

MAHCET Abstract Reasoning

Sample Paper – 1

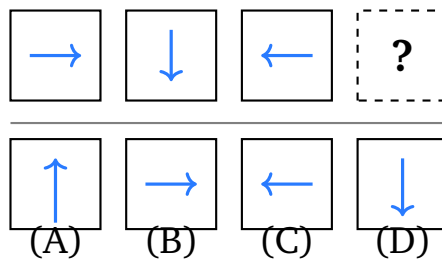
Duration: 19 Minutes **Total Marks:** 25 **Questions:** 25 **Negative Marking:** None

Instructions

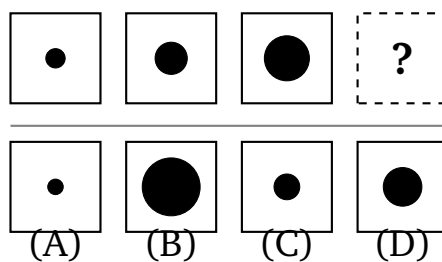
- This paper contains 25 questions from the Abstract Reasoning section of MAHCET.
- Each question carries 1 mark. There is no negative marking for wrong answers.
- All questions are compulsory. Choose the best option from (A), (B), (C), (D).
- This is a Computer Based Test (CBT). No physical calculator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

Abstract Reasoning

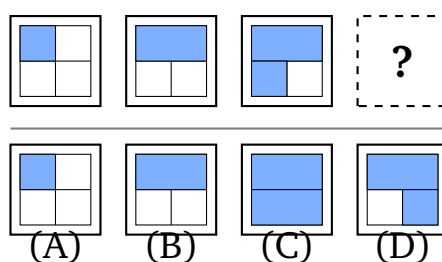
Q1. Find the missing figure in the series.



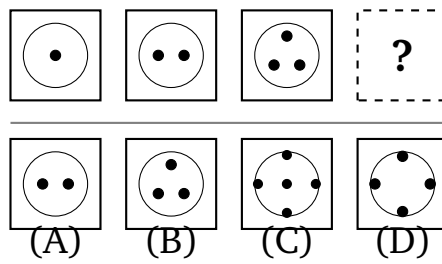
Q2. Find the missing figure in the series.



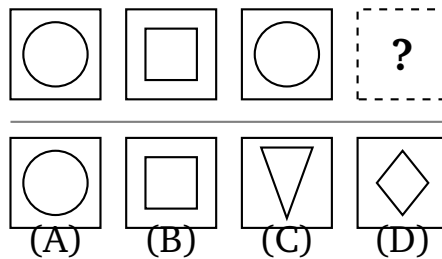
Q3. Find the missing figure in the series.



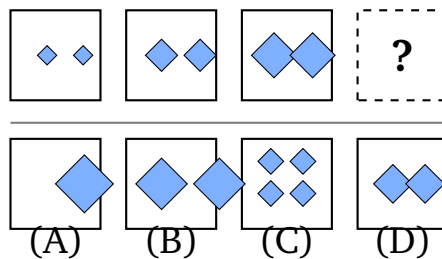
Q4. Find the missing figure in the series.



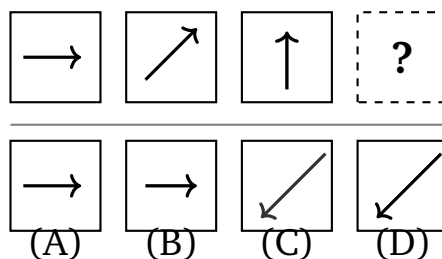
Q5. Find the missing figure in the series.



Q6. Find the missing figure in the series.

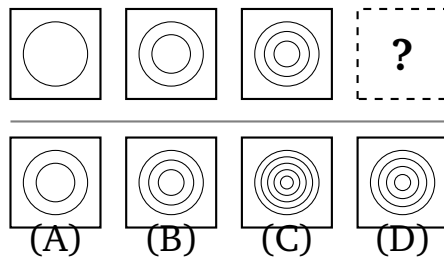


Q7. Find the missing figure in the series.

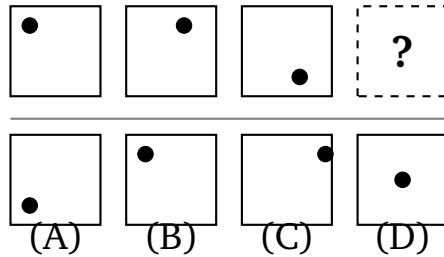


Q8. Find the missing figure in the series.

