

MAHCET Quantitative Aptitude

Sample Paper – 2

Duration: 38 Minutes

Maximum Marks: 50

Instructions

- This paper contains **50** Multiple Choice Questions (Single Correct Answer), modelled on the Quantitative Aptitude section of **MAH-MBA CET**.
- Each correct answer carries **+1 mark**. There is **no negative marking** for incorrect or unattempted answers.
- Only **one** option is correct. Choose carefully.
- Syllabus: MAH-MBA CET Quantitative Aptitude — arithmetic, algebra, data interpretation, geometry & mensuration, number series, permutation & combination, and probability.
- This is a **CBT (Computer-Based Test)**. Personal calculators, mobile phones, and electronic gadgets are strictly prohibited. A simple on-screen calculator is provided in the test interface.

Q1. Questions 1–5: The table below shows the annual revenue (in Rs. crore) of five companies over five years. Study the data carefully and answer the questions.

Company	2019	2020	2021	2022	2023
Alfa	200	180	240	280	320
Beta	120	140	160	180	200
Gamma	300	270	330	360	400
Delta	100	120	110	140	160
Epsilon	250	230	260	290	310

What is the total revenue (in Rs. crore) of all five companies in the year 2021?



- (A) 1050
- (B) 1100
- (C) 1150
- (D) 1200

Q2. Which company showed the highest percentage growth in revenue from 2019 to 2023?

- (A) Alfa
- (B) Gamma
- (C) Beta
- (D) Delta

Q3. What is the average annual revenue (in Rs. crore) of Gamma over all five years?

- (A) 312
- (B) 320
- (C) 328
- (D) 332

Q4. What was the difference (in Rs. crore) between Alfa's and Delta's revenue in the year 2022?

- (A) 140
- (B) 150
- (C) 160
- (D) 170

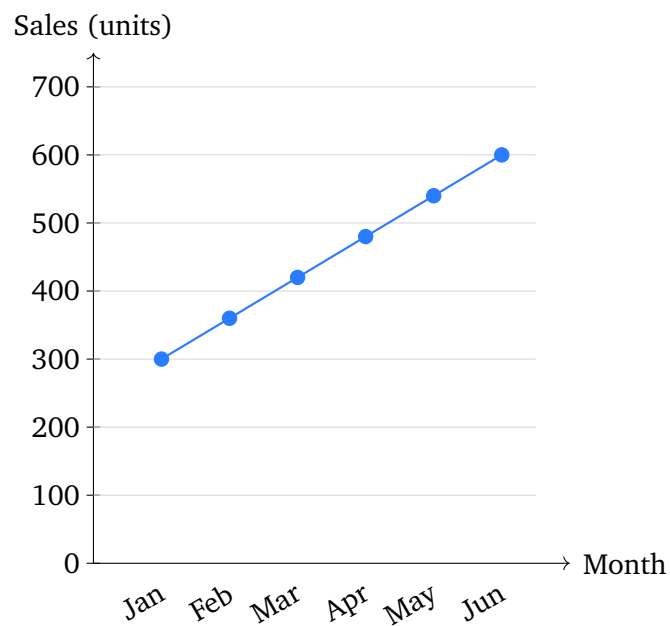
Q5. In which year was the combined revenue of all five companies the highest?

- (A) 2022



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

Q6. Questions 6–10: The line graph below shows the monthly sales (in units) of a product from January to June. Study the graph and answer the questions.



What is the average monthly sales (in units) from January to June?

- (A) 400
- (B) 420
- (C) 450
- (D) 480

Q7. By what percentage did the sales increase from January to June?

- (A) 50%
- (B) 75%
- (C) 80%
- (D) 100%



Q8. By how many units did sales increase from March to April?

- (A) 60
- (B) 80
- (C) 100
- (D) 120

Q9. What is the ratio of sales in February to sales in May?

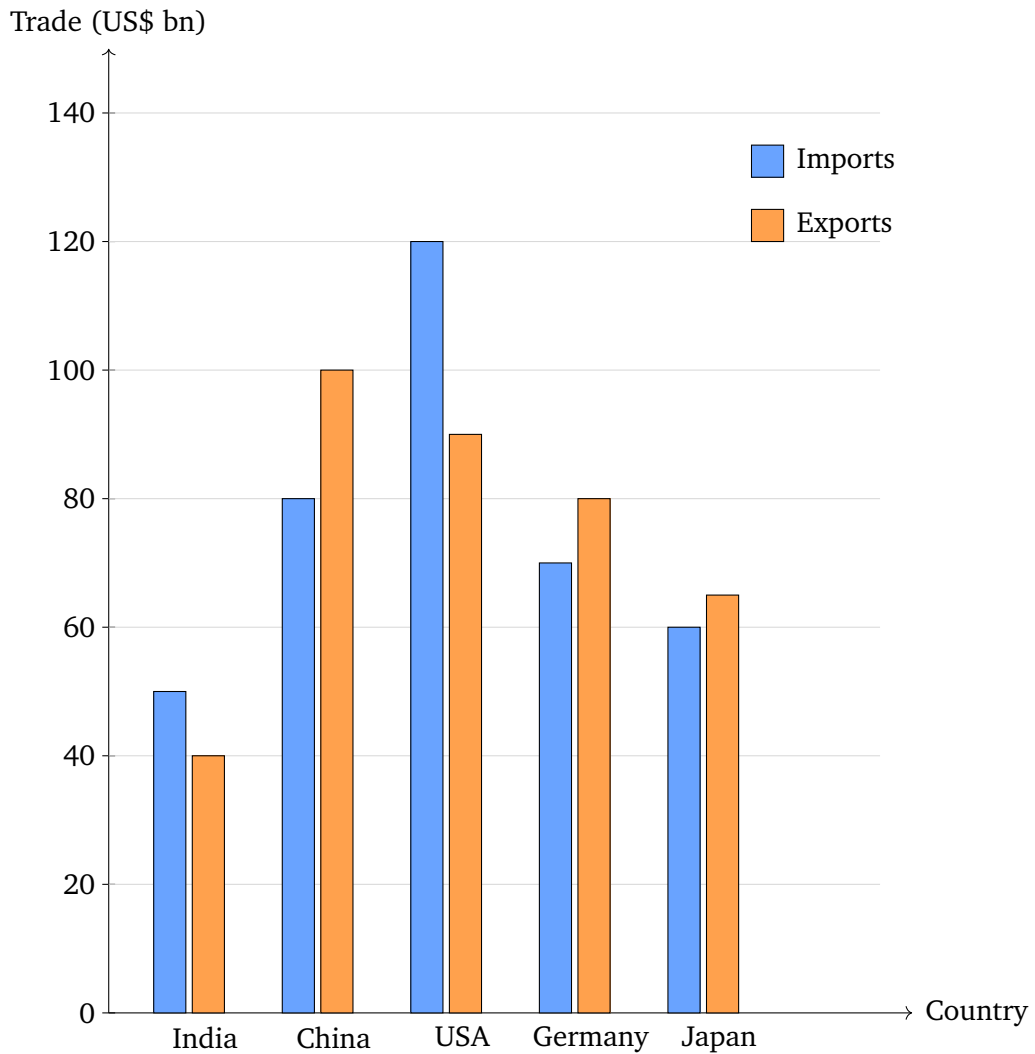
- (A) 3:4
- (B) 2:3
- (C) 4:5
- (D) 3:5

Q10. If sales in July follow the same pattern of a monthly increase of 60 units, what would be the sales in July?

