SPATIAL REASONING ASSESSMENT 1

Section 1 — 2D Views of 3D Shapes

Each of these questions has a 3D figure on the left, made out of cubes.
Work out which of the five options is a top-down 2D view of the 3D figure on the left.

Example:

a   b   c   d   e

Answer: c

①

a   b   c   d   e

②

a   b   c   d   e

③

a   b   c   d   e

④

a   b   c   d   e

⑤

a   b   c   d   e

⑥

a   b   c   d   e

⑦

a   b   c   d   e

⑧

a   b   c   d   e
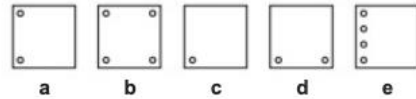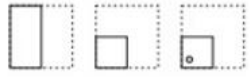
Carry on to the next question → →
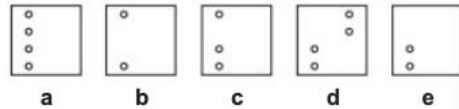
Section 2 — Fold and Punch

Each of these questions shows a square of paper being folded several times. A hole is then punched in the folded piece of paper. Work out which of the five options shows what the piece of paper would look like if it was unfolded.
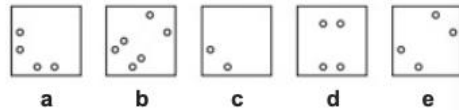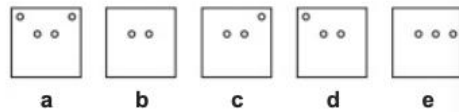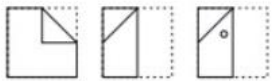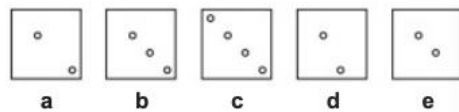
Example:

Answer: b

1

a　b　c　d　e

2

a　b　c　d　e

3

a　b　c　d　e

4

a　b　c　d　e

5

a　b　c　d　e

6

a　b　c　d　e

7

a　b　c　d　e

8

a　b　c　d　e

9

a　b　c　d　e

10

a　b　c　d　e
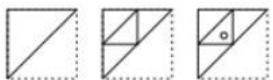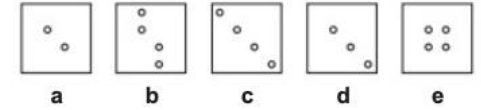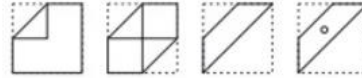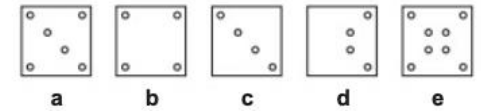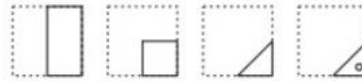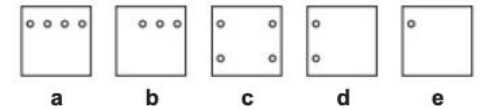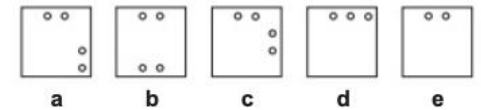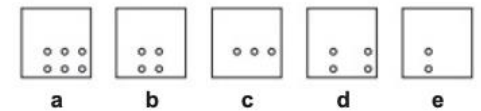
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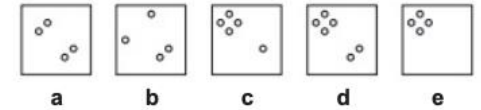
Section 3 — 3D Rotation

Work out which 3D figure in the grey box has been rotated to make the new 3D figure.

