

KMAT Logical Reasoning

Sample Paper – 1

Duration: 40 Minutes

Maximum Marks: 40

Instructions

- This paper contains **40** Multiple Choice Questions (Single Correct Answer), modelled on the Logical Reasoning section of the **KMAT Karnataka** entrance examination.
- Each correct answer carries **+1 mark**. There is **no negative marking** for incorrect or unattempted answers.
- Only **one** option is correct per question. Choose carefully.
- Syllabus: Series, Analogy, Classification, Coding-Decoding, Blood Relations, Directions, Seating Arrangement, Syllogisms, Statements & Conclusions, Venn Diagrams, Ranking, and Data Sufficiency.
- Use of mobile phones, calculators, or other electronic gadgets is strictly prohibited.

Q1. Find the missing term in the series: 3, 7, 13, 21, 31, ____

- (A) 41
- (B) 42
- (C) 43
- (D) 44

Q2. Find the next letter in the series: A, E, I, M, Q, ____

- (A) T
- (B) U
- (C) V
- (D) W



- Q3.** Find the missing term in the series: Z1, X4, V9, T16, ____
- (A) S25
 - (B) R16
 - (C) P25
 - (D) R25
- Q4.** $7 : 49 :: 9 : \underline{\hspace{1cm}}$
- (A) 81
 - (B) 72
 - (C) 63
 - (D) 27
- Q5.** Thermometer : Temperature :: Barometer : ____
- (A) Wind
 - (B) Rain
 - (C) Pressure
 - (D) Humidity
- Q6.** ABCD : DCBA :: EFGH : ____
- (A) EFGH
 - (B) HGFE
 - (C) GHEF
 - (D) FEGH
- Q7.** Which number does **NOT** belong to the following group?
8, 27, 64, 125, 150
- (A) 8
 - (B) 27



(C) 125

(D) 150

Q8. Which of the following is **NOT** a mammal?

(A) Shark

(B) Whale

(C) Dolphin

(D) Bat

Q9. In a certain code, BOOK is written as DQQM (each letter is shifted forward by 2 positions in the alphabet). Using the same code, how is EXAM written?

(A) GXCO

(B) GZCP

(C) GZCO

(D) HZCO

Q10. In a certain language:

‘go to school’ = ‘la me si’; ‘school is good’ = ‘si ve ko’; ‘good students go’ = ‘ko me ra’.

What is the code for ‘school’?

(A) la

(B) si

(C) me

(D) ko

Q11. If MAN = 28 (based on the sum of positional values of letters: M= 13, A= 1, N= 14), what is the value of WOMAN?

(A) 66



- (B) 72
- (C) 56
- (D) 78

Q12. In a coded language:

'@#\$%' = 'apple is very good'; '#!@' = 'apple tastes good'; '\$&@' = 'apple is sour'.

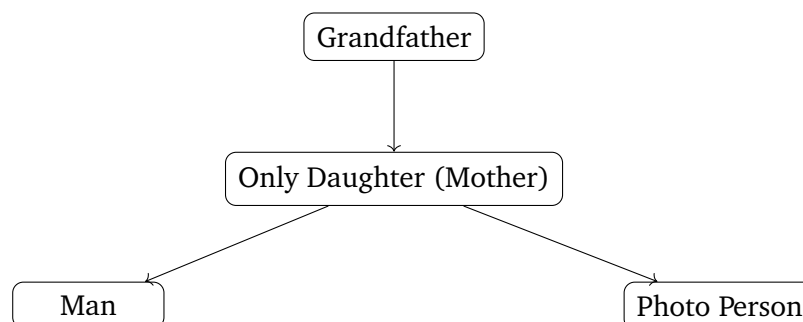
What does the symbol '\$' represent?

- (A) apple
- (B) good
- (C) very
- (D) is

Q13. Sita is the daughter-in-law of Ram. Ram has only one son, Ravi. Priya is the sister of Ravi. How is Sita related to Priya?

- (A) Daughter
- (B) Mother
- (C) Sister-in-law
- (D) Aunt

Q14. Pointing to a photograph, a man says, "This is the son of the only daughter of my grandfather." How is the man related to the person in the photograph?



- (A) Uncle



- (B) Brother
- (C) Father
- (D) Cousin

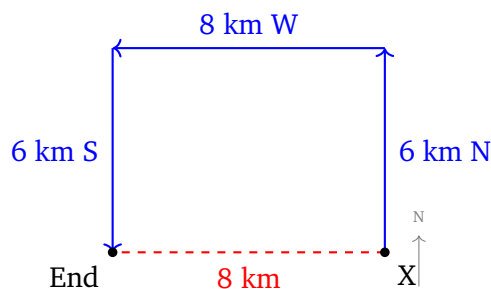
Q15. If A\$B means 'A is mother of B'; A#B means 'A is son of B'; A@B means 'A is sister of B'. What does **P\$Q#R** represent about P's relation to R?

- (A) Wife
- (B) Mother
- (C) Daughter
- (D) Sister

Q16. A person starts from point A, walks 3 km North, then turns right and walks 4 km, then turns right again and walks 5 km, and finally turns right and walks 2 km. In which direction is the person now from point A?

- (A) North-East
- (B) North-West
- (C) South-West
- (D) South-East

Q17. Starting from point X, Arjun walks 6 km North, then turns left and walks 8 km, then turns left again and walks 6 km South. What is the shortest distance from starting point X?



- (A) 6 km



- (B) 10 km
- (C) 8 km
- (D) 14 km

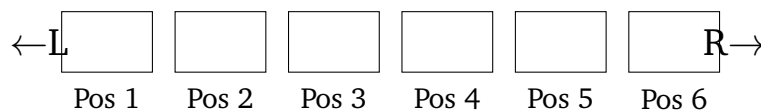
Q18. In a compass, if South-East is re-labelled as North, then what direction does South-West become?

- (A) North-West
- (B) East
- (C) North-East
- (D) West

Q19. Questions 19–22 are based on the following information:

Six friends A, B, C, D, E, and F are sitting in a row facing North.

