MAHCET Quantitative Aptitude

Sample Paper – 4

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 exports (in million USD) of three commodities by five countries. Study the data carefully and answer the questions that follow.

Country	Wheat	Rice	Spices
India	150	200	80
China	120	180	60
USA	200	80	40
Brazil	90	150	50
Germany	60	40	100

What is the total rice export (in million USD) of all five countries combined?

(A) 560

(B) 580

(C) 620

(D) 650

Q2. Which country has the highest total exports across all three commodities?

(A) India

(B) China

(C) USA

(D) Brazil

Q3. By what percentage is India's wheat export higher than China's wheat export?

(A) 20%

(B) 25%

(C) 30%

(D) 33.3%

Q4. What is the ratio of USA's total exports to Brazil's total exports?

(A) 16:15

(B) 8:7

(C) 32:29

(D) 64:58

Q5. Which country exports the highest percentage of spices as a proportion of its own total exports?

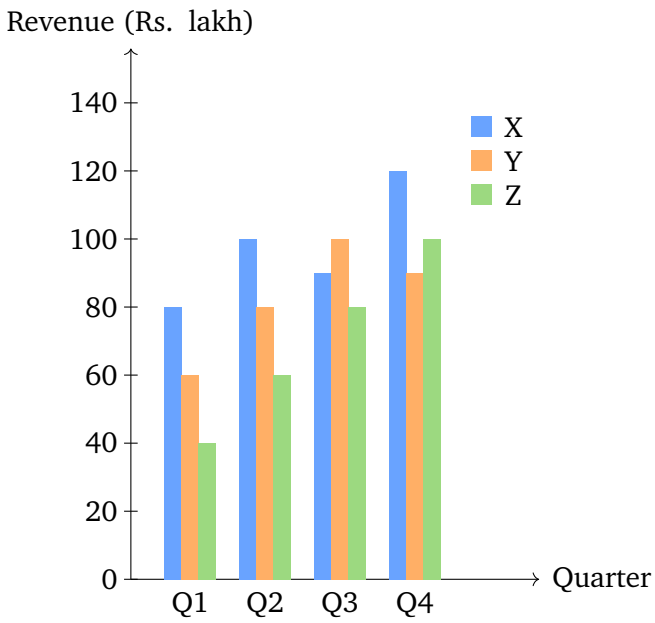
(A) India

(B) China

(C) USA

(D) Germany

Q6. **Questions 6–10:** The grouped bar chart below shows the quarterly revenue (in Rs. lakh) of three products X, Y, and Z. Study the chart and answer the questions that follow.



What is the total annual revenue (in Rs. lakh) of Product X across all four quarters?

(A) 390

(B) 370

(C) 410

(D) 420

Q7. Which product had the highest revenue in Q3?

(A) Product X

(B) Product Y

(C) Product Z

(D) All equal

Q8. What is the combined revenue (in Rs. lakh) of all three products in Q2?

(A) 200

(B) 220

(C) 240

(D) 260

Q9. What fraction of the total annual revenue (across all products and quarters) does Product Z contribute?

(A) $\frac{1}{4}$

(B) $\frac{3}{10}$

(C) $\frac{7}{20}$

(D) $\frac{7}{25}$

Q10. What is the average quarterly revenue (in Rs. lakh) of Product Y?

(A) 82.5

(B) 80.0

(C) 85.0

(D) 87.5

Q11. **Questions 11–15:** The table below shows the investment details of five investors. Study the data carefully and answer the questions that follow.

Investor	Investment (Rs. lakh)	1-yr Return %	2-yr Return %
Ram	5	8	15
Shyam	10	12	20
Mohan	12	6	12
Priya	8	10	18
Kavya	6	9	16

Which investor earned the highest absolute return (in Rs. lakh) in Year 1?

(A) Ram

(B) Shyam

(C) Mohan

(D) Priya

Q12. What is the 2-year absolute return of Mohan?

(A) Rs. 0.72 lakh

(B) Rs. 1.20 lakh

(C) Rs. 1.44 lakh

(D) Rs. 1.80 lakh

Q13. What is the total investment (in Rs. lakh) of all five investors?

(A) Rs. 35 lakh

(B) Rs. 38 lakh

(C) Rs. 40 lakh

(D) Rs. 41 lakh

Q14. Which investor has the highest 2-year return percentage?

(A) Shyam

(B) Priya

(C) Kavya

(D) Ram

Q15. What is the combined 1-year absolute return (in Rs. lakh) of Ram and Kavya?

(A) Rs. 0.80 lakh

(B) Rs. 0.94 lakh

(C) Rs. 1.08 lakh

(D) Rs. 1.20 lakh

Q16. A person earns Rs. 30,000 per month. He spends 25% on rent, 30% on food, and 15% on transport. What percentage of his monthly earnings does he save?

(A) 20%

(B) 25%

(C) 30%

(D) 35%

Q17. An article is purchased for Rs. 500 and sold for Rs. 625. What is the profit percentage?

(A) 15%

(B) 20%

(C) 22.5%

(D) 25%

Q18. Find the Simple Interest on a principal of Rs. 12,000 at an annual rate of 9% for 4 years.

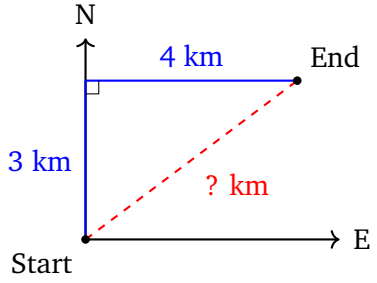
(A) Rs. 4,320

(B) Rs. 4,000

(C) Rs. 3,960

(D) Rs. 3,600

Q19. A person walks 3 km due North, then turns and walks 4 km due East. What is the straight-line distance from his starting point?



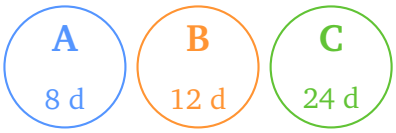
(A) 4 km

(B) 5 km

(C) 6 km

(D) 7 km

Q20. A can complete a task in 8 days, B in 12 days, and C in 24 days. If all three work together, in how many days will the task be completed?



(A) 3 days

(B) 3.5 days

(C) 4 days

(D) 5 days

Q21. Three numbers are in the ratio 2:3:4. If the sum of the first two numbers is 100, what is the third number?

(A) 60

(B) 70

(C) 75

(D) 80

Q22. The average marks of 8 students is 65. It is later found that one student's marks were recorded as 45 instead of 85. What is the correct average?

(A) 70

(B) 68

(C) 67

(D) 65

Q23. Sugar at Rs. 28 per kg is mixed with sugar at Rs. 36 per kg to produce a blend costing Rs. 32 per kg. In what ratio should the two varieties be mixed?

