NMAT Quantitative Skills

Sample Paper – 5

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 a college, 45% of the students are girls. If there are 66 boys, how many students are there in the college in all?

(A) 120

(B) 150

(C) 110

(D) 132

Q2. A trader buys a chair for Rs. 1200 and sells it at a loss of 12%. Find the selling price of the chair.

(A) Rs. 1080

(B) Rs. 1116

(C) Rs. 1044

(D) Rs. 1056

Q3. A sum of Rs. 4200 is divided between X and Y in the ratio $4 : 3$. Find X's share.

(A) Rs. 2400

(B) Rs. 1800

(C) Rs. 2100

(D) Rs. 1600

Q4. The average of 6 numbers is 42. If a new number 70 is included in the set, what is the average of the 7 numbers?

(A) 46

(B) 44

(C) 48

(D) 50

Q5. A train travels a distance of 360 km in 5 hours. Find the average speed of the train in km/h.

(A) 60

(B) 65

(C) 70

(D) 72

Q6. P can finish a job in 12 days and Q can finish the same job in 24 days. Working together, in how many days will they finish the job?

(A) 6

(B) 8

(C) 9

(D) 16

Q7. Find the simple interest on Rs. 6000 at the rate of 9% per annum for 4 years.

(A) Rs. 1800

(B) Rs. 2000

(C) Rs. 2160

(D) Rs. 2400

Q8. Find the compound interest on Rs. 5000 at 20% per annum, compounded annually, for 2 years.

(A) Rs. 2000

(B) Rs. 2100

(C) Rs. 2200

(D) Rs. 2400

Q9. In what ratio must tea costing Rs. 50 per kg be mixed with tea costing Rs. 80 per kg so that the mixture is worth Rs. 60 per kg?

(A) $1:2$

(B) $2:1$

(C) $3:2$

(D) $3:1$

Q10. P invests Rs. 9000 and Q invests Rs. 6000 in a business for the same period. If the total annual profit is Rs. 4000, find P's share of the profit.

(A) Rs. 1600

(B) Rs. 2400

(C) Rs. 2000

(D) Rs. 2500

Part B: Algebra and Number System

Q11. Solve for x: $5x - 4 = 26$.

(A) 3

(B) 4

(C) 5

(D) 6

Q12. The equation $x^2 - 9x + 20 = 0$ has two real roots. What is the smaller of the two roots?

(A) 4

(B) 5

(C) 3

(D) 6

Q13. Simplify: $\frac{3^5}{3^2}$.

(A) 9

(B) 27

(C) 81

(D) 243

Q14. Find the highest common factor (HCF) of 24 and 36.

(A) 12

(B) 6

(C) 72

(D) 18

Q15. Find the 8th term of the arithmetic progression $5,\ 9,\ 13,\ \ldots$

(A) 29

(B) 37

(C) 41

(D) 33

Q16. Simplify using the order of operations: $20 - 4 \times 3 + 18 \div 6$.

(A) 11

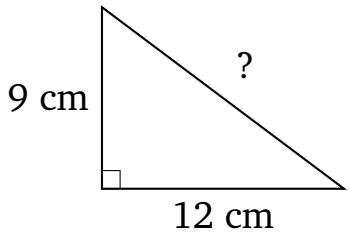
(B) 13

(C) 9

(D) 15

Part C: Geometry and Mensuration

Q17. In the right-angled triangle shown, the two legs measure 9 cm and 12 cm. Find the length of the hypotenuse.



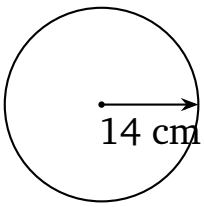
(A) 18 cm

(B) 21 cm

(C) 15 cm

(D) 13 cm

Q18. The circle shown has radius 14 cm. Find its area. (Take $\pi = \frac{22}{7}$.)