- A sits at the extreme left end.
- E is to the immediate right of A.
- D sits at the 3rd position from the left.
- F sits between D and C (F is at the 4th position).
- C is to the immediate left of B.
- B sits at the extreme right end.



Who sits to the **immediate left** of D?

- (A) E
- (B) F
- (C) A
- (D) C

Q20. (Refer to the arrangement in Q19.) How many persons sit **between** A and F?



- (A) 1
- (B) 3
- (C) 0
- (D) 2

Q21. (Refer to the arrangement in Q19.) Who sits at the **extreme right** end?

- (A) F
- (B) C
- (C) B
- (D) E

Q22. (Refer to the arrangement in Q19.) Which pair of persons sits at the **two extreme ends** of the row?

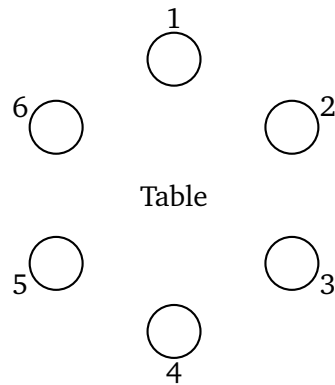
- (A) A and C
- (B) A and B
- (C) E and B
- (D) A and F

Q23. Questions 23–25 are based on the following information:

Six people A, B, C, D, E, and F are sitting around a **circular table**, all facing the centre (clockwise positions 1–6).

- A and C sit directly opposite each other.
- B is to the immediate right of A (clockwise).
- F sits directly opposite B.
- D is not adjacent to A.





Who sits **directly opposite** to E?

- (A) D
- (B) A
- (C) F
- (D) B

Q24. (Refer to the arrangement in Q23.) Who are the **immediate neighbours** of F?

- (A) D and E
- (B) A and B
- (C) B and C
- (D) C and E

Q25. (Refer to the arrangement in Q23.) How many persons sit between A and D going **clockwise** from A?

- (A) 0
- (B) 2
- (C) 1
- (D) 3

Q26. Statements:

- No pen is a pencil.



- All pencils are erasers.

Conclusions:

- I. No pen is an eraser.
- II. Some erasers are not pens.

- (A) Only I follows
- (B) Only II follows
- (C) Both follow
- (D) Neither follows

Q27. Statements:

- All students are hardworking.
- Rohan is a student.

Conclusions:

- I. Rohan is hardworking.
- II. All hardworking people are students.

- (A) Only I follows
- (B) Only II follows
- (C) Both follow
- (D) Neither follows

Q28. Statements:

- Some books are pens.
- Some pens are tables.

Conclusions:

- I. Some books are tables.
- II. All tables are pens.

- (A) Only I follows
- (B) Only II follows



- (C) Both follow
- (D) Neither follows

Q29. Statements:

- All mangoes are fruits.
- All fruits are healthy.

Conclusions:

- I. All mangoes are healthy.
- II. Some healthy things are fruits.

- (A) Only I follows
- (B) Only II follows
- (C) Both follow
- (D) Neither follows

Q30. Statement: “Despite heavy traffic, the ambulance reached the hospital in 8 minutes.”

Assumption I: The driver was exceptionally skilled.

Assumption II: The hospital is in close proximity to the incident.

- (A) Only Assumption I is implicit
- (B) Only Assumption II is implicit
- (C) Both assumptions are implicit
- (D) Neither assumption is implicit

Q31. Statement: “The government has imposed a 10% tax on luxury goods to boost revenue.”

Conclusion I: Luxury goods will become more expensive for consumers.

Conclusion II: Government revenue will definitely increase.

- (A) Only I follows
- (B) Only II follows



- (C) Both follow
(D) Neither follows

Q32. If $2 \oplus 3 = 10$, $3 \oplus 4 = 21$, $4 \oplus 5 = 36$, then $5 \oplus 6 = ?$

a	b	$a \oplus b$
2	3	10
3	4	21
4	5	36

- (A) 45
(B) 50
(C) 60
(D) 55

Q33. In a class of 40 students, Raju ranks 12th from the top and Priya ranks 15th from the bottom. How many students are there **between** Raju and Priya?

- (A) 11
(B) 12
(C) 13
(D) 14

Q34. Five friends P, Q, R, S, and T are ranked by height. P is taller than Q but shorter than R. S is taller than R. T is shorter than Q. Who is the **tallest**?

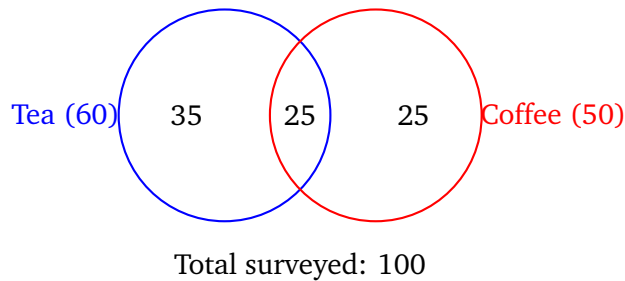
- (A) R
(B) S
(C) P
(D) T



Q35. Kavitha is 8th from the left end and 12th from the right end of a row of students. How many students are in the row?

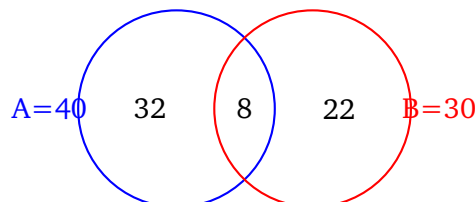
- (A) 19
- (B) 20
- (C) 21
- (D) 18

Q36. In a survey of 100 people, 60 like tea, 50 like coffee, and 25 like both. How many people like **only tea**?



- (A) 25
- (B) 10
- (C) 60
- (D) 35

Q37. Set A has 40 elements, Set B has 30 elements, and $A \cap B$ has 8 elements. How many elements are in $A \cup B$?



- (A) 78
- (B) 30
- (C) 62



(D) 48

Q38. Question: What is the value of $x + y$?