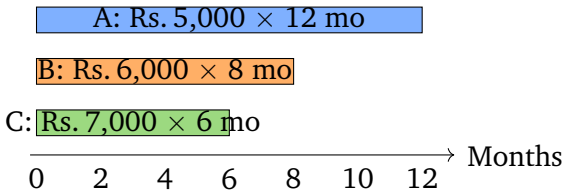
(A) 2:1

(B) 1:1

(C) 3:2

(D) 4:3

Q24. A invests Rs. 5,000 for 12 months, B invests Rs. 6,000 for 8 months, and C invests Rs. 7,000 for 6 months. If the total profit is Rs. 50,000, what is C's share?



(A) Rs. 10,000

(B) Rs. 12,000

(C) Rs. 14,000

(D) Rs. 16,000

Q25. A principal of Rs. 20,000 is invested at 5% per annum compounded half-yearly. What is the compound interest earned after 1 year?

(A) Rs. 1,000.00

(B) Rs. 1,025.00

(C) Rs. 1,000.50

(D) Rs. 1,012.50

Q26. A trader buys an article for Rs. 1,200 and marks it at Rs. 2,000. He then offers a 25% discount on the marked price. What is his profit percentage?

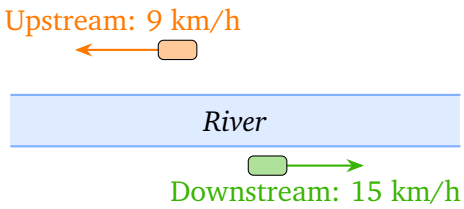
(A) 25%

(B) 20%

(C) 30%

(D) 15%

Q27. A boat travels at 9 km/h upstream and 15 km/h downstream. What is the speed of the boat in still water?



(A) 10 km/h

(B) 12 km/h

(C) 13 km/h

(D) 14 km/h

Q28. A pipe can fill a tank in 20 hours. Due to a leak, the tank is emptied in 30 hours when the pipe is open. How long will it take to fill the tank completely with the pipe open and the leak present?

(A) 40 hours

(B) 50 hours

(C) 60 hours

(D) 80 hours

Q29. A train travelling at 72 km/h has a length of 150 m. How long (in seconds) does it take to cross a bridge that is 500 m long?

(A) 25.0 sec

(B) 28.0 sec

(C) 30.0 sec

(D) 32.5 sec

Q30. A number is first increased by 25% and then decreased by 20%. What is the net percentage change in the number?

(A) 0%

(B) 5% increase

(C) 5% decrease

(D) 2% increase

Q31. The average of 4 numbers is 25. When a fifth number is added, the average becomes 27. What is the fifth number?

(A) 30

(B) 35

(C) 37

(D) 40

Q32. Three numbers are in the ratio 2:5:7 and their sum is 560. What is the largest number?

(A) 240

(B) 260

(C) 280

(D) 300

Q33. A shopkeeper buys articles at 4 for Rs. 100 and sells them at 5 for Rs. 100. What is his loss percentage?

(A) 10%

(B) 15%

(C) 18%

(D) 20%

Q34. A pump can fill a pool in 4 hours while a drain empties it in 6 hours. If the pool is half-full when both the pump and drain are opened simultaneously, how many hours will it take to fill the pool completely?

(A) 6 hours

(B) 8 hours

(C) 10 hours

(D) 12 hours

Q35. A class has 40 students, of whom 25% are girls. If 10 more girls join the class, what percentage of the new total are girls?

(A) 35%

(B) 40%

(C) 45%

(D) 50%

Q36. The sum of two numbers is 56 and their HCF is 8. How many such pairs of numbers are possible?

(A) 1

(B) 2

(C) 3

(D) 4

Q37. If $2x + 3y = 12$ and $3x - y = 7$, find the value of $5x + 2y$.

(A) 15

(B) 17

(C) 18

(D) 19

Q38. A father's age is currently 4 times his son's age. Eight years ago, the father was 8 times as old as the son was then. What is the father's present age (in years)?

(A) 56

(B) 48

(C) 52

(D) 60

Q39. 2 pens and 3 notebooks cost Rs. 140. 3 pens and 2 notebooks cost Rs. 110. What is the price of one pen?

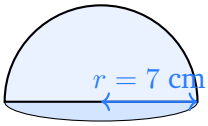
(A) Rs. 5

(B) Rs. 10

(C) Rs. 15

(D) Rs. 20

Q40. Find the total surface area (in cm^2) of a solid hemisphere of radius 7 cm. (Use $\pi = \frac{22}{7}$)



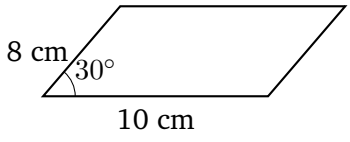
(A) 308 cm^2

(B) 385 cm^2

(C) 462 cm^2

(D) 616 cm^2

Q41. Two adjacent sides of a parallelogram are 10 cm and 8 cm, and the included angle between them is 30°. Find the area of the parallelogram.



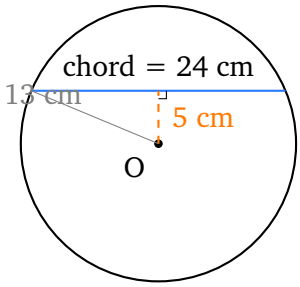
(A) 20 cm^2

(B) 30 cm^2

(C) 35 cm^2

(D) 40 cm^2

Q42. In a circle of radius 13 cm, the perpendicular distance from the centre to a chord is 5 cm. Find the length of the chord.



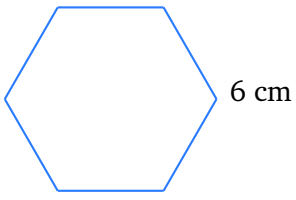
(A) 24 cm

(B) 20 cm

(C) 22 cm

(D) 26 cm

Q43. Find the area (in cm^2) of a regular hexagon with side 6 cm.



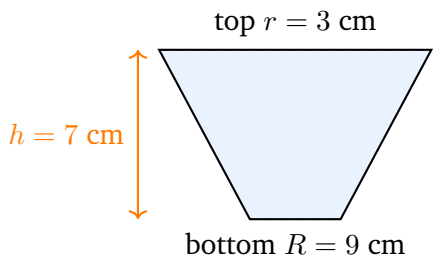
(A) $36\sqrt{3}$ cm^2

(B) $54\sqrt{3}$ cm^2

(C) $48\sqrt{3}$ cm^2

(D) $72\sqrt{3}$ cm^2

Q44. A frustum of a cone has a bottom radius of 9 cm, top radius of 3 cm, and height of 7 cm. Find its volume (in cm^3). (Use $\pi = \frac{22}{7}$)



(A) 726 cm^3

(B) 792 cm^3

(C) 858 cm^3

(D) 924 cm^3

Q45. Find the missing term in the series: $2,\ 5,\ 10,\ 17,\ 26,\ \_\_$

(A) 33

(B) 34

(C) 36

(D) 37

Q46. Find the missing term in the series: $3,\ 6,\ 11,\ 18,\ 27,\ \_\_$

(A) 38

(B) 36

(C) 34

(D) 32

Q47. Find the missing term in the series: $100,\ 50,\ 25,\ 12.5,\ \_\_$

(A) 5.00

(B) 6.25

(C) 7.50

(D) 8.00

Q48. In how many ways can 6 people be arranged around a circular table?