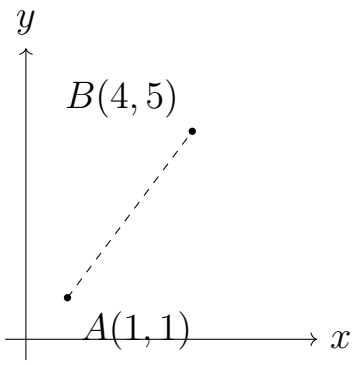
(A) 44 cm^2

(B) 88 cm^2

(C) 616 cm^2

(D) 308 cm^2

Q19. Find the distance between the points $A(1,1)$ and $B(4,5)$ shown on the coordinate plane.



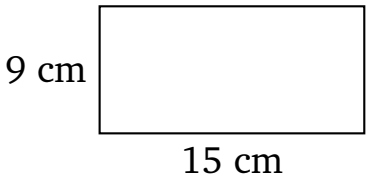
(A) 3

(B) 4

(C) 6

(D) 5

Q20. The rectangle shown has length 15 cm and breadth 9 cm. Find its perimeter.



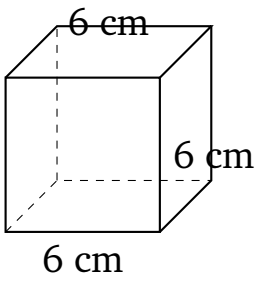
(A) 48 cm

(B) 135 cm

(C) 24 cm

(D) 60 cm

Q21. The cube shown has each edge measuring 6 cm. Find its volume.



(A) 36 cm^3

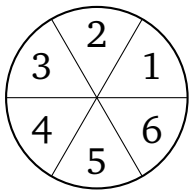
(B) 72 cm^3

(C) 144 cm^3

(D) 216 cm^3

Part D: Modern Maths

Q22. A fair spinner is divided into 6 equal sectors numbered 1 to 6, as shown. If the spinner is spun once, what is the probability that the arrow stops on a multiple of 3?



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

(B) $\frac{1}{3}$

(C) $\frac{1}{6}$

(D) $\frac{2}{3}$

Q23. In how many ways can a team of 3 members be chosen from a group of 7 players?

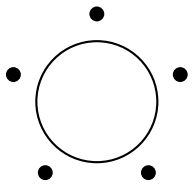
(A) 21

(B) 210

(C) 42

(D) 35

Q24. In how many ways can 5 people be seated around a circular table, as shown? (Two arrangements are the same if one is a rotation of the other.)



(A) 24

(B) 120

(C) 12

(D) 5

Part E: Data Interpretation

Data Set I (Q25–Q28): The table below shows the marks (out of 100) obtained by four students in five subjects.

Student	English	Maths	Science	History	Geography
Amit	72	85	68	75	60
Bina	80	90	78	66	86
Chetan	65	70	88	72	55
Divya	90	75	74	84	92

Q25. What is the total marks obtained by Bina across all five subjects?

(A) 390

(B) 400

(C) 410

(D) 420

Q26. In which subject did Chetan score the highest marks?

(A) English

(B) Maths

(C) Science

(D) History

Q27. What is the average marks obtained by the four students in Maths?

(A) 75

(B) 80

(C) 85

(D) 82

Q28. What is the ratio of Amit's English marks to Divya's English marks?

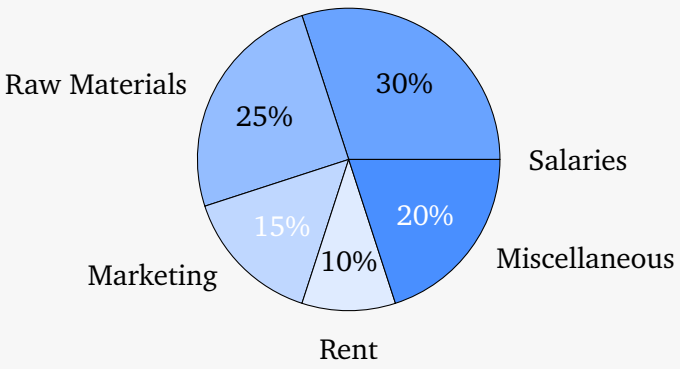
(A) $5 : 4$

(B) $6 : 5$

(C) $4 : 5$

(D) $8 : 9$

Data Set II (Q29–Q32): The pie chart below shows how a company's total annual expenditure of Rs. 8000 lakh is distributed across five categories.



