MAH MCA CET Logical & Abstract Reasoning

Sample Paper – 1

Duration: 27 Minutes **Maximum Marks: 60**

Instructions

- This paper contains **30** Multiple Choice Questions (Single Correct Answer), modelled on the Logical & Abstract Reasoning section of **MAH MCA CET**.
- Each correct answer carries **+2 marks**. There is **no negative marking** for incorrect or unattempted answers.
- Only **one** option is correct per question.
- Use of mobile phones, calculators, or electronic gadgets is strictly prohibited. Rough work may be done in the space provided in the booklet.

Q1. What is the missing term in the series: 2, 5, 10, 17, 26, ___ ?

(A) 34

(B) 35

(C) 37

(D) 40

Q2. Find the missing letter in the series: B, E, H, K, ___ ?

(A) N

(B) M

(C) L

(D) O

Q3. Find the odd one out: Apple, Mango, Grape, Potato.

(A) Apple

(B) Mango

(C) Grape

(D) Potato

Q4. Select the missing number: 36 : 6 :: 64 : ___

(A) 6

(B) 8

(C) 10

(D) 12

Q5. Complete the analogy: Doctor : Hospital :: Teacher : ___

(A) Office

(B) Library

(C) School

(D) Clinic

Q6. In a certain code, MANGO is written as OCPIQ. Using the same code, what is the code for APPLE?

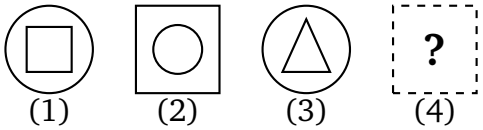
(A) CRRNG

(B) BQQMF

(C) CQQMH

(D) DSSPJ

Q7. Observe the figure series below. Identify the figure that should replace the question mark in frame (4).



(A) Small square inside a triangle

(B) Small triangle inside a square

(C) Large circle inside a triangle

(D) Small circle inside a triangle

Q8. In a certain code, 12 is written as 21 and 34 is written as 43. Using the same code, what is the code for 56?

(A) 56

(B) 65

(C) 75

(D) 66

Q9. Pointing to a photograph, Rajan says, "She is the daughter of the only son of my grandfather." How is the girl in the photograph related to Rajan?

(A) Sister

(B) Niece

(C) Cousin

(D) Daughter

Q10. A man starts from a point and walks 5 km towards North. He then turns East and walks 3 km. Finally, he turns South and walks 5 km. How far is he from the starting point?

(A) 1 km

(B) 5 km

(C) 3 km

(D) 4 km

Q11. Find the next number in the series: 3, 7, 15, 31, 63, ___

(A) 115

(B) 127

(C) 125

(D) 131

Q12. **Statement:** "All students who study regularly pass the exam."

Conclusion I: Some students who pass the exam study regularly.

Conclusion II: No student passes the exam without studying regularly.

Which of the following is correct?

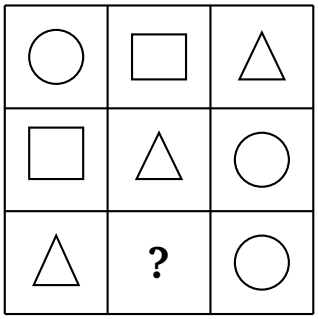
(A) Only Conclusion II follows

(B) Both Conclusion I and Conclusion II follow

(C) Neither Conclusion I nor Conclusion II follows

(D) Only Conclusion I follows

Q13. In the 3×3 matrix below, each row contains three different shapes. Identify the shape that should replace the question mark (?) to complete the pattern.



(A) Square

(B) Circle

(C) Triangle

(D) Pentagon

Q14. **Premises:**

- All dogs are animals.

- All animals have hearts.

Conclusion: All dogs have hearts.

Which of the following is correct?

(A) The conclusion does not follow

(B) Data is insufficient to decide

(C) The conclusion definitely follows

(D) The conclusion only partially follows

Q15. The figure below shows an arrow. A vertical mirror is placed to its **right side**. Which option correctly shows the mirror image of this arrow?

Original

(A) Arrow pointing upper-right (↗)

(B) Arrow pointing upper-left (↖)

(C) Arrow pointing lower-right (↘)

(D) Arrow pointing downward (↓)

Q16. Find the odd one out: 144, 169, 196, 200, 225.