(A) 720

(B) 360

(C) 120

(D) 60

Q49. A committee of 3 is to be selected from 5 men and 3 women. In how many ways can the selection be made if at least 1 woman must be included?

(A) 25

(B) 35

(C) 41

(D) 46

Q50. Three unbiased coins are tossed simultaneously. What is the probability of getting at least one head?

(A) $\frac{7}{8}$

(B) $\frac{3}{4}$

(C) $\frac{5}{8}$

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

Detailed Solutions

Q1.

Solution

Concept — Data Interpretation (Table): Read the Rice column for all five countries and sum the values.

Step 1 — Read Rice column: India = 200, China = 180, USA = 80, Brazil = 150, Germany = 40.

Step 2 — Sum: $200 + 180 + 80 + 150 + 40 = 650$ million USD.

Why other options are wrong:

- Option A (560): Omits Brazil's rice export.
- Option B (580): Arithmetic error; undercounts by 70.
- Option C (620): Undercounts Germany's contribution.

Final Answer: Total rice export $= 650$ million USD $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q1

Q2.

Solution

Concept — Data Interpretation (Table): Compute the row totals (Wheat + Rice + Spices) for each country and identify the maximum.

Step 1 — Row totals:

$$\text{India} = 150 + 200 + 80 = 430, \quad \text{China} = 120 + 180 + 60 = 360$$

$$\text{USA} = 200+80+40 = 320, \quad \text{Brazil} = 90+150+50 = 290, \quad \text{Germany} = 60+40+100 = 200$$

Step 2 — Maximum: India has the highest total of 430 million USD.

Why other options are wrong:

- Option B (China): Total 360, less than India.
- Option C (USA): Total 320, third highest.
- Option D (Brazil): Total 290, fourth.

Final Answer: India $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q2

Q3.

Solution

Concept — Percentage difference: $\% = \dfrac{\text{Difference}}{\text{Base}} \times 100$, where the base is China's wheat export.

Step 1 — Values: India wheat = 150, China wheat = 120.

Step 2 — Calculate:

$$\% = \frac{150 - 120}{120} \times 100 = \frac{30}{120} \times 100 = 25\%$$

Why other options are wrong:

- Option A (20%): Uses India as the base instead of China.
- Option C (30%): Overestimates the difference.
- Option D (33.3%): Confuses the ratio $150/120$ with a different fraction.

Final Answer: $25\% \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q3

Q4.

Solution

Concept — Ratio: Compute total exports for USA and Brazil, then simplify their ratio.

Step 1 — Totals: USA $= 200 + 80 + 40 = 320$; Brazil $= 90 + 150 + 50 = 290$.

Step 2 — Ratio:

$$320 : 290 = 32 : 29 \quad \text{(divide both by 10)}$$

Why other options are wrong:

- Option A (16:15): Incorrect simplification; $\gcd(320, 290) = 10$, not 20.
- Option B (8:7): $8 \times 29 \neq 7 \times 32$.
- Option D (64:58): Equivalent to 32:29 but not in lowest terms.

Final Answer: $320 : 290 = 32 : 29 \Rightarrow \boxed{C}$

Answer: (C) Go Back to Q4

Q5.

Solution

Concept — Percentage of total: For each country compute $\frac{\text{Spices}}{\text{Total}} \times 100$ and find the maximum.

Step 1 — Compute spice percentages:

$$\text{India} : \frac{80}{430} \approx 18.6\%, \quad \text{China} : \frac{60}{360} \approx 16.7\%, \quad \text{USA} : \frac{40}{320} = 12.5\%$$

$$\text{Brazil} : \frac{50}{290} \approx 17.2\%, \quad \text{Germany} : \frac{100}{200} = 50\%$$

Step 2 — Maximum: Germany at 50% is the highest.

Why other options are wrong:

- Option A (India): Only $\approx 18.6\%$.
- Option B (China): Only $\approx 16.7\%$.
- Option C (USA): Only 12.5%.

Final Answer: Germany $\Rightarrow \boxed{D}$

Answer: (D) Go Back to Q5

Q6.

Solution

Concept — Data Interpretation (Bar Chart): Read the height of the blue (Product X) bars for all four quarters and add them.

Step 1 — Read Product X values: Q1 = 80, Q2 = 100, Q3 = 90, Q4 = 120 (in Rs. lakh).

Step 2 — Sum:

$$80 + 100 + 90 + 120 = 390 \text{ Rs. lakh}$$

Why other options are wrong:

- Option B (370): Undercounts Q4.

- Option C (410): Overcounts one quarter by 20.
- Option D (420): Adds an extra 30 incorrectly.

Final Answer: 390 Rs. lakh $\Rightarrow$ A

Answer: (A) Go Back to Q6

Q7.

Solution

Concept — Bar Chart Reading: Compare the Q3 revenue bars of Products X, Y, and Z.

Step 1 — Q3 values: X = 90, Y = 100, Z = 80 (Rs. lakh).

Step 2 — Maximum: Product Y with 100 Rs. lakh is the highest.

Why other options are wrong:

- Option A (Product X): Q3 revenue of X = 90, less than Y.
- Option C (Product Z): Q3 revenue of Z = 80, lowest of the three.
- Option D (All equal): The values are 90, 100, 80 — all different.

Final Answer: Product Y $\Rightarrow$ B

Answer: (B) Go Back to Q7

Q8.

Solution

Concept — Bar Chart Reading: Sum the Q2 revenues of all three products.

Step 1 — Q2 values: X = 100, Y = 80, Z = 60 (Rs. lakh).

Step 2 — Sum:

$$100 + 80 + 60 = 240 \text{ Rs. lakh}$$

Why other options are wrong:

- Option A (200): Only sums X and Z; omits Y.
- Option B (220): Undercounts one product.
- Option D (260): Adds an extra 20 incorrectly.

Final Answer: 240 Rs. lakh $\Rightarrow$ C

Answer: (C) Go Back to Q8

Q9.

Solution

Concept — Fraction of total: Sum all products' annual revenues, then find Z's fraction.

Step 1 — Annual totals:

$$X = 80+100+90+120 = 390, \quad Y = 60+80+100+90 = 330, \quad Z = 40+60+80+100 = 280$$

Step 2 — Grand total: $390 + 330 + 280 = 1000$ Rs. lakh.