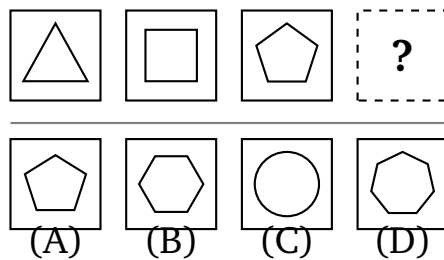




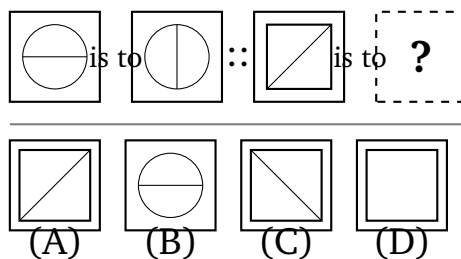
Q9. Find the missing figure in the series.



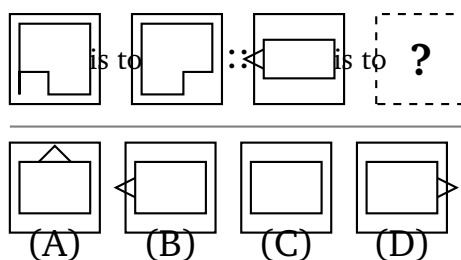
Q10. Find the missing figure in the series.



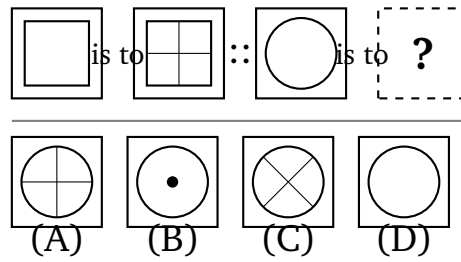
Q11. Choose the figure that completes the analogy.



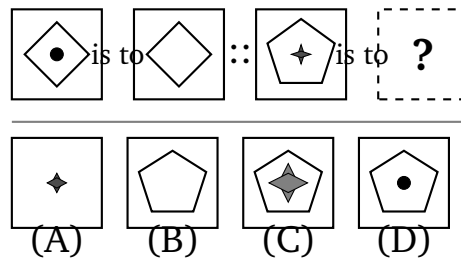
Q12. Choose the figure that completes the analogy.



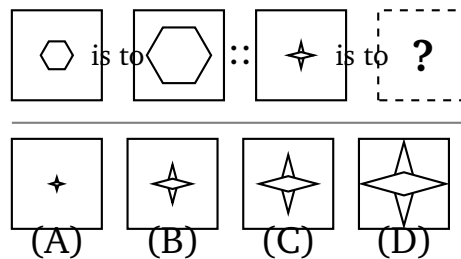
Q13. Choose the figure that completes the analogy.



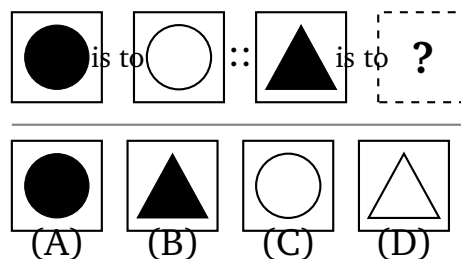
Q14. Choose the figure that completes the analogy.



Q15. Choose the figure that completes the analogy.

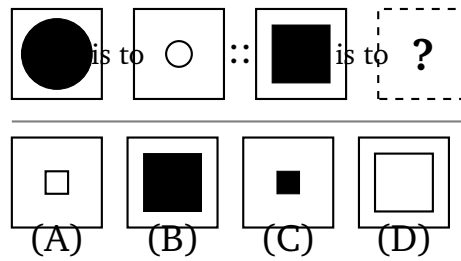


Q16. Choose the figure that completes the analogy.

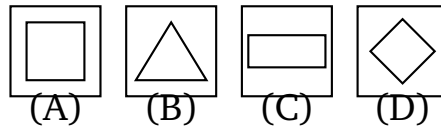


Q17. Choose the figure that completes the analogy.

