96 — this is 20% more than 80, still incorrect.
- Option C: 100 — **correct**.
- Option D: 90 — verification: $90 \times 0.80 = 72 \neq 80$.

Final Answer: The original number is 100 $\Rightarrow$ C

Answer: (C) [Go Back to Q2](#)



Q3.

Solution

Concept — Successive discounts: Equivalent discount $= d_1 + d_2 - \frac{d_1 \cdot d_2}{100}$. **Step**

1 — Apply formula: $d_1 = 20\%$, $d_2 = 10\%$.

$$\text{Equivalent discount} = 20 + 10 - \frac{20 \times 10}{100} = 30 - 2 = 28\%.$$

Step 2 — Verify: On Rs. 100: after 20% discount = 80; after 10% on 80 = 72.

Discount = 28. ✓ **Why other options are wrong:**

- Option A: 30% — simple addition, ignores the compounding effect.
- Option B: 25% — arithmetic error.
- Option C: 32% — adds instead of subtracts the interaction term.
- Option D: 28% — **correct**.

Final Answer: Equivalent discount = 28% $\Rightarrow$ **D**

Answer: (D) [Go Back to Q3](#)

Q4.

Solution

Concept — Mark-up and discount on cost price: $SP = CP \times (1 + \text{mark-up}) \times (1 - \text{discount})$. **Step 1 — Find marked price:** $MP = 600 \times 1.40 = \text{Rs. } 840$. **Step**

2 — Apply 15% discount: $SP = 840 \times 0.85 = 840 - 126 = \text{Rs. } 714$. **Why other options are wrong:**

- Option A: Rs. 714 — **correct**.
- Option B: Rs. 720 — applies 20% discount instead of 15%.
- Option C: Rs. 700 — uses 40% mark-up on 600 then rounds down.
- Option D: Rs. 735 — incorrect discount base used.

Final Answer: Selling price = Rs. 714 $\Rightarrow$ **A**

Answer: (A) [Go Back to Q4](#)



Q5.

Solution

Concept — Weighted average cost price then profit: Find blended CP, then add 20% profit. **Step 1 — Total cost:** $80 \times 13.50 + 120 \times 16 = 1,080 + 1,920 = \text{Rs. } 3,000$ for 200 kg. **Step 2 — Blended CP per kg:** $\frac{3000}{200} = \text{Rs. } 15$ per kg. **Step 3 — Selling price (20% profit):** $15 \times 1.20 = \text{Rs. } 18$ per kg. **Why other options are wrong:**

- Option A: Rs. 16 — only covers the blended cost with no profit.
- Option B: Rs. 18 — **correct**.
- Option C: Rs. 20 — applies 20% profit to the higher rate (Rs. 16) instead of blended CP.
- Option D: Rs. 15 — just the blended CP without any profit.

Final Answer: Selling price = Rs. 18 per kg $\Rightarrow$ **B**

Answer: (B) [Go Back to Q5](#)

Q6.

Solution

Concept — Distance = Speed $\times$ Time (constant distance): At a different speed, time changes inversely. **Step 1 — Find distance:** $d = 3 \times \frac{40}{60} = 3 \times \frac{2}{3} = 2$ km.

Step 2 — Find new time at 4 km/h: $t = \frac{2}{4} = 0.5$ h = 30 minutes. **Why other options are wrong:**

- Option A: 25 min — incorrect; speed increase of $\frac{1}{3}$ does not give $\frac{5}{8}$ of original time.
- Option B: 35 min — no significant reduction for 1 km/h increase.
- Option C: 30 min — **correct**.
- Option D: 20 min — would require doubling speed to 6 km/h.

Final Answer: Time at 4 km/h = 30 minutes $\Rightarrow$ **C**

Answer: (C) [Go Back to Q6](#)



Q7.

Solution

Concept — Average speed (equal distances): $\bar{v} = \frac{2v_1v_2}{v_1 + v_2}$ for two equal-distance legs. **Step 1 — Identify speeds:** $v_1 = 30$ km/h for first 60 km; $v_2 = 60$ km/h for next 60 km. **Step 2 — Apply harmonic mean:**

$$\bar{v} = \frac{2 \times 30 \times 60}{30 + 60} = \frac{3600}{90} = 40 \text{ km/h.}$$

Step 3 — Verify: Time for 60 km at 30 km/h = 2 h; time for 60 km at 60 km/h = 1 h. Total = 3 h for 120 km. $\bar{v} = \frac{120}{3} = 40$ km/h. ✓ **Why other options are wrong:**

- Option A: 45 km/h — arithmetic mean, valid only for equal time, not equal distance.
- Option B: 50 km/h — no standard formula gives this result.
- Option C: 35 km/h — underestimates; no formula support.
- Option D: 40 km/h — **correct**.