Step 3 — Z's fraction:

$$\frac{280}{1000} = \frac{28}{100} = \frac{7}{25}$$

Why other options are wrong:

- Option A ($\frac{1}{4} = 0.25$): $280/1000 = 0.28 \neq 0.25$.
- Option B ($\frac{3}{10} = 0.30$): That would be Y's share ($330/1000$).
- Option C ($\frac{7}{20} = 0.35$): That would be X's share ($390/1000 \approx 0.39$, not exact).

Final Answer: $\frac{7}{25} \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q9

Q10.

Solution

Concept — Average: Average = Total ÷ Number of quarters.

Step 1 — Product Y revenues: Q1=60, Q2=80, Q3=100, Q4=90.

Step 2 — Sum: $60 + 80 + 100 + 90 = 330$ Rs. lakh.

Step 3 — Average:

$$\frac{330}{4} = 82.5 \text{ Rs. lakh}$$

Why other options are wrong:

- Option B (80.0): Underestimates; $4 \times 80 = 320 \neq 330$.

- Option C (85.0): $4 \times 85 = 340 \neq 330$.
- Option D (87.5): $4 \times 87.5 = 350 \neq 330$.

Final Answer: 82.5 Rs. lakh $\Rightarrow$ A

Answer: (A) Go Back to Q10

Q11.

Solution

Concept — Data Interpretation (Table): Absolute return = Investment $\times$ Return%. Compare across all investors.

Step 1 — Year 1 absolute returns:

$$\text{Ram} : 5 \times 8\% = 0.40, \quad \text{Shyam} : 10 \times 12\% = 1.20$$

$$\text{Mohan} : 12 \times 6\% = 0.72, \quad \text{Priya} : 8 \times 10\% = 0.80, \quad \text{Kavya} : 6 \times 9\% = 0.54$$

(All in Rs. lakh.)

Step 2 — Maximum: Shyam earns Rs. 1.20 lakh — the highest.

Why other options are wrong:

- Option A (Ram): Only Rs. 0.40 lakh.
- Option C (Mohan): Rs. 0.72 lakh, less than Shyam.
- Option D (Priya): Rs. 0.80 lakh, still less than Shyam.

Final Answer: Shyam $\Rightarrow$ B

Answer: (B) Go Back to Q11

Q12.

Solution

Concept — Percentage of investment: 2-year absolute return = Investment $\times$ 2-year return%.

Step 1 — Mohan's details: Investment = Rs. 12 lakh, 2-yr return = 12%.

Step 2 — Calculate:

$$12 \times 12\% = 12 \times \frac{12}{100} = \frac{144}{100} = \text{Rs. } 1.44 \text{ lakh}$$

Why other options are wrong:

- Option A (Rs. 0.72 lakh): Uses 1-yr return (6%) instead of 2-yr return (12%).
- Option B (Rs. 1.20 lakh): Applies 10%, which is Priya's 1-yr rate.
- Option D (Rs. 1.80 lakh): Applies 15%, which is Ram's 2-yr rate to 12.

Final Answer: Rs. 1.44 lakh $\Rightarrow$ C

Answer: (C) Go Back to Q12

Q13.

Solution

Concept — Summation: Add the investment column for all five investors.

Step 1 — Investments (Rs. lakh): Ram=5, Shyam=10, Mohan=12, Priya=8, Kavya=6.

Step 2 — Sum:

$$5 + 10 + 12 + 8 + 6 = 41 \text{ lakh}$$

Why other options are wrong:

- Option A (Rs. 35 lakh): Excludes Mohan's investment.
- Option B (Rs. 38 lakh): Undercounts by 3.
- Option C (Rs. 40 lakh): Off by 1 lakh.

Final Answer: Rs. 41 lakh $\Rightarrow$ D

Answer: (D) Go Back to Q13

Q14.

Solution

Concept — Reading the table: Compare the 2-yr return% column directly.

Step 1 — 2-yr return percentages: Ram=15%, Shyam=20%, Mohan=12%, Priya=18%, Kavya=16%.

Step 2 — Maximum: Shyam at 20% is the highest.

Why other options are wrong:

- Option B (Priya): 18%, second highest.

- Option C (Kavya): 16%.
- Option D (Ram): 15%, lowest among the group.

Final Answer: Shyam $\Rightarrow$ A

Answer: (A) Go Back to Q14

Q15.

Solution

Concept — Combined absolute return: Sum individual 1-yr absolute returns of Ram and Kavya.

Step 1 — Ram's return: $5 \times 8\% = 0.40$ Rs. lakh.

Step 2 — Kavya's return: $6 \times 9\% = 0.54$ Rs. lakh.

Step 3 — Combined:

$$0.40 + 0.54 = 0.94 \text{ Rs. lakh}$$

Why other options are wrong:

- Option A (Rs. 0.80 lakh): Only accounts for Ram (0.40) doubled, ignoring Kavya's actual rate.
- Option C (Rs. 1.08 lakh): Applies 12% to both, using Shyam's rate.
- Option D (Rs. 1.20 lakh): Shyam's absolute return, not Ram+Kavya.

Final Answer: Rs. 0.94 lakh $\Rightarrow$ B

Answer: (B) Go Back to Q15

Q16.

Solution

Concept — Percentage: Subtract all expense percentages from 100% to find savings.

Step 1 — Total expenses: Rent 25% + Food 30% + Transport 15% = 70%.

Step 2 — Savings:

$$100\% - 70\% = 30\%$$

Why other options are wrong:

- Option A (20%): Omits transport from the calculation.
- Option B (25%): Uses only rent + transport.
- Option D (35%): Undercounts total expenses by 5%.

Final Answer: 30% savings $\Rightarrow$ C

Answer: (C) Go Back to Q16

Q17.

Solution

Concept — Profit & Loss: Profit% $= \dfrac{SP - CP}{CP} \times 100$.

Step 1 — Values: CP = Rs. 500, SP = Rs. 625.

Step 2 — Profit%:

$$\frac{625 - 500}{500} \times 100 = \frac{125}{500} \times 100 = 25\%$$

Why other options are wrong:

- Option A (15%): $15\% \times 500 = 75 \neq 125$.
- Option B (20%): $20\% \times 500 = 100 \neq 125$.
- Option C (22.5%): $22.5\% \times 500 = 112.5 \neq 125$.

Final Answer: 25% profit $\Rightarrow$ D

Answer: (D) Go Back to Q17

Q18.

Solution

Concept — Simple Interest: $SI = \dfrac{P \times R \times T}{100}$.

Step 1 — Values: P = Rs. 12,000, R = 9% p.a., T = 4 years.

Step 2 — Calculate:

$$SI = \frac{12000 \times 9 \times 4}{100} = \frac{432000}{100} = \text{Rs. } 4{,}320$$

Why other options are wrong:

- Option B (Rs. 4,000): Uses rate of 8.33% instead of 9%.
- Option C (Rs. 3,960): Uses T = 3.67 years approximately.
- Option D (Rs. 3,600): Corresponds to 7.5% rate, not 9%.