- (A) 620
- (B) 640
- (C) 660
- (D) 680

Q11. Questions 11–15: The grouped bar chart below shows the imports and exports (in US\$ billion) of five countries. Study the chart and answer the questions.





Which country has the highest trade surplus (Exports minus Imports)?

- (A) USA
- (B) Germany
- (C) Japan
- (D) China

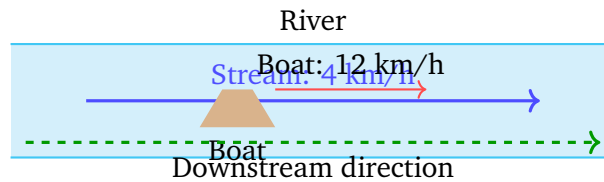
Q12. What is the total imports (in US\$ billion) of all five countries combined?

- (A) 380
- (B) 360
- (C) 400
- (D) 420



- Q13.** What is the ratio of USA's imports to USA's exports?
- (A) 3:2
 - (B) 4:3
 - (C) 5:3
 - (D) 2:1
- Q14.** By what percentage are India's imports greater than its exports?
- (A) 10%
 - (B) 20%
 - (C) 25%
 - (D) 30%
- Q15.** What is the combined total trade (imports plus exports) of Germany and Japan?
- (A) 250
 - (B) 260
 - (C) 270
 - (D) 275
- Q16.** A principal of Rs. 10,000 is invested at 10% per annum compound interest, compounded annually. What is the compound interest earned after 2 years?
- (A) Rs. 2,100
 - (B) Rs. 2,000
 - (C) Rs. 2,200
 - (D) Rs. 1,900
- Q17.** A boat travels at a speed of 12 km/h in still water. The speed of the stream is 4 km/h. How long (in hours) will it take the boat to travel 32 km downstream?





- (A) 1.5 hours
- (B) 2 hours
- (C) 2.5 hours
- (D) 3 hours

Q18. Pipe A can fill a tank in 12 minutes. Pipe B (a drain) can empty the full tank in 18 minutes. If both pipes are opened simultaneously when the tank is empty, how long will it take (in minutes) to fill the tank?

- (A) 24 min
- (B) 30 min
- (C) 36 min
- (D) 48 min

Q19. Wine costing Rs. 200 per litre is mixed with water (cost = Rs. 0 per litre) to produce a mixture worth Rs. 150 per litre. In what ratio should wine be mixed with water?

$$\begin{array}{ccc}
 \boxed{\text{Wine: Rs. 200}} & & \boxed{\text{Water: Rs. 0}} \\
 |150 - 0| = 150 & & |200 - 150| = 50 \\
 \boxed{\text{Mean: Rs. 150}} & & \\
 \text{Wine : Water} = 150 : 50 = 3 : 1
 \end{array}$$

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



- Q20.** A invests Rs. 15,000 for 12 months and B joins after 4 months with Rs. 20,000 for the remaining 8 months. If the total profit at the end of the year is Rs. 34,000, what is A's share of the profit?
- (A) Rs. 18,000
(B) Rs. 16,000
(C) Rs. 20,000
(D) Rs. 17,000
- Q21.** A number is first increased by 20% and then decreased by 20%. What is the net percentage change in the number?
- (A) No change (0%)
(B) 4% decrease
(C) 4% increase
(D) 2% decrease
- Q22.** An article is bought at Rs. 800 and sold at a loss of 15%. The selling price is then treated as the cost price and the article is sold again at a profit of 10%. What is the final selling price?
- (A) Rs. 720
(B) Rs. 735
(C) Rs. 748
(D) Rs. 760
- Q23.** A certain principal amounts to Rs. 24,000 in 4 years at a simple interest rate of 5% per annum. What is the principal?
- (A) Rs. 18,000
(B) Rs. 19,000
(C) Rs. 19,500
(D) Rs. 20,000

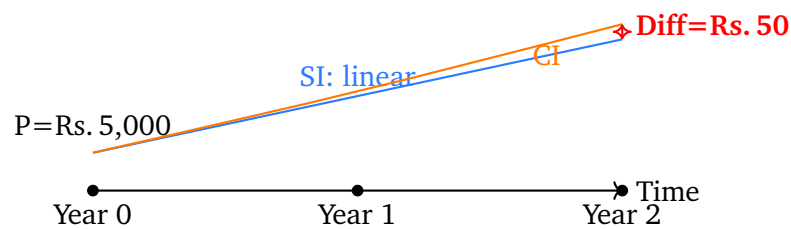


- Q24.** A car travels 240 km in two parts: the first 120 km at 60 km/h and the remaining 120 km at 40 km/h. What is the average speed for the entire journey?
- (A) 48 km/h
(B) 50 km/h
(C) 52 km/h
(D) 54 km/h
- Q25.** A can complete a task in 20 days, B in 30 days, and C in 60 days. If all three work together, in how many days will the task be completed?
- (A) 8 days
(B) 10 days
(C) 12 days
(D) 15 days
- Q26.** A sum of Rs. 40,000 is divided among A, B, and C in the ratio 2:3:5. What is C's share?
- (A) Rs. 8,000
(B) Rs. 12,000
(C) Rs. 20,000
(D) Rs. 16,000
- Q27.** What is the average of the first five multiples of 7?
- (A) 14
(B) 17
(C) 20
(D) 21
- Q28.** An article has a marked price of Rs. 2,500. Two successive discounts of 10% and 20% are offered. What is the final selling price?



- (A) Rs. 1,800
- (B) Rs. 1,850
- (C) Rs. 1,900
- (D) Rs. 1,750

Q29. A principal of Rs. 5,000 is invested at 10% per annum for 2 years. What is the difference between the compound interest and the simple interest?



- (A) Rs. 25
- (B) Rs. 50
- (C) Rs. 75
- (D) Rs. 100

Q30. Train A travels at 60 km/h and Train B travels at 80 km/h. Both start simultaneously from the same point in opposite directions. After how many hours will they be 350 km apart?

- (A) 2 hours
- (B) 2.25 hours
- (C) 2.5 hours
- (D) 3 hours

Q31. A can complete a job in 12 days. A works alone for 4 days, after which B joins A. Together they finish the remaining work in 4 more days. In how many days can B alone complete the job?

- (A) 8 days
- (B) 9 days



- (C) 10 days
- (D) 12 days

- Q32.** 20% of a number, when added to 120, gives the number itself. What is the number?
- (A) 150
 - (B) 140
 - (C) 160
 - (D) 180
- Q33.** Two articles are each sold at Rs. 4,200. One is sold at a 20% gain and the other at a 20% loss. What is the overall result?
- (A) 4% gain
 - (B) 4% loss
 - (C) No profit, no loss
 - (D) 2% loss
- Q34.** 12 men or 18 women can complete a job in 14 days. In how many days will 8 men and 6 women together complete the same job?
- (A) 9 days
 - (B) 12 days
 - (C) 14 days
 - (D) 16 days
- Q35.** A sum of money at compound interest at 20% per annum amounts to Rs. 17,280 in 3 years. What is the principal?
- (A) Rs. 8,000
 - (B) Rs. 9,000
 - (C) Rs. 9,600



(D) Rs. 10,000

Q36. Find the roots of the quadratic equation $2x^2 - 5x + 2 = 0$.

(A) 2 and $\frac{1}{2}$

(B) 1 and 2

(C) -2 and $-\frac{1}{2}$

(D) $\frac{1}{2}$ and -2

Q37. The roots of the quadratic equation $x^2 - 7x + 12 = 0$ are α and β . Find the value of $\alpha^2 + \beta^2$.

