

MAHCET Abstract Reasoning

Sample Paper – 10

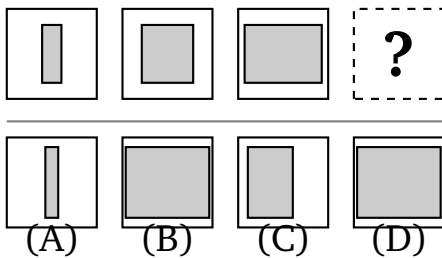
Duration: 19 Minutes Total Marks: 25 Questions: 25 Negative Marking: None

Instructions

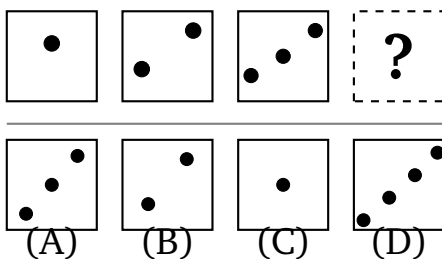
- This paper contains 25 questions from the Abstract Reasoning section of MAHCET.
- Each question carries 1 mark. There is no negative marking for wrong answers.
- All questions are compulsory. Choose the best option from (A), (B), (C), (D).
- This is a Computer Based Test (CBT). No physical calculator is allowed.
- Attempt all questions within the allotted time of 19 minutes.

Abstract Reasoning

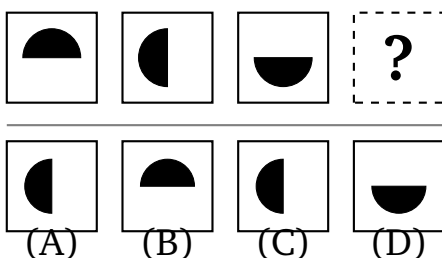
Q1. Find the **missing figure** in the series.



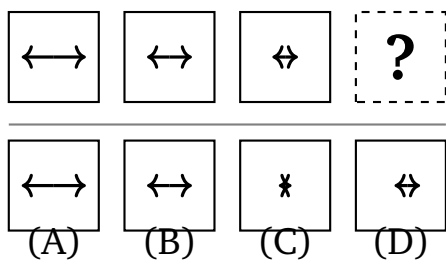
Q2. Find the **missing figure** in the series.



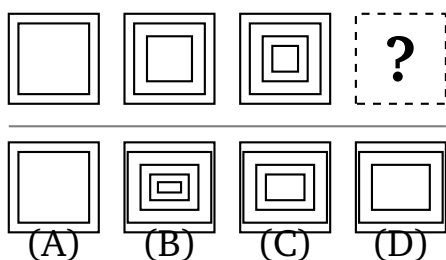
Q3. Find the **missing figure** in the series.



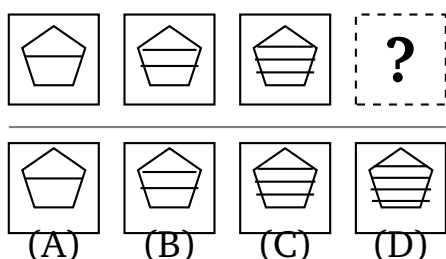
Q4. Find the **missing figure** in the series.



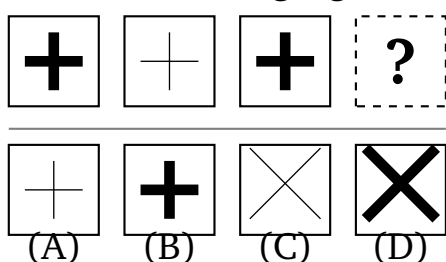
Q5. Find the **missing figure** in the series.



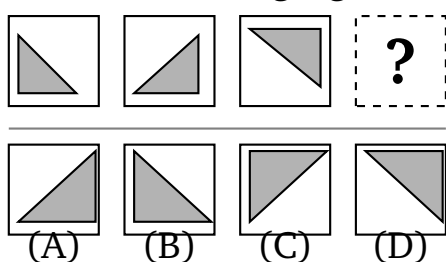
Q6. Find the **missing figure** in the series.



