

Answers

Extended answers for 11+ Non-verbal Reasoning Practice and Test for GL Assessment Ages 9–10

Series (pp6–8)

1	C	Two small lines are added in a clockwise direction.
2	B	The triangle alternates between the left edge and the top edge. A short line is added each time, alternating between horizontal and vertical to form + symbols.
3	E	The triangle moves clockwise, alternating between black and white. The line remains horizontal throughout.
4	A	The arrow moves 45° anticlockwise each time.
5	B	The short line gradually moves down the diagonal line.
6	D	This is a three-part repeating series: small shape, medium shape, large shape. The shape is always in the same orientation.
7	A	The shape rotates 90° clockwise.
8	C	One extra triangle is added. The arrangement of the triangles is not important.
9	E	An alternating series. One triangle is removed, then two, then one, etc.
10	A	The small shapes move one position anticlockwise.
11	C	The overall shape rotates 90° anticlockwise. The small circle alternates between black and white.
12	B	The number of equal-sized sections in the square is doubled each time.
13	D	Following on from the previous line, a new line is added in the direction indicated by the arrow in the previous square.
14	C	The circle size decreases while the shading gets darker.
15	E	Starting at the top and working down to the bottom, one small section of the vertical line moves from the left to the right.
16	B	The upside-down V shape decreases in size while the circle increases in size.

Analogies (pp9–11)

1	C	The first shape is rotated 90° clockwise. The line shading doesn't move with the shape and remains in its original orientation.
2	E	The number of dots inside the first shape indicate how many concentric shapes make the second shape.
3	B	The group of lines are used to form the shape. The quantity and length of the lines determine which shape can be made.
4	C	The dots in the first shape indicate where the central black shape should be added, in white, to make the second shape.
5	B	The first shape is reflected in a vertical line of symmetry to give the second shape.
6	D	The number of sides of the inner shape indicate how many x there should be in the second shape. The outer shape remains unchanged.
7	A	The top/bottom shape becomes the middle shape. The middle shape becomes the top and bottom shapes.
8	E	The shape is rotated 90° anticlockwise.
9	E	The triangles join together to make a regular polygon.
10	C	The shape is reflected in a horizontal line of symmetry.
11	B	The number of individual lines outside the first shape indicate how many times a smaller version of the first shape is repeated in the same orientation to create the second shape.
12	A	The two shapes together make a square with a 3 × 3 grid of dots inside it.
13	D	The line(s) at the bottom of the vertical line is/are moved to the top to create the second shape.

Like Figures (Two) (pp12–13)

1	D	Each shape is a circle that contains four small squares: two white, one with diagonal stripes and one black.
2	E	Each shape is a heart with an arrow pointing to the bottom left. The tail of the arrow is within the heart and the head of the arrow is outside of the heart.
3	B	Each shape is made up of two similar regular polygons, one inside the other. The inner shape outline is a solid line. The outer shape outline is a dashed line.
4	C	Each shape is made up of one large shape and two smaller, similar shapes that are positioned next to, but not touching, the larger shape.
5	E	Each shape is made up of three small protrusions at one end, with one larger, similar protrusion opposite.

6	A	Each shape has two straight lines: one with a black circle at either end and the other with an arrow head at one end.
7	B	Each shape is a large white shape overlapped by half of the same shape shaded in black.
8	C	Each shape has five small black dots connected by five lines.

Like Figures (Three) (pp14–15)

1	C	Each shape has a long line and a short line joined at one end. At the end of one line is an arrowhead and at the end of the other line is a small black or white circle.
2	E	Each shape is divided into quarters.
3	D	Each shape is made up of two identical overlapping shapes in the same orientation as each other. The overlapping section is also the same shape.
4	A	Each shape is made up of a tessellating group of shapes. The number of shapes in a group is equal to the number of sides that make up a single shape.
5	C	Each shape is made up of a curvy top, two vertical lines in the middle and one long straight line with a short line at each end underneath.
6	B	Each shape is a pentagon with two small black circles inside the pentagon and one small black circle on a vertex.
7	D	Each shape is made up of one large regular shape with two smaller similar shapes overlapping opposite edges with half inside and half outside the larger shape.
8	A	Each shape is a parallelogram split into equal-sized triangles. One triangle is black, one is white, one has stripes and one has spots.

Codes (In a Box) (pp16–17)

1	D	The upper letter indicates the shading – H means stripes. The lower letter indicates the shape – J means a circle.
2	B	The upper letter indicates the arrangement of the crosses – S means scattered. The lower letter indicates the number of crosses – V means five.
3	E	The upper letter indicates the outline style – X means a continuous line. The lower letter indicates the shape – L means a hexagon.
4	A	The upper letter indicates the position of the two black dots – O means in the top and bottom sections. The lower letter indicates the line shape – R means wavy.
5	C	The upper letter indicates the size of the circle – T means large. The lower letter indicates the direction of the line shading – Z means diagonal.
6	B	The upper letter indicates the number of lines – R means three. The lower letter indicates the position of the black circle – I means at the bottom.
7	C	The upper letter indicates the arrow direction – F means pointing up. The lower letter indicates the size of the arrowhead – U means small.
8	D	The upper letter indicates the position of the horizontal line – P means at the bottom. The lower letter indicates the type of line above the white circle – K means dotted.