(A) 144

(B) 169

(C) 196

(D) 200

Q17. In a class of 40 students, Amit is 15th from the left end of a row and Neha is 18th from the right end. How many students are sitting between Amit and Neha?

(A) 7

(B) 5

(C) 9

(D) 6

Q18. Five persons A, B, C, D and E are sitting in a straight line facing North. B sits to the right of A. D sits between B and E. C sits to the left of E. Who is sitting in the **middle**?

(A) A

(B) B

(C) D

(D) E

Q19. **Statements:**

- Some books are pens.
- All pens are pencils.

Conclusions:

I. Some books are pencils.

II. All pencils are books.

Which conclusion(s) follow?

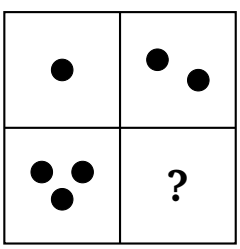
(A) Only Conclusion II follows

(B) Only Conclusion I follows

(C) Both Conclusions I and II follow

(D) Neither Conclusion I nor Conclusion II follows

Q20. The 2×2 grid below follows a dot pattern. How many dots should replace the question mark in the bottom-right cell?



(A) 2

(B) 3

(C) 5

(D) 4

Q21. Each letter is assigned a number equal to its position in the English alphabet (A = 1, B = 2, . . . , Z = 26). The code for WHITE is 23-8-9-20-5. What is the code for BLACK?

(A) 2-12-1-3-11

(B) 3-13-2-4-12

(C) 1-11-0-2-10

(D) 2-12-1-4-11

Q22. A is B's father. B is C's sister. D is C's mother. How is A related to D?

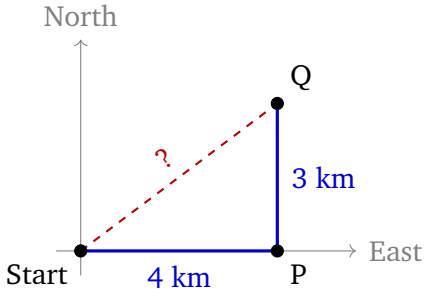
(A) Son

(B) Father

(C) Husband

(D) Brother

Q23. Starting from a point, a person walks 4 km towards East and then turns North and walks 3 km. What is the straight-line distance (in km) from the starting point to the current position? (Refer to the diagram below.)



(A) 4 km

(B) 5 km

(C) 6 km

(D) 7 km

Q24. **Statement:** "Join our coaching centre to score 100% in MAH MCA CET."

Assumption I: The coaching centre guarantees 100% results to every student.

Assumption II: Students want to score high in competitive examinations.

Which assumption(s) are **implicit** in the statement?

(A) Only Assumption I is implicit

(B) Both Assumptions I and II are implicit

(C) Neither Assumption I nor Assumption II is implicit

(D) Only Assumption II is implicit

Q25. Find the next number in the series: 1, 4, 9, 16, 25, 36, ___

(A) 49

(B) 46

(C) 48

(D) 50

Q26. Three friends Anu, Bina and Chitra have three different professions: Doctor, Engineer and Lawyer (one each). Given that:

- Anu is not a Doctor.
- Bina is not a Lawyer.
- Chitra is not an Engineer.

Who among them is the **Doctor**?

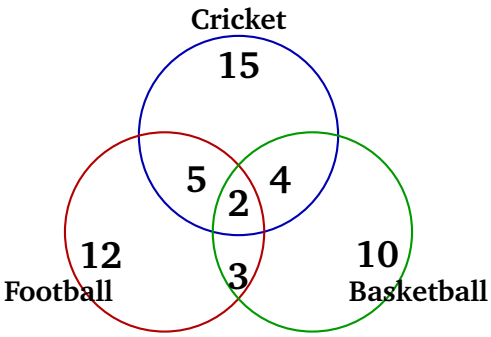
(A) Anu

(B) Bina

(C) Chitra

(D) Cannot be determined

Q27. The Venn diagram below shows the number of people in a group who play Cricket, Football and Basketball. How many people play **exactly two** sports?



(A) 10

(B) 12

(C) 14

(D) 9

Q28. Select the correct option to complete the analogy: ACE : BDF :: GIK : ___

(A) HJL

(B) HIL

(C) GHI

(D) IKM

Q29. Six people P, Q, R, S, T and U are seated in a straight row. P is 3rd from the left end and Q is 2nd from the right end. R is sitting between P and Q. How many people are sitting between P and Q?