Example:

a

b

Answer: b

a

b

c

d

e

f

1

a	d
b	e
c	f

2

a	d
b	e
c	f

3

a	d
b	e
c	f

4

a	d
b	e
c	f

5

a	d
b	e
c	f

6

a	d
b	e
c	f

7

a	d
b	e
c	f

8

a	d
b	e
c	f

9

a	d
b	e
c	f

10

a	d
b	e
c	f

/ 10

Carry on to the next question
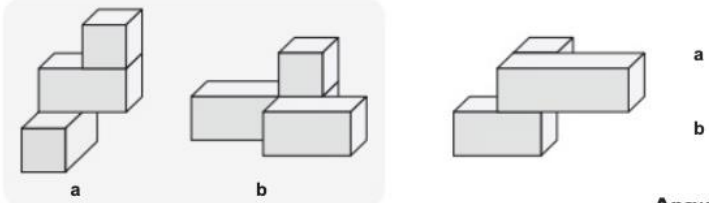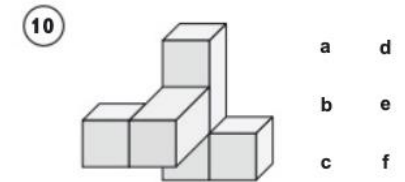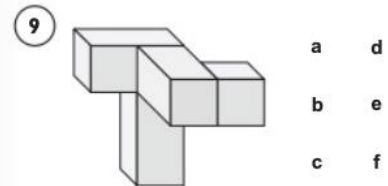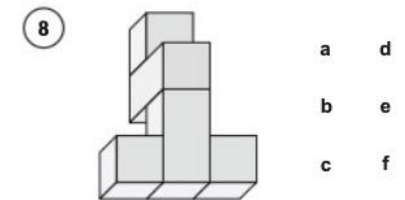