Statement I: $x - y = 4$

Statement II: $x + y = 10$

- (A) Statement I alone is sufficient
- (B) Statement II alone is sufficient
- (C) Both together are sufficient, but neither alone
- (D) Both together are also not sufficient

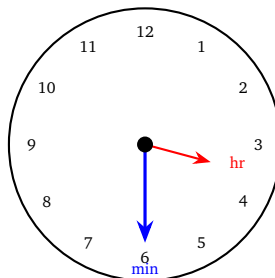
Q39. Question: What is the son's present age?

Statement I: The ratio of the father's age to the son's age is 3:1, and the father is 45 years old.

Statement II: The sum of their ages is 60 years.

- (A) Statement I alone is sufficient
- (B) Statement II alone is sufficient
- (C) Both together are sufficient
- (D) Both together are not sufficient

Q40. At 3:30, what is the **angle** between the hour hand and the minute hand of a clock?



- (A) 90°
- (B) 105°
- (C) 80°
- (D) 75°



Detailed Solutions

Sol. 1.

Solution

Concept — Number Series (Increasing Difference): In this type of series, the differences between consecutive terms themselves form an arithmetic progression. Identify the difference pattern first, then apply it to find the missing term.

Step 1 — Find the differences: $7 - 3 = 4$; $13 - 7 = 6$; $21 - 13 = 8$; $31 - 21 = 10$. The differences are 4, 6, 8, 10, ... (increasing by 2 each time).

Step 2 — Apply the pattern: The next difference must be $10 + 2 = 12$. So the missing term $= 31 + 12 = 43$.

Why other options are wrong:

- Option A (41): would imply a difference of 10, not 12.
- Option B (42): would imply a difference of 11, which breaks the even-increment pattern.
- Option D (44): would imply a difference of 13, skipping the pattern.

Final Answer: $31 + 12 = 43 \Rightarrow \boxed{C}$

Answer: (C) [Go Back to Q 1](#)

Sol. 2.

Solution

Concept — Letter Series (Fixed Skip): Each letter in the series is obtained by moving a fixed number of positions forward in the alphabet. Find the constant gap.

Step 1 — Assign positions: A=1, E=5, I=9, M=13, Q=17. The gap between consecutive terms is +4 each time.

Step 2 — Apply the pattern: Q is the 17th letter. $17 + 4 = 21$, and the 21st letter is U.

Why other options are wrong:

- Option A (T): T is the 20th letter; gap would be +3.



- Option C (V): V is the 22nd letter; gap would be +5.
- Option D (W): W is the 23rd letter; gap would be +6.

Final Answer: $Q(17) + 4 = 21 = U \Rightarrow \boxed{B}$

Answer: (B) [Go Back to Q 2](#)

Sol. 3.

Solution

Concept — Alpha-numeric Series (Two Interleaved Patterns): The letters and numbers follow separate patterns simultaneously. Decode each component independently.

Step 1 — Letter pattern: Z, X, V, T, ... — each letter decreases by 2 positions. The next letter after T (20th) is R (18th).

Step 2 — Number pattern: 1, 4, 9, 16, ... — these are perfect squares ($1^2, 2^2, 3^2, 4^2$). The next is $5^2 = 25$.

Step 3 — Combine: The missing term is **R25**.

Why other options are wrong:

- Option A (S25): S is wrong; the letter decreases by 2, not 1.
- Option B (R16): 16 is already used (4th term); the number must be 25.
- Option C (P25): P is two steps beyond R, skipping a term.

Final Answer: Letter R + Number 25 $\Rightarrow \boxed{D}$

Answer: (D) [Go Back to Q 3](#)



Sol. 4.

Solution

Concept — Number Analogy (Perfect Squares): The relationship between the pair is that the second number is the square of the first. Apply the same rule to the second pair.

Step 1 — Identify the rule: $7 : 49$. Note that $7^2 = 49$. So the rule is: second number = (first number)².

Step 2 — Apply to second pair: $9 : ?$. Therefore $? = 9^2 = 81$.

Why other options are wrong:

- Option B (72): $72 = 9 \times 8$, not related to squaring.
- Option C (63): $63 = 9 \times 7$, multiplication by 7, not self.
- Option D (27): $27 = 9 \times 3 = 3^3$, cube of 3, not square of 9.

Final Answer: $9^2 = 81 \Rightarrow \boxed{A}$

Answer: (A) [Go Back to Q 4](#)

Sol. 5.

Solution

Concept — Word Analogy (Instrument : Measurement): The relationship is that the first word is an instrument used to measure the quantity named by the second word. Apply the same relationship to find what a Barometer measures.

Step 1 — Identify the relationship: Thermometer measures Temperature. So the pattern is: Instrument measures Quantity.

Step 2 — Apply to Barometer: A Barometer is an instrument used to measure atmospheric **Pressure**.

Why other options are wrong:

- Option A (Wind): Wind speed is measured by an Anemometer.
- Option B (Rain): Rainfall is measured by a Rain Gauge.
- Option D (Humidity): Humidity is measured by a Hygrometer.

Final Answer: Barometer measures Pressure $\Rightarrow \boxed{C}$



Answer: (C) [Go Back to Q 5](#)

Sol. 6.

Solution

Concept — Letter Analogy (Reversal): The second group of letters is the exact reverse of the first group. Apply the same reversal operation to EFGH.

Step 1 — Identify the relationship: ABCD reversed = DCBA. The four letters are written in the opposite order.

Step 2 — Apply to EFGH: EFGH reversed = **HGFE**.

Why other options are wrong:

- Option A (EFGH): No change applied; the same as input.
- Option C (GHEF): Swapping the two halves (GH, EF), not a full reversal.
- Option D (FEGH): Only partially reversed; F and E are swapped but G and H are not.

Final Answer: EFGH reversed = HGFE $\Rightarrow$ **B**

Answer: (B) [Go Back to Q 6](#)

Sol. 7.

Solution

Concept — Classification (Perfect Cubes): All members of the group except one share a common mathematical property. Identify the property and find the member that does not satisfy it.

Step 1 — Check each number: $8 = 2^3$; $27 = 3^3$; $64 = 4^3$; $125 = 5^3$; $150 = ?$

Step 2 — Verify 150: $5^3 = 125$ and $6^3 = 216$. Since $125 < 150 < 216$, the number 150 is NOT a perfect cube.

