NMAT Quantitative Skills

Sample Paper – 1

Duration: 52 Minutes **Maximum Marks: 108**

Instructions

- This paper contains **36** Multiple Choice Questions (Single Correct Answer), modelled on the Quantitative Skills section of **NMAT** by GMAC.
- Each correct answer carries **+3 marks**. There is **no negative marking** for incorrect or unattempted answers, so attempt every question.
- Only **one** option is correct. Choose the most appropriate answer.
- NMAT is a computer-based test with sectional time limits; attempt this practice paper in one timed sitting of about **52 minutes**.
- Use of mobile phones, dictionaries or electronic gadgets is prohibited; a basic on-screen calculator is allowed in NMAT, but practise mental methods.

Part A: Arithmetic

Q1. In an examination, 60% of the students passed. If 240 students failed the examination, how many students appeared in all?

(A) 400

(B) 480

(C) 540

(D) 600

Q2. A shopkeeper buys an article for Rs. 800 and sells it at a profit of 15%. Find the selling price of the article.

(A) Rs. 920

(B) Rs. 940

(C) Rs. 880

(D) Rs. 960

Q3. An amount of Rs. 3000 is divided between A and B in the ratio $2 : 3$. Find B's share.

(A) Rs. 1200

(B) Rs. 1800

(C) Rs. 1500

(D) Rs. 2000

Q4. The average of 5 numbers is 27. If one of the numbers, which is 35, is removed, what is the average of the remaining 4 numbers?

(A) 20

(B) 22

(C) 25

(D) 30

Q5. A car covers a distance of 240 km in 4 hours. Find the average speed of the car in km/h.

(A) 48

(B) 54

(C) 56

(D) 60

Q6. A can complete a piece of work in 10 days and B can complete the same work in 15 days. Working together, in how many days will they finish the work?

(A) 5

(B) 12

(C) 6

(D) 25

Q7. Find the simple interest on Rs. 5000 at the rate of 8% per annum for 3 years.

(A) Rs. 1200

(B) Rs. 1400

(C) Rs. 1000

(D) Rs. 1500

Q8. Find the compound interest on Rs. 8000 at 10% per annum, compounded annually, for 2 years.

(A) Rs. 1600

(B) Rs. 1720

(C) Rs. 1680

(D) Rs. 1650

Q9. In what ratio must rice costing Rs. 30 per kg be mixed with rice costing Rs. 40 per kg so that the mixture is worth Rs. 34 per kg?

(A) $3:2$

(B) $2:3$

(C) $4:3$

(D) $1:1$

Q10. A invests Rs. 4000 and B invests Rs. 6000 in a business for the same period. If the total annual profit is Rs. 2500, find B's share of the profit.

(A) Rs. 1000

(B) Rs. 1500

(C) Rs. 1250

(D) Rs. 2000

Part B: Algebra and Number System

Q11. Solve for x: $3x + 7 = 22$.

(A) 3

(B) 4

(C) 5

(D) 6

Q12. The equation $x^2 - 7x + 12 = 0$ has two real roots. What is the larger of the two roots?

(A) 1

(B) 2

(C) 3

(D) 4

Q13. Simplify: $2^3 \times 2^4$.

(A) 64

(B) 128

(C) 256

(D) 32

Q14. Find the least common multiple (LCM) of 12 and 18.

(A) 6

(B) 72

(C) 108

(D) 36

Q15. Find the 10th term of the arithmetic progression $3,\ 7,\ 11,\ \ldots$

(A) 31

(B) 35

(C) 39

(D) 43

Q16. Simplify using the order of operations: $15 + 3 \times 4 - 8 \div 2$.

(A) 19

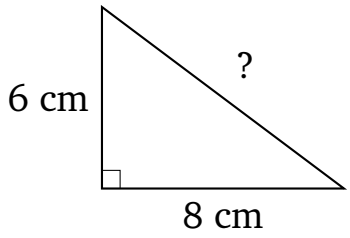
(B) 21

(C) 23

(D) 25

Part C: Geometry and Mensuration

Q17. In the right-angled triangle shown, the two legs measure 6 cm and 8 cm. Find the length of the hypotenuse.



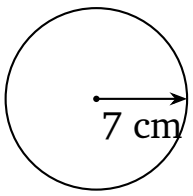
(A) 7 cm

(B) 12 cm

(C) 14 cm

(D) 10 cm

Q18. The circle shown has radius 7 cm. Find its area. (Take $\pi = \frac{22}{7}$.)