(A) 13

(B) 25

(C) 37

(D) 49

Q38. Form a quadratic equation whose roots are 3 and -5 .

(A) $x^2 - 2x - 15 = 0$

(B) $x^2 - 2x + 15 = 0$

(C) $x^2 + 2x - 15 = 0$

(D) $x^2 + 2x + 15 = 0$

Q39. The length of a rectangle is three times its width. If the area of the rectangle is 75 cm^2 , what is its perimeter?

(A) 30 cm

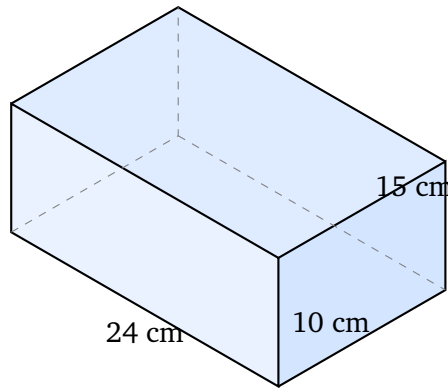
(B) 32 cm

(C) 36 cm

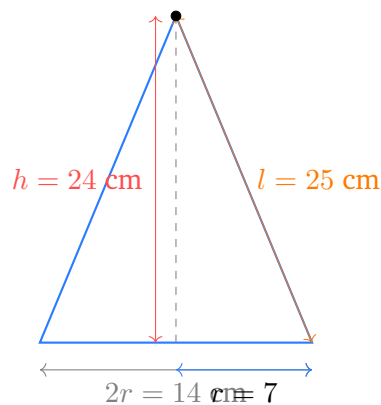
(D) 40 cm



- Q40.** Find the volume (in cm^3) of a cuboid with dimensions $24 \text{ cm} \times 15 \text{ cm} \times 10 \text{ cm}$.

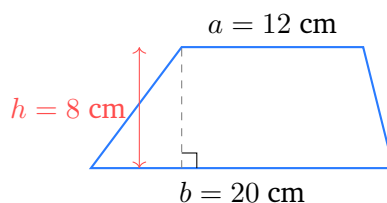


- (A) $3,600 \text{ cm}^3$
(B) $3,200 \text{ cm}^3$
(C) $3,800 \text{ cm}^3$
(D) $4,000 \text{ cm}^3$
- Q41.** A cone has a base radius of 7 cm and a slant height of 25 cm. Find the volume of the cone. (Use $\pi = \frac{22}{7}$.)



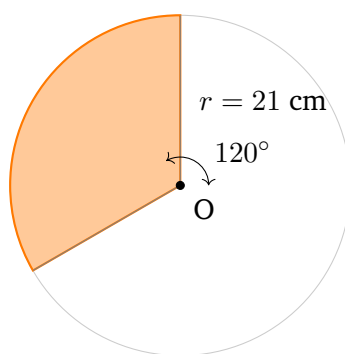
- (A) $1,078 \text{ cm}^3$
(B) $1,232 \text{ cm}^3$
(C) $1,386 \text{ cm}^3$
(D) $1,540 \text{ cm}^3$
- Q42.** Find the area (in cm^2) of a trapezoid whose parallel sides are 12 cm and 20 cm, and whose height is 8 cm.





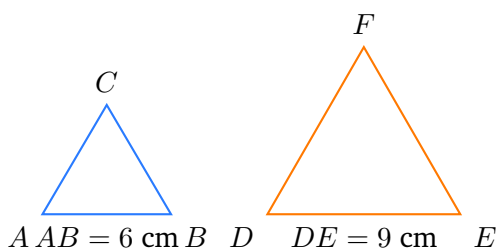
- (A) 108 cm^2
- (B) 116 cm^2
- (C) 128 cm^2
- (D) 136 cm^2

Q43. Find the area (in cm^2) of a sector of a circle with radius 21 cm and a central angle of 120° . (Use $\pi = \frac{22}{7}$.)



- (A) 308 cm^2
- (B) 385 cm^2
- (C) 420 cm^2
- (D) 462 cm^2

Q44. In two similar triangles $\triangle ABC$ and $\triangle DEF$, the corresponding sides are $AB = 6 \text{ cm}$ and $DE = 9 \text{ cm}$. What is the ratio of the area of $\triangle ABC$ to the area of $\triangle DEF$?



- (A) 4:9
- (B) 2:3
- (C) 16:81
- (D) 6:9

Q45. Find the missing term in the series: 1, 4, 9, 16, ____, 36.

- (A) 20
- (B) 25
- (C) 28
- (D) 30

Q46. Find the missing term in the series: 2, 3, 5, 9, 17, ____, 65.

- (A) 27
- (B) 31
- (C) 33
- (D) 35

Q47. Find the missing term in the series: 1, 8, 27, 64, 125, 216, ____, 512.

- (A) 300
- (B) 320
- (C) 336
- (D) 343

Q48. In how many ways can 5 people be seated in a row?

- (A) 120
- (B) 60
- (C) 24
- (D) 20



- Q49.** A card is drawn at random from a standard deck of 52 cards. What is the probability that the card drawn is a face card (Jack, Queen, or King)?
- (A) $\frac{1}{13}$
 - (B) $\frac{3}{13}$
 - (C) $\frac{4}{13}$
 - (D) $\frac{1}{4}$
- Q50.** Two fair dice are rolled simultaneously. What is the probability that the sum of the numbers on the two dice is 8?
- (A) $\frac{4}{36}$
 - (B) $\frac{6}{36}$
 - (C) $\frac{5}{36}$
 - (D) $\frac{7}{36}$



Detailed Solutions

Q1.

Solution

Concept — Data Interpretation (Table): Add the revenue values for all five companies for the given year.

Step 1 — Identify 2021 values: From the table: Alfa=240, Beta=160, Gamma=330, Delta=110, Epsilon=260.

Step 2 — Sum: $240 + 160 + 330 + 110 + 260 = 1100$ Rs. crore.

Why other options are wrong:

- Option A: 1050 — incorrect addition; misses 50 crore.
- Option C: 1150 — overestimates by 50 crore.
- Option D: 1200 — overestimates by 100 crore.

Final Answer: Total 2021 revenue = 1100 Rs. crore $\Rightarrow$ B

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

Q2.

Solution

Concept — Percentage Growth: $\text{Growth \%} = \frac{\text{Final} - \text{Initial}}{\text{Initial}} \times 100$.

Step 1 — Compute growth for each company (2019 to 2023):

- Alfa: $\frac{320-200}{200} \times 100 = 60\%$
- Beta: $\frac{200-120}{120} \times 100 = 66.7\%$
- Gamma: $\frac{400-300}{300} \times 100 \approx 33.3\%$
- Delta: $\frac{160-100}{100} \times 100 = 60\%$
- Epsilon: $\frac{310-250}{250} \times 100 = 24\%$

Step 2 — Compare: Beta has the highest growth at 66.7%.

Why other options are wrong:

- Option A: Alfa grew by 60%, less than Beta.
- Option B: Gamma grew by only $\approx 33.3\%$.
- Option D: Delta grew by 60%, equal to Alfa but less than Beta.



Final Answer: Highest growth = Beta $\Rightarrow$ C

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

Q3.

Solution

Concept — Simple Average: $\text{Average} = \frac{\text{Sum of values}}{\text{Number of values}}$.