Why other options are wrong:

- Option A (8): $2^3 = 8$ — perfect cube.
- Option B (27): $3^3 = 27$ — perfect cube.



- Option C (125): $5^3 = 125$ — perfect cube.

Final Answer: 150 is not a perfect cube $\Rightarrow$ D

Answer: (D) [Go Back to Q 7](#)

Sol. 8.

Solution

Concept — Classification (Mammals vs. Fish): Mammals are warm-blooded vertebrates that breathe air using lungs and nurse their young with milk. Fish are cold-blooded aquatic vertebrates that breathe using gills.

Step 1 — Evaluate each option: Whale: a marine mammal (breathes air, warm-blooded). Dolphin: a marine mammal. Bat: a flying mammal.

Step 2 — Evaluate Shark: A shark is a cartilaginous **fish** — it breathes through gills and is cold-blooded. It is NOT a mammal.

Why other options are wrong:

- Option B (Whale): classified as Cetacean mammal (Order Artiodactyla).
- Option C (Dolphin): also a Cetacean mammal.
- Option D (Bat): the only flying mammal (Order Chiroptera).

Final Answer: Shark is a fish, not a mammal $\Rightarrow$ A

Answer: (A) [Go Back to Q 8](#)



Sol. 9.

Solution

Concept — Coding-Decoding (Forward Letter Shift): Each letter in the word is replaced by the letter that is 2 positions ahead of it in the alphabet. Apply this rule to each letter of EXAM.

Step 1 — Verify the rule with BOOK: $B \rightarrow D$, $O \rightarrow Q$, $O \rightarrow Q$, $K \rightarrow M \Rightarrow DQQM$. Confirmed: shift = +2.

Step 2 — Encode EXAM: $E(5)+2 = G(7)$; $X(24)+2 = Z(26)$; $A(1)+2 = C(3)$; $M(13)+2 = O(15)$. Result: **GZCO**.

Why other options are wrong:

- Option A (GXCO): X is not shifted; should be Z.
- Option B (GZCP): M should shift to O, not P (+3).
- Option D (HZCO): E should shift to G (+2), not H (+3).

Final Answer: EXAM $\xrightarrow{+2}$ GZCO $\Rightarrow$ C

Answer: (C) [Go Back to Q 9](#)

Sol. 10.

Solution

Concept — Coding-Decoding (Common Word Method): Compare sentences to identify which code word corresponds to which English word by finding common elements across sentences.

Step 1 — List sentences and codes: (1) 'go to school' = 'la me si'; (2) 'school is good' = 'si ve ko'; (3) 'good students go' = 'ko me ra'.

Step 2 — Find 'school': 'school' appears in sentences (1) and (2). Common code between (1) and (2): 'si'. Therefore 'school' = **si**.

Why other options are wrong:

- Option A (la): 'la' appears only in sentence (1); the unique word is 'to'.
- Option C (me): 'me' appears in (1) and (3); common word is 'go'.
- Option D (ko): 'ko' appears in (2) and (3); common word is 'good'.

Final Answer: Code for 'school' = si $\Rightarrow$ B



Answer: (B) [Go Back to Q 10](#)

Sol. 11.

Solution

Concept — Coding-Decoding (Positional Sum): Each letter is assigned its position number in the alphabet (A=1, B=2, ..., Z=26), and the word's code is the sum of all the positional values.

Step 1 — Verify with MAN: M=13, A=1, N=14. $\text{Sum} = 13 + 1 + 14 = 28$. Confirmed.

Step 2 — Calculate WOMAN: W=23, O=15, M=13, A=1, N=14. $\text{Sum} = 23 + 15 + 13 + 1 + 14 = 66$.

Why other options are wrong:

- Option B (72): arithmetic error; $23 + 15 = 38$, $38 + 13 = 51$, $51 + 1 = 52$, $52 + 14 = 66$, not 72.
- Option C (56): would mean the letters sum to only 56, which is less than the actual.
- Option D (78): overcounts by 12 — perhaps confusing W=23 with some other value.

Final Answer: $23 + 15 + 13 + 1 + 14 = 66 \Rightarrow \boxed{A}$

Answer: (A) [Go Back to Q 11](#)



Sol. 12.

Solution

Concept — Coding-Decoding (Symbol Mapping): Match each symbol to a word by comparing which symbols are common across sentences and identifying the corresponding common words.

Step 1 — Find '@': '@' appears in all three sentences. The common word in all three is 'apple'. So @ = apple.

Step 2 — Find '\$': '\$' appears in sentences (1) and (3): '@#\$\$%' = 'apple is very good' and '\$&@' = 'apple is sour'. Common words (excluding apple) between (1) and (3) = 'is'. Therefore \$ = is.

Why other options are wrong:

- Option A: @ = apple (already decoded).
- Option B: # appears in (1) and (2); common words are apple and good; since @ = apple, # = good.
- Option C: % appears only in (1); it maps to 'very'.

Final Answer: '\$' represents 'is' ⇒ D

Answer: (D) [Go Back to Q 12](#)

Sol. 13.

Solution

Concept — Blood Relations (Marriage and Sibling Links): Trace the family relationships step by step using the given information to establish the connection between two individuals.

Step 1 — Establish Sita's relation to Ravi: Sita is the daughter-in-law of Ram. Ram has only one son, Ravi. So Sita is the **wife** of Ravi.

Step 2 — Establish Priya's relation to Ravi: Priya is the sister of Ravi.

Step 3 — Find Sita's relation to Priya: Since Sita is the wife of Ravi and Priya is Ravi's sister, Sita is Priya's **sister-in-law** (wife of brother).

Why other options are wrong:

- Option A (Daughter): Sita is not Priya's child.



- Option B (Mother): Sita is not Priya's parent.
- Option D (Aunt): Aunt implies Sita would be a sibling of Priya's parent.

Final Answer: Sita is Priya's sister-in-law $\Rightarrow$ C

Answer: (C) [Go Back to Q 13](#)

Sol. 14.