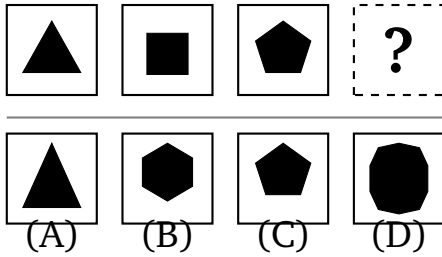
Q7. Find the **missing figure** in the series.



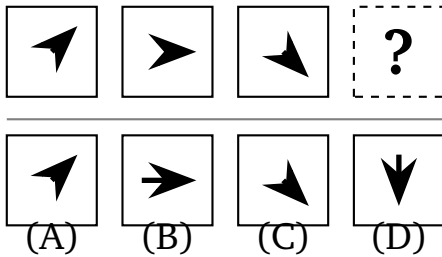
Q8. Find the **missing figure** in the series.



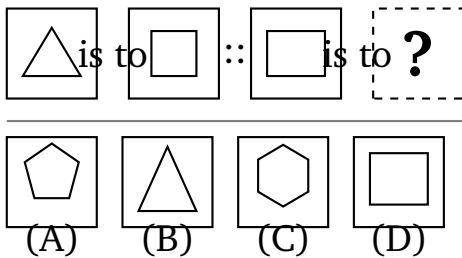
Q9. Find the **missing figure** in the series.



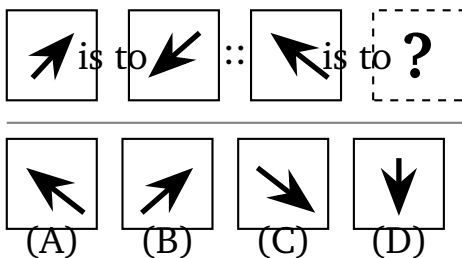
Q10. Find the **missing figure** in the series.



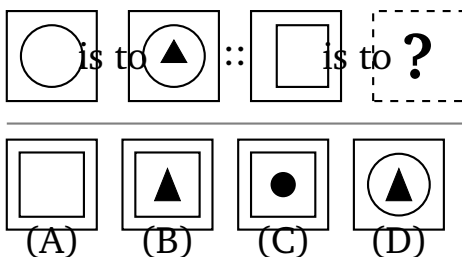
Q11. Choose the figure that **completes the analogy**.



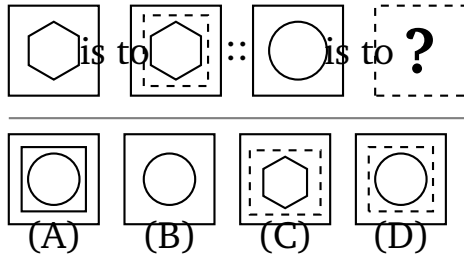
Q12. Choose the figure that **completes the analogy**.



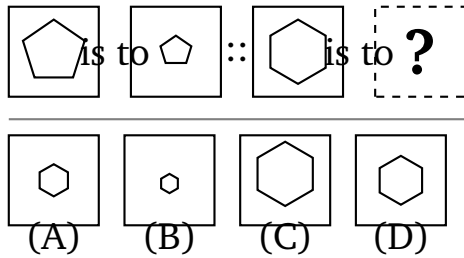
Q13. Choose the figure that **completes the analogy**.



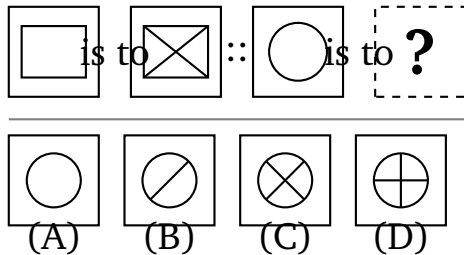
Q14. Choose the figure that **completes the analogy**.