Step 1 — Sum Gamma's revenues: $300 + 270 + 330 + 360 + 400 = 1660$ Rs. crore.

Step 2 — Divide by 5: $\frac{1660}{5} = 332$ Rs. crore.

Why other options are wrong:

- Option A: 312 — incorrect sum used.
- Option B: 320 — underestimates the total.
- Option C: 328 — rounding error in addition.

Final Answer: Average annual revenue of Gamma = 332 Rs. crore $\Rightarrow$ D

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

Q4.

Solution

Concept — Difference between values: Subtract the smaller value from the larger.

Step 1 — Identify 2022 revenues: Alfa = 280 Rs. crore; Delta = 140 Rs. crore.

Step 2 — Find difference: $280 - 140 = 140$ Rs. crore.

Why other options are wrong:

- Option B: 150 — uses incorrect values from a different year.
- Option C: 160 — overestimates Delta's 2022 revenue.
- Option D: 170 — incorrect; uses 2023 values instead.

Final Answer: Difference in 2022 = 140 Rs. crore $\Rightarrow$ A

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



Q5.

Solution

Concept — Row totals comparison: Sum all five companies for each year, then identify the maximum.

Step 1 — Compute yearly totals:

- 2019: $200 + 120 + 300 + 100 + 250 = 970$
- 2020: $180 + 140 + 270 + 120 + 230 = 940$
- 2021: $240 + 160 + 330 + 110 + 260 = 1100$
- 2022: $280 + 180 + 360 + 140 + 290 = 1250$
- 2023: $320 + 200 + 400 + 160 + 310 = 1390$

Step 2 — Identify maximum: 2023 has the highest combined revenue of 1390 Rs. crore.

Why other options are wrong:

- Option A: 2022 gives 1250, which is less than 2023.
- Option C: 2021 gives 1100, not the highest.
- Option D: 2020 gives 940, the lowest.

Final Answer: Highest combined revenue year = 2023 $\Rightarrow$ **B**

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

Q6.

Solution

Concept — Arithmetic Mean: $\text{Average} = \frac{\text{Sum of all values}}{\text{Number of values}}$

Step 1 — Sum monthly sales: $300 + 360 + 420 + 480 + 540 + 600 = 2700$ units.

Step 2 — Divide by 6: $\frac{2700}{6} = 450$ units.

Why other options are wrong:

- Option A: 400 — arithmetic error in summation.
- Option B: 420 — treats March as the midpoint incorrectly.
- Option D: 480 — overestimates by treating April as average.

Final Answer: Average monthly sales = 450 units $\Rightarrow$ **C**

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



Q7.

Solution

Concept — Percentage Increase: $\% \text{ increase} = \frac{\text{Final} - \text{Initial}}{\text{Initial}} \times 100.$

Step 1 — Identify values: January sales = 300; June sales = 600.

Step 2 — Apply formula: $\frac{600 - 300}{300} \times 100 = \frac{300}{300} \times 100 = 100\%.$

Why other options are wrong:

- Option A: 50% — uses wrong denominator (600 instead of 300).
- Option B: 75% — arithmetic error.
- Option C: 80% — confuses net change with proportional change.

Final Answer: Percentage increase Jan to Jun = 100% $\Rightarrow$ **D**

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

Q8.

Solution

Concept — Difference of consecutive values: Subtract March sales from April sales.

Step 1 — Read values from graph: March = 420 units; April = 480 units.

Step 2 — Compute difference: $480 - 420 = 60$ units.

Why other options are wrong:

- Option B: 80 — uses Jan-to-Feb change for a different pair.
- Option C: 100 — overestimates the monthly jump.
- Option D: 120 — double-counts the increase.

Final Answer: Increase March to April = 60 units $\Rightarrow$ **A**

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



Q9.

Solution

Concept — Ratio: Express two quantities in simplest form.

Step 1 — Read values: February = 360 units; May = 540 units.

Step 2 — Simplify ratio: $360 : 540 = \frac{360}{540} = \frac{2}{3}$, so ratio = 2 : 3.

Why other options are wrong:

- Option A: 3:4 — does not match 360:480 (different months).
- Option C: 4:5 — corresponds to April:May = 480:540.
- Option D: 3:5 — uses Jan:May = 300:500 (wrong months).

Final Answer: Feb : May = 2 : 3 $\Rightarrow$ **B**

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

Q10.

Solution

Concept — Arithmetic progression extrapolation: Add the constant monthly increment to the last known value.

Step 1 — Identify June sales and pattern: June = 600 units; monthly increase = 60 units.

Step 2 — Project July: $600 + 60 = 660$ units.

Why other options are wrong:

- Option A: 620 — adds only 20 units instead of 60.
- Option B: 640 — adds 40 units, not the correct increment.
- Option D: 680 — adds 80 units, over-extrapolates.

Final Answer: July sales = 660 units $\Rightarrow$ **C**

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



Q11.

Solution**Concept — Trade Surplus:** $\text{Surplus} = \text{Exports} - \text{Imports}$ (positive = surplus).**Step 1 — Compute surplus for each country:**

- India: $40 - 50 = -10$ (trade deficit)
- China: $100 - 80 = +20$
- USA: $90 - 120 = -30$ (trade deficit)
- Germany: $80 - 70 = +10$
- Japan: $65 - 60 = +5$

Step 2 — Identify maximum surplus: China has the highest trade surplus of US\$20 billion.**Why other options are wrong:**

- Option A: USA has a trade deficit of \$30 bn, not a surplus.
- Option B: Germany's surplus is only \$10 bn.
- Option C: Japan's surplus is only \$5 bn.

Final Answer: Highest surplus country = China $\Rightarrow$ **D****Answer: (D)** [Go Back to Q11](#)

Q12.

Solution**Concept — Summing column data:** Add all import values.**Step 1 — List imports:** India=50, China=80, USA=120, Germany=70, Japan=60.**Step 2 — Sum:** $50 + 80 + 120 + 70 + 60 = 380$ US\$ billion.**Why other options are wrong:**

- Option B: 360 — misreads one country's imports.
- Option C: 400 — adds 20 extra, confusing imports with exports.
- Option D: 420 — sums both imports and partial exports.

Final Answer: Total imports = 380 US\$ bn $\Rightarrow$ **A****Answer: (A)** [Go Back to Q12](#)

Q13.

Solution

Concept — Ratio in simplest form: Divide both numbers by their GCD.

Step 1 — Identify USA data: Imports = 120 US\$ bn; Exports = 90 US\$ bn.

Step 2 — Simplify: $120 : 90 = \frac{120}{30} : \frac{90}{30} = 4 : 3$.

Why other options are wrong:

- Option A: 3:2 — inverts or incorrectly simplifies the values.
- Option C: 5:3 — does not correspond to 120:90.
- Option D: 2:1 — halves both incorrectly.

Final Answer: USA Imports : Exports = 4 : 3 $\Rightarrow$ **B**

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

Q14.

Solution

Concept — Percentage excess: $\% \text{ excess} = \frac{\text{Imports} - \text{Exports}}{\text{Exports}} \times 100$.

Step 1 — Identify India's data: Imports = 50; Exports = 40.

Step 2 — Apply formula: $\frac{50 - 40}{40} \times 100 = \frac{10}{40} \times 100 = 25\%$.

Why other options are wrong:

- Option A: 10% — uses total trade as denominator.
- Option B: 20% — compares difference to imports (50) instead of exports.
- Option D: 30% — overestimates the difference.

Final Answer: India's imports exceed exports by 25% $\Rightarrow$ **C**

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



Q15.