Final Answer: Rs. 4,320 $\Rightarrow$ A

Answer: (A) Go Back to Q18

Q19.

Solution

Concept — Pythagoras Theorem: The path (3 km North, 4 km East) forms a right-angle triangle. The straight-line distance is the hypotenuse.

Step 1 — Apply Pythagoras:

$$d = \sqrt{3^2 + 4^2} = \sqrt{9 + 16} = \sqrt{25} = 5 \text{ km}$$

Step 2 — Verify: $(3, 4, 5)$ is a standard Pythagorean triple. ✓

Why other options are wrong:

- Option A (4 km): The horizontal distance only; ignores vertical component.
- Option C (6 km): $\sqrt{9 + 16} = 5 \neq 6$.
- Option D (7 km): $3 + 4 = 7$ is the path length, not straight-line distance.

Final Answer: 5 km $\Rightarrow$ B

Answer: (B) Go Back to Q19

Q20.

Solution

Concept — Work and Time: Combined rate = sum of individual rates. Time = $\frac{1}{\text{Combined rate}}$.

Step 1 — Individual rates per day:

$$A = \frac{1}{8}, \quad B = \frac{1}{12}, \quad C = \frac{1}{24}$$

Step 2 — Combined rate (LCM of 8, 12, 24 = 24):

$$\frac{1}{8}+\frac{1}{12}+\frac{1}{24}=\frac{3}{24}+\frac{2}{24}+\frac{1}{24}=\frac{6}{24}=\frac{1}{4}$$

Step 3 — Time: $T=\dfrac{1}{1/4}=4$ days.

Why other options are wrong:

- Option A (3 days): Over-estimates combined rate.
- Option B (3.5 days): Arithmetic error in summing fractions.
- Option D (5 days): Under-estimates combined rate.

Final Answer: 4 days $\Rightarrow$ C

Answer: (C) Go Back to Q20

Q21.

Solution

Concept — Ratio: Let the numbers be $2x$, $3x$, $4x$. Given the sum of the first two equals 100.

Step 1 — Find x:

$$2x+3x=5x=100 \implies x=20$$

Step 2 — Third number:

$$4x=4\times 20=80$$

Why other options are wrong:

- Option A (60): $4x$ when $x=15$, but then $5x=75\neq 100$.
- Option B (70): Not in the ratio 2:3:4.
- Option C (75): $4x=75$ gives $x=18.75$; then $5x=93.75\neq 100$.

Final Answer: 80 $\Rightarrow$ D

Answer: (D) Go Back to Q21

Q22.

Solution

Concept — Average correction: When a wrong value is replaced, adjust the total sum by the difference.

Step 1 — Original total: $8 \times 65 = 520$.

Step 2 — Correction: Wrong entry = 45; correct entry = 85. Difference = $+40$.

Step 3 — Corrected total: $520 + 40 = 560$.

Step 4 — Correct average:

$$\frac{560}{8} = 70$$

Why other options are wrong:

- Option B (68): Uses difference of 23 instead of 40.
- Option C (67): Uses difference of 16.
- Option D (65): The original (wrong) average.

Final Answer: $70 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q22

Q23.

Solution

Concept — Alligation: The ratio of mixing = ratio of deviations from the mean price (taken in reverse).

Step 1 — Deviations from mean price (Rs. 32):

$$\text{Cheaper (Rs. 28)} : 32 - 28 = 4, \quad \text{Costlier (Rs. 36)} : 36 - 32 = 4$$

Step 2 — Mixing ratio: Cheaper : Costlier = 4 : 4 = 1 : 1.

Why other options are wrong:

- Option A (2:1): Would give mean $= (2 \times 28 + 36)/3 = 30.67 \neq 32$.
- Option C (3:2): Would give mean $= (3 \times 28 + 2 \times 36)/5 = 31.2 \neq 32$.
- Option D (4:3): Deviations are equal, not 4:3.

Final Answer: 1:1 $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q23

Q24.

Solution

Concept — Partnership: Profit is shared in the ratio of (Capital $\times$ Time).

Step 1 — Capital-time products:

$$A : 5000 \times 12 = 60000, \quad B : 6000 \times 8 = 48000, \quad C : 7000 \times 6 = 42000$$

Step 2 — Ratio: $60000 : 48000 : 42000 = 10 : 8 : 7$ (divide by 6000).

Step 3 — C's share of Rs. 50,000:

$$C = \frac{7}{10+8+7} \times 50000 = \frac{7}{25} \times 50000 = \text{Rs. } 14{,}000$$

Why other options are wrong:

- Option A (Rs. 10,000): That is $\frac{5}{25} \times 50000$, not C's ratio.
- Option B (Rs. 12,000): Would be $\frac{6}{25} \times 50000$.
- Option D (Rs. 16,000): Would be $\frac{8}{25} \times 50000$, i.e., B's share.

Final Answer: Rs. 14,000 $\Rightarrow$ C

Answer: (C) Go Back to Q24

Q25.

Solution

Concept — Compound Interest (half-yearly): When compounded half-yearly, rate per period $= R/2$ and number of periods $= 2T$.

Step 1 — Values: P = Rs. 20,000, half-yearly rate = 2.5%, periods = 2.

Step 2 — Amount:

$$A = 20000 \times (1.025)^2 = 20000 \times 1.050625 = \text{Rs. } 21{,}012.50$$

Step 3 — CI:

$$CI = 21012.50 - 20000 = \text{Rs. } 1{,}012.50$$

Why other options are wrong:

- Option A (Rs. 1,000): Simple interest for 1 yr at 5%; ignores compounding.
- Option B (Rs. 1,025): Uses $(1.05)^1 - 1 = 5\%$ annual without half-yearly.
- Option C (Rs. 1,000.50): Arithmetic error in squaring 1.025.

Final Answer: Rs. 1,012.50 $\Rightarrow$ D

Answer: (D) Go Back to Q25

Q26.

Solution

Concept — Profit & Loss with discount: SP = MP $\times$ (1 $-$ Discount%). Profit% is on CP.

Step 1 — SP after 25% discount:

$$SP = 2000 \times (1 - 0.25) = 2000 \times 0.75 = \text{Rs. } 1{,}500$$

Step 2 — Profit%:

$$\text{Profit\%} = \frac{1500 - 1200}{1200} \times 100 = \frac{300}{1200} \times 100 = 25\%$$

Why other options are wrong:

- Option B (20%): 20% of 1200 = 240; SP would be Rs. 1440, not Rs. 1500.
- Option C (30%): 30% of 1200 = 360; SP would be Rs. 1560.
- Option D (15%): Corresponds to SP = Rs. 1380.

Final Answer: 25% profit $\Rightarrow$ A

Answer: (A) Go Back to Q26

Q27.

Solution

Concept — Boats and Streams: Speed in still water $= \dfrac{\text{Upstream} + \text{Downstream}}{2}$.