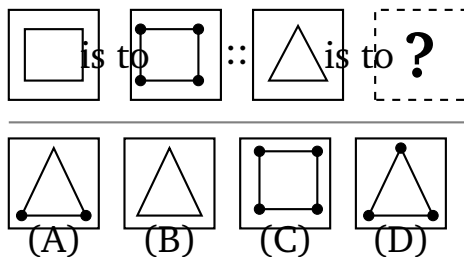
Q15. Choose the figure that **completes the analogy**.



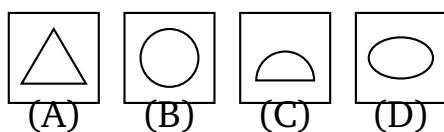
Q16. Choose the figure that **completes the analogy**.



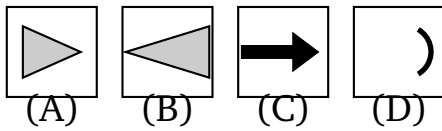
Q17. Choose the figure that **completes the analogy**.



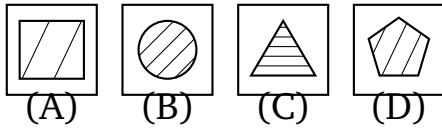
Q18. Which figure does **NOT** belong to the group?



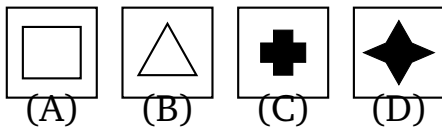
Q19. Which figure does **NOT** belong to the group?



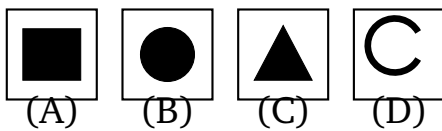
Q20. Which figure does **NOT** belong to the group?



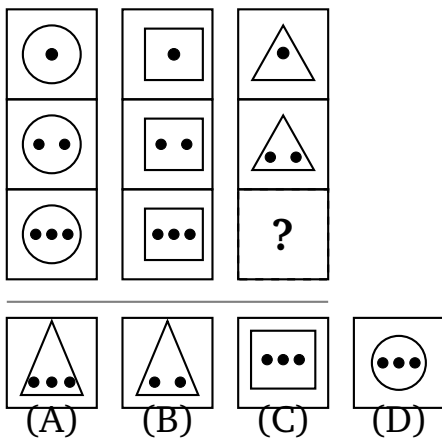
Q21. Which figure does **NOT** belong to the group?



Q22. Which figure does **NOT** belong to the group?

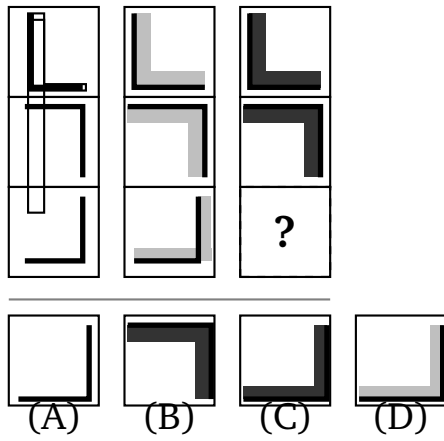


Q23. Find the **missing figure** in the 3×3 matrix.

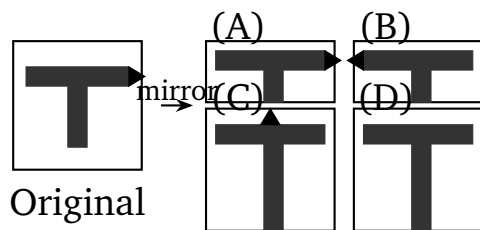


Q24. Find the **missing figure** in the 3×3 matrix.