Final Answer: Average speed = 40 km/h $\Rightarrow$ **D**

Answer: (D) [Go Back to Q7](#)

Q8.

Solution

Concept — Man-days (inverse proportion): $M_1 \times D_1 = M_2 \times D_2$. **Step 1 — Set up equation:** $12 \times 18 = M_2 \times 12$. **Step 2 — Solve:** $M_2 = \frac{12 \times 18}{12} = 18$ men. **Why other options are wrong:**

- Option A: 18 men — **correct**.
- Option B: 15 men — uses wrong ratio (adds instead of multiplying).
- Option C: 20 men — overshoots; $20 \times 12 = 240 > 216$.
- Option D: 24 men — uses $12 \times 18/9$ instead of $/12$.

Final Answer: 18 men required $\Rightarrow$ **A**

Answer: (A) [Go Back to Q8](#)



Q9.

Solution

Concept — Combined work rate: Add individual rates; time = 1/combined rate.

Step 1 — Individual rates per hour: A fills $\frac{1}{3}$, B fills $\frac{1}{4}$, C fills $\frac{1}{6}$ of the cistern.

Step 2 — Combined rate (LCM = 12):

$$\frac{1}{3} + \frac{1}{4} + \frac{1}{6} = \frac{4 + 3 + 2}{12} = \frac{9}{12} = \frac{3}{4} \text{ per hour.}$$

Step 3 — Time to fill: $t = \frac{1}{3/4} = \frac{4}{3} \text{ h} = 1 \text{ hour } 20 \text{ min.}$ **Why other options are wrong:**

- Option A: 1 hour — rate would need to be 1 cistern/h; actual rate is only $3/4$.
- Option B: 1 hour 20 min — **correct**.
- Option C: 1 hour 30 min — corresponds to rate $2/3$; smaller than actual.
- Option D: 2 hours — corresponds to rate $1/2$; much less than actual combined rate.

Final Answer: Cistern fills in 1 hour 20 min $\Rightarrow$ **B**

Answer: (B) [Go Back to Q9](#)

Q10.

Solution

Concept — Simple Interest (doubling): If a principal doubles, SI = Principal; use $SI = \frac{P \cdot R \cdot T}{100}$. **Step 1 — Set SI equal to P:** $P = \frac{P \times R \times 10}{100}$. **Step 2 —**

Solve for R: $1 = \frac{R \times 10}{100} \Rightarrow R = 10\%$. **Why other options are wrong:**

- Option A: 5% — at 5% the money doubles in 20 years, not 10.
- Option B: 8% — at 8% the money doubles in 12.5 years.
- Option C: 10% — **correct**.
- Option D: 12% — at 12% the money doubles in ≈ 8.3 years.

Final Answer: Annual rate of interest = 10% $\Rightarrow$ **C**

Answer: (C) [Go Back to Q10](#)



Q11.

Solution

Concept — Compound Interest formula: $A = P\left(1 + \frac{r}{100}\right)^n$; $CI = A - P$. **Step**

1 — Compute Amount:

$$A = 5000 \times \left(1 + \frac{8}{100}\right)^2 = 5000 \times (1.08)^2 = 5000 \times 1.1664 = \text{Rs. } 5,832.$$

Step 2 — Find CI: $CI = 5832 - 5000 = \text{Rs. } 832$. **Why other options are wrong:**

- Option A: Rs. 800 — this is simple interest ($5000 \times 8\% \times 2$), ignoring compounding.
- Option B: Rs. 816 — adds only the first-year interest to simple interest.
- Option C: Rs. 824 — arithmetic error in $(1.08)^2$.
- Option D: Rs. 832 — **correct**.

Final Answer: Compound Interest = Rs. 832 $\Rightarrow$ D

Answer: (D) [Go Back to Q11](#)

Q12.