Solution

Concept — Blood Relations (Generational Tracing): Parse the descriptive phrase level by level to determine the exact relationship.

Step 1 — Identify “only daughter of my grandfather”: The man's grandfather has only one daughter. That daughter is the man's **mother**.

Step 2 — Identify the person in the photo: The photograph shows the son of the man's mother. The man's mother's son is the man's **brother** (or the man himself, but since he is *pointing to* the photo, it is his brother).

Why other options are wrong:

- Option A (Uncle): Uncle would be a sibling of the man's parent, not a sibling of the man himself.
- Option C (Father): Father would be of the grandfather's generation.
- Option D (Cousin): Cousin would be a child of a sibling of one of the man's parents.

Final Answer: The person in the photograph is the man's Brother $\Rightarrow$ B

Answer: (B) [Go Back to Q 14](#)



Sol. 15.

Solution

Concept — Blood Relations (Symbolic Notation): Decode each symbol in the expression step by step using the given definitions.

Step 1 — Decode P\$Q: P\$Q means “P is mother of Q”. So P is Q’s mother.

Step 2 — Decode Q#R: Q#R means “Q is son of R”. So R is Q’s parent (father or parent figure). Since P is Q’s mother and R is Q’s parent, R must be Q’s **father**.

Step 3 — P’s relation to R: P is Q’s mother and R is Q’s father $\Rightarrow$ P is the **wife** of R.

Why other options are wrong:

- Option B (Mother): P is mother of Q, not of R.
- Option C (Daughter): Daughter implies P is a child of R; that contradicts P being Q’s mother and R being Q’s father.
- Option D (Sister): No sibling relationship is established.

Final Answer: P is the wife of R $\Rightarrow$ A

Answer: (A) [Go Back to Q 15](#)

Sol. 16.

Solution

Concept — Directions (Coordinate Tracking): Track each movement using a coordinate system. Let East = $+x$, North = $+y$. Start at $(0, 0)$.

Step 1 — Trace the path:

- 3 km North: $(0, 0) \rightarrow (0, 3)$.
- Turn right (now facing East), walk 4 km: $(0, 3) \rightarrow (4, 3)$.
- Turn right (now facing South), walk 5 km: $(4, 3) \rightarrow (4, -2)$.
- Turn right (now facing West), walk 2 km: $(4, -2) \rightarrow (2, -2)$.

Step 2 — Determine direction from A: Final position $(2, -2)$: positive x means East, negative y means South. So the person is in the **South-East** direction from A.

Why other options are wrong:



- Options A, B, C: the x -coordinate is positive (East) and y -coordinate is negative (South), ruling out North-East, North-West, and South-West.

Final Answer: South-East of point A $\Rightarrow$ D

Answer: (D) [Go Back to Q 16](#)

Sol. 17.

Solution

Concept — Directions (Return Distance): Track movements using coordinates and apply the Pythagorean theorem if needed to find the straight-line distance back to the start.

Step 1 — Trace the path from X at (0, 0):

- 6 km North: $(0, 0) \rightarrow (0, 6)$.
- Turn left (now facing West), 8 km: $(0, 6) \rightarrow (-8, 6)$.
- Turn left (now facing South), 6 km: $(-8, 6) \rightarrow (-8, 0)$.

Step 2 — Calculate shortest distance: End point $(-8, 0)$ and start point $(0, 0)$.
Distance = $\sqrt{(-8)^2 + 0^2} = \sqrt{64} = 8$ km. The end point is directly west of X.

Why other options are wrong:

- Option A (6 km): the northward and southward movements cancel; the net displacement is purely horizontal.
- Option B (10 km): this would apply if the north and west movements were not cancelled (Pythagoras of a 6-8-10 right triangle, but the south leg cancels the north leg).
- Option D (14 km): sum of all distances, not the straight-line return distance.

Final Answer: Shortest distance = 8 km $\Rightarrow$ C

Answer: (C) [Go Back to Q 17](#)



Sol. 18.

Solution

Concept — Directions (Compass Rotation): When a direction is relabelled as another, it implies a fixed rotation applied to the entire compass. Find the rotation angle and apply it to the target direction.

Step 1 — Find the rotation: In standard bearings (clockwise from North): North = 0° , South-East = 135° . If SE becomes N (0°), the compass has been rotated *anticlockwise* by 135° (i.e., every direction is shifted -135°).

Step 2 — Apply to South-West: Standard SW = 225° . After rotation: $225 - 135 = 90$, which corresponds to **East**.

Why other options are wrong:

- Option A (North-West): NW = 315° ; $315 - 135 = 180 = \text{South}$.
- Option C (North-East): NE = 45° ; would come from $45 + 135 = 180$ (South), not SW.
- Option D (West): West = 270° ; $270 - 135 = 135 = \text{SE}$.

Final Answer: South-West becomes East $\Rightarrow$ **B**

Answer: (B) [Go Back to Q 18](#)

Sol. 19.

Solution

Concept — Linear Seating Arrangement: Use the given clues one by one to fix each person's position in the row.

Step 1 — Build the arrangement: A at position 1 (extreme left); E is immediately right of A $\Rightarrow$ E at 2; D at 3; F at 4; C at 5; B at 6 (extreme right). Final: **A(1) – E(2) – D(3) – F(4) – C(5) – B(6)**.

Step 2 — Answer the question: D is at position 3. The person immediately to D's left is at position 2 = E.

Why other options are wrong:

- Option B (F): F is to the immediate *right* of D (position 4), not left.
- Option C (A): A is at position 1, two seats to the left of D.
- Option D (C): C is at position 5, two seats to the right of D.



Final Answer: E sits immediately left of D $\Rightarrow$ A

Answer: (A) [Go Back to Q 19](#)

Sol. 20.

Solution

Concept — Linear Seating Arrangement (Counting Between): Use the established arrangement and count the persons who sit strictly between the two specified persons.

Step 1 — Recall arrangement: A(1) – E(2) – D(3) – F(4) – C(5) – B(6).

Step 2 — Count between A and F: A is at position 1 and F is at position 4. The persons between them (positions 2 and 3) are E and D. Count = **2**.