Q25. Select the correct **mirror image** of the given figure (mirror on the right side).



Detailed Solutions

1.

Solution**Concept — Series: Progressive Size Change**

Identify the rule: The rectangle becomes progressively wider from left to right. Frame 1 shows a very narrow rectangle, Frame 2 a medium-width rectangle, and Frame 3 a wide rectangle. Each step roughly doubles the width while keeping the height constant.

Apply the rule: The next (4th) figure must be a very wide rectangle — one that spans most of the available frame width, noticeably wider than Frame 3.

Why other options are wrong:

- Option A: Shows a narrow rectangle, identical to Frame 1 — breaks the widening pattern.
- Option C: Shows a medium rectangle, identical to Frame 2 — an earlier stage in the series.
- Option D: Shows a wide rectangle, identical to Frame 3 — repeats the current stage rather than advancing it.

Final Answer: The rectangle must be very wide (wider than all previous frames).

⇒

Answer: (B)

[Go Back to Q1](#)



2.

Solution**Concept — Series: Counting Pattern (Diagonal Dots)**

Identify the rule: The number of filled circles increases by 1 each step, arranged along a NE diagonal. Frame 1 has 1 dot, Frame 2 has 2 dots, Frame 3 has 3 dots.

Apply the rule: The 4th frame must contain 4 dots arranged along the NE diagonal from bottom-left to top-right.

Why other options are wrong:

- Option A: Shows 3 dots — same as Frame 3, not the next step.
- Option B: Shows 2 dots — same as Frame 2, two steps behind.
- Option C: Shows 1 dot — same as Frame 1, three steps behind.

Final Answer: 4 filled circles along the NE diagonal. $\Rightarrow$ **D**

Answer: (D) [Go Back to Q2](#)

3.

Solution**Concept — Series: Rotation (90° Clockwise)**

Identify the rule: The filled semicircle rotates 90° clockwise at each step. Frame 1: dome up (flat bottom). Frame 2: dome right (flat left). Frame 3: dome down (flat top).

Apply the rule: One more 90° CW rotation from dome-down gives dome-left (flat on the right side).

Why other options are wrong:

- Option B: Dome pointing up — same as Frame 1, wrong position.
- Option C: Dome pointing right — same as Frame 2, wrong position.
- Option D: Dome pointing down — same as Frame 3, wrong position.

Final Answer: Filled semicircle with dome pointing left (flat edge on right). $\Rightarrow$ **A**

Answer: (A) [Go Back to Q3](#)



4.

Solution**Concept — Series: Progressive Shrinkage**

Identify the rule: Two arrows pointing in opposite directions ($\leftarrow$ and $\rightarrow$) get shorter with each step. Frame 1: long arrows (arm ≈ 0.5). Frame 2: medium arrows (arm ≈ 0.35). Frame 3: short arrows (arm ≈ 0.20).

Apply the rule: The 4th step requires tiny arrows — barely visible, arm length ≈ 0.10 .

Why other options are wrong:

- Option A: Long arrows — same as Frame 1.
- Option B: Medium arrows — same as Frame 2.
- Option D: Short arrows — same as Frame 3.

Final Answer: Two tiny opposing arrows. $\Rightarrow$ C

Answer: (C) [Go Back to Q4](#)

5.

Solution**Concept — Series: Increasing Concentric Rectangles**

Identify the rule: The number of concentric outline rectangles increases by 1 each step. Frame 1: 1 rectangle. Frame 2: 2 rectangles. Frame 3: 3 rectangles.

Apply the rule: The 4th frame must show 4 concentric rectangles, each progressively smaller and centered.

Why other options are wrong:

- Option A: 1 rectangle — same as Frame 1.
- Option C: 3 rectangles — same as Frame 3.
- Option D: 2 rectangles — same as Frame 2.

Final Answer: 4 concentric outline rectangles. $\Rightarrow$ B

Answer: (B) [Go Back to Q5](#)



6.