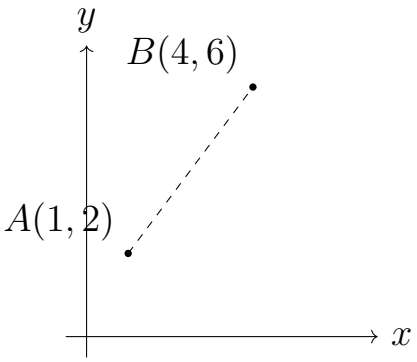
(A) 144 cm^2

(B) 154 cm^2

(C) 44 cm^2

(D) 22 cm^2

Q19. Find the distance between the points $A(1, 2)$ and $B(4, 6)$ shown on the coordinate plane.



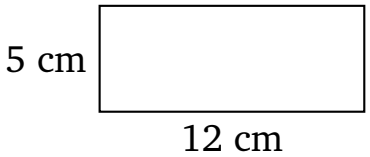
(A) 4

(B) 5

(C) 6

(D) 7

Q20. The rectangle shown has length 12 cm and breadth 5 cm. Find its area.



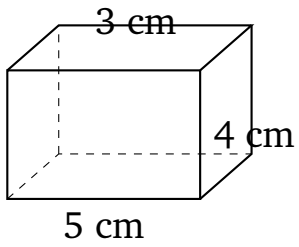
(A) 34 cm^2

(B) 17 cm^2

(C) 60 cm^2

(D) 45 cm^2

Q21. The cuboid shown has length 5 cm, height 4 cm and depth 3 cm. Find its volume.



(A) 60 cm^3

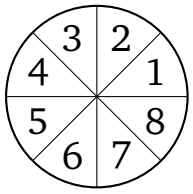
(B) 47 cm^3

(C) 12 cm^3

(D) 94 cm^3

Part D: Modern Maths

Q22. A fair spinner is divided into 8 equal sectors numbered 1 to 8, as shown. If the spinner is spun once, what is the probability that the arrow stops on a prime number?



(A) $\frac{3}{8}$

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

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

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

Q23. In how many ways can a committee of 2 members be chosen from a group of 6 people?

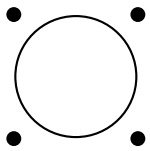
(A) 12

(B) 30

(C) 15

(D) 20

Q24. In how many ways can 4 friends be seated around a circular table, as shown? (Two arrangements are the same if one is a rotation of the other.)



(A) 24

(B) 12

(C) 4

(D) 6

Part E: Data Interpretation

Data Set I (Q25–Q28): The table below shows the number of cars sold by four dealers P, Q, R and S in the years 2022 and 2023.

Dealer	2022	2023
P	120	150
Q	200	180
R	160	220
S	100	130

Q25. What is the total number of cars sold by all four dealers together in the year 2023?

(A) 580

(B) 640

(C) 680

(D) 700

Q26. Which dealer recorded the largest increase in the number of cars sold from 2022 to 2023?

(A) P

(B) Q

(C) S

(D) R

Q27. What is the percentage increase in the number of cars sold by dealer R from 2022 to 2023?

(A) 37.5%

(B) 40%

(C) 27.3%

(D) 60%

Q28. What is the ratio of dealer P's sales in 2022 to dealer S's sales in 2023?

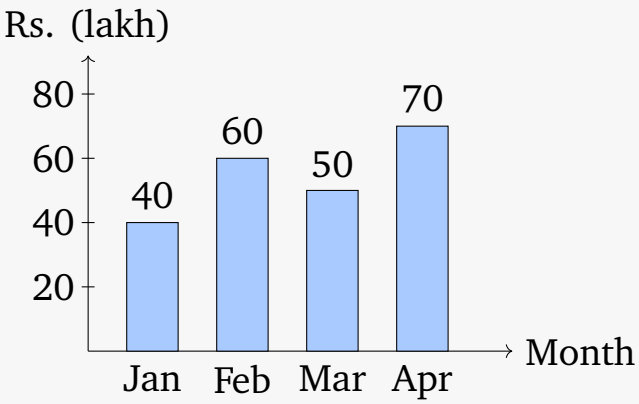
(A) $4 : 5$

(B) $6 : 5$

(C) $5 : 6$

(D) $12 : 13$

Data Set II (Q29–Q32): The bar chart below shows the monthly revenue (in Rs. lakh) of a store over four months.



Q29. What is the total revenue of the store over the four months (in Rs. lakh)?