Solution

Concept — Combined total trade: Add imports and exports for each country, then sum the two countries.

Step 1 — Germany total trade: $70 + 80 = 150$ US\$ bn.

Step 2 — Japan total trade: $60 + 65 = 125$ US\$ bn.

Step 3 — Combined: $150 + 125 = 275$ US\$ bn.

Why other options are wrong:

- Option A: 250 — omits Japan's exports of 65.
- Option B: 260 — uses 130 for Japan (error of 5).
- Option C: 270 — arithmetic error of 5 in one country.

Final Answer: Combined trade Germany + Japan = 275 US\$ bn $\Rightarrow$ **D**

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

Q16.

Solution

Concept — Compound Interest: $CI = P \left[\left(1 + \frac{R}{100} \right)^T - 1 \right]$.

Step 1 — Identify values: $P = 10,000$; $R = 10\%$; $T = 2$ years.

Step 2 — Calculate Amount: $A = 10000 \times (1.1)^2 = 10000 \times 1.21 = 12,100$.

Step 3 — Find CI: $CI = 12,100 - 10,000 = \text{Rs. } 2,100$.

Why other options are wrong:

- Option B: Rs. 2,000 — this is the SI (not CI), ignoring interest on interest.
- Option C: Rs. 2,200 — uses $R = 11\%$ by error.
- Option D: Rs. 1,900 — wrong base calculation.

Final Answer: $CI = \text{Rs. } 2,100 \Rightarrow$ **A**

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



Q17.

Solution

Concept — Boats and Streams: Downstream speed = boat speed + stream speed.

Step 1 — Compute downstream speed: $12 + 4 = 16$ km/h.

Step 2 — Apply Time formula: Time = $\frac{\text{Distance}}{\text{Speed}} = \frac{32}{16} = 2$ hours.

Why other options are wrong:

- Option A: 1.5 hours — uses speed 21.3 km/h (incorrect).
- Option C: 2.5 hours — uses upstream speed $12 - 4 = 8$ km/h wrongly.
- Option D: 3 hours — divides by still water speed only (12 km/h).

Final Answer: Time downstream = 2 hours $\Rightarrow$ **B**

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

Q18.

Solution

Concept — Pipes and Cisterns: Net rate = filling rate – draining rate.

Step 1 — Individual rates: Pipe A fills at $\frac{1}{12}$ per minute; Pipe B drains at $\frac{1}{18}$ per minute.

Step 2 — Net rate:

$$\frac{1}{12} - \frac{1}{18} = \frac{3}{36} - \frac{2}{36} = \frac{1}{36} \text{ per minute.}$$

Step 3 — Time to fill: $\frac{1}{1/36} = 36$ minutes.

Why other options are wrong:

- Option A: 24 min — takes LCM of 12 and 18 without accounting for the drain.
- Option B: 30 min — arithmetic error in fraction subtraction.
- Option D: 48 min — uses sum of rates instead of difference.

Final Answer: Time to fill tank = 36 minutes $\Rightarrow$ **C**

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



Q19.

Solution

Concept — Rule of Alligation: Ratio of quantities = $|\text{CP of cheaper} - \text{Mean price}|$: $|\text{CP of dearer} - \text{Mean price}|$.

Step 1 — Set up alligation:

- Wine (dearer): Rs. 200/litre
- Water (cheaper): Rs. 0/litre
- Mean price: Rs. 150/litre

Step 2 — Compute differences:

$$\text{Water portion} = |200 - 150| = 50; \quad \text{Wine portion} = |150 - 0| = 150.$$

Step 3 — Ratio: Wine : Water = 150 : 50 = 3 : 1.

Why other options are wrong:

- Option A: 1:2 — interchanges wine and water quantities.
- Option B: 2:1 — incorrect difference calculation.
- Option C: 1:3 — inverts the correct ratio.

Final Answer: Wine : Water = 3 : 1 $\Rightarrow$ D

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

Q20.

Solution

Concept — Partnership Profit Sharing: Profit ratio = Capital $\times$ Time.

Step 1 — Compute weighted investments:

- A: $15,000 \times 12 = 1,80,000$
- B: $20,000 \times 8 = 1,60,000$

Step 2 — Profit ratio: 1,80,000 : 1,60,000 = 9 : 8.

Step 3 — A's share: $\frac{9}{9+8} \times 34,000 = \frac{9}{17} \times 34,000 = 9 \times 2,000 = \text{Rs. } 18,000.$

Why other options are wrong:



- Option B: Rs. 16,000 — uses B's share (8/17 of profit).
- Option C: Rs. 20,000 — divides profit equally ignoring time.
- Option D: Rs. 17,000 — uses incorrect ratio of 1:1.

Final Answer: A's share = Rs. 18,000 $\Rightarrow$ **A**

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

Q21.

Solution

Concept — Successive Percentage Change: Net multiplier = $(1+a)(1+b)$ where a, b are fractional changes.

Step 1 — Apply successive changes:

$$\text{Net multiplier} = 1.20 \times 0.80 = 0.96.$$

Step 2 — Interpret: $0.96 < 1$, so there is a 4% decrease.

Step 3 — Shortcut: For equal and opposite % changes of x , $\text{net} = -\frac{x^2}{100} = -\frac{400}{100} = -4\%$.

Why other options are wrong:

- Option A: 0% — assumes increases and decreases cancel exactly (wrong for percentages).
- Option C: 4% increase — gets the sign wrong.
- Option D: 2% decrease — halves the correct answer.

Final Answer: Net change = 4% decrease $\Rightarrow$ **B**

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



Q22.

Solution

Concept — Successive Profit & Loss Transactions: Apply each % change sequentially.

Step 1 — First sale (15% loss):

$$SP_1 = 800 \times (1 - 0.15) = 800 \times 0.85 = \text{Rs. } 680.$$

Step 2 — Second sale (10% profit):

$$SP_2 = 680 \times (1 + 0.10) = 680 \times 1.10 = \text{Rs. } 748.$$

Why other options are wrong:

- Option A: Rs. 720 — applies 10% profit to original CP (Rs. 800).
- Option B: Rs. 735 — uses 5% profit in the second step.
- Option D: Rs. 760 — uses 12% profit or wrong first SP.

Final Answer: Final SP = Rs. 748 $\Rightarrow$ **C**

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

Q23.

Solution

Concept — Simple Interest (Finding Principal): $A = P \left(1 + \frac{RT}{100} \right)$.

Step 1 — Substitute values: $24000 = P \times \left(1 + \frac{5 \times 4}{100} \right) = P \times 1.20$.

Step 2 — Solve for P: $P = \frac{24000}{1.20} = \text{Rs. } 20,000$.

Why other options are wrong:

- Option A: Rs. 18,000 — uses $T = 6$ years by mistake.
- Option B: Rs. 19,000 — incorrect rate used.
- Option C: Rs. 19,500 — arithmetic error in division.

Final Answer: Principal = Rs. 20,000 $\Rightarrow$ **D**

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



Q24.

Solution

Concept — Average Speed: $\bar{v} = \frac{\text{Total Distance}}{\text{Total Time}}$.

Step 1 — Compute time for each leg:

- Leg 1: $t_1 = \frac{120}{60} = 2$ hours.
- Leg 2: $t_2 = \frac{120}{40} = 3$ hours.

Step 2 — Total time and distance: Total time = 5 h; total distance = 240 km.

Step 3 — Average speed: $\bar{v} = \frac{240}{5} = 48$ km/h.