Q29. How much does the company spend on Salaries in the year (in Rs. lakh)?

(A) 2400

(B) 2000

(C) 1600

(D) 1200

Q30. The expenditure on Marketing is what fraction of the total annual expenditure?

(A) $\frac{1}{5}$

(B) $\frac{3}{20}$

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

(D) $\frac{1}{10}$

Q31. By how many degrees does the Salaries sector exceed the Rent sector in the pie chart?

(A) 36°

(B) 108°

(C) 72°

(D) 90°

Q32. What is the ratio of the expenditure on Raw Materials to the expenditure on Miscellaneous?

(A) $4 : 5$

(B) $5 : 4$

(C) $1 : 1$

(D) $5 : 3$

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. $x + y = 10$.

II. $x - y = 4$.

(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.

Q34. What is the area of a rectangle?

I. The length of the rectangle is 8 cm.

II. The breadth of the rectangle is 5 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. What is the perimeter of a square?

I. The side of the square is 7 cm.

II. The area of the square is 49 cm^2.

(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. Is the positive integer n an odd number?

I. n is a prime number greater than 2.

II. n leaves a remainder of 1 when divided by 2.

(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 girls form one percentage, boys form the remaining percentage, both taken on the same total.

Step 1: Girls $= 45\%$, so boys $= 100\% - 45\% = 55\%$.

Step 2: The 55% who are boys equal 66 students.

Step 3: So 55% of Total $= 66$.

Step 4: $\frac{55}{100} \times \text{Total} = 66$.

Step 5: $\text{Total} = 66 \times \frac{100}{55}$.

Step 6: $\text{Total} = 66 \times \frac{20}{11} = 6 \times 20 = 120$.

Why other options are wrong:

- Option B (150): would make 55% of it $= 82.5$, not 66.
- Option C (110): 55% of it $= 60.5$, not 66.
- Option D (132): 55% of it $= 72.6$, not 66.

Final Answer: 120 students $\Rightarrow$ A

Answer: (A) Go Back to Q1

Q2.

Solution

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

Step 1: Cost price = Rs. 1200, Loss $= 12\%$.

Step 2: Loss $= \frac{12}{100} \times 1200$.

Step 3: Loss $= 12 \times 12 = 144$.

Step 4: Selling price $= 1200 - 144 = 1056$.

Why other options are wrong:

- Option A (1080): uses a wrong loss of Rs. 120 (10%).

- Option B (1116): uses a loss of only Rs. 84.
- Option C (1044): uses a wrong loss of Rs. 156 (13%).

Final Answer: Rs. 1056 $\Rightarrow$ D

Answer: (D) 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 $X : Y = 4 : 3$, so total parts $= 4 + 3 = 7$.

Step 2: X's part $= 4$ out of 7.

Step 3: X's share $= \frac{4}{7} \times 4200$.

Step 4: $\frac{4200}{7} = 600$.

Step 5: X's share $= 4 \times 600 = 2400$.

Why other options are wrong:

- Option B (1800): this is Y's share, not X's.
- Option C (2100): an equal half-split, ignoring the ratio.
- Option D (1600): uses a wrong ratio part.

Final Answer: Rs. 2400 $\Rightarrow$ A

Answer: (A) Go Back to Q3

Q4.

Solution

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

Step 1: Sum of 6 numbers $= 42 \times 6 = 252$.

Step 2: Include the number 70: new sum $= 252 + 70 = 322$.

Step 3: New count $= 6 + 1 = 7$.

Step 4: New average $= \dfrac{322}{7} = 46$.

Why other options are wrong:

- Option B (44): uses a wrong sum.
- Option C (48): uses a wrong sum.
- Option D (50): wrongly divides by 6 instead of 7.