(A) 0

(B) 2

(C) 3

(D) 1

Q30. Polygons are arranged in increasing order of the number of their sides: Triangle (3), Square (4), Pentagon (5), Hexagon (6), ___. Which polygon comes next in this series?

(A) Octagon

(B) Pentagon

(C) Heptagon

(D) Hexagon

Detailed Solutions

Q1.

Solution

Concept — Arithmetic Difference Series: The difference between consecutive terms forms an arithmetic progression of odd numbers.

Step 1 — Compute consecutive differences:

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

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

Step 2 — Find the next difference and term: Next difference $= 9+2 = 11$. Missing term $= 26+11 =$ **37**.

Why other options are wrong:

- Option A (34): Requires difference of 8 — breaks the odd-number pattern.
- Option B (35): Requires difference of 9 — the same as the previous difference; pattern demands 11.
- Option D (40): Requires difference of 14 — skips too far ahead.

Final Answer: Missing term $= 37$. $\Rightarrow$ C

Answer: (C) Go Back to Q 1

Q2.

Solution

Concept — Letter Series with Fixed Jump: Each letter is obtained by moving 3 positions forward in the alphabet (skipping 2 letters each time).

Step 1 — Identify the pattern:

$$\mathrm{B}(2) \xrightarrow{+3} \mathrm{E}(5) \xrightarrow{+3} \mathrm{H}(8) \xrightarrow{+3} \mathrm{K}(11) \xrightarrow{+3} ?$$

Step 2 — Find the missing letter: $11+3=14 \Rightarrow$ **N**.

Why other options are wrong:

- Option B (M): Position 13 — only $+2$ from K, not $+3$.
- Option C (L): Position 12 — only $+1$ from K.

- Option D (O): Position 15 — a jump of $+4$ from K.

Final Answer: The missing letter is **N**. $\Rightarrow$ A

Answer: (A) Go Back to Q 2

Q3.

Solution

Concept — Classification / Odd One Out: Items are grouped by a shared property; the item that does not share that property is the odd one.

Step 1 — Identify the common category: Apple, Mango, and Grape are all *fruits*. Potato is a *vegetable*.

Step 2 — Select the odd one: Potato belongs to a different biological/culinary category from the other three.

Why other options are wrong:

- Option A (Apple): A fruit — fits the majority group.
- Option B (Mango): A fruit — fits the majority group.
- Option C (Grape): A fruit — fits the majority group.

Final Answer: Potato is the odd one out (vegetable among fruits). $\Rightarrow$ D

Answer: (D) Go Back to Q 3

Q4.

Solution

Concept — Number Analogy (Perfect Square and Square Root):

Step 1 — Analyse the given pair: $36 = 6^2$ and $\sqrt{36} = 6$. The relationship is: *perfect square* : *its square root*.

Step 2 — Apply to the second pair: $64 = 8^2$, so $\sqrt{64} = 8$.

Why other options are wrong:

- Option A (6): $6^2 = 36 \neq 64$.
- Option C (10): $10^2 = 100 \neq 64$.
- Option D (12): $12^2 = 144 \neq 64$.

Final Answer: $64 : 8$ (since $\sqrt{64} = 8$). $\Rightarrow$ B

Answer: (B) Go Back to Q 4

Q5.

Solution

Concept — Word Analogy (Profession : Place of Work):

Step 1 — Identify the relationship: A Doctor works at a *Hospital*. The pattern is: Professional → their primary workplace.

Step 2 — Apply to Teacher: A Teacher's primary workplace is a *School*.

Why other options are wrong:

- Option A (Office): Generic workplace, not specific to a teacher's profession.
- Option B (Library): A resource location; a teacher may use one but does not work *there*.
- Option D (Clinic): Workplace of a doctor or nurse, not a teacher.

Final Answer: Teacher : School. $\Rightarrow$ C

Answer: (C) Go Back to Q 5

Q6.

Solution

Concept — Coding by Alphabetical Shift of $+2$: Each letter is replaced by the letter two positions ahead in the alphabet.