(A) 220

(B) 200

(C) 210

(D) 240

Q30. What is the difference between the highest and the lowest monthly revenue (in Rs. lakh)?

(A) 20

(B) 30

(C) 10

(D) 40

Q31. What is the percentage increase in revenue from January to February?

(A) 20%

(B) 50%

(C) 33.3%

(D) 25%

Q32. What is the average monthly revenue over the four months (in Rs. lakh)?

(A) 55

(B) 50

(C) 60

(D) 45

Part F: Data Sufficiency

Directions (Q33–Q36): Each question below is followed by two statements, I and II. Decide whether the information in the statements is sufficient to answer the question and choose from the standard options given with each question.

Q33. What is the value of x?

I. $2x = 10$.

II. x is a positive integer less than 8.

(A) Statement I alone is sufficient, but statement II alone is not.

(B) Statement II alone is sufficient, but statement I alone is not.

(C) Both statements together are sufficient, but neither alone is.

(D) Each statement alone is sufficient.

Q34. What is the area of a square?

I. The side of the square is 6 cm.

II. The perimeter of the square is 24 cm.

(A) Statement I alone is sufficient, but statement II alone is not.

(B) Statement II alone is sufficient, but statement I alone is not.

(C) Both statements together are sufficient, but neither alone is.

(D) Each statement alone is sufficient.

Q35. Is the positive integer n an even number?

I. n is a prime number.

II. n is divisible by 4.

(A) Statement I alone is sufficient, but statement II alone is not.

(B) Statement II alone is sufficient, but statement I alone is not.

(C) Both statements together are sufficient, but neither alone is.

(D) Each statement alone is sufficient.

Q36. What is the present age of the father?

I. The father is 30 years older than his son, and the son is now 10 years old.

II. The father's present age is a multiple of 8.

(A) Statement I alone is sufficient, but statement II alone is not.

(B) Statement II alone is sufficient, but statement I alone is not.

(C) Both statements together are sufficient, but neither alone is.

(D) Each statement alone is sufficient.

Detailed Solutions

Q1.

Solution

Concept — Percentage: If a certain percentage passed, the remaining percentage failed, and both percentages are taken on the same total.

Step 1: Passed $= 60\%$, so failed $= 100\% - 60\% = 40\%$.

Step 2: The 40% who failed equal 240 students.

Step 3: So 40% of Total $= 240$.

Step 4: $\frac{40}{100} \times \text{Total} = 240$.

Step 5: Total $= 240 \times \frac{100}{40}$.

Step 6: Total $= 240 \times 2.5 = 600$.

Why other options are wrong:

- Option A (400): would make 40% of it $= 160$, not 240.
- Option B (480): 40% of it $= 192$, not 240.
- Option C (540): 40% of it $= 216$, not 240.

Final Answer: 600 students $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q1

Q2.

Solution

Concept — Profit and Loss: Selling price $=$ Cost price $+$ Profit, where Profit $=$ Profit% of Cost price.

Step 1: Cost price $=$ Rs. 800, Profit $= 15\%$.

Step 2: Profit $= \frac{15}{100} \times 800$.

Step 3: Profit $= 15 \times 8 = 120$.

Step 4: Selling price $= 800 + 120 = 920$.

Why other options are wrong:

- Option B (940): uses a wrong profit of Rs. 140.

- Option C (880): uses only 10% profit ($= 80$).
- Option D (960): uses 20% profit ($= 160$).

Final Answer: Rs. 920 $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q2

Q3.

Solution

Concept — Ratio and Proportion: A share equals its ratio part divided by the sum of parts, times the total amount.

Step 1: Ratio $A : B = 2 : 3$, so total parts $= 2 + 3 = 5$.

Step 2: B's part $= 3$ out of 5.

Step 3: B's share $= \frac{3}{5} \times 3000$.

Step 4: B's share $= 3 \times 600 = 1800$.

Why other options are wrong:

- Option A (1200): this is A's share, not B's.
- Option C (1500): this is an equal half-split, ignoring the ratio.
- Option D (2000): uses a wrong ratio part.

Final Answer: Rs. 1800 $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q3

Q4.

Solution

Concept — Averages: Sum $=$ Average $\times$ Count. Remove a value from the sum, then divide by the new count.

Step 1: Sum of 5 numbers $= 27 \times 5 = 135$.

Step 2: Remove the number 35: new sum $= 135 - 35 = 100$.

Step 3: Remaining count $= 5 - 1 = 4$.

Step 4: New average $= \frac{100}{4} = 25$.