Codes (Two and Three Letters) (pp18–19)

1	C	The first letter indicates the number of short lines between the two circles – M means four. The second letter indicates the shading of the inner circle – F means striped.
2	D	The first letter indicates the orientation of the circles – Y means vertical. The second letter indicates the quantity of circles – M means three.
3	B	The first letter indicates the shape at the top of the longest vertical line – I means an arrowhead. The second letter indicates the position of the longest vertical line – P means on the right.
4	D	The first letter indicates the orientation of the semicircle – S means diagonally top left to bottom right. The second letter indicates the positioning of the shading – L means white on the left and black on the right.
5	A	The first letter indicates the orientation of the two shapes – H means both with curved side pointing to the right. The second letter indicates the shading of the two small circles – P means both black.
6	C	The first letter indicates the outer shape – U means a triangle. The second letter indicates the number of crosses within the shape – H means three.
7	A	The first letter indicates the size of the square – S means small. The second letter indicates the shading of the square – K means black.
8	E	The first letter indicates the direction of the arrow – S means pointing to the right. The second letter indicates the style of the arrowhead – V means a triangular arrowhead. The third letter indicates the style of the arrow tail – W means a < or > shape.

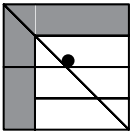
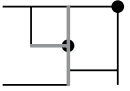
Odd One Out (pp20–22)


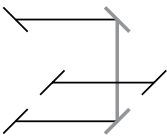
1	B	The shapes that belong have an arrow pointing into a shape. The odd one out has an arrow pointing out of a shape.
2	C	The shapes that belong have a small black or white circle where the two same-length lines meet. The odd one out has a small black circle at the opposite end of one of the same-length lines.
3	E	The shapes that belong have circles that contain two identical symbols in the same orientation. The odd one out has circles that contain two identical symbols in different orientations.
4	E	The shapes that belong have one fewer x than the number of sides of the outer shape. The odd one out has two fewer x than the number of sides of the pentagon.
5	A	The shapes that belong have stripes in one triangle that are parallel to one edge of the triangle. The odd one out has stripes in one triangle that are perpendicular to one edge of the triangle.
6	B	The shapes that belong have a line with an arrowhead at one end and a white circle at the other. The odd one out has a line with a short perpendicular line at one end and a white circle at the other.
7	C	The shapes that belong have four sides. The odd one out has five sides.
8	B	The shapes that belong are all the same shape, but are rotations of each other. The odd one out is a reflection of the other four shapes.
9	D	The shapes that belong have an identical size circle. The odd one out has a smaller circle.
10	E	The shapes that belong have three different ends on the lines. The odd one out has two ends the same.
11	A	The shapes that belong have a small white or black circle on the same corner of the triangle. The odd one out has a small black circle on the neighbouring corner of the triangle.
12	C	The shapes that belong have a small black square positioned inside the outer shape. The odd one out has a small black square overlapping the outer shape.
13	D	The shapes that belong have a circle or oval overlapping the shaded right-angled corner of the triangle. The odd one out has an oval overlapping a shaded acute-angled corner of the triangle.

Matrices (pp23–25)

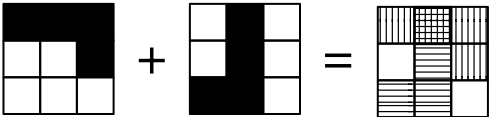
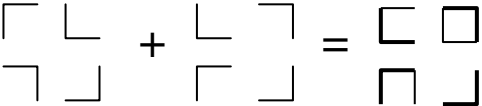
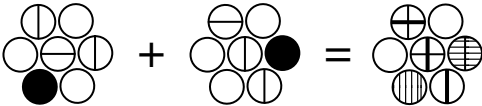
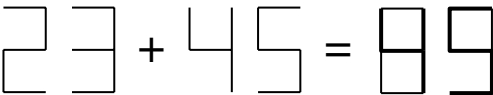
1	D	The shading in the diagonally opposite corners of each square is mirrored. The top row has triangles and the bottom row has semicircles.
2	D	In each row, the shape is reflected vertically.
3	B	In each column, the shape is reduced in size and shaded black.
4	E	In each row, the number of black dots equals the number of sides used to make the shape.
5	B	In each row, the shapes remain the same but the shading moves one shape clockwise.
6	D	In each column, the shape is reflected horizontally and the normal/heavy lines swapped.
7	A	The shapes in the left and right columns join together to make the shapes in the central column. Each row and column has one white, one grey and one black shape.
8	D	The nine squares create a symmetrical pattern. The missing square is a horizontal reflection of the top middle square.
9	E	The number of lines in the central column indicate how many matching copies of the shapes in the left column will appear in the right column.
10	C	The nine squares create a repeating pattern. The missing square is identical to the square at the top of the central column.
11	B	A line or shape is removed from each row moving from left to right across the columns.
12	C	In each row, the arrows point in one direction. In each row and each column there is one of each type of arrowhead.
13	C	In each column, the shapes in the top and bottom squares combine to make the shapes in the middle squares.