Why other options are wrong:

- Option A (1): undercounts; there are two people between positions 1 and 4.
- Option B (3): overcounts; D, E, and possibly F are not all “between”.
- Option C (0): clearly wrong as E and D sit between them.

Final Answer: 2 persons (E and D) sit between A and F $\Rightarrow$ D

Answer: (D) [Go Back to Q 20](#)

Sol. 21.

Solution

Concept — Linear Seating Arrangement (Extreme Position): Identify the person at the rightmost position in the row from the established arrangement.

Step 1 — Recall arrangement: A(1) – E(2) – D(3) – F(4) – C(5) – B(6).

Step 2 — Identify extreme right: Position 6 (extreme right) is occupied by B.

Why other options are wrong:

- Option A (F): F is at position 4, not the extreme right.
- Option B (C): C is at position 5, one seat from the right end.
- Option D (E): E is at position 2, near the left end.



Final Answer: B sits at the extreme right $\Rightarrow$ C

Answer: (C) [Go Back to Q 21](#)

Sol. 22.

Solution

Concept — Linear Seating Arrangement (Extreme Ends): Identify the persons occupying the leftmost and rightmost positions.

Step 1 — Recall arrangement: A(1) – E(2) – D(3) – F(4) – C(5) – B(6).

Step 2 — Identify the pair: Position 1 = A (extreme left); Position 6 = B (extreme right). The pair is **A and B**.

Why other options are wrong:

- Option A (A and C): C is at position 5, not the extreme right.
- Option C (E and B): E is at position 2, not the extreme left.
- Option D (A and F): F is at position 4, not the extreme right.

Final Answer: A (left) and B (right) are at the two extreme ends $\Rightarrow$ B

Answer: (B) [Go Back to Q 22](#)

Sol. 23.

Solution

Concept — Circular Seating Arrangement: In a 6-person circular arrangement with persons at positions 1–6 clockwise, the person directly opposite any position n is at position $n + 3 \pmod{6}$.

Step 1 — Build the arrangement: A at position 1; C directly opposite A $\Rightarrow$ C at position 4; B immediately right (clockwise) of A $\Rightarrow$ B at position 2; F directly opposite B $\Rightarrow$ F at position 5. Remaining positions: 3 and 6 for D and E. D not adjacent to A (positions 2 and 6 are adjacent to A); $D \neq 6 \Rightarrow$ D at 3, E at 6.

Arrangement (clockwise): A(1) – B(2) – D(3) – C(4) – F(5) – E(6).

Step 2 — Find opposite of E: E is at position 6; opposite = position $6 - 3 = 3 =$



D.

Why other options are wrong:

- Option B (A): A is at position 1, opposite is position 4 = C.
- Option C (F): F is at position 5, opposite is position 2 = B.
- Option D (B): B is at position 2, opposite is position 5 = F.

Final Answer: D sits directly opposite E $\Rightarrow$ A

Answer: (A) [Go Back to Q 23](#)

Sol. 24.

Solution

Concept — Circular Seating (Neighbours): In a circular arrangement, the immediate neighbours of a person are the persons sitting one position clockwise and one position anticlockwise.

Step 1 — Recall arrangement: A(1) – B(2) – D(3) – C(4) – F(5) – E(6).

Step 2 — Find neighbours of F (position 5): Clockwise neighbour of F = position 6 = E. Anticlockwise neighbour of F = position 4 = C. Neighbours: **C and E**.

Why other options are wrong:

- Option A (D and E): D is at position 3, not adjacent to F at position 5.
- Option B (A and B): A and B are at positions 1 and 2, far from F.
- Option C (B and C): B is at position 2, not adjacent to F.

Final Answer: C and E are immediate neighbours of F $\Rightarrow$ D

Answer: (D) [Go Back to Q 24](#)



Sol. 25.

Solution

Concept — Circular Seating (Counting Between, Clockwise): Count the number of persons sitting strictly between two given persons when moving in the clockwise direction.

Step 1 — Recall arrangement: A(1) – B(2) – D(3) – C(4) – F(5) – E(6).

Step 2 — Count from A to D clockwise: Starting at A (position 1) and moving clockwise, we pass through position 2 (B) before reaching D at position 3. Only B (1 person) is between A and D going clockwise.

Why other options are wrong:

- Option A (0): there is one person (B) between A and D.
- Option B (2): only 1 person, not 2, sits between A and D clockwise.
- Option D (3): 3 persons would be the count going *anticlockwise* from A to D (E, F, C).

Final Answer: 1 person (B) sits between A and D clockwise $\Rightarrow$ C

Answer: (C) [Go Back to Q 25](#)

Sol. 26.

Solution

Concept — Syllogisms (Negative Universal + Universal Affirmative): When one statement is a universal negative and another is a universal affirmative linking different sets, use Venn diagram logic to test each conclusion.

Step 1 — Analyse statements: (i) No pen is a pencil (Pens and Pencils are disjoint). (ii) All pencils are erasers (Pencils $\subset$ Erasers).

Step 2 — Test Conclusion I (No pen is an eraser): Erasers include all pencils, but erasers may also include pens (nothing rules this out). So “No pen is an eraser” does NOT necessarily follow.

Step 3 — Test Conclusion II (Some erasers are not pens): All pencils are erasers, and no pencil is a pen, so all those pencil-erasers are definitely not pens. Therefore “some erasers are not pens” DOES follow.

Why other options are wrong:



- Option A: Conclusion I does not follow.
- Option C: Both do not follow; only II follows.
- Option D: At least Conclusion II follows.

Final Answer: Only Conclusion II follows $\Rightarrow$ **B**

Answer: (B) [Go Back to Q 26](#)

Sol. 27.

Solution

Concept — Syllogisms (Universal + Particular): When a universal statement applies to all members of a class and an individual is identified as belonging to that class, the universal property applies to that individual.

Step 1 — Test Conclusion I (Rohan is hardworking): All students are hardworking (universal). Rohan is a student (particular). By Universal Instantiation, Rohan is hardworking. Conclusion I **follows**.