Why other options are wrong:

- Option B: 50 km/h — arithmetic mean of 60 and 40, which is incorrect for average speed.
- Option C: 52 km/h — arithmetic error.
- Option D: 54 km/h — uses wrong total time.

Final Answer: Average speed = 48 km/h $\Rightarrow$ A

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

Q25.

Solution

Concept — Combined Work Rate: Combined rate = $\frac{1}{A} + \frac{1}{B} + \frac{1}{C}$.

Step 1 — Compute individual rates:

$$\frac{1}{20} + \frac{1}{30} + \frac{1}{60} = \frac{3}{60} + \frac{2}{60} + \frac{1}{60} = \frac{6}{60} = \frac{1}{10}.$$

Step 2 — Time together: $\frac{1}{1/10} = 10$ days.

Why other options are wrong:

- Option A: 8 days — uses only A and B's rates.
- Option C: 12 days — uses only A and C's rates.
- Option D: 15 days — uses only B and C's rates.



Final Answer: Together they finish in 10 days $\Rightarrow$ **B**

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

Q26.

Solution

Concept — Ratio Distribution: C's share = $\frac{\text{C's ratio part}}{\text{Sum of ratio parts}} \times \text{Total}$.

Step 1 — Sum of ratio parts: $2 + 3 + 5 = 10$.

Step 2 — C's share: $\frac{5}{10} \times 40,000 = \text{Rs. } 20,000$.

Why other options are wrong:

- Option A: Rs. 8,000 — this is A's share (2/10).
- Option B: Rs. 12,000 — this is B's share (3/10).
- Option D: Rs. 16,000 — uses wrong ratio denominator.

Final Answer: C's share = Rs. 20,000 $\Rightarrow$ **C**

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

Q27.

Solution

Concept — Arithmetic Mean of an AP: Average = middle term for an AP, or $\frac{\text{Sum}}{n}$.

Step 1 — List first 5 multiples of 7: 7, 14, 21, 28, 35.

Step 2 — Compute average:

$$\frac{7 + 14 + 21 + 28 + 35}{5} = \frac{105}{5} = 21.$$

Note: For an AP, average = middle term = 21 (3rd term).

Why other options are wrong:

- Option A: 14 — this is the 2nd multiple, not the average.
- Option B: 17 — not a multiple of 7 at all.
- Option C: 20 — arithmetic error in addition.

Final Answer: Average of first 5 multiples of 7 = 21 $\Rightarrow$ **D**



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

Q28.

Solution

Concept — Successive Discounts: Apply each discount sequentially on the reduced price.

Step 1 — After first discount of 10%:

$$\text{Price}_1 = 2500 \times 0.90 = \text{Rs. } 2,250.$$

Step 2 — After second discount of 20%:

$$\text{Final price} = 2250 \times 0.80 = \text{Rs. } 1,800.$$

Why other options are wrong:

- Option B: Rs. 1,850 — combines discounts as $10\% + 20\% = 30\%$ then applies: $2500 \times 0.70 = 1750$ (also wrong); Rs. 1,850 comes from a different error.
- Option C: Rs. 1,900 — applies only 24% effective discount.
- Option D: Rs. 1,750 — applies the 30% equivalent discount directly.

Final Answer: Final selling price = Rs. 1,800 $\Rightarrow$ **A**

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

Q29.

Solution

Concept — CI vs SI Difference: For 2 years, Difference = $P \times \left(\frac{R}{100}\right)^2$.

Step 1 — Compute SI:

$$\text{SI} = \frac{5000 \times 10 \times 2}{100} = \text{Rs. } 1,000.$$

Step 2 — Compute CI:

$$\text{CI} = 5000 \times [(1.1)^2 - 1] = 5000 \times 0.21 = \text{Rs. } 1,050.$$



Step 3 — Difference: $1050 - 1000 = \text{Rs. } 50$.

Shortcut: Difference $= P \times (R/100)^2 = 5000 \times 0.01 = \text{Rs. } 50$.

Why other options are wrong:

- Option A: Rs. 25 — uses $P = 2,500$ by mistake.
- Option C: Rs. 75 — uses 3-year formula for 2 years.
- Option D: Rs. 100 — uses SI value as the difference.

Final Answer: CI – SI = Rs. 50 $\Rightarrow$ **B**

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

Q30.

Solution

Concept — Relative Speed (Opposite Directions): Relative speed = sum of individual speeds.

Step 1 — Relative speed: $60 + 80 = 140 \text{ km/h}$.

Step 2 — Time for 350 km separation:

$$t = \frac{350}{140} = 2.5 \text{ hours.}$$

Why other options are wrong:

- Option A: 2 hours — gives distance $= 140 \times 2 = 280 \text{ km}$, not 350 km.
- Option B: 2.25 hours — gives distance $= 315 \text{ km}$, not 350 km.
- Option D: 3 hours — gives distance $= 420 \text{ km}$, overshoots.

Final Answer: Time = 2.5 hours $\Rightarrow$ **C**

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



Q31.

Solution

Concept — Work (finding partner's rate): Use fractions of work completed in each phase.

Step 1 — Work done by A alone in first 4 days:

$$\frac{4}{12} = \frac{1}{3}.$$

Step 2 — Remaining work: $1 - \frac{1}{3} = \frac{2}{3}$.

Step 3 — Set up equation (A+B together for 4 days):

$$4 \left(\frac{1}{12} + \frac{1}{b} \right) = \frac{2}{3} \implies \frac{1}{12} + \frac{1}{b} = \frac{1}{6} \implies \frac{1}{b} = \frac{1}{12} \implies b = 12 \text{ days.}$$

Why other options are wrong:

- Option A: 8 days — gives combined rate $\frac{1}{12} + \frac{1}{8} = \frac{5}{24}$; in 4 days: $\frac{5}{6} \neq \frac{2}{3}$.
- Option B: 9 days — similar check fails.
- Option C: 10 days — combined rate $\frac{1}{12} + \frac{1}{10}$; in 4 days $\neq \frac{2}{3}$.

Final Answer: B alone = 12 days $\Rightarrow$ D

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

Q32.

Solution

Concept — Linear Equation: Translate the word problem into an algebraic equation and solve.

Step 1 — Form the equation: Let the number be x .

$$0.20x + 120 = x.$$

Step 2 — Solve:

$$120 = x - 0.20x = 0.80x \implies x = \frac{120}{0.80} = 150.$$



Why other options are wrong:

- Option B: 140 — would give $0.2(140) + 120 = 148 \neq 140$.
- Option C: 160 — would give $0.2(160) + 120 = 152 \neq 160$.
- Option D: 180 — would give $0.2(180) + 120 = 156 \neq 180$.

Final Answer: The number = 150 $\Rightarrow$ **A**

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

Q33.

Solution

Concept — Equal SP with opposite gain/loss: When two items sell at the same price with $x\%$ gain and $x\%$ loss, there is always a net loss of $\frac{x^2}{100}\%$.

Step 1 — Find cost prices:

- Item sold at 20% gain: $CP_1 = \frac{4200}{1.20} = \text{Rs. } 3,500$.
- Item sold at 20% loss: $CP_2 = \frac{4200}{0.80} = \text{Rs. } 5,250$.

Step 2 — Overall result: Total CP = 8,750; Total SP = 8,400. Loss = 350.

Step 3 — Loss %: $\frac{350}{8750} \times 100 = 4\%$.

Shortcut: $\frac{20^2}{100} = 4\%$ loss.