Why other options are wrong:

- Option A (20): uses a wrong sum.
- Option B (22): uses a wrong sum.
- Option D (30): wrongly assumes the average rises after removal.

Final Answer: 25 $\Rightarrow$ C

Answer: (C) Go Back to Q4

Q5.

Solution

Concept — Speed, Time and Distance: Speed $= \dfrac{\text{Distance}}{\text{Time}}$.

Step 1: Distance $= 240$ km, Time $= 4$ hours.

Step 2: Speed $= \dfrac{240}{4}$.

Step 3: Speed $= 60$ km/h.

Why other options are wrong:

- Option A (48): would cover only $48 \times 4 = 192$ km.
- Option B (54): would cover only 216 km.
- Option C (56): would cover only 224 km.

Final Answer: 60 km/h $\Rightarrow$ D

Answer: (D) Go Back to Q5

Q6.

Solution

Concept — Time and Work: Add the one-day work of each worker to get the combined one-day work, then take the reciprocal.

Step 1: A's one-day work $= \dfrac{1}{10}$.

Step 2: B's one-day work $= \dfrac{1}{15}$.

Step 3: Combined one-day work $= \dfrac{1}{10} + \dfrac{1}{15}$.

Step 4: Take LCM of 10 and 15, which is 30: $\dfrac{3}{30} + \dfrac{2}{30} = \dfrac{5}{30}$.

Step 5: $\frac{5}{30} = \frac{1}{6}$.

Step 6: Time together $= \frac{1}{1/6} = 6$ days.

Why other options are wrong:

- Option A (5): less than either single time, impossible check aside, it does not match.
- Option B (12): this is the average of 10 and 15, not the work rule.
- Option D (25): sums the days, which is incorrect.

Final Answer: 6 days $\Rightarrow$ C

Answer: (C) Go Back to Q6

Q7.

Solution

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

Step 1: $P = 5000$, $R = 8$, $T = 3$.

Step 2: SI $= \frac{5000 \times 8 \times 3}{100}$.

Step 3: Numerator $= 5000 \times 8 = 40000$.

Step 4: $40000 \times 3 = 120000$.

Step 5: SI $= \frac{120000}{100} = 1200$.

Why other options are wrong:

- Option B (1400): uses a wrong rate or time.
- Option C (1000): uses 2 years instead of 3.
- Option D (1500): uses 10% instead of 8%.

Final Answer: Rs. 1200 $\Rightarrow$ A

Answer: (A) Go Back to Q7

Q8.

Solution

Concept — Compound Interest: Amount $= P\left(1+\dfrac{R}{100}\right)^{T}$, and CI $=$ Amount $-P$.

Step 1: $P = 8000$, $R = 10$, $T = 2$.

Step 2: Growth factor per year $= 1 + \dfrac{10}{100} = 1.1$.

Step 3: Amount $= 8000 \times 1.1 \times 1.1$.

Step 4: $8000 \times 1.1 = 8800$.

Step 5: $8800 \times 1.1 = 9680$.

Step 6: CI $= 9680 - 8000 = 1680$.

Why other options are wrong:

- Option A (1600): this is only the simple interest.
- Option B (1720): uses a wrong second-year base.
- Option D (1650): arithmetic slip on the compounding.

Final Answer: Rs. 1680 $\Rightarrow$ C

Answer: (C) Go Back to Q8

Q9.

Solution

Concept — Alligation: Ratio $= \dfrac{\text{Dearer price} - \text{Mean}}{\text{Mean} - \text{Cheaper price}}$ for (cheaper : dearer).

Step 1: Cheaper $= 30$, dearer $= 40$, mean $= 34$.

Step 2: Dearer $-$ Mean $= 40 - 34 = 6$.

Step 3: Mean $-$ Cheaper $= 34 - 30 = 4$.

Step 4: Ratio (cheaper : dearer) $= 6 : 4$.

Step 5: Divide both by 2: $6 : 4 = 3 : 2$.

Why other options are wrong:

- Option B (2:3): reverses the two rice types.

- Option C (4:3): comes from an incorrect subtraction.
- Option D (1:1): would give a mean of Rs. 35, not Rs. 34.

Final Answer: $3 : 2 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q9

Q10.

Solution

Concept — Partnership: For equal time periods, profit is shared in the ratio of the amounts invested.

Step 1: A : B investments $= 4000 : 6000$.

Step 2: Divide both by 2000: $4000 : 6000 = 2 : 3$.