Step 2 — Test Conclusion II (All hardworking people are students): The premise only states that all students are hardworking, not that all hardworking people are students (the converse is not given). Conclusion II does **not** follow.

Why other options are wrong:

- Option B: Only I follows, not only II.
- Option C: Both do not follow; Conclusion II is the converse fallacy.
- Option D: At least Conclusion I follows.

Final Answer: Only Conclusion I follows $\Rightarrow$ **A**

Answer: (A) [Go Back to Q 27](#)



Sol. 28.

Solution

Concept — Syllogisms (Particular + Particular): When both premises are particular (Some ...), no definite universal conclusion can be drawn about the relationship between the non-middle terms.

Step 1 — Test Conclusion I (Some books are tables): Some books are pens (certain pens $\in$ books); some pens are tables (certain pens $\in$ tables). The overlapping pens may or may not be the same ones. Conclusion I does **not** necessarily follow.

Step 2 — Test Conclusion II (All tables are pens): The premise says only “some pens are tables”, not “all tables are pens”. This is an invalid conversion. Conclusion II does **not** follow.

Why other options are wrong:

- Option A: Conclusion I does not follow.
- Option B: Conclusion II does not follow.
- Option C: Neither conclusion follows; not both.

Final Answer: Neither conclusion follows $\Rightarrow$ D

Answer: (D) [Go Back to Q 28](#)

Sol. 29.

Solution

Concept — Syllogisms (Transitive/Chain Syllogism): When two universal affirmative statements form a chain (All A are B; All B are C), we can conclude All A are C. Also, the subset becomes part of the superset.

Step 1 — Test Conclusion I (All mangoes are healthy): All mangoes $\subset$ fruits; all fruits $\subset$ healthy things. By transitivity, all mangoes $\subset$ healthy things. Conclusion I **follows**.

Step 2 — Test Conclusion II (Some healthy things are fruits): All fruits are healthy $\Rightarrow$ fruits $\subset$ healthy. Since fruits exist, at least some healthy things are fruits. Conclusion II **follows**.

Why other options are wrong:

- Option A: Only I — incorrect; II also follows.



- Option B: Only II — incorrect; I also follows.
- Option D: Neither — incorrect; both conclusions follow from the chain rule.

Final Answer: Both Conclusions I and II follow $\Rightarrow$ C

Answer: (C) [Go Back to Q 29](#)

Sol. 30.

Solution

Concept — Statement and Assumption: An assumption is something that is implicitly taken for granted in the statement. It must be necessary for the statement to be true without being explicitly stated.

Step 1 — Evaluate Assumption I (Driver was exceptionally skilled): The statement attributes quick arrival to “despite heavy traffic”, not to driver skill. Driver skill is not implied as the reason. Assumption I is **not implicit**.

Step 2 — Evaluate Assumption II (Hospital is in close proximity): Reaching within 8 minutes despite heavy traffic strongly implies the hospital must be nearby. If it were far, heavy traffic would have caused far greater delay. Assumption II is **implicit**.

Why other options are wrong:

- Option A: Only I is implicit — but I is not implicit.
- Option C: Both implicit — but Assumption I is not supported.
- Option D: Neither implicit — but Assumption II is clearly implicit.

Final Answer: Only Assumption II is implicit $\Rightarrow$ B

Answer: (B) [Go Back to Q 30](#)



Sol. 31.

Solution

Concept — Statement and Conclusion: A conclusion must directly and logically follow from the given statement. Avoid conclusions that use words like “definitely” unless the statement guarantees it.

Step 1 — Evaluate Conclusion I (Luxury goods will become more expensive): A 10% tax added on luxury goods directly increases their price for end consumers. This is a direct, logical consequence. Conclusion I **follows**.

Step 2 — Evaluate Conclusion II (Revenue will definitely increase): Taxes can sometimes reduce demand, leading to fewer sales and potentially lower overall revenue. The word “definitely” makes this conclusion too strong. Conclusion II does **not** follow.

Why other options are wrong:

- Option B: Only II follows — incorrect; I follows, not II (due to “definitely”).
- Option C: Both follow — Conclusion II is too absolute.
- Option D: Neither follows — Conclusion I is a direct and valid inference.

Final Answer: Only Conclusion I follows $\Rightarrow$ A

Answer: (A) [Go Back to Q 31](#)

Sol. 32.

Solution

Concept — Mathematical Operations (Pattern Recognition): Identify the hidden formula that relates a , b , and $a \oplus b$ using the given examples, then apply it to the unknown.

Step 1 — Find the pattern: $2 \oplus 3 = 10$: Try $a(a + b) = 2(2 + 3) = 2 \times 5 = 10$. ✓

$3 \oplus 4 = 21$: $3(3 + 4) = 3 \times 7 = 21$. ✓

$4 \oplus 5 = 36$: $4(4 + 5) = 4 \times 9 = 36$. ✓

Step 2 — Apply to $5 \oplus 6$: $5(5 + 6) = 5 \times 11 = 55$.

Why other options are wrong:

- Option A (45): would be 5×9 ; wrong formula using only $b + b$.
- Option B (50): would be 5×10 ; not consistent with the pattern.



- Option C (60): would be 5×12 ; overshoots by one multiple of 5.

Final Answer: $5 \oplus 6 = 5 \times 11 = 55 \Rightarrow \boxed{D}$

Answer: (D) [Go Back to Q 32](#)

Sol. 33.

Solution

Concept — Ranking (Position from Top and Bottom): Convert both rankings to positions from the top, then subtract to find the number of students between them.

Step 1 — Find Priya's rank from the top: Priya is 15th from the bottom in a class of 40. Rank from top = $40 - 15 + 1 = 26$.

Step 2 — Count students between Raju (rank 12) and Priya (rank 26): Number of students between = $26 - 12 - 1 = 13$.

Why other options are wrong:

- Option A (11): uses $26 - 12 - 3$, incorrect subtraction.
- Option B (12): uses $26 - 12 - 2$, off by one.
- Option D (14): uses $26 - 12$, forgetting to subtract 1 (to exclude both end-points).