Step 1 — Verify with MANGO:

$$\mathrm{M}(13)+2=\mathrm{O},\quad \mathrm{A}(1)+2=\mathrm{C},\quad \mathrm{N}(14)+2=\mathrm{P},\quad \mathrm{G}(7)+2=\mathrm{I},\quad \mathrm{O}(15)+2=\mathrm{Q}\ \Rightarrow\ \text{OCPIQ}\ \checkmark$$

Step 2 — Encode APPLE:

$$\mathrm{A}(1)+2=\mathrm{C},\quad \mathrm{P}(16)+2=\mathrm{R},\quad \mathrm{P}(16)+2=\mathrm{R},\quad \mathrm{L}(12)+2=\mathrm{N},\quad \mathrm{E}(5)+2=\mathrm{G}\ \Rightarrow\ \mathbf{CRRNG}.$$

Why other options are wrong:

- Option B (BQQMF): Uses a shift of $+1$ instead of $+2$.
- Option C (CQQMH): The 4th letter N should come from L$+2$; H would require E$+3$.

- Option D (DSSPJ): Uses a shift of $+3$.

Final Answer: APPLE $\rightarrow$ CRRNG. $\Rightarrow$ A

Answer: (A) Go Back to Q 6

Q7.

Solution

Concept — Abstract Figure Series (Outer/Inner Shape Alternation):

Step 1 — Analyse the pattern:

- Frame (1): **Circle** (outer), **Square** (inner).
- Frame (2): **Square** (outer), **Circle** (inner) — inner and outer have swapped.
- Frame (3): **Circle** (outer), **Triangle** (inner) — the outer shape comes from the inner shape of frame (1); a new inner shape (triangle) is introduced.

Step 2 — Predict Frame (4): Following the swap rule: outer of (4) = inner of (3) = **Triangle**; inner of (4) = **Circle** (the recurring inner shape). Result: **small circle inside a triangle**.

Why other options are wrong:

- Option A (Square inside triangle): Inner should be circle, not square.
- Option B (Triangle inside square): Outer should be triangle, not square.
- Option C (Large circle inside triangle): The inner shape should be *small*, consistent with the series.

Final Answer: Small circle inside a triangle. $\Rightarrow$ D

Answer: (D) Go Back to Q 7

Q8.

Solution

Concept — Coding by Digit Reversal: The two digits of a number are swapped.

Step 1 — Verify with the given examples: $12 \rightarrow 21$ (swap 1 and 2); $34 \rightarrow 43$ (swap 3 and 4).

Step 2 — Apply to 56: Swapping digits of 56 gives **65**.

Why other options are wrong:

- Option A (56): Same as input; no transformation applied.
- Option C (75): Cannot be obtained by reversing digits of 56.
- Option D (66): Not the reverse; both digits would have to be 6.

Final Answer: $56 \rightarrow 65. \Rightarrow \boxed{B}$

Answer: (B) Go Back to Q 8

Q9.

Solution

Concept — Blood Relationships (Tracing the Family Tree):

Step 1 — Identify "only son of my grandfather": Rajan's grandfather's only son = Rajan's *father*.

Step 2 — Identify the girl: The girl is the *daughter* of Rajan's father. A daughter of one's own father is one's **sister**.

Why other options are wrong:

- Option B (Niece): A niece is the daughter of one's sibling, not of one's father.
- Option C (Cousin): A cousin is the child of one's uncle or aunt.
- Option D (Daughter): Rajan's own daughter, not his father's daughter.

Final Answer: The girl is Rajan's Sister. $\Rightarrow \boxed{A}$

Answer: (A) Go Back to Q 9

Q10.

Solution

Concept — Direction and Distance (Net Displacement):

Step 1 — Trace each leg of the journey:

- 5 km North.
- 3 km East.
- 5 km South.

Step 2 — Compute net displacement: The 5 km North and 5 km South *cancel* each other completely. The net displacement is **3 km East** from the starting point.

Why other options are wrong:

- Option A (1 km): Would require partial cancellation, but the north and south legs are equal.
- Option B (5 km): Confuses the length of one leg with the total displacement.
- Option D (4 km): No arithmetic path leads to 4 km with the given data.

Final Answer: The man is **3 km** from the starting point. $\Rightarrow$ C

Answer: (C) Go Back to Q 10

Q11.

Solution

Concept — Number Series (Double and Add 1): Each term is obtained by multiplying the previous term by 2 and adding 1.