Final Answer: $46 \Rightarrow \boxed{A}$

Answer: (A) Go Back to Q4

Q5.

Solution

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

Step 1: Distance $= 360$ km, Time $= 5$ hours.

Step 2: Speed $= \dfrac{360}{5}$.

Step 3: Speed $= 72$ km/h.

Why other options are wrong:

- Option A (60): would cover only $60 \times 5 = 300$ km.
- Option B (65): would cover only 325 km.
- Option C (70): would cover only 350 km.

Final Answer: 72 km/h $\Rightarrow \boxed{D}$

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: P's one-day work $= \dfrac{1}{12}$.

Step 2: Q's one-day work $= \dfrac{1}{24}$.

Step 3: Combined one-day work $= \frac{1}{12} + \frac{1}{24}$.

Step 4: Take LCM of 12 and 24, which is 24: $\frac{2}{24} + \frac{1}{24} = \frac{3}{24}$.

Step 5: $\frac{3}{24} = \frac{1}{8}$.

Step 6: Time together $= \frac{1}{1/8} = 8$ days.

Why other options are wrong:

- Option A (6): does not match the combined rate.
- Option C (9): an arithmetic slip on the addition.
- Option D (16): this is the average of 12 and 24, not the work rule.

Final Answer: 8 days $\Rightarrow$ B

Answer: (B) Go Back to Q6

Q7.

Solution

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

Step 1: $P = 6000$, $R = 9$, $T = 4$.

Step 2: SI $= \frac{6000 \times 9 \times 4}{100}$.

Step 3: Numerator $= 6000 \times 9 = 54000$.

Step 4: $54000 \times 4 = 216000$.

Step 5: SI $= \frac{216000}{100} = 2160$.

Why other options are wrong:

- Option A (1800): uses 3 years instead of 4.
- Option B (2000): uses a wrong rate.
- Option D (2400): uses 10% instead of 9%.

Final Answer: Rs. 2160 $\Rightarrow$ C

Answer: (C) Go Back to Q7

Q8.

Solution

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

Step 1: $P = 5000$, $R = 20$, $T = 2$.

Step 2: Growth factor per year $= 1 + \dfrac{20}{100} = 1.2$.

Step 3: Amount $= 5000 \times 1.2 \times 1.2$.

Step 4: $5000 \times 1.2 = 6000$.

Step 5: $6000 \times 1.2 = 7200$.

Step 6: CI $= 7200 - 5000 = 2200$.

Why other options are wrong:

- Option A (2000): this is only the simple interest.
- Option B (2100): uses a wrong second-year base.
- Option D (2400): an arithmetic slip on the compounding.

Final Answer: Rs. 2200 $\Rightarrow$ 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 $= 50$, dearer $= 80$, mean $= 60$.

Step 2: Dearer $-$ Mean $= 80 - 60 = 20$.

Step 3: Mean $-$ Cheaper $= 60 - 50 = 10$.

Step 4: Ratio (cheaper : dearer) $= 20 : 10$.

Step 5: Divide both by 10: $20 : 10 = 2 : 1$.

Why other options are wrong:

- Option A (1:2): reverses the two teas.

- Option C (3:2): comes from an incorrect subtraction.
- Option D (3:1): would not give a mean of Rs. 60.

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

Answer: (B) Go Back to Q9

Q10.

Solution

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

Step 1: P : Q investments $= 9000 : 6000$.

Step 2: Divide both by 3000: $9000 : 6000 = 3 : 2$.

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

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

Step 5: P's share $= \frac{3}{5} \times 4000 = 3 \times 800 = 2400$.

Why other options are wrong:

- Option A (1600): this is Q's share.
- Option C (2000): an equal split, ignoring the ratio.
- Option D (2500): uses a wrong ratio part.

Final Answer: Rs. 2400 $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q10

Q11.

Solution

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

Step 1: $5x - 4 = 26$.

Step 2: Add 4 to both sides: $5x = 26 + 4$.

Step 3: $5x = 30$.

Step 4: Divide both sides by 5: $x = \frac{30}{5}$.