Solution**Concept — Series: Increasing Internal Stripes****Identify the rule:** A regular pentagon contains an increasing number of horizontal stripes. Frame 1: 1 stripe. Frame 2: 2 stripes. Frame 3: 3 stripes.**Apply the rule:** The 4th pentagon must contain 4 horizontal stripes evenly distributed inside.**Why other options are wrong:**

- Option A: 1 stripe — same as Frame 1.
- Option B: 2 stripes — same as Frame 2.
- Option C: 3 stripes — same as Frame 3.

Final Answer: Regular pentagon with 4 horizontal stripes inside. $\Rightarrow$ **D****Answer: (D)** [Go Back to Q6](#)

7.

Solution**Concept — Series: Alternating Stroke Weight****Identify the rule:** The plus (+) sign alternates between very thick and very thin strokes. Frame 1: thick. Frame 2: thin. Frame 3: thick. The arm length and position remain constant; only the line width changes.**Apply the rule:** Frame 4 must continue the alternation: thin plus sign.**Why other options are wrong:**

- Option B: Thick plus — same as Frames 1 and 3, breaks the alternation.
- Option C: Thin X (diagonal cross) — wrong shape, diagonals instead of horizontal/vertical.
- Option D: Thick X — wrong shape and wrong weight.

Final Answer: Very thin plus (+) sign. $\Rightarrow$ **A****Answer: (A)** [Go Back to Q7](#)

8.

Solution**Concept — Series: Rotation (90° Counter-Clockwise)**

Identify the rule: A right-angle triangle rotates 90° counter-clockwise each step. Frame 1: right angle at bottom-left. Frame 2: right angle at bottom-right. Frame 3: right angle at top-right.

Apply the rule: One more 90° CCW rotation places the right angle at the top-left.

Why other options are wrong:

- Option A: Right angle at bottom-right — same as Frame 2.
- Option B: Right angle at bottom-left — same as Frame 1.
- Option D: Right angle at top-right — same as Frame 3.

Final Answer: Right-angle triangle with right angle at top-left. ⇒ **C**

Answer: (C) [Go Back to Q8](#)

9.

Solution**Concept — Series: Increasing Number of Sides**

Identify the rule: Each frame shows a filled regular polygon with one more side than the previous. Frame 1: triangle (3 sides). Frame 2: square (4 sides). Frame 3: pentagon (5 sides).

Apply the rule: The next shape has 6 sides: a filled regular hexagon.

Why other options are wrong:

- Option A: Filled triangle — same as Frame 1 (3 sides).
- Option C: Filled pentagon — same as Frame 3 (5 sides).
- Option D: Filled octagon — skips hexagon, jumps to 8 sides.

Final Answer: Filled regular hexagon (6 sides). ⇒ **B**

Answer: (B) [Go Back to Q9](#)



10.

Solution**Concept — Series: Arrow Direction Rotates 45° Clockwise****Identify the rule:** A thick arrow rotates 45° clockwise at each step. Frame 1: NE ($\nearrow$). Frame 2: E ($\rightarrow$). Frame 3: SE ($\searrow$).**Apply the rule:** One more 45° CW rotation gives South ($\downarrow$, straight down).**Why other options are wrong:**

- Option A: NE arrow — same as Frame 1.
- Option B: E arrow — same as Frame 2.
- Option C: SE arrow — same as Frame 3.

Final Answer: Thick arrow pointing straight down (South). $\Rightarrow$ DAnswer: (D) [Go Back to Q10](#)

11.

Solution**Concept — Analogy: Number of Sides Increases by 1****Identify the rule:** FigA (triangle, 3 sides) relates to FigB (square, 4 sides) by gaining one extra side. The same rule must apply to FigC (square, 4 sides) $\rightarrow$ Answer.**Apply the rule:** Adding one side to the square (4 sides) gives a pentagon (5 sides). The answer must be an outline pentagon of similar size.**Why other options are wrong:**

- Option B: Triangle — subtracts 1 side instead of adding.
- Option C: Hexagon — adds 2 sides instead of 1.
- Option D: Square — same as FigC, no change.