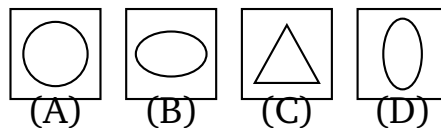




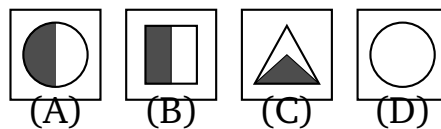
Q18. Which figure does NOT belong to the group?



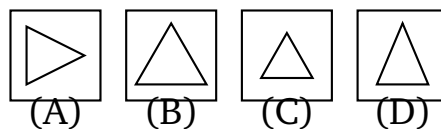
Q19. Which figure does NOT belong to the group?



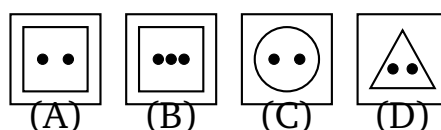
Q20. Which figure does NOT belong to the group?



Q21. Which figure does NOT belong to the group?

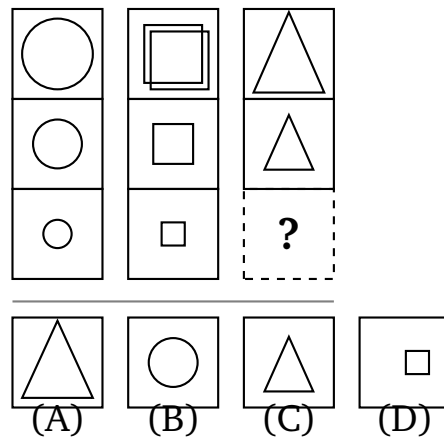


Q22. Which figure does NOT belong to the group?

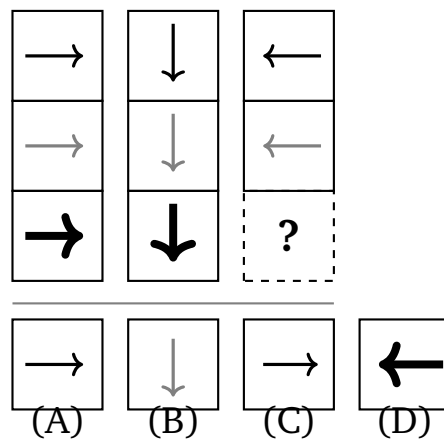


Q23. Find the missing figure in the 3×3 matrix.

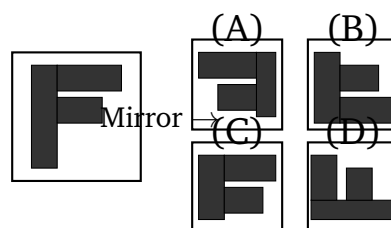




Q24. Find the missing figure in the 3×3 matrix.



Q25. Select the correct mirror image of the given figure.



Detailed Solutions

1.

Solution**Concept — Series: Arrow Direction Rotation**

Identify the rule: The arrow inside each frame rotates exactly 90 degrees clockwise at every step: Right (0°) $\rightarrow$ Down (90°) $\rightarrow$ Left (180°) $\rightarrow$ Up (270°).

Apply the rule: After Left (Step 3), the next 90° CW rotation gives Up, so the missing figure shows an upward-pointing arrow.

Why other options are wrong:

- Option B: Arrow points Right — this is the Step 1 position, already used.
- Option C: Arrow points Left — this is the Step 3 position, already used.
- Option D: Arrow points Down — this is the Step 2 position, already used.

Final Answer: The arrow rotates 90° CW per step; Step 4 must point Up. $\Rightarrow$ **A**

Answer: (A) [Go Back to Q1](#)

2.

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

Identify the rule: The filled black circle grows larger with each step in uniform increments: $r = 0.15, 0.25, 0.35$ (increase of 0.10 each step).

Apply the rule: Step 4 requires $r = 0.45$, which is larger than Step 3 ($r = 0.35$). Option B shows a filled circle of radius 0.45.

Why other options are wrong:

- Option A: $r = 0.12$ — smaller than Step 1, not part of the growing sequence.
- Option C: $r = 0.20$ — smaller than Step 2, breaks the increasing pattern.
- Option D: $r = 0.30$ — smaller than Step 3, does not continue the growth.

Final Answer: Circle grows by $r = 0.10$ per step; Step 4 = $r = 0.45$ (Option B). $\Rightarrow$ **B**

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



3.