Solution

Concept — Cost of mixture and profit pricing: Water has zero cost; total cost is cost of milk only. **Step 1 — Total cost:** $40 \times 25 = \text{Rs. } 1,000$. Total volume

$= 40 + 10 = 50$ litres. **Step 2 — Cost per litre of mixture:** $\frac{1000}{50} = \text{Rs. } 20$ per litre.

Step 3 — Selling price (20% profit): $20 \times 1.20 = \text{Rs. } 24$ per litre. **Why other options are wrong:**

- Option A: Rs. 24 — **correct**.
- Option B: Rs. 26 — applies 30% profit to blended cost.
- Option C: Rs. 28 — applies 40% profit; over-shoot.
- Option D: Rs. 30 — ignores the dilution with water; applies 20% on original Rs. 25.

Final Answer: Selling price = Rs. 24 per litre $\Rightarrow$ A

Answer: (A) [Go Back to Q12](#)



Q13.

Solution

Concept — Reverse profit calculation: $CP = \frac{SP}{1 + \text{profit\%/100}}$. **Step 1 — Apply**

formula: $CP = \frac{450}{1 + 12.5/100} = \frac{450}{1.125} = \text{Rs. } 400$. **Step 2 — Verify:** Profit = $400 \times 0.125 = 50$. $SP = 400 + 50 = 450$. ✓ **Why other options are wrong:**

- Option A: Rs. 380 — gives SP of $380 \times 1.125 = 427.50 \neq 450$.
- Option B: Rs. 400 — **correct**.
- Option C: Rs. 420 — gives SP of $420 \times 1.125 = 472.50 \neq 450$.
- Option D: Rs. 440 — gives SP of $440 \times 1.125 = 495 \neq 450$.

Final Answer: Cost price = Rs. 400 $\Rightarrow$ B

Answer: (B) [Go Back to Q13](#)

Q14.

Solution

Concept — Reading a bar chart (trade deficit): Trade deficit = Import – Export for each year. **Step 1 — Compute deficits:**

- 2019: $200 - 150 = 50$ crore
- 2020: $240 - 170 = 70$ crore
- 2021: $260 - 200 = 60$ crore
- 2022: $300 - 250 = 50$ crore
- 2023: $320 - 270 = 50$ crore

Step 2 — Identify maximum: Highest deficit = 70 crore in 2020. **Why other options are wrong:**

- Option A: 2019 — deficit only 50 crore.
- Option B: 2021 — deficit 60 crore, second highest.
- Option C: 2020 — **correct**.
- Option D: 2022 — deficit only 50 crore.

Final Answer: Highest trade deficit was in 2020 $\Rightarrow$ C

Answer: (C) [Go Back to Q14](#)



Q15.

Solution

Concept — Summing bar values (exports): Add export values for all five years.

Step 1 — Sum exports:

$$150 + 170 + 200 + 250 + 270 = 1,040 \text{ crore.}$$

Why other options are wrong:

- Option A: Rs. 900 crore — omits 2023 export figure.
- Option B: Rs. 980 crore — arithmetic error (uses 260 instead of 270 for 2023).
- Option C: Rs. 1,000 crore — uses 230 instead of 270 for 2023.
- Option D: Rs. 1,040 crore — **correct**.

Final Answer: Total exports = Rs. 1,040 crore $\Rightarrow$ D

Answer: (D) [Go Back to Q15](#)

Q16.

Solution

Concept — Percentage increase: $\% \text{ increase} = \frac{\text{New} - \text{Old}}{\text{Old}} \times 100$. **Step 1 —**

Read values: Import in 2019 = 200 crore; Import in 2023 = 320 crore. **Step 2 —**

Calculate: $\frac{320 - 200}{200} \times 100 = \frac{120}{200} \times 100 = 60\%$. **Why other options are wrong:**

- Option A: 60% — **correct**.
- Option B: 50% — gives increase of 100 crore; $200 + 100 = 300 \neq 320$.
- Option C: 70% — gives increase of 140 crore; $200 + 140 = 340 \neq 320$.
- Option D: 80% — gives increase of 160 crore; $200 + 160 = 360 \neq 320$.

Final Answer: Percentage increase in imports = 60% $\Rightarrow$ A

Answer: (A) [Go Back to Q16](#)



Q17.