Step 5: $x = 6$.

Why other options are wrong:

- Option A (3): gives $5(3) - 4 = 11$, not 26.
- Option B (4): gives $5(4) - 4 = 16$, not 26.
- Option C (5): gives $5(5) - 4 = 21$, not 26.

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

Answer: (D) 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: $x^2 - 9x + 20 = 0$.

Step 2: Find two numbers with product 20 and sum 9: these are 4 and 5.

Step 3: Factorise: $(x - 4)(x - 5) = 0$.

Step 4: So $x = 4$ or $x = 5$.

Step 5: The smaller root is 4.

Why other options are wrong:

- Option B (5): is a root, but it is the larger one.
- Option C (3) and Option D (6): are not roots of the equation.

Final Answer: Smaller root $= 4 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q12

Q13.

Solution

Concept — Indices: When dividing powers with the same base, subtract the exponents: $\dfrac{a^m}{a^n} = a^{m-n}$.

Step 1: $\dfrac{3^5}{3^2} = 3^{5-2}$.

Step 2: $3^{5-2} = 3^3$.

Step 3: $3^3 = 27$.

Why other options are wrong:

- Option A (9): equals 3^2, from subtracting wrongly.
- Option C (81): equals 3^4.
- Option D (243): equals 3^5, from not dividing at all.

Final Answer: $27 \Rightarrow \boxed{B}$

Answer: (B) Go Back to Q13

Q14.

Solution

Concept — HCF: The HCF is found by taking the lowest power of each prime common to both numbers.

Step 1: Prime factorise: $24 = 2^3 \times 3$.

Step 2: Prime factorise: $36 = 2^2 \times 3^2$.

Step 3: Common primes: lowest power of 2 is 2^2; lowest power of 3 is 3^1.

Step 4: HCF $= 2^2 \times 3 = 4 \times 3$.

Step 5: HCF $= 12$.

Why other options are wrong:

- Option B (6): a common factor, but not the highest.
- Option C (72): this is the LCM, not the HCF.
- Option D (18): does not divide 24 exactly.

Final Answer: $12 \Rightarrow \boxed{A}$

Answer: (A) 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 $a = 5$.

Step 2: Common difference $d = 9 - 5 = 4$.

Step 3: For the 8th term, $n = 8$: $a_8 = 5 + (8 - 1) \times 4$.

Step 4: $a_8 = 5 + 7 \times 4$.

Step 5: $a_8 = 5 + 28 = 33$.

Why other options are wrong:

- Option A (29): this is the 7th term.
- Option B (37): this is the 9th term.
- Option C (41): this is the 10th term.

Final Answer: $33 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q15

Q16.

Solution

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

Step 1: Expression: $20 - 4 \times 3 + 18 \div 6$.

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

Step 3: Divide next: $18 \div 6 = 3$.

Step 4: Rewrite: $20 - 12 + 3$.

Step 5: Work left to right: $20 - 12 = 8$, then $8 + 3 = 11$.

Why other options are wrong:

- Option B (13): from a wrong order of operations.
- Option C (9): from ignoring the division term.
- Option D (15): from subtracting after adding incorrectly.

Final Answer: $11 \Rightarrow \boxed{\text{A}}$

Answer: (A) 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 9 cm and 12 cm.

Step 2: $\text{Hypotenuse}^2 = 9^2 + 12^2$.

Step 3: $9^2 = 81$ and $12^2 = 144$.

Step 4: $\text{Hypotenuse}^2 = 81 + 144 = 225$.

Step 5: $\text{Hypotenuse} = \sqrt{225} = 15$ cm.

Why other options are wrong:

- Option A (18): its square 324 exceeds 225.
- Option B (21): equals adding the legs $9 + 12$, which is wrong.
- Option D (13): its square is only 169, too small.

Final Answer: 15 cm $\Rightarrow$ C

Answer: (C) Go Back to Q17

Q18.

Solution

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

Step 1: Radius $r = 14$ cm, and $\pi = \dfrac{22}{7}$.