Step 1 — Values: Upstream = 9 km/h, Downstream = 15 km/h.

Step 2 — Still water speed:

$$\text{Speed} = \frac{9 + 15}{2} = \frac{24}{2} = 12 \text{ km/h}$$

Why other options are wrong:

- Option A (10 km/h): $(9 + 11)/2 = 10$; uses wrong downstream speed.
- Option C (13 km/h): $(11 + 15)/2 = 13$; uses wrong upstream speed.
- Option D (14 km/h): Uses incorrect formula or data.

Final Answer: 12 km/h $\Rightarrow$ B

Answer: (B) Go Back to Q27

Q28.

Solution

Concept — Pipes and Cisterns: Net rate = Fill rate − Leak rate. Time $= \dfrac{1}{\text{Net rate}}$.

Step 1 — Rates: Pipe fills at $\frac{1}{20}$ per hour; leak empties at $\frac{1}{30}$ per hour.

Step 2 — Net rate:

$$\frac{1}{20} - \frac{1}{30} = \frac{3}{60} - \frac{2}{60} = \frac{1}{60} \text{ per hour (net fill)}$$

Step 3 — Time to fill:

$$T = \frac{1}{1/60} = 60 \text{ hours}$$

Why other options are wrong:

- Option A (40 hours): Corresponds to net rate $\frac{1}{40}$; incorrect.
- Option B (50 hours): Net rate $\frac{1}{50}$; arithmetic error.
- Option D (80 hours): Over-estimates the effect of the leak.

Final Answer: 60 hours $\Rightarrow$ C

Answer: (C) Go Back to Q28

Q29.

Solution

Concept — Train crossing a bridge: Distance covered = train length + bridge length. Convert speed to m/s.

Step 1 — Convert speed:

$$72 \text{ km/h} = 72 \times \frac{1000}{3600} = 20 \text{ m/s}$$

Step 2 — Total distance:

$$150 + 500 = 650 \text{ m}$$

Step 3 — Time:

$$T = \frac{650}{20} = 32.5 \text{ sec}$$

Why other options are wrong:

- Option A (25.0 sec): Uses only bridge length (500 m) in numerator.
- Option B (28.0 sec): Arithmetic error in conversion or division.
- Option C (30.0 sec): $600/20 = 30$; uses 600 m instead of 650 m.

Final Answer: 32.5 sec $\Rightarrow$ D

Answer: (D) Go Back to Q29

Q30.

Solution

Concept — Successive percentage change: Net multiplier = $(1 + x_1)(1 + x_2)$. If product $= 1$, there is no net change.

Step 1 — Multipliers: Increase by 25% $\Rightarrow \times 1.25$; decrease by 20% $\Rightarrow \times 0.80$.

Step 2 — Net multiplier:

$$1.25 \times 0.80 = 1.00$$

Step 3 — Net change: $1.00 - 1 = 0 \Rightarrow$ no change (0%).

Why other options are wrong:

- Option B (5% increase): Confuses with adding the percentages ($+25 - 20 = +5$), which is incorrect.
- Option C (5% decrease): -5% would mean multiplier 0.95; that's not what we get.
- Option D (2% increase): No basis for this.

Final Answer: 0% net change $\Rightarrow$ A

Answer: (A) Go Back to Q30

Q31.

Solution

Concept — Average: Sum = Average $\times$ Count. The 5th number = New sum $-$ Old sum.

Step 1 — Old sum: $4 \times 25 = 100$.

Step 2 — New sum: $5 \times 27 = 135$.

Step 3 — 5th number:

$$135 - 100 = 35$$

Why other options are wrong:

- Option A (30): $100 + 30 = 130$; new average $= 26 \neq 27$.
- Option C (37): $100 + 37 = 137$; new average $= 27.4 \neq 27$.
- Option D (40): $100 + 40 = 140$; new average $= 28 \neq 27$.

Final Answer: 35 $\Rightarrow$ B

Answer: (B) Go Back to Q31

Q32.

Solution

Concept — Ratio and proportion: Let the numbers be $2x$, $5x$, $7x$. Sum $= 14x$.

Step 1 — Find x:

$$14x = 560 \implies x = 40$$

Step 2 — Largest number:

$$7x = 7 \times 40 = 280$$

Why other options are wrong:

- Option A (240): $7x = 240 \Rightarrow x = 34.3$; then $14x = 480 \neq 560$.
- Option B (260): $7x = 260 \Rightarrow x = 37.1$; sum $\neq 560$.
- Option D (300): $7x = 300 \Rightarrow x = 42.9$; sum $\neq 560$.

Final Answer: $280 \Rightarrow$ C

Answer: (C) Go Back to Q32

Q33.

Solution

Concept — Profit & Loss (buy/sell in bulk): Find CP and SP per article.

Step 1 — CP per article: 4 for Rs. 100 $\Rightarrow$ CP $= \dfrac{100}{4} =$ Rs. 25.

Step 2 — SP per article: 5 for Rs. 100 $\Rightarrow$ SP $= \dfrac{100}{5} =$ Rs. 20.

Step 3 — Loss%:

$$\text{Loss\%} = \frac{25 - 20}{25} \times 100 = \frac{5}{25} \times 100 = 20\%$$

Why other options are wrong:

- Option A (10%): Uses SP as base: $5/20 \times 100 = 25\%$; even that is not 10%.
- Option B (15%): 15% of 25 $= 3.75$; SP would be Rs. 21.25.
- Option C (18%): Incorrect loss percentage calculation.

Final Answer: 20% loss $\Rightarrow$ D

Answer: (D) Go Back to Q33

Q34.

Solution

Concept — Work/Pipes with initial condition: Net fill rate with both open; time to fill half the pool.

Step 1 — Net rate:

$$\frac{1}{4} - \frac{1}{6} = \frac{3}{12} - \frac{2}{12} = \frac{1}{12} \text{ pool per hour}$$

Step 2 — Pool is half-full; half remains: Volume remaining $= \frac{1}{2}$ pool.

Step 3 — Time:

$$T = \frac{1/2}{1/12} = \frac{1}{2} \times 12 = 6 \text{ hours}$$

Why other options are wrong:

- Option B (8 hours): Applies full pool volume to net rate of 1/12: $12 \neq 8$.
- Option C (10 hours): Incorrect net rate assumed.
- Option D (12 hours): Time to fill the entire pool; ignores initial half-full condition.

Final Answer: 6 hours $\Rightarrow$ A

Answer: (A) Go Back to Q34

Q35.

Solution

Concept — Percentage: Update numerator and denominator, then recalculate percentage.

Step 1 — Initial girls: 25% of $40 = 10$ girls.

Step 2 — After 10 more girls join: Girls $= 20$; Total $= 50$.

Step 3 — New percentage:

$$\frac{20}{50} \times 100 = 40\%$$

Why other options are wrong:

- Option A (35%): 35% of 50 $= 17.5$; we have 20 girls.