Solution

Concept — Year-on-year increase (exports): Compute difference between consecutive years. **Step 1 — Calculate year-on-year increases:**

- 2020 over 2019: $170 - 150 = 20$ crore
- 2021 over 2020: $200 - 170 = 30$ crore
- 2022 over 2021: $250 - 200 = 50$ crore
- 2023 over 2022: $270 - 250 = 20$ crore

Step 2 — Identify maximum: Highest increase = 50 crore in 2022. **Why other options are wrong:**

- Option A: 2021 — increase of only 30 crore.
- Option B: 2022 — **correct**.
- Option C: 2023 — increase of only 20 crore.
- Option D: 2020 — increase of only 20 crore.

Final Answer: Highest export increase in 2022 $\Rightarrow$ B

Answer: (B) [Go Back to Q17](#)

Q18.

Solution

Concept — Reading a table (revenue column): Directly compare the Revenue column. **Step 1 — Read revenue values:** A = Rs. 12,500; B = Rs. 14,400; C = Rs. 10,800; D = Rs. 16,800. **Step 2 — Identify maximum:** Product D has the highest revenue at Rs. 16,800. **Why other options are wrong:**

- Option A: Product A — revenue Rs. 12,500; lowest of all.
- Option B: Product B — revenue Rs. 14,400; second highest.
- Option C: Product D — **correct**.
- Option D: Product C — revenue Rs. 10,800; lowest.

Final Answer: Product D generates the highest revenue $\Rightarrow$ C

Answer: (C) [Go Back to Q18](#)



Q19.

Solution

Concept — Profit per unit $\times$ units produced: Total Profit = $(SP - CP) \times \text{Units}$.

Step 1 — Profit per unit for A: $25 - 20 = \text{Rs. } 5$. **Step 2 — Total profit:** $5 \times 500 =$

Rs. 2,500. **Why other options are wrong:**

- Option A: Rs. 1,000 — uses profit of Rs. 2/unit instead of Rs. 5.
- Option B: Rs. 1,500 — uses profit of Rs. 3/unit.
- Option C: Rs. 2,000 — uses profit of Rs. 4/unit.
- Option D: Rs. 2,500 — **correct**.

Final Answer: Total profit from Product A = Rs. 2,500 $\Rightarrow$ D

Answer: (D) [Go Back to Q19](#)

Q20.

Solution

Concept — Profit percentage $= \frac{SP - CP}{CP} \times 100$: Compare across all products. **Step**

1 — Compute profit % for each:

- A: $\frac{25 - 20}{20} \times 100 = 25\%$
- B: $\frac{18 - 15}{15} \times 100 = 20\%$
- C: $\frac{36 - 30}{30} \times 100 = 20\%$
- D: $\frac{28 - 25}{25} \times 100 = 12\%$

Step 2 — Identify maximum: Product A at 25%. **Why other options are wrong:**

- Option A: Product A — **correct** at 25%.
- Option B: Product B — 20% profit, less than A.
- Option C: Product C — 20% profit, less than A.
- Option D: Product D — only 12% profit.

Final Answer: Product A has the highest profit percentage (25%) $\Rightarrow$ A

Answer: (A) [Go Back to Q20](#)



Q21.

Solution

Concept — Summing the revenue column: Add all four revenue figures. **Step 1**

— **Sum:**

$$12,500 + 14,400 + 10,800 + 16,800 = 54,500.$$

Step 2 — Verify: $12500 + 14400 = 26900$; $10800 + 16800 = 27600$; $26900 + 27600 =$

54500 . ✓ **Why other options are wrong:**

- Option A: Rs. 52,000 — omits part of one product's revenue.
- Option B: Rs. 54,500 — **correct**.
- Option C: Rs. 56,000 — arithmetic error (adds an extra 1,500).
- Option D: Rs. 58,500 — adds an extra 4,000; incorrect.

Final Answer: Total revenue = Rs. 54,500 $\Rightarrow$ B

Answer: (B) [Go Back to Q21](#)

Q22.

Solution

Concept — Perfect squares: A perfect square is n^2 for integer $n \geq 1$. **Step 1**

— **List them:** 1, 4, 9, 16, 25, 36, 49, 64, 81, 100 — that is 1^2 through 10^2 . **Step 2**

— **Count:** 10 perfect squares from 1 to 100 inclusive. **Why other options are wrong:**

- Option A: 8 — stops at $8^2 = 64$, missing 81 and 100.
- Option B: 9 — stops at $9^2 = 81$, missing 100.
- Option C: 10 — **correct**.
- Option D: 11 — counts 101 or double-counts; $11^2 = 121 > 100$.