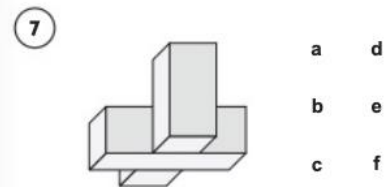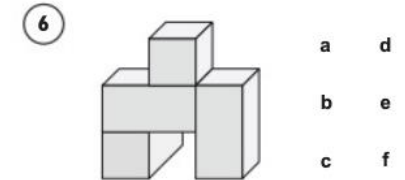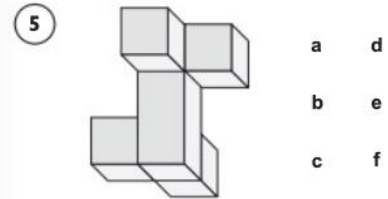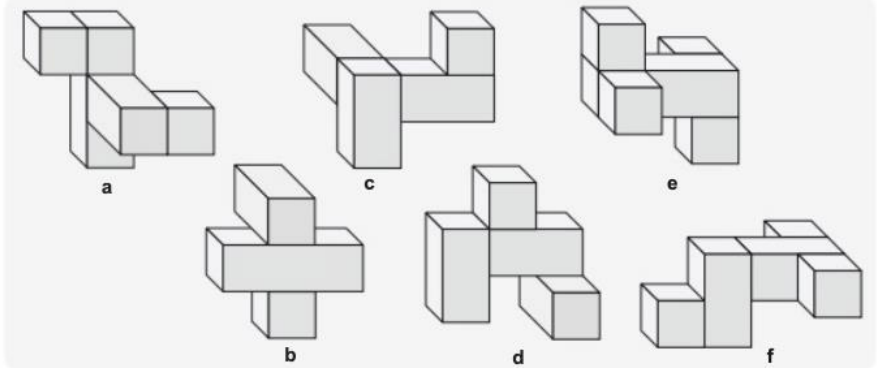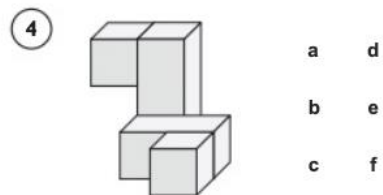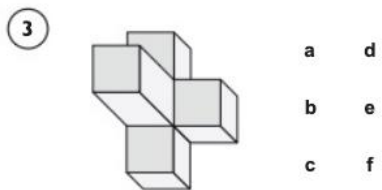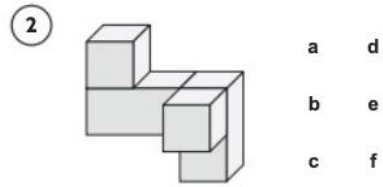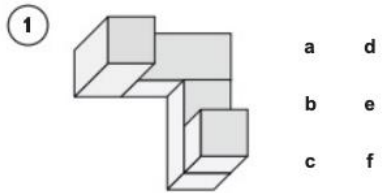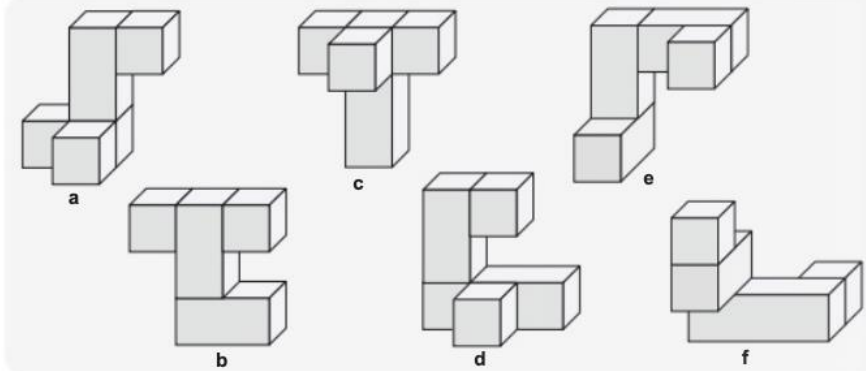
Section 4 — Cubes and Nets