Step 1 — Verify the rule:

$$3 \times 2 + 1 = 7, \quad 7 \times 2 + 1 = 15, \quad 15 \times 2 + 1 = 31, \quad 31 \times 2 + 1 = 63.$$

Step 2 — Find the next term: $63 \times 2 + 1 = 126 + 1 = \mathbf{127}$.

Why other options are wrong:

- Option A (115): $63 \times 2 - 11 = 115$; does not follow the $\times 2 + 1$ rule.
- Option C (125): Equal to 5^3; no relation to the series rule.
- Option D (131): $63 \times 2 + 5 = 131$; incorrect addend.

Final Answer: $63 \times 2 + 1 = 127$. $\Rightarrow$ B

Answer: (B) Go Back to Q 11

Q12.

Solution

Concept — Statement and Conclusions (Logical Deduction):

Step 1 — Analyse the statement: "All students who study regularly pass the exam" means: studying regularly $\Rightarrow$ passing. The converse (passing $\Rightarrow$ studying regularly) is *not* stated.

Step 2 — Evaluate each conclusion:

- **Conclusion I** (Some who pass, study regularly): Since all regular students

pass, they are a subset of passers. Hence at least *some* passers did study regularly — **TRUE**.

- **Conclusion II** (No student passes without studying): This asserts the converse, which is not given. Some students could pass without regular study — **FALSE**.

Why other options are wrong:

- Option A (Only II): Conclusion II is not logically valid.
- Option B (Both): Conclusion II is not valid.
- Option C (Neither): Conclusion I is valid.

Final Answer: Only Conclusion I follows. $\Rightarrow$ D

Answer: (D) Go Back to Q 12

Q13.

Solution

Concept — Matrix Pattern (Each Row Contains All Three Shapes):

Step 1 — Identify the row pattern: Each row contains exactly one Circle, one Square, and one Triangle (a cyclic permutation):

- Row 3 (top): Circle, Square, Triangle.
- Row 2 (middle): Square, Triangle, Circle.
- Row 1 (bottom): Triangle, **?**, Circle.

Step 2 — Find the missing shape: Row 1 already has Triangle (col 1) and Circle (col 3). The only shape not yet in Row 1 is **Square**.

Why other options are wrong:

- Option B (Circle): Circle is already present in Row 1 (col 3).
- Option C (Triangle): Triangle is already present in Row 1 (col 1).
- Option D (Pentagon): Pentagon does not appear anywhere in the matrix.

Final Answer: The missing shape is a **Square**. $\Rightarrow$ A

Answer: (A) Go Back to Q 13

Q14.

Solution

Concept — Categorical Syllogism (Transitivity of "All . . . are"):

Step 1 — Set up the logical chain:

$$\text{All dogs} \subseteq \text{Animals} \quad \text{and} \quad \text{All animals} \subseteq \text{Creatures with hearts.}$$

Step 2 — Apply transitivity:

$$\text{All dogs} \subseteq \text{Animals} \subseteq \text{Creatures with hearts} \Rightarrow \text{All dogs have hearts.}$$

The conclusion is a direct, valid deduction from the two universal affirmative premises.

Why other options are wrong:

- Option A (Does not follow): The conclusion *does* follow by transitivity.
- Option B (Data insufficient): Both premises are stated explicitly; no extra data is needed.
- Option D (Partially follows): The conclusion is fully universal and completely valid.

Final Answer: The conclusion definitely follows. $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q 14

Q15.

Solution

Concept — Mirror Image in a Vertical Mirror:

Step 1 — Effect of a vertical mirror: A vertical mirror placed to the right reflects the image left-to-right. The vertical component (up/down direction) is *unchanged*; the horizontal component (left/right) is *reversed*.

Step 2 — Apply to the arrow: Original arrow: points **upper-right** (↗).

- Vertical component: upward — unchanged.
- Horizontal component: right → left (reversed).

Mirror image: points **upper-left** (↖).

Why other options are wrong:

- Option A (Upper-right): That is the original; reflection must change the horizontal direction.
- Option C (Lower-right): Vertical flip would require a *horizontal* mirror, not a vertical one.
- Option D (Downward): A vertical mirror does not flip the up/down component.

Final Answer: Mirror image is upper-left (↖). ⇒ B

Answer: (B) Go Back to Q 15

Q16.