Final Answer: There are 10 perfect squares $\Rightarrow$ C

Answer: (C) [Go Back to Q22](#)



Q23.

Solution

Concept — LCM (Least Common Multiple): Smallest number divisible by all given numbers = LCM. **Step 1 — Find LCM of 4, 5, 6:** Prime factorizations: $4 = 2^2$, $5 = 5$, $6 = 2 \times 3$. $\text{LCM} = 2^2 \times 3 \times 5 = 60$. **Step 2 — Verify:** $60/4 = 15 \checkmark$, $60/5 = 12 \checkmark$, $60/6 = 10 \checkmark$. **Why other options are wrong:**

- Option A: 30 — not divisible by 4 ($30/4 = 7.5$).
- Option B: 40 — not divisible by 6 ($40/6 = 6.67$).
- Option C: 48 — not divisible by 5 ($48/5 = 9.6$).
- Option D: 60 — **correct**.

Final Answer: Smallest number = 60 $\Rightarrow$ D

Answer: (D) [Go Back to Q23](#)

Q24.

Solution

Concept — Decimal to fraction (simplest form): Write as fraction over power of 10, then simplify. **Step 1 — Write as fraction:** $0.625 = \frac{625}{1000}$. **Step 2 — Simplify:**

$\text{gcd}(625, 1000) = 125$. $\frac{625 \div 125}{1000 \div 125} = \frac{5}{8}$. **Why other options are wrong:**

- Option A: $\frac{5}{8} = 0.625$ — **correct**.
- Option B: $\frac{3}{5} = 0.6 \neq 0.625$.
- Option C: $\frac{7}{10} = 0.7 \neq 0.625$.
- Option D: $\frac{4}{7} \approx 0.571 \neq 0.625$.

Final Answer: $0.625 = \frac{5}{8} \Rightarrow$ A

Answer: (A) [Go Back to Q24](#)



Q25.

Solution

Concept — $\text{HCF} \times \text{LCM} = \text{Product of two numbers}$: $\text{LCM} = \frac{\text{Product}}{\text{HCF}}$. **Step 1**

— **Apply formula**: $\text{LCM} = \frac{120}{4} = 30$. **Step 2** — **Verify**: Two numbers with HCF 4 and LCM 30: e.g., 4 and 30 — $\text{HCF}(4,30) = 2 \neq 4$. Try 12 and 10: $\text{HCF} = 2$. Try 20 and 6: $\text{HCF} = 2$. Actually numbers could be $4k$ and $4m$ with $\text{gcd}(k, m) = 1$ and $4km = 120 \Rightarrow km = 30$; e.g. $k = 6, m = 5$: numbers are 24 and 20, $\text{HCF} = 4$, $\text{LCM} = 120/4 = 30$. ✓ **Why other options are wrong:**

- Option A: 20 — gives product $4 \times 20 = 80 \neq 120$.
- Option B: 30 — **correct**.
- Option C: 40 — gives product $4 \times 40 = 160 \neq 120$.
- Option D: 48 — gives product $4 \times 48 = 192 \neq 120$.

Final Answer: $\text{LCM} = 30 \Rightarrow \boxed{\text{B}}$

Answer: (B) [Go Back to Q25](#)

Q26.

Solution

Concept — **Venn diagram (inclusion-exclusion)**: Only Cricket = (Cricket total) — (Both). **Step 1** — **Apply formula**: Only Cricket = $30 - 10 = 20$. **Step 2** —

Verify total: Only Cricket + Both + Only Football = $20 + 10 + 10 = 40$. Remaining = $45 - 40 = 5$ play neither. (Consistent with totals.) **Why other options are wrong:**

- Option A: 15 — subtracts 15 instead of 10 from 30.
- Option B: 25 — adds instead of subtracts ($30 - 5$).
- Option C: 20 — **correct**.
- Option D: 10 — uses “both” figure as the answer.

Final Answer: Students playing only cricket = $20 \Rightarrow \boxed{\text{C}}$

Answer: (C) [Go Back to Q26](#)



Q27.