Why other options are wrong:

- Option A: 4% gain — gets the direction wrong.
- Option C: no profit/no loss — ignores the asymmetry of percentage changes.
- Option D: 2% loss — halves the correct loss percentage.

Final Answer: Overall result = 4% loss $\Rightarrow$ **B**

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



Q34.

Solution

Concept — Work (men and women efficiency): Find individual daily rates from the given data.

Step 1 — Individual rates per day:

$$1 \text{ man} = \frac{1}{12 \times 14} = \frac{1}{168}; \quad 1 \text{ woman} = \frac{1}{18 \times 14} = \frac{1}{252}.$$

Step 2 — Combined rate (8 men + 6 women):

$$\frac{8}{168} + \frac{6}{252} = \frac{1}{21} + \frac{1}{42} = \frac{2}{42} + \frac{1}{42} = \frac{3}{42} = \frac{1}{14}.$$

Step 3 — Days required: $\frac{1}{1/14} = 14$ days.

Why other options are wrong:

- Option A: 9 days — incorrect rate computation.
- Option B: 12 days — uses only men's rate.
- Option D: 16 days — underestimates combined rate.

Final Answer: 8 men + 6 women finish in 14 days $\Rightarrow$ C

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

Q35.

Solution

Concept — Compound Interest (finding principal): $A = P(1 + R/100)^T$.

Step 1 — Compute $(1.2)^3$: $1.2^2 = 1.44$; $1.2^3 = 1.44 \times 1.2 = 1.728$.

Step 2 — Solve for P:

$$P \times 1.728 = 17,280 \implies P = \frac{17,280}{1.728} = \text{Rs. } 10,000.$$

Why other options are wrong:

- Option A: Rs. 8,000 — $8000 \times 1.728 = 13,824 \neq 17,280$.
- Option B: Rs. 9,000 — $9000 \times 1.728 = 15,552 \neq 17,280$.
- Option C: Rs. 9,600 — $9600 \times 1.728 = 16,588.8 \neq 17,280$.



Final Answer: Principal = Rs. 10,000 $\Rightarrow$ D

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

Q36.

Solution

Concept — Quadratic Formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$.

Step 1 — Identify coefficients: $a = 2$, $b = -5$, $c = 2$.

Step 2 — Discriminant: $\Delta = (-5)^2 - 4(2)(2) = 25 - 16 = 9$.

Step 3 — Roots:

$$x = \frac{5 \pm 3}{4} \Rightarrow x_1 = \frac{8}{4} = 2, \quad x_2 = \frac{2}{4} = \frac{1}{2}.$$

Verification: $2(2)^2 - 5(2) + 2 = 8 - 10 + 2 = 0$. ✓

Why other options are wrong:

- Option B: 1 and 2 — verify: $2(1)^2 - 5(1) + 2 = -1 \neq 0$.
- Option C: -2 and $-1/2$ — signs are incorrect.
- Option D: $1/2$ and -2 — -2 is not a root.

Final Answer: Roots are 2 and $\frac{1}{2} \Rightarrow$ A

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

Q37.

Solution

Concept — Sum and Product of Roots: For $x^2 - 7x + 12 = 0$: $\alpha + \beta = 7$, $\alpha\beta = 12$.

Step 1 — Identity:

$$\alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta = 49 - 24 = 25.$$

Step 2 — Verify roots: Roots of $x^2 - 7x + 12 = 0$ are $x = 3$ and $x = 4$. Indeed $3^2 + 4^2 = 9 + 16 = 25$.

Why other options are wrong:



- Option A: 13 — this is $\alpha\beta + 1 = 13$ (unrelated formula).
- Option C: 37 — adds $(\alpha + \beta)^2 = 49$ and $2\alpha\beta = 24$ instead of subtracting.
- Option D: 49 — this is just $(\alpha + \beta)^2$, ignoring $2\alpha\beta$.

Final Answer: $\alpha^2 + \beta^2 = 25 \Rightarrow \boxed{\text{B}}$

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

Q38.

Solution

Concept — Form Quadratic from Roots: $x^2 - (\alpha + \beta)x + \alpha\beta = 0$.

Step 1 — Compute sum and product:

- Sum of roots: $3 + (-5) = -2$.
- Product of roots: $3 \times (-5) = -15$.

Step 2 — Write equation:

$$x^2 - (-2)x + (-15) = 0 \implies x^2 + 2x - 15 = 0.$$

Why other options are wrong:

- Option A: $x^2 - 2x - 15 = 0$ — uses $-(\alpha + \beta) = -(-2) = +2$ correctly but then writes $-2x$, sign error.
- Option B: $x^2 - 2x + 15 = 0$ — has wrong sign on product term.
- Option D: $x^2 + 2x + 15 = 0$ — product should be -15 , not $+15$.

Final Answer: Equation = $x^2 + 2x - 15 = 0 \Rightarrow \boxed{\text{C}}$

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

Q39.

Solution

Concept — Quadratic Word Problem (Rectangle): Express area in terms of one variable and solve.

Step 1 — Set up: Let width = w ; length = $3w$. Area = $3w^2 = 75$.



Step 2 — Solve:

$$w^2 = 25 \implies w = 5 \text{ cm}; \quad \text{length} = 15 \text{ cm}.$$

Step 3 — Perimeter:

$$P = 2(5 + 15) = 2 \times 20 = 40 \text{ cm}.$$

Why other options are wrong:

- Option A: 30 cm — uses $2(w + l) = 2(5 + 10) = 30$ (wrong length).
- Option B: 32 cm — arithmetic error.
- Option C: 36 cm — uses $P = 2(l + w)$ with $l = 13$ (incorrect).

Final Answer: Perimeter = 40 cm $\Rightarrow$ D

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

Q40.

Solution

Concept — Volume of Cuboid: $V = l \times b \times h$.

Step 1 — Substitute values:

$$V = 24 \times 15 \times 10.$$

Step 2 — Compute:

$$24 \times 15 = 360; \quad 360 \times 10 = 3,600 \text{ cm}^3.$$

Why other options are wrong:

- Option B: $3,200 \text{ cm}^3$ — uses $20 \times 16 \times 10$ (wrong dimensions).
- Option C: $3,800 \text{ cm}^3$ — arithmetic error.
- Option D: $4,000 \text{ cm}^3$ — uses $25 \times 16 \times 10$ (wrong dimensions).

Final Answer: Volume = $3,600 \text{ cm}^3 \Rightarrow$ A

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



Q41.

Solution

Concept — Volume of Cone: $V = \frac{1}{3}\pi r^2 h$.

Step 1 — Find height using Pythagoras:

$$h = \sqrt{l^2 - r^2} = \sqrt{25^2 - 7^2} = \sqrt{625 - 49} = \sqrt{576} = 24 \text{ cm.}$$

Step 2 — Compute volume:

$$V = \frac{1}{3} \times \frac{22}{7} \times 7^2 \times 24 = \frac{1}{3} \times \frac{22}{7} \times 49 \times 24 = \frac{22 \times 49 \times 24}{21} = 22 \times 7 \times 8 = 1,232 \text{ cm}^3.$$

Why other options are wrong:

- Option A: 1,078 cm³ — uses $h = 21$ cm (wrong height).
- Option C: 1,386 cm³ — uses $h = 27$ cm (wrong, uses slant directly).
- Option D: 1,540 cm³ — uses $h = 30$ cm (incorrect Pythagorean calculation).

Final Answer: Volume of cone = 1,232 cm³ $\Rightarrow$ **B**

Answer: (B) [Go Back to Q41](#)

Q42.