Solution

Concept — Odd One Out (Perfect Squares):

Step 1 — Test each number:

$$144 = 12^2 \checkmark, \quad 169 = 13^2 \checkmark, \quad 196 = 14^2 \checkmark, \quad 225 = 15^2 \checkmark.$$

$$\sqrt{200} \approx 14.14 \quad \Rightarrow \quad 200 \text{ is } \textbf{not} \text{ a perfect square.}$$

Step 2 — Identify the odd one: 200 is the only number in the list that is not a perfect square.

Why other options are wrong:

- Option A (144): $12^2 = 144$ — perfect square.
- Option B (169): $13^2 = 169$ — perfect square.
- Option C (196): $14^2 = 196$ — perfect square.

Final Answer: 200 is not a perfect square. ⇒ D

Answer: (D) Go Back to Q 16

Q17.

Solution

Concept — Position in a Row (Ranking):

Step 1 — Convert Neha's position to left-end reference: Total students $= 40$. Neha is 18th from the right.

$$\text{Neha's position from left} = 40 - 18 + 1 = 23.$$

Step 2 — Count students between Amit and Neha: Amit is at position 15; Neha is at position 23.

$$\text{Students between them} = 23 - 15 - 1 = \mathbf{7}.$$

Why other options are wrong:

- Option B (5): Would require Neha to be at position 21, not 23.
- Option C (9): Would require Neha to be at position 25.
- Option D (6): An off-by-one error; the formula gives $23 - 15 - 1 = 7$.

Final Answer: **7** students sit between Amit and Neha. $\Rightarrow$ A

Answer: (A) Go Back to Q 17

Q18.

Solution

Concept — Linear Seating Arrangement (Constraint Satisfaction):

Step 1 — Apply constraints systematically:

- B is to the right of A $\Rightarrow$ A appears before B.
- D is between B and E $\Rightarrow$ order is B . . . D . . . E (left to right).
- C is to the left of E.

Step 2 — Construct the unique arrangement: Combining all constraints, the only valid left-to-right order for all five is:

$$\mathbf{A - B - D - C - E} \quad \text{(positions 1 to 5)}$$

D is at position 3 — the **middle** of five.

Why other options are wrong:

- Option A (A): A is at position 1, the leftmost seat.
- Option B (B): B is at position 2.
- Option D (E): E is at position 5, the rightmost seat.

Final Answer: **D** sits in the middle. $\Rightarrow$ $\boxed{C}$

Answer: (C) Go Back to Q 18

Q19.

Solution

Concept — Syllogism with a Particular and a Universal Premise:

Step 1 — Map the statements:

- Some books are pens: Books $\cap$ Pens $\neq \emptyset$.
- All pens are pencils: Pens $\subseteq$ Pencils.

Step 2 — Evaluate conclusions:

- **Conclusion I** (Some books are pencils): Since some books are pens, and all pens are pencils, those books are also pencils. Hence Conclusion I is **TRUE**.
- **Conclusion II** (All pencils are books): The premises do not imply that every pencil is a book; pencils could include items that are not books. Conclusion II is **FALSE**.

Why other options are wrong:

- Option A (Only II): Conclusion II is not valid.
- Option C (Both): Conclusion II is not valid.
- Option D (Neither): Conclusion I is valid.

Final Answer: Only Conclusion I follows. $\Rightarrow$ $\boxed{B}$

Answer: (B) Go Back to Q 19

Q20.

Solution

Concept — Abstract Dot Pattern ($+1$ per cell, left-to-right then top-to-bottom):

Step 1 — Read the cells in order:

$$\text{Top-left} : 1 \longrightarrow \text{Top-right} : 2 \longrightarrow \text{Bottom-left} : 3 \longrightarrow \text{Bottom-right} : ?$$

Each cell has exactly one more dot than the previous cell.

Step 2 — Find the missing value: $3 + 1 = 4$.

Why other options are wrong:

- Option A (2): The count decreases from 3 to 2 — breaks the $+1$ pattern.
- Option B (3): Same as the bottom-left cell; implies no change.
- Option C (5): Requires a $+2$ jump instead of $+1$.

Final Answer: The bottom-right cell should have **4** dots. $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q 20

Q21.

Solution

Concept — Positional Letter Code (A = 1, B = 2, . . . , Z = 26):

Step 1 — Verify WHITE: W = 23, H = 8, I = 9, T = 20, E = 5 $\Rightarrow$ 23-8-9-20-5 ✓.