Final Answer: Outline regular pentagon. $\Rightarrow$ AAnswer: (A) [Go Back to Q11](#)

12.

Solution**Concept — Analogy: 180° Rotation**

Identify the rule: FigA (NE arrow) relates to FigB (SW arrow) by a 180° rotation — the arrow flips to point in the exact opposite direction. The same rule applies to FigC (NW arrow).

Apply the rule: Rotating the NW (↖) arrow by 180° gives a SE (↘) arrow.

Why other options are wrong:

- Option A: NW arrow — same as FigC, no change.
- Option B: NE arrow — 90° rotation, not 180°.
- Option D: S arrow (straight down) — not a 180° rotation of NW.

Final Answer: Arrow pointing SE (lower-right). ⇒ C

Answer: (C) [Go Back to Q12](#)

13.

Solution**Concept — Analogy: Adding Inner Shape**

Identify the rule: FigA (large circle, empty) relates to FigB (large circle with a small filled triangle inside) by inserting a small filled triangle. The outer shape retains its identity while a smaller version of a fixed shape (triangle) is added inside.

Apply the rule: FigC is a large square with nothing inside. The answer must be a large square containing a small filled triangle inside.

Why other options are wrong:

- Option A: Square with nothing — same as FigC, no inner shape added.
- Option C: Square with small circle — wrong inner shape (circle instead of triangle).
- Option D: Circle with small triangle — wrong outer shape (circle instead of square).

Final Answer: Large outline square with a small filled triangle inside. ⇒ B



Answer: (B) [Go Back to Q13](#)

14.

Solution

Concept — Analogy: Dashed Border Added Around Shape

Identify the rule: FigA (plain hexagon) relates to FigB (hexagon with a dashed rectangle surrounding it) by the addition of a dashed rectangular frame around the existing shape.

Apply the rule: FigC is a plain circle. The answer must be a circle with a dashed rectangle surrounding it.

Why other options are wrong:

- Option A: Circle with a solid (not dashed) rectangle — wrong border style.
- Option B: Plain circle — same as FigC, no frame added.
- Option C: Hexagon with dashed frame — wrong inner shape (hexagon instead of circle).

Final Answer: Outline circle with a dashed rectangle surrounding it. $\Rightarrow$ **D**

Answer: (D) [Go Back to Q14](#)

15.

Solution

Concept — Analogy: Shape Shrinks to Half Size

Identify the rule: FigA (large pentagon, $r \approx 0.5$) relates to FigB (small pentagon, $r \approx 0.25$) — the shape is reduced to half its original linear dimensions. The same shape is preserved, just scaled down by 50%.

Apply the rule: FigC is a large hexagon ($r \approx 0.5$). The answer is a small hexagon ($r \approx 0.25$, half the size).

Why other options are wrong:

- Option B: Tiny hexagon ($r \approx 0.15$) — reduced by too much (more than half).
- Option C: Large hexagon — same size as FigC, no reduction applied.



- Option D: Medium hexagon ($r \approx 0.38$) — not exactly half; too large.

Final Answer: Small outline hexagon at half the size of FigC. $\Rightarrow$ A

Answer: (A) [Go Back to Q15](#)

16.

Solution

Concept — Analogy: Diagonal X Added Inside Shape

Identify the rule: FigA (plain rectangle) relates to FigB (rectangle with two diagonal lines forming an X inside) — the rule is to inscribe an X-pattern of two crossing diagonals within the shape.

Apply the rule: FigC is a plain circle. The answer must be a circle with two diagonal lines crossing inside it (forming an X).