Step 3: Total parts $= 2 + 3 = 5$.

Step 4: B's part $= 3$ out of 5.

Step 5: B's share $= \frac{3}{5} \times 2500 = 3 \times 500 = 1500$.

Why other options are wrong:

- Option A (1000): this is A's share.
- Option C (1250): an equal split, ignoring the ratio.
- Option D (2000): uses a wrong ratio part.

Final Answer: Rs. 1500 $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q10

Q11.

Solution

Concept — Linear Equation: Isolate x by undoing addition first, then division.

Step 1: $3x + 7 = 22$.

Step 2: Subtract 7 from both sides: $3x = 22 - 7$.

Step 3: $3x = 15$.

Step 4: Divide both sides by 3: $x = \frac{15}{3}$.

Step 5: $x = 5$.

Why other options are wrong:

- Option A (3): gives $3(3) + 7 = 16$, not 22.
- Option B (4): gives $3(4) + 7 = 19$, not 22.
- Option D (6): gives $3(6) + 7 = 25$, not 22.

Final Answer: $x = 5 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q11

Q12.

Solution

Concept — Quadratic Equation: Factorise into two brackets whose product is the constant and sum is the middle coefficient.

Step 1: $x^2 - 7x + 12 = 0$.

Step 2: Find two numbers with product 12 and sum 7: these are 3 and 4.

Step 3: Factorise: $(x - 3)(x - 4) = 0$.

Step 4: So $x = 3$ or $x = 4$.

Step 5: The larger root is 4.

Why other options are wrong:

- Option A (1) and Option B (2): are not roots of the equation.
- Option C (3): is a root, but it is the smaller one.

Final Answer: Larger root $= 4 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q12

Q13.

Solution

Concept — Indices: When multiplying powers with the same base, add the exponents: $a^m \times a^n = a^{m+n}$.

Step 1: $2^3 \times 2^4 = 2^{3+4}$.

Step 2: $2^{3+4} = 2^7$.

Step 3: $2^7 = 128$.

Why other options are wrong:

- Option A (64): equals 2^6, from adding wrongly.
- Option C (256): equals 2^8.
- Option D (32): equals 2^5.

Final Answer: $128 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q13

Q14.

Solution

Concept — LCM: The LCM is found by taking the highest power of each prime that appears in either number.

Step 1: Prime factorise: $12 = 2^2 \times 3$.

Step 2: Prime factorise: $18 = 2 \times 3^2$.

Step 3: Highest power of 2 is 2^2; highest power of 3 is 3^2.

Step 4: LCM $= 2^2 \times 3^2 = 4 \times 9$.

Step 5: LCM $= 36$.

Why other options are wrong:

- Option A (6): this is the HCF, not the LCM.
- Option B (72): a common multiple, but not the least.
- Option C (108): also a multiple, but not the least.

Final Answer: $36 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q14

Q15.

Solution

Concept — Arithmetic Progression: The nth term is $a_n = a + (n-1)d$, where a is the first term and d is the common difference.

Step 1: First term $a = 3$.

Step 2: Common difference $d = 7 - 3 = 4$.

Step 3: For the 10th term, $n = 10$: $a_{10} = 3 + (10 - 1) \times 4$.

Step 4: $a_{10} = 3 + 9 \times 4$.

Step 5: $a_{10} = 3 + 36 = 39$.

Why other options are wrong:

- Option A (31): this is the 8th term.
- Option B (35): this is the 9th term.
- Option D (43): this is the 11th term.

Final Answer: 39 $\Rightarrow$ C

Answer: (C) Go Back to Q15

Q16.

Solution

Concept — Order of Operations (BODMAS): Do multiplication and division before addition and subtraction.

Step 1: Expression: $15 + 3 \times 4 - 8 \div 2$.

Step 2: Multiply first: $3 \times 4 = 12$.

Step 3: Divide next: $8 \div 2 = 4$.

Step 4: Rewrite: $15 + 12 - 4$.

Step 5: Add and subtract left to right: $15 + 12 = 27$, then $27 - 4 = 23$.

Why other options are wrong:

- Option A (19): from ignoring the division.
- Option B (21): from a wrong order of operations.
- Option D (25): from adding before multiplying.

Final Answer: 23 $\Rightarrow$ C

Answer: (C) Go Back to Q16

Q17.

Solution

Concept — Pythagoras Theorem: In a right triangle, $(\text{hypotenuse})^2 = (\text{leg})^2 + (\text{leg})^2$.