Solution

Concept — Consecutive integers sum: Let integers be $n - 2, n - 1, n, n + 1, n + 2$.
Sum = $5n$. **Step 1 — Solve for n :** $5n = 85 \Rightarrow n = 17$. **Step 2 — Find largest:**

Largest = $n + 2 = 17 + 2 = 19$. **Why other options are wrong:**

- Option A: 15 — this is $n - 2$, the smallest integer.
- Option B: 17 — this is n , the middle integer.
- Option C: 18 — this is $n + 1$, the fourth integer.
- Option D: 19 — **correct**.

Final Answer: Largest integer = 19 $\Rightarrow$ D

Answer: (D) [Go Back to Q27](#)

Q28.

Solution

Concept — Algebraic identity: $(a + b)^2 = a^2 + 2ab + b^2 \Rightarrow a^2 + b^2 = (a + b)^2 - 2ab$.
Step 1 — Given: $a + b = 8, ab = 15$. **Step 2 — Calculate:** $a^2 + b^2 = 8^2 - 2 \times 15 =$

$64 - 30 = 34$. **Why other options are wrong:**

- Option A: 34 — **correct**.
- Option B: 49 — uses $(a + b)^2 - ab = 64 - 15 = 49$; wrong formula.
- Option C: 64 — uses only $(a + b)^2$; forgets to subtract $2ab$.
- Option D: 30 — uses $2ab$; wrong formula.

Final Answer: Sum of squares = 34 $\Rightarrow$ A

Answer: (A) [Go Back to Q28](#)

Q29.

Solution

Concept — n -th term of AP: $T_n = a + (n - 1)d$. **Step 1 — Identify AP:** First term $a = 2$, common difference $d = 5 - 2 = 3$. **Step 2 — Find 10th term:**
 $T_{10} = 2 + (10 - 1) \times 3 = 2 + 27 = 29$. **Why other options are wrong:**

- Option A: 26 — uses $n = 9$: $2 + 8 \times 3 = 26$.



- Option B: 29 — **correct**.
- Option C: 32 — uses $n = 11$: $2 + 10 \times 3 = 32$.
- Option D: 35 — uses $n = 12$: $2 + 11 \times 3 = 35$.

Final Answer: 10th term = 29 $\Rightarrow$ B

Answer: (B) [Go Back to Q29](#)

Q30.

Solution

Concept — Simultaneous equations (substitution): Solve for x and y , then find xy . **Step 1 — From equation 2:** $x = y + 2$. **Step 2 — Substitute into equation**

1:

$$3(y + 2) + 2y = 16 \Rightarrow 3y + 6 + 2y = 16 \Rightarrow 5y = 10 \Rightarrow y = 2.$$

Step 3 — Find x and product: $x = 2 + 2 = 4$. $xy = 4 \times 2 = 8$. **Why other options are wrong:**

- Option A: 6 — uses $y = 3, x = 2$; check: $3(2) + 2(3) = 6 + 6 = 12 \neq 16$.
- Option B: 10 — uses $y = 2, x = 5$; check: $x - y = 3 \neq 2$.
- Option C: 8 — **correct**.
- Option D: 12 — uses $y = 3, x = 4$; check: $x - y = 1 \neq 2$.

Final Answer: $xy = 8 \Rightarrow$ C

Answer: (C) [Go Back to Q30](#)

Q31.

Solution

Concept — Ratio and difference: Let the numbers be $7k$ and $5k$. Difference = $2k$.

Step 1 — Solve for k: $7k - 5k = 14 \Rightarrow 2k = 14 \Rightarrow k = 7$. **Step 2 — Find larger number:** $7k = 7 \times 7 = 49$. **Why other options are wrong:**

- Option A: 35 — uses $k = 5$; difference would be $10 \neq 14$.
- Option B: 42 — uses $k = 6$; difference would be $12 \neq 14$.
- Option C: 56 — uses $k = 8$; difference would be $16 \neq 14$.
- Option D: 49 — **correct**.

Final Answer: Larger number = 49 $\Rightarrow$ D



Answer: (D) [Go Back to Q31](#)

Q32.

Solution

Concept — Alligation rule: Ratio = (Mean price – Cheaper price) : (Costlier price – Mean price). **Step 1 — Apply alligation:**

Qty of Rs. 120 variety : Qty of Rs. 80 variety = $(96 - 80) : (120 - 96) = 16 : 24 = 2 : 3$.