Step 2: Area $= \dfrac{22}{7} \times 14^2$.

Step 3: $14^2 = 196$.

Step 4: Area $= \dfrac{22}{7} \times 196$.

Step 5: $\dfrac{196}{7} = 28$, so Area $= 22 \times 28$.

Step 6: Area $= 616$ cm^2.

Why other options are wrong:

- Option A (44): this is only part of a circumference value.

- Option B (88): this is the circumference $2\pi r$, not the area.
- Option D (308): uses radius 7 by mistake ($\pi \times 49 \times 2$ style slip).

Final Answer: 616 $\text{cm}^2 \Rightarrow$ C

Answer: (C) Go Back to Q18

Q19.

Solution

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

Step 1: $A(1, 1)$ and $B(4, 5)$.

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

Step 3: $y_2 - y_1 = 5 - 1 = 4$.

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 (3): only the horizontal gap, not the diagonal.
- Option B (4): only the vertical gap, not the diagonal.
- Option C (6): does not satisfy the formula.

Final Answer: 5 $\Rightarrow$ D

Answer: (D) Go Back to Q19

Q20.

Solution

Concept — Perimeter of a Rectangle: Perimeter $= 2 \times$ (length + breadth).

Step 1: Length $= 15$ cm, breadth $= 9$ cm.

Step 2: Length + breadth $= 15 + 9 = 24$.

Step 3: Perimeter $= 2 \times 24$.

Step 4: Perimeter $= 48$ cm.

Why other options are wrong:

- Option B (135): this is the area 15×9, not the perimeter.
- Option C (24): this is only length + breadth, missing the factor 2.
- Option D (60): an incorrect sum.

Final Answer: 48 cm $\Rightarrow$ A

Answer: (A) Go Back to Q20

Q21.

Solution

Concept — Volume of a Cube: Volume $= (\text{edge})^3$.

Step 1: Edge $= 6$ cm.

Step 2: Volume $= 6^3 = 6 \times 6 \times 6$.

Step 3: $6 \times 6 = 36$.

Step 4: $36 \times 6 = 216$.

Step 5: Volume $= 216$ cm^3.

Why other options are wrong:

- Option A (36): this is the area of one face 6^2, not the volume.
- Option B (72): equals twice a face area, not the volume.
- Option C (144): equals $6^2 \times 4$, not the cube of the edge.

Final Answer: 216 cm^3 $\Rightarrow$ D

Answer: (D) Go Back to Q21

Q22.

Solution

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

Step 1: Total outcomes $= 6$ (sectors 1 to 6).

Step 2: Multiples of 3 between 1 and 6 are 3 and 6.

Step 3: Count of favourable outcomes $= 2$.

Step 4: Probability $= \frac{2}{6}$.

Step 5: $\frac{2}{6} = \frac{1}{3}$.

Why other options are wrong:

- Option A $(1/2)$: would count 3 favourable outcomes.
- Option C $(1/6)$: would count only 1 favourable outcome.
- Option D $(2/3)$: would count 4 favourable outcomes.

Final Answer: $\frac{1}{3} \Rightarrow \boxed{\text{B}}$

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 $n = 7$ and $r = 3$.

Step 2: ${}^{7}C_{3} = \frac{7 \times 6 \times 5}{3 \times 2 \times 1}$.

Step 3: Numerator $= 7 \times 6 \times 5 = 210$.

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

Step 5: ${}^{7}C_{3} = \frac{210}{6} = 35$.

Why other options are wrong:

- Option A (21): this is ${}^{7}C_{2}$, choosing 2 instead of 3.
- Option B (210): this is ${}^{7}P_{3}$ (order counted), not a team.
- Option C (42): does not match the formula.

Final Answer: $35 \Rightarrow \boxed{\text{D}}$

Answer: (D) 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 $n = 5$.

Step 2: Number of ways $= (5-1)!$.

Step 3: $= 4!$.

Step 4: $4! = 4 \times 3 \times 2 \times 1 = 24$.