Step 1: The legs are 6 cm and 8 cm.

Step 2: $\text{Hypotenuse}^2 = 6^2 + 8^2$.

Step 3: $6^2 = 36$ and $8^2 = 64$.

Step 4: $\text{Hypotenuse}^2 = 36 + 64 = 100$.

Step 5: $\text{Hypotenuse} = \sqrt{100} = 10$ cm.

Why other options are wrong:

- Option A (7): too small; its square is only 49.
- Option B (12): its square 144 exceeds 100.
- Option C (14): comes from adding the legs $6 + 8$, which is wrong.

Final Answer: 10 cm $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q17

Q18.

Solution

Concept — Area of a Circle: $\text{Area} = \pi r^2$.

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

Step 2: $\text{Area} = \dfrac{22}{7} \times 7^2$.

Step 3: $7^2 = 49$.

Step 4: $\text{Area} = \dfrac{22}{7} \times 49$.

Step 5: $\dfrac{49}{7} = 7$, so $\text{Area} = 22 \times 7$.

Step 6: $\text{Area} = 154$ cm^2.

Why other options are wrong:

- Option A (144): not produced by the formula.

- Option C (44): this is the circumference $2\pi r$, not the area.
- Option D (22): only the value of πr style slip.

Final Answer: 154 $\text{cm}^2 \Rightarrow$ B

Answer: (B) Go Back to Q18

Q19.

Solution

Concept — Distance Formula: Distance $= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.

Step 1: $A(1, 2)$ and $B(4, 6)$.

Step 2: $x_2 - x_1 = 4 - 1 = 3$.

Step 3: $y_2 - y_1 = 6 - 2 = 4$.

Step 4: Distance $= \sqrt{3^2 + 4^2}$.

Step 5: $= \sqrt{9 + 16} = \sqrt{25}$.

Step 6: Distance $= 5$.

Why other options are wrong:

- Option A (4): only the vertical gap, not the diagonal.
- Option C (6): does not satisfy the formula.
- Option D (7): equals $3 + 4$, from adding instead of using squares.

Final Answer: 5 $\Rightarrow$ B

Answer: (B) Go Back to Q19

Q20.

Solution

Concept — Area of a Rectangle: Area = length $\times$ breadth.

Step 1: Length $= 12$ cm, breadth $= 5$ cm.

Step 2: Area $= 12 \times 5$.

Step 3: Area $= 60$ cm^2.

Why other options are wrong:

- Option A (34): this is the perimeter $2(12+5)$, not the area.
- Option B (17): this is half the perimeter, $12+5$.
- Option D (45): an incorrect product.

Final Answer: 60 $\text{cm}^2 \Rightarrow$ C

Answer: (C) Go Back to Q20

Q21.

Solution

Concept — Volume of a Cuboid: Volume = length $\times$ breadth $\times$ height.

Step 1: Length $= 5$ cm, height $= 4$ cm, depth $= 3$ cm.

Step 2: Volume $= 5 \times 4 \times 3$.

Step 3: $5 \times 4 = 20$.

Step 4: $20 \times 3 = 60$.

Step 5: Volume $= 60$ cm^3.

Why other options are wrong:

- Option B (47): equals half the surface area, not the volume.
- Option C (12): equals $5+4+3$, from adding.
- Option D (94): equals the total surface area $2(20+15+12)$.

Final Answer: 60 $\text{cm}^3 \Rightarrow$ A

Answer: (A) Go Back to Q21

Q22.

Solution

Concept — Probability: Probability $= \dfrac{\text{favourable outcomes}}{\text{total outcomes}}$.

Step 1: Total outcomes $= 8$ (sectors 1 to 8).

Step 2: Prime numbers between 1 and 8 are $2, 3, 5, 7$.

Step 3: Count of favourable outcomes $= 4$.

Step 4: Probability $= \dfrac{4}{8}$.

Step 5: $\frac{4}{8} = \frac{1}{2}$.

Why other options are wrong:

- Option A $(3/8)$: would count only 3 primes.
- Option C $(5/8)$: would count 5 primes, but 1 is not prime.
- Option D $(1/4)$: would count only 2 favourable outcomes.

Final Answer: $\frac{1}{2} \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q22

Q23.

Solution

Concept — Combinations: The number of ways to choose r from n is ${}^{n}C_{r} = \frac{n!}{r!\,(n-r)!}$.

Step 1: Here $n = 6$ and $r = 2$.

Step 2: ${}^{6}C_{2} = \frac{6 \times 5}{2 \times 1}$.