- Option C (45%): 45% of $50 = 22.5$; we have only 20.
- Option D (50%): Would require 25 girls out of 50.

Final Answer: 40% $\Rightarrow$ B

Answer: (B) Go Back to Q35

Q36.

Solution

Concept — HCF and Number Theory: If HCF $= 8$, write numbers as $8a$ and $8b$ where $\gcd(a, b) = 1$. Then $8a + 8b = 56 \Rightarrow a + b = 7$.

Step 1 — Find coprime pairs (a, b) with $a + b = 7$, $a < b$:

a	b	$\gcd(a, b)$
1	6	1 ✓
2	5	1 ✓
3	4	1 ✓

Step 2 — Count: 3 valid pairs: $(8, 48)$, $(16, 40)$, $(24, 32)$.

Why other options are wrong:

- Option A (1): Only counts $(1, 6)$.
- Option B (2): Misses the pair $(3, 4)$.
- Option D (4): $(a, b) = (0, 7)$ gives one number as 0; not a valid positive pair.

Final Answer: 3 pairs $\Rightarrow$ C

Answer: (C) Go Back to Q36

Q37.

Solution

Concept — Simultaneous Linear Equations: Solve for x and y, then evaluate the expression.

Step 1 — Solve equations: From Eq. 2: $y = 3x - 7$.

Substitute into Eq. 1:

$$2x + 3(3x - 7) = 12 \implies 2x + 9x - 21 = 12 \implies 11x = 33 \implies x = 3$$

$$y = 3(3) - 7 = 2$$

Step 2 — Evaluate:

$$5x + 2y = 5(3) + 2(2) = 15 + 4 = 19$$

Why other options are wrong:

- Option A (15): Only computes $5x$ and ignores $2y$.
- Option B (17): Arithmetic error in solving for y.
- Option C (18): Uses $y = 1.5$ due to a calculation mistake.

Final Answer: 19 $\Rightarrow$ D

Answer: (D) Go Back to Q37

Q38.

Solution

Concept — Age Problems: Set up two equations using present and past ages.

Step 1 — Set up: Let son's present age $= S$. Father's present age $= 4S$.

Step 2 — Condition 8 years ago:

$$4S - 8 = 8(S - 8) \implies 4S - 8 = 8S - 64 \implies 4S = 56 \implies S = 14$$

Step 3 — Father's age:

$$F = 4 \times 14 = 56 \text{ years}$$

Verify: 8 years ago: Father $= 48$, Son $= 6$. $48 = 8 \times 6$ ✓.

Why other options are wrong:

- Option B (48): Father's age 8 years ago, not present age.
- Option C (52): Does not satisfy $F = 4S$ with integer S.
- Option D (60): $S = 15$, but $60 - 8 = 52 \neq 8 \times 7 = 56$.

Final Answer: 56 years $\Rightarrow$ A

Answer: (A) Go Back to Q38

Q39.

Solution

Concept — Simultaneous Equations: Let pen $= p$, notebook $= n$.

Step 1 — Equations:

$$\text{Eq.1} : 2p + 3n = 140 \qquad \text{Eq.2} : 3p + 2n = 110$$

Step 2 — Subtract Eq.1 from Eq.2: $p - n = -30 \Rightarrow n = p + 30$.

Step 3 — Substitute into Eq.1:

$$2p + 3(p + 30) = 140 \implies 5p + 90 = 140 \implies 5p = 50 \implies p = 10$$

Verify: $n = 40$; Eq.1: $2(10) + 3(40) = 20 + 120 = 140$ ✓; Eq.2: $3(10) + 2(40) = 30 + 80 = 110$ ✓.

Why other options are wrong:

- Option A (Rs. 5): $2(5) + 3n = 140 \Rightarrow n = 43.3$; Eq.2: $15 + 86.6 \neq 110$.
- Option C (Rs. 15): $p - n = -30 \Rightarrow n = 45$; Eq.1: $30 + 135 = 165 \neq 140$.
- Option D (Rs. 20): $p - n = -30 \Rightarrow n = 50$; Eq.1: $40 + 150 = 190 \neq 140$.

Final Answer: Rs. 10 per pen $\Rightarrow$ B

Answer: (B) Go Back to Q39

Q40.

Solution

Concept — Mensuration (Hemisphere): Total surface area of solid hemisphere $= 2\pi r^2 + \pi r^2 = 3\pi r^2$.

Step 1 — Values: $r = 7$ cm, $\pi = \dfrac{22}{7}$.

Step 2 — Calculate:

$$TSA = 3 \times \frac{22}{7} \times 7^2 = 3 \times \frac{22}{7} \times 49 = 3 \times 22 \times 7 = 462 \text{ cm}^2$$

Why other options are wrong:

- Option A (308 cm^2): $2\pi r^2 = 308$; this is the curved surface area only.

- Option B (385 cm^2): $\frac{5}{2}\pi r^2$; uses incorrect multiplier.
- Option D (616 cm^2): $4\pi r^2$; the total surface area of a full sphere.

Final Answer: 462 cm^2 $\Rightarrow$ C

Answer: (C) Go Back to Q40

Q41.

Solution

Concept — Area of Parallelogram: Area $= ab\sin\theta$, where a, b are adjacent sides and θ is the included angle.

Step 1 — Values: $a = 10$ cm, $b = 8$ cm, $\theta = 30°$.

Step 2 — Calculate:

$$\text{Area} = 10 \times 8 \times \sin 30° = 80 \times 0.5 = 40 \text{ cm}^2$$

Why other options are wrong:

- Option A (20 cm^2): $\frac{1}{2} \times 10 \times 8 \times \sin 30$; applies triangle formula.
- Option B (30 cm^2): Uses $\sin 30 \times (10 + 8) \times \frac{5}{3}$; incorrect.
- Option C (35 cm^2): No basis for this value.

Final Answer: 40 cm^2 $\Rightarrow$ D

Answer: (D) Go Back to Q41

Q42.

Solution

Concept — Circle Chord: The perpendicular from the centre bisects the chord. Use Pythagoras to find the half-chord length.

Step 1 — Half-chord:

$$\text{half-chord} = \sqrt{r^2 - d^2} = \sqrt{13^2 - 5^2} = \sqrt{169 - 25} = \sqrt{144} = 12 \text{ cm}$$

Step 2 — Full chord:

$$\text{Chord} = 2 \times 12 = 24 \text{ cm}$$

Why other options are wrong:

- Option B (20 cm): $2\sqrt{13^2 - 7^2} = 2\sqrt{120} \approx 21.9$; uses wrong perpendicular.
- Option C (22 cm): $\sqrt{169 - 25} = 12$; chord $= 24 \neq 22$.
- Option D (26 cm): Equals the diameter; only if perpendicular $= 0$.

Final Answer: 24 cm $\Rightarrow$ A

Answer: (A) Go Back to Q42

Q43.