Solution**Concept — Series: Sequential Grid Filling**

Identify the rule: A 2×2 grid is filled one cell at a time, proceeding left-to-right, top-to-bottom: Step 1 = top-left (1 cell), Step 2 = top-left + top-right (2 cells), Step 3 = top-left + top-right + bottom-left (3 cells).

Apply the rule: Step 4 must have all 4 cells filled. Only Option C shows the complete 2×2 grid fully shaded.

Why other options are wrong:

- Option A: Only 1 cell filled — matches Step 1.
- Option B: 2 cells filled — matches Step 2.
- Option D: 3 cells filled but with bottom-left empty — incorrect fill order.

Final Answer: All 4 cells must be filled in Step 4 (Option C). $\Rightarrow$ C

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

4.

Solution**Concept — Series: Increasing Dot Count**

Identify the rule: The number of dots inside an outline circle increases by 1 each step: Step 1 = 1 dot, Step 2 = 2 dots, Step 3 = 3 dots.

Apply the rule: Step 4 requires 4 dots. Option D shows 4 dots arranged at N, E, S, W positions inside the circle.

Why other options are wrong:

- Option A: Shows 2 dots — matches Step 2 only.
- Option B: Shows 3 dots — matches Step 3 only.
- Option C: Shows 5 dots — skips Step 4 and exceeds the pattern.

Final Answer: Dot count increases by 1 per step; Step 4 = 4 dots (Option D). $\Rightarrow$ D

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



5.

Solution**Concept — Series: Alternating Shapes**

Identify the rule: The shapes alternate between circle and square: Step 1 = circle, Step 2 = square, Step 3 = circle.

Apply the rule: Step 4 follows the alternating pattern, so it must be a circle again. Option A shows an outline circle.

Why other options are wrong:

- Option B: Square — matches even steps only (Step 2), not Step 4 in the circle-square alternation.
- Option C: Triangle — not part of the alternating pattern at all.
- Option D: Diamond — not part of the alternating pattern at all.

Final Answer: Alternating circle/square; Step 4 = circle (Option A). $\Rightarrow$ **A**

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

6.

Solution**Concept — Series: Symmetric Pair Growing**

Identify the rule: Two symmetrically placed filled diamonds grow larger together each step: Step 1 = tiny ($r \approx 0.15$), Step 2 = small ($r \approx 0.25$), Step 3 = medium ($r \approx 0.35$).

Apply the rule: Step 4 requires two large diamonds ($r \approx 0.45$), maintaining the symmetric pair arrangement. Option B shows 2 large diamonds.

Why other options are wrong:

- Option A: Only 1 large diamond — breaks the symmetric pair rule.
- Option C: 4 small diamonds — changes both count and size, contradicting the pattern.
- Option D: 2 medium diamonds — matches Step 3 size, not Step 4.

Final Answer: Two symmetric diamonds grow each step; Step 4 = 2 large diamonds (Option B). $\Rightarrow$ **B**



Answer: (B) [Go Back to Q6](#)

7.

Solution

Concept — Series: Dual Rule (Rotation + Progressive Fill)

Identify the rule: Two simultaneous changes occur: (1) the arrow rotates 45° clockwise each step (Right $\rightarrow$ NE $\rightarrow$ Up $\rightarrow$ NW), and (2) the arrow fill darkens progressively (outline $\rightarrow$ outline $\rightarrow$ half-filled $\rightarrow$ fully filled).

Apply the rule: Step 4 = 45° CW from Up = NW direction AND fully filled. Option C shows a solid filled arrow pointing upper-left (NW).

Why other options are wrong:

- Option A: Outline arrow pointing Right — wrong direction and wrong fill level.
- Option B: Half-filled arrow pointing Right — wrong direction.
- Option D: Outline arrow pointing NW — correct direction but wrong fill (should be fully filled).

Final Answer: Step 4 = fully-filled arrow pointing NW (Option C). $\Rightarrow$ **C**

Answer: (C) [Go Back to Q7](#)

8.

Solution

Concept — Series: Increasing Concentric Circles

Identify the rule: One concentric circle is added per step: Step 1 = 1 circle, Step 2 = 2 concentric circles, Step 3 = 3 concentric circles.

Apply the rule: Step 4 requires 4 concentric circles. Option D shows 4 evenly spaced concentric circles.

Why other options are wrong:

- Option A: 2 concentric — matches Step 2.
- Option B: 3 concentric — matches Step 3.