Step 2 — Encode BLACK:

$$\text{B} = 2, \quad \text{L} = 12, \quad \text{A} = 1, \quad \text{C} = 3, \quad \text{K} = 11 \Rightarrow \textbf{2-12-1-3-11}.$$

Why other options are wrong:

- Option B (3-13-2-4-12): Each value is $+1$ too large; would imply B = 3, which is wrong.
- Option C (1-11-0-2-10): Each value is -1 too small; A would be coded as 0, invalid.
- Option D (2-12-1-4-11): C is coded as 4 instead of the correct value 3.

Final Answer: Code for BLACK = 2-12-1-3-11. $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q 21

Q22.

Solution

Concept — Blood Relations (Building the Family Tree):

Step 1 — Establish the links:

- A is B's father ⇒ A is a parent.
- B is C's sister ⇒ B and C are siblings; they share the same parents.
- Therefore A is also C's father.
- D is C's mother ⇒ D is C's parent (the other one).

Step 2 — Determine A's relation to D: A (father of C) and D (mother of C) are C's parents, so A is D's **husband**.

Why other options are wrong:

- Option A (Son): A is a parent of C, placing him in D's generation, not a child of D.
- Option B (Father): A and D are spouses, not parent–child.
- Option D (Brother): A is D's spouse, not a sibling.

Final Answer: A is D's **Husband**. ⇒ C

Answer: (C) Go Back to Q 22

Q23.

Solution

Concept — Direction and Distance (Pythagoras Theorem):

Step 1 — Identify the right triangle: The person walks 4 km East (horizontal leg) and then 3 km North (vertical leg), forming a right-angled triangle with legs 4 and 3.

Step 2 — Apply Pythagoras:

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

Why other options are wrong:

- Option A (4 km): Only the East component; ignores the North displacement.
- Option C (6 km): $3^2 + 4^2 = 25$, not 36.
- Option D (7 km): $3^2 + 4^2 = 25$, not 49.

Final Answer: Straight-line distance $= 5$ km (a 3-4-5 Pythagorean triple). $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q 23

Q24.

Solution

Concept — Statement and Implicit Assumptions: An implicit assumption is an unstated belief that must be true for the statement to make sense.

Step 1 — Analyse the statement: The statement is an advertisement claiming that joining the coaching centre will lead to a 100% score.

Step 2 — Evaluate each assumption:

- **Assumption I** (Centre guarantees results): This is a *stated* (explicit) claim in the advertisement, not a hidden assumption. It is also an unrealistic absolute claim. Not implicit.
- **Assumption II** (Students want to score high): The advertisement would be meaningless if students did not desire high scores. This *must* be true for the advertisement to have any purpose — it is **implicit**.

Why other options are wrong:

- Option A (Only I): Assumption I is explicit, not implicit.
- Option B (Both): Assumption I is not a valid implicit assumption.
- Option C (Neither): Assumption II is clearly implicit.

Final Answer: Only Assumption II is implicit. $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q 24

Q25.

Solution

Concept — Perfect Squares Series: The series consists of squares of consecutive natural numbers.

Step 1 — Identify the pattern:

$$1^2 = 1, \quad 2^2 = 4, \quad 3^2 = 9, \quad 4^2 = 16, \quad 5^2 = 25, \quad 6^2 = 36, \quad \ldots$$

Step 2 — Find the next term: $7^2 = 49$.

Why other options are wrong:

- Option B (46): Not a perfect square; lies between $6^2 = 36$ and $7^2 = 49$.
- Option C (48): Not a perfect square.
- Option D (50): Not a perfect square; $7^2 = 49$ and $8^2 = 64$.

Final Answer: $7^2 = 49$. $\Rightarrow$ A

Answer: (A) Go Back to Q 25

Q26.

Solution

Concept — Logical Deduction by Process of Elimination:

Step 1 — List constraints: Anu $\neq$ Doctor; Bina $\neq$ Lawyer; Chitra $\neq$ Engineer.