Step 2 — Verify: $\frac{2 \times 120 + 3 \times 80}{5} = \frac{240 + 240}{5} = \frac{480}{5} = 96$. ✓ **Why other options are wrong:**

- Option A: 2:3 — **correct**.
- Option B: 3:2 — inverted ratio (places cheaper in numerator).
- Option C: 1:2 — miscalculates differences.
- Option D: 2:1 — incorrect application of the rule.

Final Answer: Ratio of first to second = 2 : 3 ⇒ **A**

Answer: (A) [Go Back to Q32](#)

Q33.

Solution

Concept — Partnership (capital × time): Profit is shared in ratio of capital-months. **Step 1 — Capital-months:**

- A: $5000 \times 12 = 60,000$
- B: $8000 \times 6 = 48,000$ (joined at month 7, so for 6 months)
- C: $12000 \times 4 = 48,000$ (joined at month 9, so for 4 months)

Step 2 — Ratio: $60000 : 48000 : 48000 = 5 : 4 : 4$. Total parts = 13. **Step 3 — B's share:** $\frac{4}{13} \times 6500 = \text{Rs. } 2,000$. **Why other options are wrong:**

- Option A: Rs. 1,500 — uses ratio 3:2:2.
- Option B: Rs. 2,000 — **correct**.
- Option C: Rs. 2,500 — applies ratio 5:5:3.
- Option D: Rs. 3,000 — assigns A's share to B.



Final Answer: B's share = Rs. 2,000 $\Rightarrow$ **B**

Answer: (B) [Go Back to Q33](#)

Q34.

Solution

Concept — Ages and ratio: Let current ages be $9x$ (father) and $2x$ (son). **Step 1 — Set up equation after 12 years:**

$$\frac{9x + 12}{2x + 12} = \frac{3}{1} \Rightarrow 9x + 12 = 6x + 36 \Rightarrow 3x = 24 \Rightarrow x = 8.$$

Step 2 — Son's current age: $2x = 2 \times 8 = 16$ years. **Step 3 — Verify:** Father = 72, Son = 16; ratio = $72 : 16 = 9 : 2$. ✓ After 12 years: $84 : 28 = 3 : 1$. ✓ **Why other options are wrong:**

- Option A: 8 years — gives son's half (value of x , not $2x$).
- Option B: 12 years — uses $x = 6$; check: $(54 + 12) : (12 + 12) = 66 : 24 \neq 3 : 1$.
- Option C: 16 years — **correct**.
- Option D: 20 years — uses $x = 10$; check: $(90 + 12) : (20 + 12) = 102 : 32 \neq 3 : 1$.

Final Answer: Son's current age = 16 years $\Rightarrow$ **C**

Answer: (C) [Go Back to Q34](#)

Q35.

Solution

Concept — Perpendicular from centre bisects chord: half-chord² = $r^2 - d^2$. **Step 1 — Apply Pythagoras:** Let half-chord = h . $h = \sqrt{r^2 - d^2} = \sqrt{10^2 - 6^2} = \sqrt{100 - 36} = \sqrt{64} = 8$ cm. **Step 2 — Full chord:** Chord = $2h = 2 \times 8 = 16$ cm.

Why other options are wrong:

- Option A: 8 cm — this is the half-chord, not full chord.
- Option B: 12 cm — uses $d = 8$ instead of 6.
- Option C: 14 cm — arithmetic error in square root.
- Option D: 16 cm — **correct**.

Final Answer: Length of chord = 16 cm $\Rightarrow$ **D**



Answer: (D) [Go Back to Q35](#)

Q36.

Solution

Concept — Rectangle: Perimeter and Area: $P = 2(l + b)$; $A = l \times b$. **Step 1 —**

Find breadth: $52 = 2(16 + b) \Rightarrow 16 + b = 26 \Rightarrow b = 10$ cm. **Step 2 — Find area:**

$A = 16 \times 10 = 160$ cm². **Why other options are wrong:**

- Option A: 160 cm² — **correct**.
- Option B: 176 cm² — uses breadth = 11 cm (P would be $54 \neq 52$).
- Option C: 192 cm² — uses breadth = 12 cm (P would be $56 \neq 52$).
- Option D: 208 cm² — uses breadth = 13 cm (P would be $58 \neq 52$).

Final Answer: Area = 160 cm² $\Rightarrow$ **A**

Answer: (A) [Go Back to Q36](#)

Q37.