- Option C: 5 concentric — overshoots the pattern by one.

Final Answer: One circle is added per step; Step 4 = 4 concentric circles (Option D). $\Rightarrow$

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

9.

Solution

Concept — Series: Clockwise Corner Movement

Identify the rule: A filled dot moves clockwise from corner to corner inside a square: Step 1 = top-left, Step 2 = top-right, Step 3 = bottom-right.

Apply the rule: The next clockwise corner from bottom-right is bottom-left. Option A shows the dot at the bottom-left corner.

Why other options are wrong:

- Option B: Dot at top-left — matches Step 1, already visited.
- Option C: Dot at top-right — matches Step 2, already visited.
- Option D: Dot at center — not part of the corner-to-corner clockwise pattern.

Final Answer: Dot moves CW: top-left $\rightarrow$ top-right $\rightarrow$ bottom-right $\rightarrow$ bottom-left (Option A). $\Rightarrow$

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



10.

Solution**Concept — Series: Increasing Polygon Sides**

Identify the rule: The number of sides of the polygon increases by 1 each step: Step 1 = triangle (3 sides), Step 2 = square (4 sides), Step 3 = pentagon (5 sides).

Apply the rule: Step 4 requires a 6-sided polygon: a regular hexagon. Option B shows a regular hexagon.

Why other options are wrong:

- Option A: Pentagon — matches Step 3 (5 sides).
- Option C: Circle — has infinite sides, skips the pattern.
- Option D: Heptagon (7 sides) — skips the hexagon step.

Final Answer: Sides increase by 1 per step; Step 4 = hexagon (Option B). ⇒ **B**

Answer: (B) [Go Back to Q10](#)

11.

Solution**Concept — Analogy: Internal Line Rotation 90° CW**

Identify the rule: The line drawn inside the shape rotates 90° clockwise: FigA (circle + horizontal line) → FigB (circle + vertical line). The same rotation must apply to FigC (square + diagonal '/') to give the answer.

Apply the rule: A forward-slash diagonal '/' rotated 90° CW becomes a backslash diagonal '\'. The answer must show a square with a '\' diagonal. Option C matches.

Why other options are wrong:

- Option A: Square + '/' diagonal — same as FigC, no rotation applied.
- Option B: Circle + horizontal line — uses wrong outer shape (circle instead of square).
- Option D: Plain square with no line — inner element removed, not rotated.

Final Answer: Line rotates 90° CW; square + '/' becomes square + '\' (Option C). ⇒ **C**

Answer: (C) [Go Back to Q11](#)



12.

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

Identify the rule: Each figure in the second position is the left-right mirror image of the first: the notch/bump on the left moves to the right side. FigA (square, notch left) → FigB (square, notch right); FigC (rectangle, bump left) → ? (rectangle, bump right).

Apply the rule: The rectangle with a triangle bump on the right side is the correct mirror. Option D shows this.

Why other options are wrong:

- Option A: Rectangle with bump on top — vertical displacement, not a left-right mirror.
- Option B: Rectangle with bump on left — same as FigC, no reflection applied.
- Option C: Plain rectangle — bump is removed entirely, not reflected.

Final Answer: Left-right reflection moves bump from left to right (Option D). ⇒

D

Answer: (D)

[Go Back to Q12](#)

13.

Solution**Concept — Analogy: Adding a Cross Symbol**

Identify the rule: A '+' (cross) symbol is added inside the shape: FigA (plain square) → FigB (square with + inside). The same transformation must be applied to FigC (plain circle) to find the missing figure.

Apply the rule: FigC (circle) with a cross (+) added inside gives a circle with horizontal and vertical lines through its center. Option A shows this.

Why other options are wrong:

- Option B: Circle with a single dot — dot added instead of cross.
- Option C: Circle with X shape — diagonal cross, not a + cross.
- Option D: Plain circle — no element added.



Final Answer: Cross (+) is added inside circle (Option A). $\Rightarrow$ A

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

14.

Solution

Concept — Analogy: Removing the Inner Element

Identify the rule: The inner element is removed while the outer shape is retained: FigA (diamond + inner circle) $\rightarrow$ FigB (diamond only). Apply the same rule to FigC (pentagon + inner star) to get the answer.

Apply the rule: Removing the inner star from the pentagon leaves a plain pentagon. Option B shows just the pentagon with nothing inside.