Step 2 — Eliminate and assign:

- *Test Bina = Doctor:* Then Anu $\neq$ Doctor $\Rightarrow$ Anu = Lawyer. Chitra = Engineer, but Chitra $\neq$ Engineer — **contradiction**. So Bina $\neq$ Doctor.
- Since Bina $\neq$ Lawyer and Bina $\neq$ Doctor, Bina **must be Engineer**.
- Anu $\neq$ Doctor, so Anu **must be Lawyer**.
- Only Doctor remains for Chitra; and Chitra $\neq$ Engineer $\Rightarrow$ consistent. Chitra **is Doctor**.

Final: Anu = Lawyer, Bina = Engineer, **Chitra = Doctor**.

Why other options are wrong:

- Option A (Anu): Explicitly stated that Anu is not a Doctor.
- Option B (Bina): Shown by elimination to be the Engineer.

- Option D (Cannot be determined): A unique solution is reached by elimination.

Final Answer: Chitra is the Doctor. $\Rightarrow$ C

Answer: (C) Go Back to Q 26

Q27.

Solution

Concept — Venn Diagram (Exactly Two Sets Intersection):

Step 1 — Identify the "exactly two sports" regions: These are the pairwise intersections *excluding* the triple-intersection region:

- Cricket $\cap$ Football only: 5 people.
- Cricket $\cap$ Basketball only: 4 people.
- Football $\cap$ Basketball only: 3 people.

Step 2 — Sum the regions: $5 + 4 + 3 = \mathbf{12}$.

Why other options are wrong:

- Option A (10): Omits one of the three pairwise regions.
- Option C (14): Includes the triple-intersection (2 extra), giving $12 + 2 = 14$.
- Option D (9): Incorrectly sums only two of the three pairwise regions ($5+4 = 9$).

Final Answer: **12** people play exactly two sports. $\Rightarrow$ B

Answer: (B) Go Back to Q 27

Q28.

Solution

Concept — Letter Analogy (Each Corresponding Letter Shifted $+1$):

Step 1 — Analyse the given pair:

$$\mathrm{A}(1) + 1 = \mathrm{B}(2), \quad \mathrm{C}(3) + 1 = \mathrm{D}(4), \quad \mathrm{E}(5) + 1 = \mathrm{F}(6).$$

So ACE $\rightarrow$ BDF (each letter $+1$).

Step 2 — Apply to GIK:

$$\mathrm{G}(7)+1=\mathrm{H}(8),\quad \mathrm{I}(9)+1=\mathrm{J}(10),\quad \mathrm{K}(11)+1=\mathrm{L}(12).$$

GIK $\rightarrow$ **HJL.**

Why other options are wrong:

- Option B (HIL): Second letter I is unchanged (no shift applied); should be J.
- Option C (GHI): Consecutive letters; not a $+1$ shift of G, I, K.
- Option D (IKM): Each letter is shifted $+2$ instead of $+1$.

Final Answer: GIK $\rightarrow$ HJL. $\Rightarrow$ A

Answer: (A) Go Back to Q 28

Q29.

Solution

Concept — Position in a Row:

Step 1 — Find positions from the left:

- P is 3rd from the left $\Rightarrow$ position 3.
- Q is 2nd from the right in a row of 6: position from left $= 6-2+1=5$.

Step 2 — Count people between P (pos 3) and Q (pos 5):

$$\text{People between} = 5-3-1=\mathbf{1}.$$

Only position 4 lies between positions 3 and 5. R occupies that seat.

Why other options are wrong:

- Option A (0): Would require P and Q to be adjacent, but they are at positions 3 and 5.
- Option B (2): Would require Q to be at position 6, not 5.
- Option C (3): Would require Q to be at position 7, but the row has only 6 seats.

Final Answer: **1** person (R) sits between P and Q. $\Rightarrow$ D

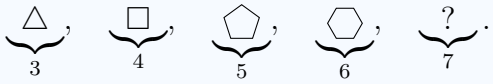
Answer: (D) Go Back to Q 29

Q30.

Solution

Concept — Polygon Series (Increasing Number of Sides by 1):

Step 1 — List the pattern:



(Each polygon has one more side than the previous one.)

Step 2 — Identify the next polygon: A polygon with 7 sides is a **Heptagon**.

Why other options are wrong:

- Option A (Octagon): An octagon has 8 sides; it comes *after* the heptagon.
- Option B (Pentagon): Pentagon (5 sides) already appeared in the series.
- Option D (Hexagon): Hexagon (6 sides) already appeared in the series.

Final Answer: The next polygon is a **Heptagon** (7 sides). $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q 30

Answer Key

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