Each of these questions has a net on the left.
Find which of the five cubes on the right can be made by folding up the net.

Example:

a   b   c   d   e

Answer: c

1

a   b   c   d   e

2

a   b   c   d   e

3

a   b   c   d   e

4

a   b   c   d   e

5

a   b   c   d   e

6

a   b   c   d   e

7

a   b   c   d   e

8

a   b   c   d   e
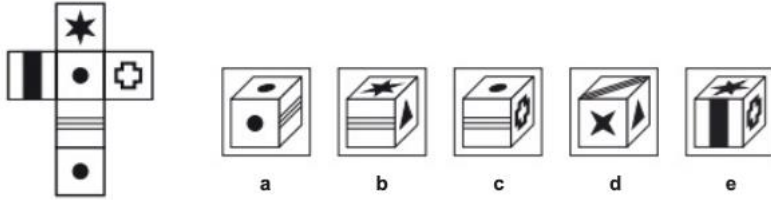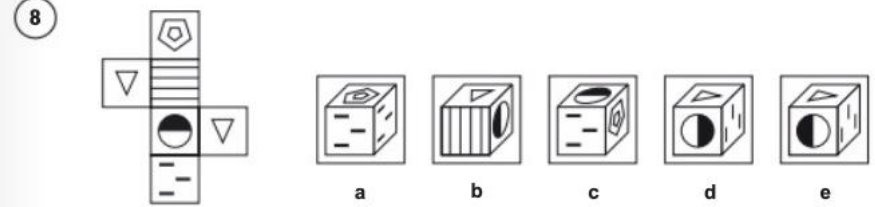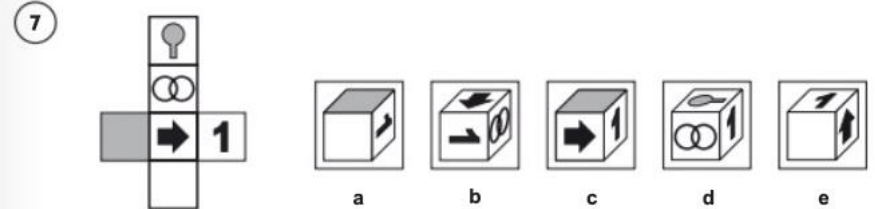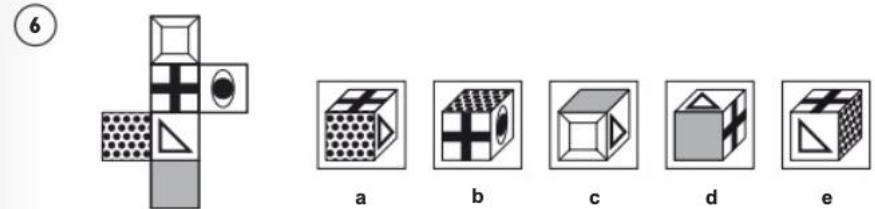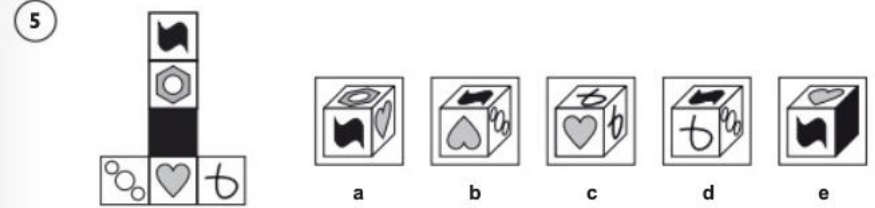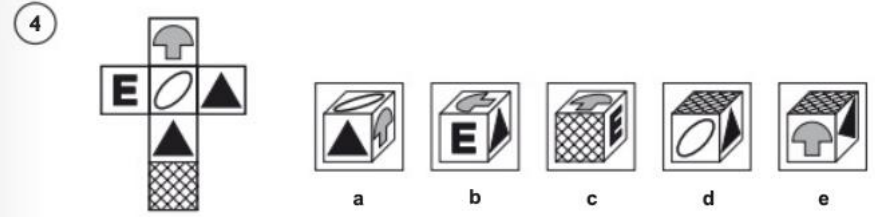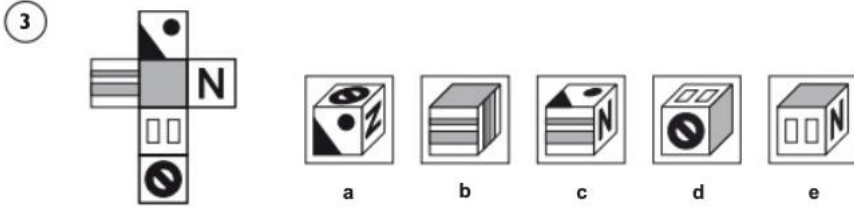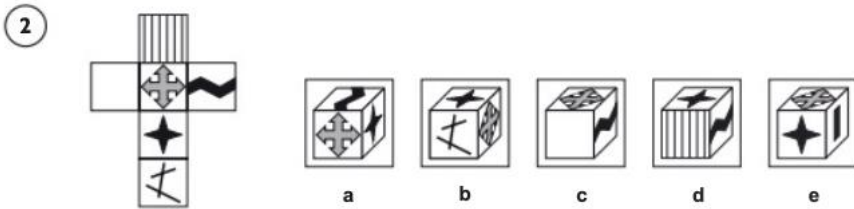