Why other options are wrong:

- Option A: Small star only — outer shape removed instead of inner element.
- Option C: Pentagon + larger star — inner element enlarged instead of removed.
- Option D: Pentagon + small circle — wrong inner element substituted.

Final Answer: Inner element removed; only plain pentagon remains (Option B). $\Rightarrow$ B

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



15.

Solution**Concept — Analogy: Doubling the Shape Size**

Identify the rule: The shape doubles in size while keeping the same form: FigA (small hexagon, $r \approx 0.25$) $\rightarrow$ FigB (large hexagon, $r \approx 0.50$). The same doubling must be applied to FigC (small 4-pointed star, arm ≈ 0.20).

Apply the rule: Doubling the star gives a large 4-pointed star with arm length ≈ 0.45 . Option C shows the correct large star that fits within the frame.

Why other options are wrong:

- Option A: Tiny star — smaller than FigC, not doubled.
- Option B: Medium star — increased but not doubled from the original.
- Option D: Extra-huge star extending beyond the frame — exceeds the doubling ratio.

Final Answer: Shape doubles in size; small star $\rightarrow$ large star (Option C). $\Rightarrow$ C

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

16.

Solution**Concept — Analogy: Solid Fill to Outline Conversion**

Identify the rule: A solid/filled shape transforms into the same shape as an outline only: FigA (solid black circle) $\rightarrow$ FigB (outline circle). Apply the same transformation to FigC (solid black triangle).

Apply the rule: The solid triangle becomes an outline (empty) triangle. Option D shows an outline triangle with no fill.

Why other options are wrong:

- Option A: Solid circle — same as FigA, wrong shape and wrong transformation.
- Option B: Solid triangle — same as FigC, fill not removed.
- Option C: Outline circle — correct transformation but wrong shape (circle instead of triangle).



Final Answer: Solid triangle $\rightarrow$ outline triangle (Option D). $\Rightarrow$ D

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

17.

Solution

Concept — Analogy: Large Filled to Small Outline

Identify the rule: Two simultaneous changes occur: size decreases (large $\rightarrow$ small) AND fill is removed (filled $\rightarrow$ outline): FigA (large filled circle, $r \approx 0.55$) $\rightarrow$ FigB (small outline circle, $r \approx 0.20$). Apply this to FigC (large filled square, side ≈ 0.9).

Apply the rule: The result must be a small outline square (side ≈ 0.35) with no fill. Option A shows exactly this.

Why other options are wrong:

- Option B: Large filled square — same as FigC, no transformation applied.
- Option C: Small filled square — size reduced but fill not removed.
- Option D: Large outline square — fill removed but size not reduced.

Final Answer: Large filled square $\rightarrow$ small outline square (Option A). $\Rightarrow$ A

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



18.

Solution**Concept — Odd One Out: Number of Sides**

Identify the rule: Three of the four figures share a common property. Options A, C, and D are all quadrilaterals (4-sided shapes): square, rectangle, and rhombus. Option B is a triangle (3 sides).

Apply the rule: The triangle has 3 sides whereas all others have 4 sides, making it the odd one out.

Why other options are wrong:

- Option A: Square — 4 sides, belongs to the group.
- Option C: Rectangle — 4 sides, belongs to the group.
- Option D: Rhombus — 4 sides, belongs to the group.

Final Answer: Triangle (3 sides) is the odd one out among quadrilaterals (Option B). $\Rightarrow$ **B**

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

19.

Solution**Concept — Odd One Out: Curved vs Angular**

Identify the rule: Three figures are curved/round shapes and one is angular. Options A (circle), B (wide oval), and D (narrow ellipse) all have curved boundaries. Option C is an equilateral triangle with straight sides and sharp corners.

Apply the rule: The triangle is the only angular shape among round figures, making it the odd one out.

Why other options are wrong:

- Option A: Circle — perfectly round, belongs to the group.
- Option B: Wide oval/ellipse — curved, belongs to the group.
- Option D: Narrow vertical ellipse — curved, belongs to the group.

Final Answer: Triangle is angular while others are curved (Option C). $\Rightarrow$ **C**

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



20.

Solution**Concept — Odd One Out: Half-Filled vs Empty**

Identify the rule: Three figures are shapes with one half filled (partial shading): Option A (half-filled circle, left half shaded), B (half-filled square, left half shaded), and C (half-filled triangle, bottom half shaded). Option D is a completely empty outline circle with no shading.