Solution

Concept — Regular Hexagon Area: A regular hexagon of side s consists of 6 equilateral triangles. Area $= 6 \times \frac{\sqrt{3}}{4}s^2$.

Step 1 — Values: $s = 6$ cm.

Step 2 — Calculate:

$$\text{Area} = 6 \times \frac{\sqrt{3}}{4} \times 36 = 6 \times 9\sqrt{3} = 54\sqrt{3} \text{ cm}^2$$

Why other options are wrong:

- Option A ($36\sqrt{3}$): Area of 4 equilateral triangles, not 6.
- Option C ($48\sqrt{3}$): No valid derivation for this value.
- Option D ($72\sqrt{3}$): $6 \times \frac{\sqrt{3}}{4} \times 48 = 72\sqrt{3}$; uses $s^2 = 48$ instead of 36.

Final Answer: $54\sqrt{3}$ cm^2 $\Rightarrow$ B

Answer: (B) Go Back to Q43

Q44.

Solution

Concept — Volume of Frustum: $V = \frac{1}{3}\pi h(R^2 + r^2 + Rr)$.

Step 1 — Values: $R = 9$, $r = 3$, $h = 7$, $\pi = \frac{22}{7}$.

Step 2 — Compute bracket:

$$R^2 + r^2 + Rr = 81 + 9 + 27 = 117$$

Step 3 — Volume:

$$V = \frac{1}{3} \times \frac{22}{7} \times 7 \times 117 = \frac{1}{3} \times 22 \times 117 = \frac{2574}{3} = 858 \text{ cm}^3$$

Why other options are wrong:

- Option A (726 cm^3): Uses bracket $= 99$ (omits Rr term).
- Option B (792 cm^3): Arithmetic error in simplification.
- Option D (924 cm^3): Applies incorrect h or bracket value.

Final Answer: 858 $\text{cm}^3 \Rightarrow$ C

Answer: (C) Go Back to Q44

Q45.

Solution

Concept — Number Series: Identify the pattern by computing successive differences.

Step 1 — Differences:

$$5 - 2 = 3, \quad 10 - 5 = 5, \quad 17 - 10 = 7, \quad 26 - 17 = 9$$

Differences: 3, 5, 7, 9 (odd numbers increasing by 2).

Step 2 — Next difference: $9 + 2 = 11$.

Step 3 — Next term: $26 + 11 = 37$.

Why other options are wrong:

- Option A (33): $26 + 7 = 33$; reuses difference 7 instead of 11.
- Option B (34): $26 + 8 = 34$; difference 8 is not in the pattern.
- Option C (36): $26 + 10 = 36$; skips to even difference.

Final Answer: 37 $\Rightarrow$ D

Answer: (D) Go Back to Q45

Q46.

Solution

Concept — Number Series: Compute differences to find the pattern.

Step 1 — Differences:

$$6-3=3, \quad 11-6=5, \quad 18-11=7, \quad 27-18=9$$

Differences: 3, 5, 7, 9 (odd numbers increasing by 2).

Step 2 — Next difference: $9+2=11$.

Step 3 — Next term: $27+11=38$.

Why other options are wrong:

- Option B (36): $27+9=36$; reuses difference 9.
- Option C (34): Adds difference 7 again.
- Option D (32): Adds only 5, regressing the pattern.

Final Answer: $38 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q46

Q47.

Solution

Concept — Number Series (Geometric): Each term is divided by 2 (ratio $= 0.5$).

Step 1 — Pattern:

$$100 \div 2 = 50, \quad 50 \div 2 = 25, \quad 25 \div 2 = 12.5$$

Step 2 — Next term:

$$12.5 \div 2 = 6.25$$

Why other options are wrong:

- Option A (5.00): $12.5 \div 2.5 = 5$; uses ratio $\frac{1}{2.5}$ instead of $\frac{1}{2}$.
- Option C (7.50): $12.5 - 5 = 7.5$; uses arithmetic subtraction instead of geometric division.
- Option D (8.00): No basis in the geometric pattern.

Final Answer: $6.25 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q47

Q48.

Solution

Concept — Circular Permutation: For n distinct objects arranged in a circle, the number of arrangements $= (n-1)!$.

Step 1 — Formula:

$$(6-1)! = 5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$$

Why other options are wrong:

- Option A (720): $= 6!$; the number of linear (row) arrangements.
- Option B (360): $= 6!/2$; applies when the circle has a reflection symmetry (e.g., necklace).
- Option D (60): $= 5!/2$; incorrectly halves the circular permutation count.

Final Answer: $120 \Rightarrow$ C

Answer: (C) Go Back to Q48

Q49.

Solution

Concept — Combinations (complementary): Ways with at least 1 woman = Total ways − Ways with no woman.

Step 1 — Total ways (3 from 8):

$$\binom{8}{3} = \frac{8!}{3! \cdot 5!} = \frac{8 \times 7 \times 6}{6} = 56$$

Step 2 — Ways with no woman (3 from 5 men):

$$\binom{5}{3} = 10$$

Step 3 — At least 1 woman:

$$56 - 10 = 46$$

Why other options are wrong:

- Option A (25): Only counts exactly 1 woman: $\binom{3}{1}\binom{5}{2} = 3 \times 10 = 30 \neq 25$.
- Option B (35): $\binom{5}{3} + \binom{3}{1}\binom{5}{2} = 10 + 30 = 40 \neq 35$.
- Option C (41): Off by 5; arithmetic error somewhere.

Final Answer: $46 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q49

Q50.

Solution

Concept — Probability (complementary): $P(\text{at least one head}) = 1 - P(\text{no heads})$.

Step 1 — Sample space: $2^3 = 8$ equally likely outcomes.

Step 2 — P(no heads): Only outcome TTT.

$$P(\text{no heads}) = \left(\frac{1}{2}\right)^3 = \frac{1}{8}$$

Step 3 — P(at least one head):

$$1 - \frac{1}{8} = \frac{7}{8}$$

Why other options are wrong:

- Option B ($\frac{3}{4}$): $P(\text{exactly one head}) = \frac{3}{8} \neq \frac{3}{4}$.
- Option C ($\frac{5}{8}$): Counts only 5 favourable outcomes; missing 2.
- Option D ($\frac{1}{2}$): $P(\text{at least 2 heads}) = \frac{4}{8} = \frac{1}{2}$, not at least 1.

Final Answer: $\frac{7}{8} \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q50

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	D	2	A	3	B	4	C	5	D
6	A	7	B	8	C	9	D	10	A
11	B	12	C	13	D	14	A	15	B
16	C	17	D	18	A	19	B	20	C
21	D	22	A	23	B	24	C	25	D
26	A	27	B	28	C	29	D	30	A
31	B	32	C	33	D	34	A	35	B
36	C	37	D	38	A	39	B	40	C
41	D	42	A	43	B	44	C	45	D
46	A	47	B	48	C	49	D	50	A