Step 3: Numerator $= 6 \times 5 = 30$.

Step 4: Denominator $= 2 \times 1 = 2$.

Step 5: ${}^{6}C_{2} = \frac{30}{2} = 15$.

Why other options are wrong:

- Option A (12): an incorrect product.
- Option B (30): this is ${}^{6}P_{2}$ (order counted), not a committee.
- Option D (20): does not match the formula.

Final Answer: $15 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q23

Q24.

Solution

Concept — Circular Permutation: The number of ways to seat n people around a round table is $(n-1)!$.

Step 1: Here $n = 4$.

Step 2: Number of ways $= (4 - 1)!$.

Step 3: $= 3!$.

Step 4: $3! = 3 \times 2 \times 1 = 6$.

Why other options are wrong:

- Option A (24): this is $4!$, the count for a straight row, not a circle.
- Option B (12): does not match the circular rule.
- Option C (4): far too small.

Final Answer: $6 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q24

Q25.

Solution

Concept — Table Reading (Total): Add the 2023 column for all four dealers.

Step 1: 2023 sales: P $= 150$, Q $= 180$, R $= 220$, S $= 130$.

Step 2: $150 + 180 = 330$.

Step 3: $330 + 220 = 550$.

Step 4: $550 + 130 = 680$.

Why other options are wrong:

- Option A (580): this is the 2022 total.
- Option B (640): an incorrect sum.
- Option D (700): an incorrect sum.

Final Answer: 680 cars $\Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q25

Q26.

Solution

Concept — Table Reading (Change): Compute the increase (2023 − 2022) for each dealer and compare.

Step 1: P: $150 - 120 = 30$.

Step 2: Q: $180 - 200 = -20$ (a decrease).

Step 3: R: $220 - 160 = 60$.

Step 4: S: $130 - 100 = 30$.

Step 5: The largest increase is 60, for dealer R.

Why other options are wrong:

- Option A (P): increase is only 30.
- Option B (Q): sales actually fell by 20.
- Option C (S): increase is only 30.

Final Answer: Dealer R $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q26

Q27.

Solution

Concept — Percentage Change: Percentage increase $= \dfrac{\text{increase}}{\text{original}} \times 100$.

Step 1: R's 2022 sales $= 160$, 2023 sales $= 220$.

Step 2: Increase $= 220 - 160 = 60$.

Step 3: Percentage increase $= \dfrac{60}{160} \times 100$.

Step 4: $\dfrac{60}{160} = 0.375$.

Step 5: $0.375 \times 100 = 37.5\%$.

Why other options are wrong:

- Option B (40%): rounds the fraction incorrectly.
- Option C (27.3%): uses 220 as the base, which is wrong.
- Option D (60%): confuses the raw increase with the percentage.

Final Answer: 37.5% $\Rightarrow$ A

Answer: (A) Go Back to Q27

Q28.

Solution

Concept — Ratio from a Table: Form the ratio and reduce it to lowest terms.

Step 1: P's 2022 sales $= 120$; S's 2023 sales $= 130$.

Step 2: Ratio $= 120 : 130$.

Step 3: Divide both by 10: $120 : 130 = 12 : 13$.

Step 4: 12 and 13 share no common factor, so the ratio is final.

Why other options are wrong:

- Option A $(4 : 5)$: does not reduce from $120 : 130$.
- Option B $(6 : 5)$: uses the wrong two values.
- Option C $(5 : 6)$: reverses and mis-reduces the ratio.

Final Answer: $12 : 13 \Rightarrow$ D

Answer: (D) Go Back to Q28

Q29.

Solution

Concept — Bar Chart (Total): Add the four bar heights.

Step 1: Revenues: Jan $= 40$, Feb $= 60$, Mar $= 50$, Apr $= 70$.

Step 2: $40 + 60 = 100$.

Step 3: $100 + 50 = 150$.

Step 4: $150 + 70 = 220$.

Why other options are wrong:

- Option B (200): drops part of one bar.
- Option C (210): an incorrect sum.
- Option D (240): overcounts the bars.

Final Answer: Rs. 220 lakh $\Rightarrow$ A

Answer: (A) Go Back to Q29

Q30.

Solution

Concept — Bar Chart (Range): Subtract the smallest bar from the largest bar.

Step 1: Highest revenue $= 70$ (April).

Step 2: Lowest revenue $= 40$ (January).

Step 3: Difference $= 70 - 40$.

Step 4: Difference $= 30$.