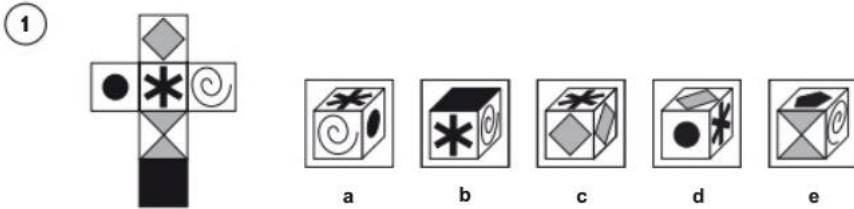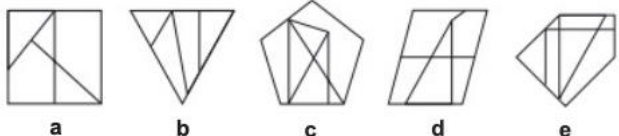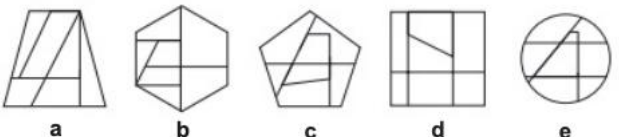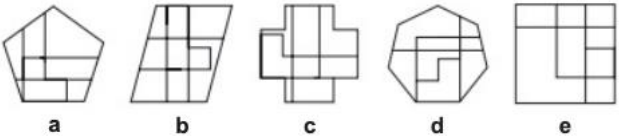
Section 5 — Hidden Shape
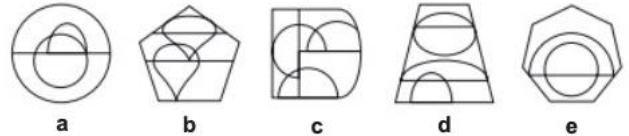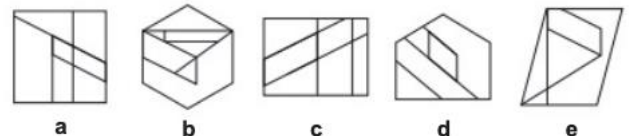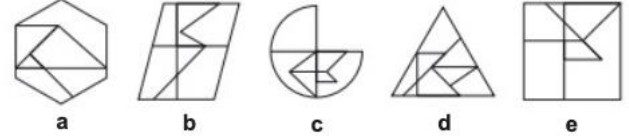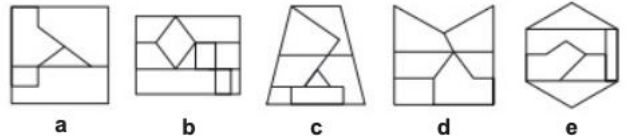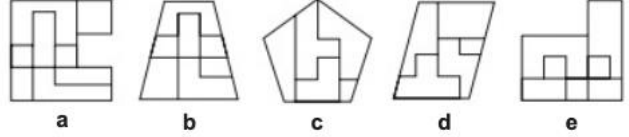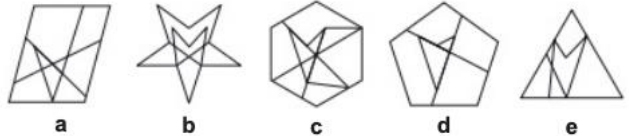
Each of these questions has a single shape on the left.
This shape can be found in one of the five figures on the right.
The shape must be the same size and orientation.
Find which of the five figures contains the shape.