Why other options are wrong:

- Option A: Plain circle — same as FigC, no lines added.
- Option B: Circle with only one diagonal — incomplete; needs two diagonals.
- Option D: Circle with a + cross (horizontal and vertical lines) — adds a cross, not an X.

Final Answer: Outline circle with two diagonal lines (X) inside. $\Rightarrow$ C

Answer: (C) [Go Back to Q16](#)



17.

Solution**Concept — Analogy: Dots Placed at Each Vertex**

Identify the rule: FigA (plain square) relates to FigB (square with a filled dot at each of its 4 corner vertices) — a small dot is placed at every vertex of the shape.

Apply the rule: FigC is a plain triangle (3 vertices). The answer must be a triangle with a small filled dot at each of its 3 vertices (apex, bottom-left, bottom-right).

Why other options are wrong:

- Option A: Triangle with only 2 base dots — misses the apex vertex dot.
- Option B: Plain triangle — same as FigC, no dots added.
- Option C: Square with vertex dots — wrong outer shape (square instead of triangle).

Final Answer: Outline triangle with small filled dots at all 3 vertices. ⇒ D

Answer: (D) [Go Back to Q17](#)

18.

Solution**Concept — Odd-One-Out: Curved vs. Straight Edges**

Identify the rule: The group consists of figures that have at least one curved edge: circle (B), semicircle (C), and ellipse (D) all contain curved boundaries.

Apply the rule: Option A is an isosceles triangle — all three sides are perfectly straight line segments. It has no curved edge whatsoever, making it the odd one out.

Why other options are wrong:

- Option B: Circle — entirely curved boundary; belongs to the group.
- Option C: Semicircle — curved top edge; belongs to the group.
- Option D: Ellipse — entirely curved boundary; belongs to the group.

Final Answer: The isosceles triangle (all straight edges) is the odd one out. ⇒ A

Answer: (A) [Go Back to Q18](#)



19.

Solution**Concept — Odd-One-Out: Direction of Pointing / Opening**

Identify the rule: The group consists of figures that point or open toward the right: right-pointing triangle (A), right-pointing filled arrow (C), and a right-opening arc (D).

Apply the rule: Option B is a left-pointing triangle — its apex faces left while its base faces right, which is the opposite direction from the rest of the group.

Why other options are wrong:

- Option A: Right-pointing triangle — apex on right, belongs to group.
- Option C: Right-pointing arrow — arrowhead on right, belongs to group.
- Option D: Right-opening arc — opens toward the right, belongs to group.

Final Answer: The left-pointing triangle is the odd one out. $\Rightarrow$ **B**

Answer: (B) [Go Back to Q19](#)

20.

Solution**Concept — Odd-One-Out: Fill Pattern (Diagonal Hatching vs. Horizontal Stripes)**

Identify the rule: The group uses diagonal NE hatching as the interior fill pattern. The square (A), circle (B), and pentagon (D) all have diagonal hatching lines.

Apply the rule: Option C (triangle) has horizontal stripes instead of diagonal hatching. Although it is also a hatched shape, the orientation of the lines is different — horizontal rather than diagonal.

Why other options are wrong:

- Option A: Square with diagonal hatching — consistent with the group pattern.
- Option B: Circle with diagonal hatching — consistent with the group pattern.
- Option D: Pentagon with diagonal hatching — consistent with the group pattern.



Final Answer: The triangle (horizontal stripes) is the odd one out. $\Rightarrow$ C

Answer: (C) [Go Back to Q20](#)

21.

Solution

Concept — Odd-One-Out: Rotational Symmetry Order

Identify the rule: The group consists of shapes with rotational symmetry of order 4 — they look identical after a 90° rotation. The square (A) has order-4 symmetry, the plus/cross (C) has order-4 symmetry, and the 4-pointed star (D) has order-4 symmetry.

Apply the rule: Option B is an equilateral triangle, which has rotational symmetry of order 3 (looks the same after 120° rotation). It does not fit the order-4 pattern.