Why other options are wrong:

- Option A (20): from picking the wrong two months.
- Option C (10): from adjacent months, not the extremes.
- Option D (40): from a subtraction slip.

Final Answer: Rs. 30 lakh $\Rightarrow$ B

Answer: (B) Go Back to Q30

Q31.

Solution

Concept — Percentage Change: Percentage increase $= \dfrac{\text{increase}}{\text{original}} \times 100$.

Step 1: January $= 40$, February $= 60$.

Step 2: Increase $= 60 - 40 = 20$.

Step 3: Percentage increase $= \dfrac{20}{40} \times 100$.

Step 4: $\dfrac{20}{40} = 0.5$.

Step 5: $0.5 \times 100 = 50\%$.

Why other options are wrong:

- Option A (20%): confuses the raw increase with the percentage.
- Option C (33.3%): uses 60 as the base, which is wrong.
- Option D (25%): an incorrect fraction.

Final Answer: 50% $\Rightarrow$ B

Answer: (B) Go Back to Q31

Q32.

Solution

Concept — Average: Average $= \dfrac{\text{sum of values}}{\text{number of values}}$.

Step 1: Sum of revenues $= 40 + 60 + 50 + 70 = 220$ (from Q29).

Step 2: Number of months $= 4$.

Step 3: Average $= \dfrac{220}{4}$.

Step 4: Average $= 55$.

Why other options are wrong:

- Option B (50): uses a wrong total.
- Option C (60): uses a wrong total.
- Option D (45): uses a wrong total.

Final Answer: Rs. 55 lakh $\Rightarrow$ A

Answer: (A) Go Back to Q32

Q33.

Solution

Concept — Data Sufficiency: Test each statement alone for a unique answer.

Step 1: Statement I: $2x = 10$ gives $x = 5$, a single unique value. So I alone is sufficient.

Step 2: Statement II: x is a positive integer less than 8, so x could be $1, 2, 3, 4, 5, 6$ or 7. Not unique, so II alone is not sufficient.

Step 3: Since I alone works and II alone does not, the answer is option A.

Why other options are wrong:

- Option B: II alone is not sufficient, so this is false.
- Option C: I already suffices alone, so we do not need both.
- Option D: II alone does not suffice, so "each alone" is false.

Final Answer: Statement I alone is sufficient $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q33

Q34.

Solution

Concept — Data Sufficiency: A square is fully determined by its side, so any statement giving the side is sufficient.

Step 1: Statement I: side $= 6$ cm, so area $= 6^2 = 36$ cm^2. I alone is sufficient.

Step 2: Statement II: perimeter $= 24$ cm, so side $= \dfrac{24}{4} = 6$ cm, and area $= 36$ cm^2. II alone is sufficient.

Step 3: Each statement alone gives the area, so the answer is option D.

Why other options are wrong:

- Option A: II also suffices alone, so "only I" is false.
- Option B: I also suffices alone, so "only II" is false.
- Option C: we do not need both together.

Final Answer: Each statement alone is sufficient $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q34

Q35.

Solution

Concept — Data Sufficiency: Check whether each statement pins down the parity of n.

Step 1: Statement I: n is prime. Primes include 2 (even) and 3, 5, 7 (odd), so parity is not fixed. I alone is not sufficient.

Step 2: Statement II: n is divisible by 4, so $n = 4, 8, 12, \ldots$, all of which are even. So n is definitely even. II alone is sufficient.

Step 3: Since II alone works and I alone does not, the answer is option B.

Why other options are wrong:

- Option A: I alone leaves parity unknown, so this is false.
- Option C: II already suffices alone, so both are not needed.

- Option D: I alone does not suffice, so "each alone" is false.

Final Answer: Statement II alone is sufficient $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q35

Q36.

Solution

Concept — Data Sufficiency: Test each statement for a unique value of the father's age.

Step 1: Statement I: father is 30 years older than the son, and the son is 10, so father $= 10 + 30 = 40$ years. Unique, so I alone is sufficient.

Step 2: Statement II: father's age is a multiple of 8, so it could be $32, 40, 48, \ldots$. Not unique, so II alone is not sufficient.

Step 3: Since I alone works and II alone does not, the answer is option A.

Why other options are wrong:

- Option B: II alone is not sufficient, so this is false.
- Option C: I already suffices alone, so both are not needed.
- Option D: II alone does not suffice, so "each alone" is false.

Final Answer: Statement I alone is sufficient $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q36

Answer Key

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