Example:

a   b   c   d   e

Answer: d

① a b c d e

② a b c d e

③ a b c d e

④ a b c d e

⑤ a b c d e

⑥ a b c d e

⑦ a b c d e

⑧ a b c d e

⑨ a b c d e

⑩ a b c d e

Section 6 — Connecting Shapes

Each of these questions has three shapes on the left. Some of their sides are labelled with a letter. Choose the option which shows how the shapes would look if they were joined together so that sides with the same letter are touching.

Example:
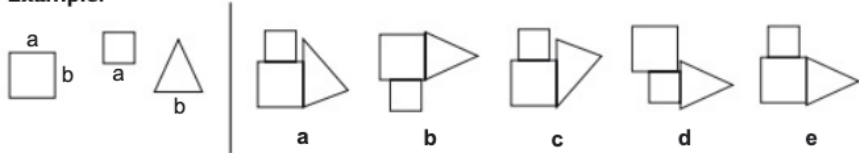
Answer: e

1

2

3

4

5

6

7

8

9

10

/ 10   Total   / 56
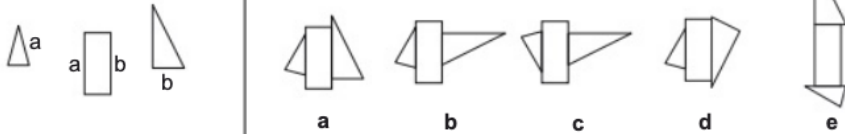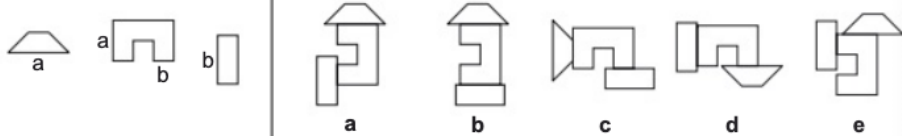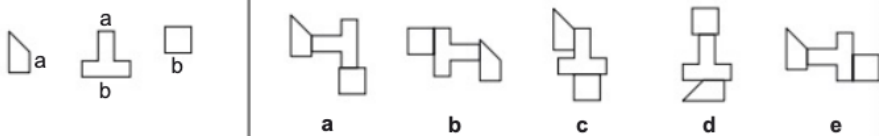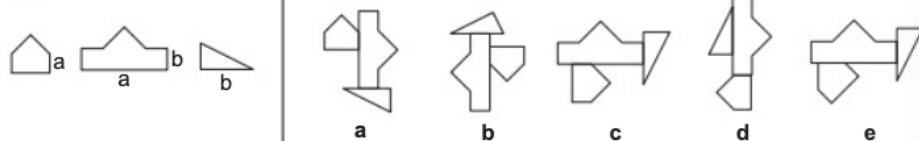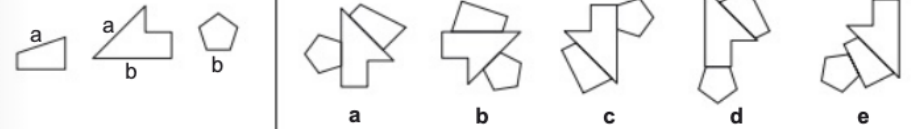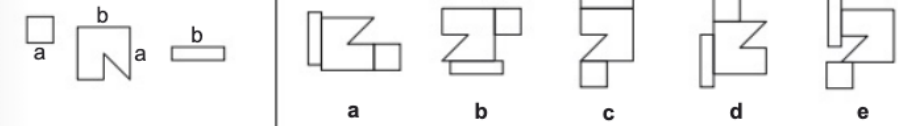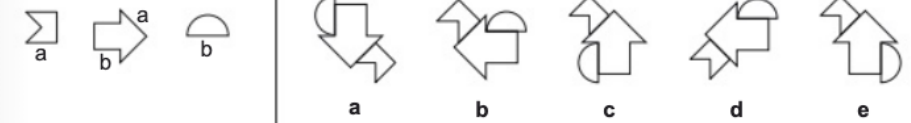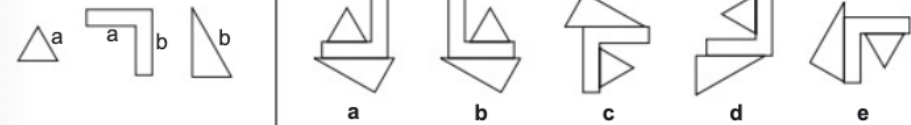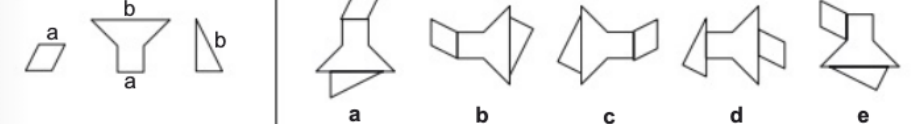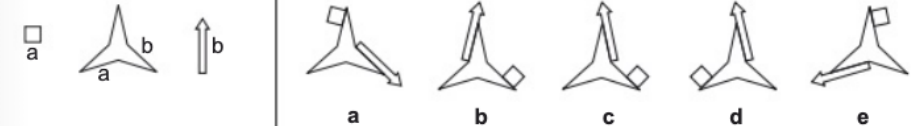
Assessment Test 6

Section 1 — 2D Views of 3D Shapes

1) C
There are three blocks on the left-hand side of the figure, which rules out options A, B, D and E.

2) D
There are only five blocks visible from above, which rules out options A and B. The block on the right does not have any blocks next to its sides, which rules out options C and E.

3) B
There are only five blocks visible from above, which rules out options A and D. There is only one block visible on the left-hand side, which rules out options C and E.

4) C
There are only five blocks visible from above, which rules out options A, B and D. There are two blocks visible on the right-hand side, which rules out option E.