Solution

Concept — Total Surface Area of cuboid: $TSA = 2(lb + bh + hl)$. **Step 1 —**

Substitute values: $l = 8, b = 5, h = 4$.

$$TSA = 2(8 \times 5 + 5 \times 4 + 4 \times 8) = 2(40 + 20 + 32) = 2 \times 92 = 184 \text{ cm}^2.$$

Why other options are wrong:

- Option A: 160 cm² — computes only $2(lb + bh) = 2(40 + 20) = 120$ or uses wrong formula.
- Option B: 184 cm² — **correct**.
- Option C: 200 cm² — adds extra face or uses wrong dimension.
- Option D: 220 cm² — arithmetic error; uses $l = 10$ in one face.

Final Answer: Total surface area = 184 cm² $\Rightarrow$ **B**

Answer: (B) [Go Back to Q37](#)



Q38.

Solution

Concept — Combinations (nC_r): ${}^{15}C_{11} = {}^{15}C_4$ (use smaller r). **Step 1 — Compute ${}^{15}C_4$:**

$${}^{15}C_4 = \frac{15!}{4! \cdot 11!} = \frac{15 \times 14 \times 13 \times 12}{4 \times 3 \times 2 \times 1} = \frac{32760}{24} = 1,365.$$

Why other options are wrong:

- Option A: 105 — equals ${}^{15}C_2 = 105$.
- Option B: 455 — equals ${}^{15}C_3 = 455$.
- Option C: 1,365 — **correct** (${}^{15}C_4 = {}^{15}C_{11}$).
- Option D: 3,003 — equals ${}^{15}C_5 = 3003$.

Final Answer: Number of ways = 1,365 $\Rightarrow$ C

Answer: (C) [Go Back to Q38](#)

Q39.

Solution

Concept — Classical probability (equally likely outcomes): $P(E) = \frac{\text{favourable outcomes}}{\text{total outcomes}}$. **Step 1 — Sample space:** $\{HH, HT, TH, TT\}$ — 4 equally likely outcomes. **Step 2 — Favourable outcomes (exactly 1 tail):** $\{HT, TH\}$ — 2 outcomes. **Step 3 — Probability:** $P = \frac{2}{4} = \frac{1}{2}$. **Why other options are wrong:**

- Option A: $\frac{1}{4}$ — probability of exactly 0 tails (HH only).
- Option B: $\frac{3}{4}$ — probability of at least 1 tail (HT, TH, TT).
- Option C: $\frac{1}{3}$ — incorrect denominator; sample space has 4 outcomes.
- Option D: $\frac{1}{2}$ — **correct**.

Final Answer: $P(\text{exactly one tail}) = \frac{1}{2} \Rightarrow$ D

Answer: (D) [Go Back to Q39](#)



Q40.

Solution

Concept — Angle of elevation (trigonometry): $\tan \theta = \frac{\text{height}}{\text{base distance}}$. **Step 1**

— **Set up equation:** $\tan 30^\circ = \frac{h}{30}$. **Step 2 — Solve:** $\tan 30^\circ = \frac{1}{\sqrt{3}}$. So $h = \frac{30}{\sqrt{3}} = \frac{30\sqrt{3}}{3} = 10\sqrt{3}$ m. **Step 3 — Approximate:** $10\sqrt{3} \approx 10 \times 1.732 = 17.32$ m. **Why**

other options are wrong:

- Option A: $10\sqrt{3}$ m — **correct**.
- Option B: $15\sqrt{3}$ m — uses base distance of 45 m ($\tan 30^\circ \times 45 = 15\sqrt{3}$).
- Option C: $20\sqrt{3}$ m — uses base distance of 60 m.
- Option D: $30\sqrt{3}$ m — uses $\tan 60^\circ$ instead of $\tan 30^\circ$ ($h = 30 \tan 60^\circ = 30\sqrt{3}$).

Final Answer: Height of tower = $10\sqrt{3}$ m $\Rightarrow$ A

Answer: (A) [Go Back to Q40](#)



Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	2	C	3	D	4	A	5	B
6	C	7	D	8	A	9	B	10	C
11	D	12	A	13	B	14	C	15	D
16	A	17	B	18	C	19	D	20	A
21	B	22	C	23	D	24	A	25	B
26	C	27	D	28	A	29	B	30	C
31	D	32	A	33	B	34	C	35	D
36	A	37	B	38	C	39	D	40	A