Why other options are wrong:

- Option B (120): this is $5!$, the count for a straight row, not a circle.
- Option C (12): does not match the circular rule.
- Option D (5): far too small.

Final Answer: 24 $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q24

Q25.

Solution

Concept — Table Reading (Row Total): Add all five subject marks in Bina's row.

Step 1: Bina's marks: English $= 80$, Maths $= 90$, Science $= 78$, History $= 66$, Geography $= 86$.

Step 2: $80 + 90 = 170$.

Step 3: $170 + 78 = 248$.

Step 4: $248 + 66 = 314$.

Step 5: $314 + 86 = 400$.

Why other options are wrong:

- Option A (390): an incorrect sum.
- Option C (410): an incorrect sum.
- Option D (420): overcounts one subject.

Final Answer: 400 marks $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q25

Q26.

Solution

Concept — Table Reading (Maximum in a Row): Compare Chetan's marks across the five subjects.

Step 1: Chetan's marks: English $= 65$, Maths $= 70$, Science $= 88$, History $= 72$, Geography $= 55$.

Step 2: List them in order: 55, 65, 70, 72, 88.

Step 3: The largest value is 88.

Step 4: 88 corresponds to Science.

Why other options are wrong:

- Option A (English): 65, not the highest.
- Option B (Maths): 70, not the highest.
- Option D (History): 72, not the highest.

Final Answer: Science $\Rightarrow$ C

Answer: (C) Go Back to Q26

Q27.

Solution

Concept — Average of a Column: Add all four students' Maths marks and divide by 4.

Step 1: Maths marks: Amit $= 85$, Bina $= 90$, Chetan $= 70$, Divya $= 75$.

Step 2: $85 + 90 = 175$.

Step 3: $175 + 70 = 245$.

Step 4: $245 + 75 = 320$.

Step 5: Average $= \dfrac{320}{4} = 80$.

Why other options are wrong:

- Option A (75): uses a wrong total.

- Option C (85): uses a wrong total.
- Option D (82): uses a wrong total.

Final Answer: $80 \Rightarrow \boxed{B}$

Answer: (B) Go Back to Q27

Q28.

Solution

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

Step 1: Amit's English marks $= 72$; Divya's English marks $= 90$.

Step 2: Ratio $= 72 : 90$.

Step 3: Divide both by 18: $72 : 90 = 4 : 5$.

Step 4: 4 and 5 share no common factor, so the ratio is final.

Why other options are wrong:

- Option A $(5 : 4)$: reverses the two students.
- Option B $(6 : 5)$: does not reduce from $72 : 90$.
- Option D $(8 : 9)$: comes from a wrong reduction.

Final Answer: $4 : 5 \Rightarrow \boxed{C}$

Answer: (C) Go Back to Q28

Q29.

Solution

Concept — Pie Chart (Part of a Whole): A category's amount $=$ its percentage $\times$ the total.

Step 1: Salaries share $= 30\%$; total expenditure $=$ Rs. 8000 lakh.

Step 2: Salaries $= \dfrac{30}{100} \times 8000$.

Step 3: $\dfrac{8000}{100} = 80$.

Step 4: Salaries $= 30 \times 80 = 2400$.

Why other options are wrong:

- Option B (2000): this is the Raw Materials amount (25%).
- Option C (1600): this is the Miscellaneous amount (20%).
- Option D (1200): this is the Marketing amount (15%).

Final Answer: Rs. 2400 lakh $\Rightarrow$ A

Answer: (A) Go Back to Q29

Q30.

Solution

Concept — Percentage as a Fraction: A percentage is that number over 100, reduced to lowest terms.

Step 1: Marketing share $= 15\%$.

Step 2: As a fraction $= \frac{15}{100}$.

Step 3: Divide numerator and denominator by 5: $\frac{15}{100} = \frac{3}{20}$.

Why other options are wrong:

- Option A $(1/5)$: equals 20%, the Miscellaneous share.
- Option C $(1/4)$: equals 25%, the Raw Materials share.
- Option D $(1/10)$: equals 10%, the Rent share.