Final Answer: 13 students sit between Raju and Priya $\Rightarrow \boxed{C}$

Answer: (C) [Go Back to Q 33](#)



Sol. 34.

Solution

Concept — Ranking (Height Comparison Chain): Build a linear order of heights from the given comparison statements and identify the extreme values.

Step 1 — List the given comparisons: $P > Q$ (P taller than Q); $R > P$ (P shorter than R); $S > R$; $T < Q$.

Step 2 — Build the chain: $T < Q < P < R < S$.

Step 3 — Identify tallest: S is at the top of the chain, so **S is the tallest**.

Why other options are wrong:

- Option A (R): R is taller than P but shorter than S.
- Option C (P): P is in the middle of the chain.
- Option D (T): T is the shortest.

Final Answer: S is the tallest $\Rightarrow$ **B**

Answer: (B) [Go Back to Q 34](#)

Sol. 35.

Solution

Concept — Ranking (Row Size Formula): When a person's position is given from both ends of a row, the total number of persons in the row is calculated as: $\text{Total} = (\text{Rank from left}) + (\text{Rank from right}) - 1$.

Step 1 — Apply the formula: Kavitha is 8th from the left and 12th from the right.
 $\text{Total} = 8 + 12 - 1 = 19$.

Why other options are wrong:

- Option B (20): This is $8 + 12$, forgetting to subtract 1 (Kavitha is counted twice otherwise).
- Option C (21): overcounts by 2.
- Option D (18): This is $8 + 12 - 2$, subtracting too much.

Final Answer: Total students $= 8 + 12 - 1 = 19 \Rightarrow$ **A**

Answer: (A) [Go Back to Q 35](#)



Sol. 36.

Solution

Concept — Venn Diagram (Set Intersection): To find the number of people who like only one set, subtract the intersection from the total for that set.

Step 1 — Identify values: Total liking Tea = 60. Both Tea and Coffee = 25.

Step 2 — Calculate “only tea”: Only tea = $60 - 25 = 35$.

Verification: Only coffee = $50 - 25 = 25$. Total accounted for: $35 + 25 + 25 = 85$ (15 people like neither; consistent with total of 100).

Why other options are wrong:

- Option A (25): that is the number who like both.
- Option B (10): arithmetic error; $60 - 50 = 10$ is the difference, not “only tea”.
- Option C (60): that is the total tea drinkers, including those who also like coffee.

Final Answer: Only tea = $60 - 25 = 35 \Rightarrow \boxed{D}$

Answer: (D) [Go Back to Q 36](#)

Sol. 37.

Solution

Concept — Venn Diagram ($A \cup B$ Formula): The union of two sets is calculated using the inclusion-exclusion principle: $|A \cup B| = |A| + |B| - |A \cap B|$.

Step 1 — Apply the formula: $|A \cup B| = 40 + 30 - 8 = 62$.

Verification: Only in A = $40 - 8 = 32$; Only in B = $30 - 8 = 22$; In both = 8. Total = $32 + 22 + 8 = 62$. ✓

Why other options are wrong:

- Option A (78): $40 + 30 + 8$, incorrectly adding the intersection instead of subtracting.
- Option B (30): just $|B|$; ignores elements only in A.
- Option D (48): $40 + 8$; ignores the elements only in B.

Final Answer: $|A \cup B| = 40 + 30 - 8 = 62 \Rightarrow \boxed{C}$



Answer: (C) [Go Back to Q 37](#)

Sol. 38.

Solution

Concept — Data Sufficiency: Determine whether each statement alone, or both together, provide enough information to answer the question directly.

Step 1 — Test Statement I alone ($x - y = 4$): This gives one equation with two unknowns. We cannot determine $x + y$ from $x - y$ alone (infinitely many solutions). **Insufficient.**

Step 2 — Test Statement II alone ($x + y = 10$): This directly and exactly answers the question. No calculation needed. **Sufficient.**

Why other options are wrong:

- Option A: Statement I alone cannot determine $x + y$.
- Option C: Statement II alone is already sufficient; we do not need both together.
- Option D: Statement II is clearly sufficient.

Final Answer: Statement II alone is sufficient $\Rightarrow$ **B**

Answer: (B) [Go Back to Q 38](#)



Sol. 39.

Solution

Concept — Data Sufficiency (Age Problems): Check whether each statement independently provides enough information to find the unknown age.

Step 1 — Test Statement I alone: Ratio of father's age to son's age = 3:1 and father's age = 45. Let son's age = x . Then $3x = 45 \Rightarrow x = 15$. Uniquely determined. **Sufficient.**

Step 2 — Test Statement II alone: Sum of ages = 60. This gives father + son = 60, but without the ratio, we cannot determine the individual ages (many solutions exist). **Insufficient.**

Why other options are wrong:

- Option B: Statement II alone gives sum = 60 but not individual ages; insufficient.
- Option C: Statement I alone is already sufficient; both together are not required.
- Option D: Statement I is sufficient, so the answer cannot be "neither".

Final Answer: Statement I alone is sufficient $\Rightarrow$ A

Answer: (A) [Go Back to Q 39](#)

Sol. 40.

Solution

Concept — Clock Angle: The minute hand moves 6 per minute and the hour hand moves 0.5 per minute. At time H hours M minutes, calculate each hand's angle from 12 o'clock, then find the difference.

Step 1 — Minute hand position at 3:30: $30 \times 6 = 180$ from 12 (pointing at 6).

Step 2 — Hour hand position at 3:30: At 3:00, hour hand is at $3 \times 30 = 90$. In 30 minutes it moves $30 \times 0.5 = 15$ further. So hour hand at $90 + 15 = 105$ from 12.

Step 3 — Angle between hands: $|180 - 105| = 75$.

Why other options are wrong:

- Option A (90): the hour hand position at exactly 3:00, ignoring the 30-



minute movement.

- Option B (105): that is the hour hand's absolute position from 12, not the angle between the hands.
- Option C (80): no standard calculation yields this value for 3:30.

Final Answer: Angle = $|180 - 105| = 75 \Rightarrow \boxed{D}$

Answer: (D) [Go Back to Q 40](#)



Answer Key

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