Why other options are wrong:

- Option A: Square — order-4 rotational symmetry; belongs to the group.
- Option C: Plus/cross — order-4 rotational symmetry; belongs to the group.
- Option D: 4-pointed star — order-4 rotational symmetry; belongs to the group.

Final Answer: The equilateral triangle (order-3 symmetry) is the odd one out. $\Rightarrow$

B

Answer: (B) [Go Back to Q21](#)



22.

Solution**Concept — Odd-One-Out: Closed vs. Open Shape**

Identify the rule: The group consists of closed, filled shapes — every boundary connects back to itself with no open ends. The filled square (A), filled circle (B), and filled triangle (C) are all closed forms.

Apply the rule: Option D is an open arc (like a “(” bracket) — it has two open endpoints and does not enclose any area. It cannot be filled and is fundamentally open.

Why other options are wrong:

- Option A: Filled black square — a closed shape; belongs to the group.
- Option B: Filled black circle — a closed shape; belongs to the group.
- Option C: Filled black triangle — a closed shape; belongs to the group.

Final Answer: The open arc is the odd one out. $\Rightarrow$ D

Answer: (D) [Go Back to Q22](#)

23.

Solution**Concept — Matrix: Two-Variable Pattern (Dot Count $\times$ Shape)**

Identify the rule: Each row determines the number of dots (Row 1: 1 dot, Row 2: 2 dots, Row 3: 3 dots). Each column determines the outer shape (Col 1: circle, Col 2: square, Col 3: triangle).

Apply the rule: The missing cell is at Row 3, Col 3: it must show 3 dots inside a triangle.

Why other options are wrong:

- Option B: Triangle with 2 dots — correct shape but wrong dot count (Row 3 needs 3 dots).
- Option C: Square with 3 dots — correct count but wrong shape (Col 3 needs a triangle).
- Option D: Circle with 3 dots — correct count but wrong shape (Col 3 needs a triangle, Col 1 is circle).



Final Answer: Triangle with 3 dots inside. $\Rightarrow$ A

Answer: (A) [Go Back to Q23](#)

24.

Solution

Concept — Matrix: Two-Variable Pattern (Rotation $\times$ Fill)

Identify the rule: Each row determines the rotation of the L-shape: Row 1 = 0° , Row 2 = 90° CW, Row 3 = 180° CW. Each column determines the fill: Col 1 = outline only, Col 2 = half-filled gray, Col 3 = fully filled black.

Apply the rule: The missing cell is at Row 3, Col 3: L-shape rotated 180° CW, fully filled black.

Why other options are wrong:

- Option A: Outline L at 180° — correct rotation but wrong fill (outline instead of fully filled).
- Option B: Fully filled L at 90° CW — correct fill but wrong rotation (90° not 180°).
- Option D: Half-filled gray L at 180° — correct rotation but wrong fill (gray instead of fully filled black).

Final Answer: Fully filled black L rotated 180° CW. $\Rightarrow$ C

Answer: (C) [Go Back to Q24](#)



25.

Solution**Concept — Mirror Image: Left-Right Reflection**

Identify the rule: When a figure is reflected in a vertical mirror placed on its right side, all horizontal positions are reversed: what was on the right now appears on the left and vice versa. The T-shape itself is symmetric, but the small triangle attached to the RIGHT end of the horizontal bar will move to the LEFT end in the mirror image.

Apply the rule: Original: T-shape with a small triangle pointing outward at the RIGHT end of the bar.

Mirror image: T-shape with a small triangle pointing outward at the LEFT end of the bar.

Why other options are wrong:

- Option A: T with triangle at right — identical to the original, not mirrored.
- Option C: T with triangle at center-top — triangle placed at the wrong position entirely.
- Option D: T with no triangle — the element is missing from the mirror image.

Final Answer: T-shape with small triangle at the LEFT end of the horizontal bar.

⇒ B

Answer: (B) [Go Back to Q25](#)



Answer Key

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