5) E
There are only four blocks visible from above, which rules out options A, B and D. There are only two blocks visible at the front, which rules out option C.

6) B
There are six blocks visible from above, which rules out options C, D and E. There are three blocks visible on the right-hand side, which rules out option A.

7) B
There are only six blocks visible from above, which rules out options A, C and D. There are only three blocks visible on the right-hand side, which rules out option E.

8) D
There are only seven blocks visible from above, which rules out option A. There are four blocks visible on the right-hand side, which rules out options B and C. There are two blocks visible at the back, which rules out option E.

Section 2 — Fold and Punch

1) A

2) E

3) C

4) B

5) C

6) E

7) D

8) C

9) A

10) D
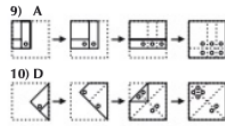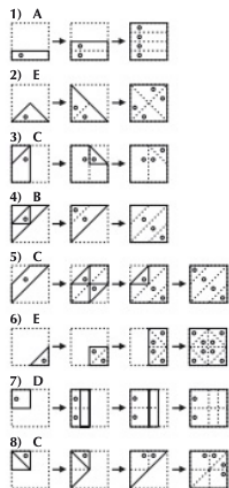
Section 3 — 3D Rotation

1) E
Shape E has been rotated 90 degrees clockwise in the plane of the page.

2) A
Shape A has been rotated 90 degrees anticlockwise in the plane of the page.

3) C
Shape C has been rotated 90 degrees away from you, top-to-bottom. It has then been rotated 90 degrees clockwise in the plane of the page.

4) F
Shape F has been rotated 90 degrees anticlockwise in the plane of the page. It has then been rotated 90 degrees left-to-right.

5) E
Shape E has been rotated 90 degrees clockwise in the plane of the page.

6) D
Shape D has been rotated 180 degrees left-to-right.

7) B
Shape B has been rotated 90 degrees towards you, top-to-bottom.

8) F
Shape F has been rotated 90 degrees towards you, top-to-bottom. It has then been rotated 90 degrees clockwise in the plane of the page.

9) C
Shape C has been rotated 90 degrees away from you, top-to-bottom. It has then been rotated 90 degrees right-to-left.

10) A
Shape A has been rotated 180 degrees in the plane of the page.

Section 4 — Cubes and Nets

1) D
Option A is ruled out because the cube face with the spiral and the cube face with the black dot must be on opposite sides. Option B is ruled out because the cube face with the star and the black cube face must be on opposite sides. Option C is ruled out because the net doesn't have two identical faces. Option E is ruled out because there is no black pentagon on the net.

2) A
Option B is ruled out because the cube face with the three thin lines and the cube face with the four-way arrow must be on opposite sides. Option C is ruled out because the white cube face and the cube face with the black zig-zag must be on opposite sides. Option D is ruled out because the cube face with the thin lines and the cube face with the star must be on opposite sides. Option E is ruled out because there is no black rectangle on the net.

3) A
Option B is ruled out because the net doesn't have two identical faces. Option C is ruled out because the cube face with the letter N and the cube face with the grey bars must be on opposite sides. Option D is ruled out because the grey cube face and the cube face with the circle with a line through it must be on opposite sides. Option E is ruled out because the letter N has the wrong rotation.

4) E
Option A is ruled out because the face with the ellipse is never above the 'top' of the grey mushroom shape. Option B is ruled out because the black triangle should be opposite either the face with the letter E or the grey mushroom shape, so these three faces cannot be seen together. Option C is ruled out because the grey mushroom shape has the wrong rotation. Option D is ruled out because the ellipse and the hatched face must be on opposite sides.

5) B
Option A is ruled out because the face with the heart and the face with the hexagon and circle must be on opposite sides. Option C is ruled out because the net doesn't have two identical faces. Option D is ruled out because the cube face with the three circles and the cube face with the loop must be on opposite sides. Option E is ruled out because the face with the curved black shape and the black face must be on opposite sides.