Final Answer: $\frac{3}{20} \Rightarrow$ B

Answer: (B) Go Back to Q30

Q31.

Solution

Concept — Pie Chart (Sector Angle): A category's sector angle $=$ its percentage $\times 360°$, taken over 100.

Step 1: Salaries $= 30\%$, so its angle $= \frac{30}{100} \times 360 = 108°$.

Step 2: Rent $= 10\%$, so its angle $= \frac{10}{100} \times 360 = 36°$.

Step 3: Difference $= 108° - 36°$.

Step 4: Difference $= 72°$.

Why other options are wrong:

- Option A ($36°$): this is the Rent angle alone.
- Option B ($108°$): this is the Salaries angle alone.
- Option D ($90°$): does not match the computed difference.

Final Answer: $72° \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q31

Q32.

Solution

Concept — Ratio from a Pie Chart: Because both amounts share the same total, their ratio equals the ratio of their percentages.

Step 1: Raw Materials $= 25\%$; Miscellaneous $= 20\%$.

Step 2: Ratio $= 25 : 20$.

Step 3: Divide both by 5: $25 : 20 = 5 : 4$.

Why other options are wrong:

- Option A ($4 : 5$): reverses the two categories.
- Option C ($1 : 1$): would need equal percentages.
- Option D ($5 : 3$): comes from a wrong reduction.

Final Answer: $5 : 4 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q32

Q33.

Solution

Concept — Data Sufficiency: Test each statement alone, then together, for a unique value of x.

Step 1: Statement I: $x + y = 10$ has many solutions for x (depends on y). So I alone is not sufficient.

Step 2: Statement II: $x - y = 4$ also has many solutions for x. So II alone is not sufficient.

Step 3: Together: add the equations, $(x + y) + (x - y) = 10 + 4$, giving $2x = 14$, so $x = 7$. Unique value.

Step 4: Both together suffice, but neither alone does, so the answer is option C.

Why other options are wrong:

- Option A: I alone leaves x undetermined.
- Option B: II alone leaves x undetermined.
- Option D: neither statement alone gives a single value.

Final Answer: Both together are sufficient $\Rightarrow$ C

Answer: (C) Go Back to Q33

Q34.

Solution

Concept — Data Sufficiency: The area of a rectangle needs both length and breadth.

Step 1: Statement I: length $= 8$ cm, but breadth is unknown, so area cannot be found. I alone is not sufficient.

Step 2: Statement II: breadth $= 5$ cm, but length is unknown, so area cannot be found. II alone is not sufficient.

Step 3: Together: area $= 8 \times 5 = 40$ cm^2, a unique value.

Step 4: Both together suffice, but neither alone does, so the answer is option C.

Why other options are wrong:

- Option A: I alone lacks the breadth.
- Option B: II alone lacks the length.
- Option D: neither statement alone gives the area.

Final Answer: Both together are sufficient $\Rightarrow$ C

Answer: (C) Go Back to Q34

Q35.

Solution

Concept — Data Sufficiency: A square is fully fixed by its side, so any statement that pins the side gives the perimeter.

Step 1: Statement I: side $= 7$ cm, so perimeter $= 4 \times 7 = 28$ cm. I alone is

sufficient.

Step 2: Statement II: area $= 49$ cm^2, so side $= \sqrt{49} = 7$ cm, and perimeter $= 28$ cm. II alone is sufficient.

Step 3: Each statement alone gives the perimeter, 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 $\Rightarrow$ D

Answer: (D) Go Back to Q35

Q36.

Solution

Concept — Data Sufficiency: Check whether each statement fixes the parity of n as odd.

Step 1: Statement I: n is a prime greater than 2. Every prime above 2 is odd, so n is odd. I alone is sufficient.

Step 2: Statement II: n leaves remainder 1 when divided by 2, which is exactly the definition of an odd number. So n is odd. II alone is sufficient.

Step 3: Each statement alone answers the question, 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 $\Rightarrow$ D

Answer: (D) Go Back to Q36

Answer Key

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