Apply the rule: Option D has no fill at all and does not share the partial-fill property of the other three.

Why other options are wrong:

- Option A: Half-filled circle — has partial shading, belongs to the group.
- Option B: Half-filled square — has partial shading, belongs to the group.
- Option C: Half-filled triangle — has partial shading, belongs to the group.

Final Answer: Completely empty outline circle is odd among half-filled shapes (Option D). ⇒ D

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

21.

Solution**Concept — Odd One Out: Triangle Orientation**

Identify the rule: Options B, C, and D all show triangles pointing upward (apex at top). Option A shows a triangle pointing to the right (apex at right, base on the left).

Apply the rule: The rightward-pointing triangle does not share the upward-pointing orientation of the group.

Why other options are wrong:

- Option B: Large upward triangle — belongs to the group.
- Option C: Medium upward triangle — belongs to the group.
- Option D: Large upward triangle (slightly different proportions) — belongs to the group.



Final Answer: Rightward-pointing triangle is odd among upward-pointing triangles (Option A). $\Rightarrow$ **A**

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

22.

Solution

Concept — Odd One Out: Count of Inner Dots

Identify the rule: Options A (square), C (circle), and D (triangle) each contain exactly 2 small dots inside. Option B (square) contains 3 dots inside.

Apply the rule: Option B has 3 inner dots while all others have 2, making it the odd one out regardless of outer shape differences.

Why other options are wrong:

- Option A: Square with 2 dots — matches the group's dot count.
- Option C: Circle with 2 dots — matches the group's dot count.
- Option D: Triangle with 2 dots — matches the group's dot count.

Final Answer: 3 inner dots makes Option B odd among 2-dot figures. $\Rightarrow$ **B**

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

23.

Solution

Concept — Matrix: Shape Type $\times$ Size

Identify the rule: The matrix has two simultaneous rules: columns determine shape type (Col 1 = circles, Col 2 = squares, Col 3 = triangles) and rows determine size (Row 1 = large, Row 2 = medium, Row 3 = small). All shapes are outlines.

Apply the rule: Cell (3,3) is at Column 3 (triangles) and Row 3 (small), so the missing figure is a small outline triangle. Option C shows exactly this.

Why other options are wrong:

- Option A: Large outline triangle — correct shape but wrong size (Row 1



size).

- Option B: Medium outline circle — correct size but wrong shape (Col 1 shape).
- Option D: Small outline square — correct size but wrong shape (Col 2 shape).

Final Answer: Col 3 = triangle, Row 3 = small; missing = small outline triangle (Option C). $\Rightarrow$ C

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

24.

Solution

Concept — Matrix: Rotation $\times$ Fill Level

Identify the rule: Columns control arrow direction (Col 1 = right/ 0° , Col 2 = down/ 90° CW, Col 3 = left/ 180°). Rows control fill level (Row 1 = outline/empty, Row 2 = gray/half-filled, Row 3 = solid black/fully filled).

Apply the rule: Cell (3,3) is Column 3 (pointing left, 180°) and Row 3 (fully filled/solid black). The missing figure is a solid black arrow pointing left. Option D matches precisely.

Why other options are wrong:

- Option A: Outline arrow pointing right — wrong direction (Col 1) and wrong fill (Row 1).
- Option B: Gray arrow pointing down — wrong direction (Col 2) and wrong fill (Row 2).
- Option C: Outline arrow pointing left — correct direction but wrong fill (Row 1 instead of Row 3).

Final Answer: Col 3 + Row 3 = solid black arrow pointing left (Option D). $\Rightarrow$ D

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



25.

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

Identify the rule: A left-right mirror image flips the figure horizontally about the vertical axis. The original F-shape has its vertical bar on the left with two horizontal bars extending to the right. After reflection, the vertical bar moves to the right and the horizontal bars extend to the left.

Apply the rule: Option A shows the vertical bar on the right side with horizontal bars extending leftward — this is the correct mirror image.

Why other options are wrong:

- Option B: Vertical bar on left, bars at bottom — this is a vertical (top-bottom) flip, not a left-right mirror.
- Option C: Vertical bar on left, bars extending right — this is the original figure, not its mirror.
- Option D: F rotated 90° CW — this is a rotation, not a reflection; the geometry is different.

Final Answer: Correct left-right mirror has vertical bar on right, bars extend left (Option A). $\Rightarrow$

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



Answer Key

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