Solution

Concept — Area of Trapezoid: $A = \frac{(a+b)}{2} \times h$.

Step 1 — Substitute values: $a = 12$ cm, $b = 20$ cm, $h = 8$ cm.

Step 2 — Compute:

$$A = \frac{12+20}{2} \times 8 = \frac{32}{2} \times 8 = 16 \times 8 = 128 \text{ cm}^2.$$

Why other options are wrong:

- Option A: 108 cm² — uses height as 6.75 or adds sides wrongly.
- Option B: 116 cm² — arithmetic error in adding parallel sides.
- Option D: 136 cm² — uses $h = 8.5$ cm or wrong formula.

Final Answer: Area = 128 cm² $\Rightarrow$ **C**

Answer: (C) [Go Back to Q42](#)



Q43.

Solution

Concept — Area of Sector: $A = \frac{\theta}{360} \times \pi r^2$.

Step 1 — Substitute values: $\theta = 120^\circ$, $r = 21$ cm, $\pi = 22/7$.

Step 2 — Compute:

$$A = \frac{120}{360} \times \frac{22}{7} \times 21^2 = \frac{1}{3} \times \frac{22}{7} \times 441 = \frac{1}{3} \times 22 \times 63 = \frac{1386}{3} = 462 \text{ cm}^2.$$

Why other options are wrong:

- Option A: 308 cm² — uses $\theta = 80^\circ$ (wrong angle).
- Option B: 385 cm² — uses $\theta = 105^\circ$ (wrong angle).
- Option C: 420 cm² — uses slightly different r or approximation error.

Final Answer: Area of sector = 462 cm² $\Rightarrow$ **D**

Answer: (D) [Go Back to Q43](#)

Q44.

Solution

Concept — Similar Triangles (Area Ratio): $\frac{\text{Area}_1}{\text{Area}_2} = \left(\frac{\text{corresponding side}_1}{\text{corresponding side}_2} \right)^2$.

Step 1 — Identify sides: $AB = 6$ cm; $DE = 9$ cm.

Step 2 — Compute ratio of areas:

$$\frac{\text{Area}(\triangle ABC)}{\text{Area}(\triangle DEF)} = \left(\frac{6}{9} \right)^2 = \frac{36}{81} = \frac{4}{9}.$$

Why other options are wrong:

- Option B: 2:3 — this is the ratio of sides, not areas.
- Option C: 16:81 — squares only the numerator side incorrectly.
- Option D: 6:9 — gives the sides ratio, not the area ratio.

Final Answer: Area ratio $\triangle ABC : \triangle DEF = 4 : 9 \Rightarrow$ **A**

Answer: (A) [Go Back to Q44](#)



Q45.

Solution**Concept — Number Series (Perfect Squares):** Each term is n^2 for $n = 1, 2, 3, \dots$ **Step 1 — Identify pattern:** $1 = 1^2$, $4 = 2^2$, $9 = 3^2$, $16 = 4^2$, $\underline{\quad} = 5^2$, $36 = 6^2$.**Step 2 — Missing term:** $5^2 = 25$.**Why other options are wrong:**

- Option A: 20 — not a perfect square.
- Option C: 28 — not a perfect square.
- Option D: 30 — not a perfect square.

Final Answer: Missing term = 25 $\Rightarrow$ **B****Answer: (B)** [Go Back to Q45](#)

Q46.

Solution**Concept — Number Series (Double minus 1):** Each term = $2 \times \text{previous term} - 1$.**Step 1 — Verify pattern:**

- $2 \times 2 - 1 = 3 \checkmark$
- $2 \times 3 - 1 = 5 \checkmark$
- $2 \times 5 - 1 = 9 \checkmark$
- $2 \times 9 - 1 = 17 \checkmark$

Step 2 — Missing term: $2 \times 17 - 1 = 33$.**Verification:** $2 \times 33 - 1 = 65 \checkmark$ (matches next given term).**Why other options are wrong:**

- Option A: 27 — adding 10 each time (incorrect pattern).
- Option B: 31 — adding 14 (incorrect pattern).
- Option D: 35 — $2 \times 17 + 1 = 35$ (uses +1 instead of -1).

Final Answer: Missing term = 33 $\Rightarrow$ **C****Answer: (C)** [Go Back to Q46](#)

Q47.

Solution**Concept — Number Series (Perfect Cubes):** Each term is n^3 for $n = 1, 2, 3, \dots$ **Step 1 — Identify pattern:**

$$1^3 = 1, 2^3 = 8, 3^3 = 27, 4^3 = 64, 5^3 = 125, 6^3 = 216, 7^3 = ?, 8^3 = 512.$$

Step 2 — Missing term: $7^3 = 343$.**Why other options are wrong:**

- Option A: 300 — not a perfect cube.
- Option B: 320 — not a perfect cube.
- Option C: 336 — not a perfect cube; $7^3 = 343 \neq 336$.

Final Answer: Missing term = 343 $\Rightarrow$ **D****Answer: (D)** [Go Back to Q47](#)

Q48.

Solution**Concept — Permutation (Linear Arrangement):** n distinct objects in a row = $n!$ ways.**Step 1 — Apply formula:**

$$5! = 5 \times 4 \times 3 \times 2 \times 1 = 120.$$

Why other options are wrong:

- Option B: 60 — this is $5!/2! = 60$ (arrangements with 2 identical), not required here.
- Option C: 24 — this is $4! = 24$ (arrangements of 4, not 5 people).
- Option D: 20 — this is 5×4 (choosing 2 from 5, not full arrangement).

Final Answer: Ways to seat 5 people = 120 $\Rightarrow$ **A****Answer: (A)** [Go Back to Q48](#)

Q49.

Solution

Concept — Classical Probability: $P(\text{event}) = \frac{\text{Favourable outcomes}}{\text{Total outcomes}}$.

Step 1 — Count face cards: Each suit has 3 face cards (J, Q, K); 4 suits $\Rightarrow 4 \times 3 = 12$ face cards.

Step 2 — Compute probability:

$$P(\text{face card}) = \frac{12}{52} = \frac{3}{13}.$$

Why other options are wrong:

- Option A: $1/13$ — counts only 4 face cards (one type, e.g., only Kings).
- Option C: $4/13$ — counts 16 face cards (includes Aces incorrectly).
- Option D: $1/4$ — counts $52/4 = 13$ face cards per suit (wrong count).

Final Answer: $P(\text{face card}) = \frac{3}{13} \Rightarrow \boxed{\text{B}}$

Answer: (B) [Go Back to Q49](#)

Q50.

Solution

Concept — Probability (two dice): Total outcomes = 36. List favourable pairs.

Step 1 — Find pairs summing to 8:

$$(2, 6), (3, 5), (4, 4), (5, 3), (6, 2) \Rightarrow 5 \text{ favourable outcomes.}$$

Step 2 — Probability:

$$P(\text{sum} = 8) = \frac{5}{36}.$$

Why other options are wrong:

- Option A: $4/36$ — misses one pair (e.g., omits $(4, 4)$).
- Option B: $6/36$ — this is $P(\text{sum} = 7)$, the most common sum.
- Option D: $7/36$ — overcount; no sum of 8 has 7 pairs.

Final Answer: $P(\text{sum} = 8) = \frac{5}{36} \Rightarrow \boxed{\text{C}}$



Answer: (C) [Go Back to Q50](#)



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
41	B	42	C	43	D	44	A	45	B
46	C	47	D	48	A	49	B	50	C