6) A
Option B is ruled out because the dotted cube face and the cube face with the eye shape must be on opposite sides. Option C is ruled out because the cube face with the triangle and the cube face with the square in the middle must be on opposite sides. Option D is ruled out because the grey cube face and the cube face with the cross must be on opposite sides. Option E is ruled out because if the face with the triangle is on the front and the face with the cross is on the top, then the face with the eye shape should be on the right.

7) B
Options A and C are ruled out because the grey cube face and the cube face with the number 1 must be on opposite sides. Option D is ruled out because the 'handle' of the racquet shape must point towards the cube face with the overlapping circles. Option E is ruled out because if the white face is on the front and the number 1 is on the top, then the black arrow would be on the left.

8) E
Option A is ruled out because the face with the three short black lines does not appear twice on the net. Option B is ruled out because the face with the triangle has the wrong rotation. Option C is ruled out because the face with the circle and the face with the two pentagons should be on opposite sides. Option D is ruled out because the white half of circle must be closest to the cube face with three short lines.

Section 5 — Hidden Shape

1) E

2) B

3) E

4) A

5) C

6) B

7) A

8) B

9) E

10) C
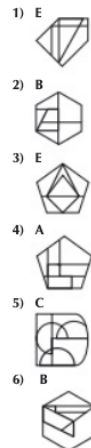
Section 6 — Connecting Shapes

1) B
Options A and D are ruled out because the wrong side of the larger triangle is connected to the rectangle. Option C is ruled out because the wrong side of the small triangle is connected to the rectangle. Option E is ruled out because both triangles are connected to the wrong sides of the rectangle.

2) A
Options B and E are ruled out because the rectangle is connected to the wrong side of the C-shape. Option C is ruled out because the wrong side of the trapezium is connected to the C-shape. Option D is ruled out because the rectangle and the trapezium are connected to the wrong sides of the C-shape.

3) E
Option A is ruled out because the square is connected to the wrong side of the T-shape. Option B is ruled out because the wrong side of the trapezium is connected to the T-shape. Option C is ruled out because the trapezium is connected to the wrong side of the T-shape. Option D is ruled out because the square and the trapezium are connected to the wrong sides of the T-shape.

4) A
Option B is ruled out because the wrong side of the triangle is connected to the large shape. Options C and E are ruled out because the wrong side of the five-sided shape is connected to the large shape. Option D is ruled out because the five-sided shape and the triangle are connected to the wrong sides of the large shape.

5) C
Option A is ruled out because the wrong side of the trapezium is connected to the arrow shape. Option B is ruled out because the trapezium and the pentagon are connected to the wrong sides of the arrow shape. Option D is ruled out because the pentagon is connected to the wrong side of the arrow shape. Option E is ruled out because the pentagon should be connected to the arrow shape.

6) D
Option A is ruled out because the square is connected to the wrong side of the large shape. Option B is ruled out because the square and the rectangle are connected to the wrong sides of the large shape. Options C and E are ruled out because the rectangle is connected to the wrong side of the large shape.

7) E
Options A and D are ruled out because the wrong side of the five-sided shape is connected to the arrow. Option B is ruled out because the five-sided shape is connected to the wrong side of the arrow. Option C is ruled out because the semi-circle is connected to the wrong side of the arrow.

8) C
Option A is ruled out because the small triangle is connected to the wrong side of the L-shape. Option B is ruled out because the large triangle is connected to the wrong side of the L-shape. Option D is ruled out because the wrong side of the large triangle is connected to the L-shape. Option E is ruled out because both triangles are connected to the wrong sides of the L-shape.

9) B
Option A is ruled out because the wrong side of the triangle is connected to the large shape. Option C is ruled out because the wrong side of the parallelogram is connected to the large shape. Option D is ruled out because the triangle and the parallelogram are connected to the wrong sides of the large shape. Option E is ruled out because the parallelogram is connected to the wrong side of the large shape.

10) B
Options A and C are ruled out because the arrow is connected to the wrong side of the star shape. Option D is ruled out because the square and the arrow are connected to the wrong sides of the star shape. Option E is ruled out because the square is connected to the wrong side of the star shape.