Merge Shapes (Hidden) (p26)

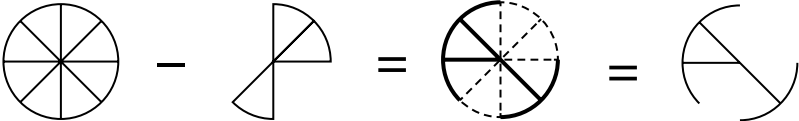
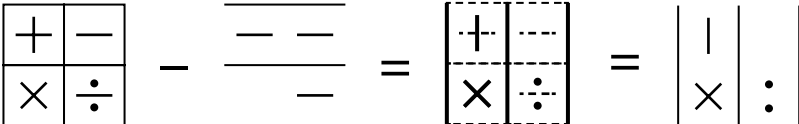
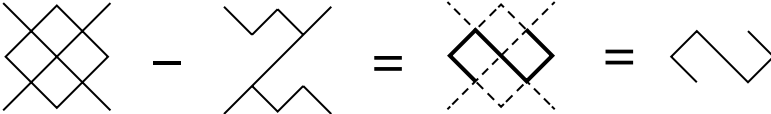
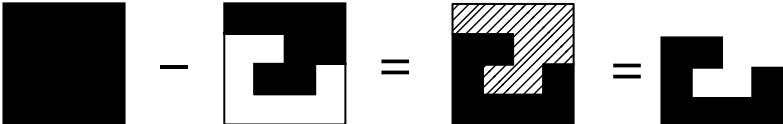
1	B	The hidden shape is shown with a thicker line in the answer diagram. 
2	C	The hidden shape is shown with a thicker line in the answer diagram. 

3	E	The hidden shape is shown with a thicker line in the answer diagram. 
4	A	The hidden shape is shown with a thicker line in the answer diagram. 

Merge Shapes (Addition) (p27)

1	E	The answer diagram uses vertical shading for the left-hand image and horizontal shading for the right-hand image. 
2	B	The answer diagram uses plain lines for the left-hand image and thick lines for the right-hand image or overlapping lines. 
3	C	The answer diagram uses plain lines and vertical shading for the left-hand image and thick lines and horizontal shading for the right-hand image. 
4	C	The answer diagram uses plain lines for the left-hand image and thick lines for the right-hand image or overlapping lines. 

Merge Shapes (Subtraction) (p28)

1	A	The answer diagram uses thick lines for the answer and dotted lines for what was subtracted. 
2	D	The answer diagram uses thick lines for the answer and dotted lines for what was subtracted. 
3	E	The answer diagram uses thick lines for the answer and dotted lines for what was subtracted. 
4	D	The answer diagram uses a solid fill for the answer and a shaded fill for what was subtracted. 

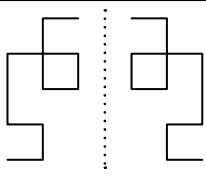
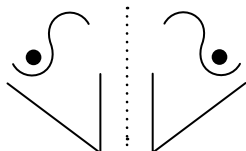
Cubes (Which Net?) (pp29–30)

1	B	The top of the N must meet the straight edge of the D. This only happens in B.
2	E	The edge of the black triangle must meet the hexagon. This rules out B, C and D. The three faces shown on the cube are in a straight line when net A is assembled, ruling it out.
3	C	Nets A and B are ruled out because the three faces shown on the cube are in a straight line when the nets are assembled. In D, the striped face is below the faces with the cross and black dot. The white circle is on the top face. In E, the black dot is on the opposite face to the cross.
4	D	Nets A, C and E are ruled out because the three faces shown on the cube are in a straight line when the nets are assembled. The + symbol cannot be next to the face with two circles on net B.
5	E	Nets A and D are ruled out because the three faces shown on the cube are in a straight line when the nets are assembled. The face with two lines forming a right angle are not next to the face with the black rectangle on net B when assembled. On net C the black rectangle is incorrectly oriented alongside the face with two lines forming a right angle.
6	A	Nets B, C, D and E are ruled out because the three faces shown on the cube are in a straight line when the nets are assembled.
7	C	Nets A and B are ruled out because the three dots are incorrectly positioned alongside the face with a T on it. On net D, the face with the X is not next to the face with the T when assembled. On net E, the face with the X is on the wrong side of the face with the T.
8	E	Net A is ruled out because the 3 cannot be next to the 9 and net C is ruled out because the 3 cannot be next to the 1. On nets B and D the face with the 6 is on the wrong side of the face with the 3.

Cubes (Which Cube?) (pp31–32)

1	B	Cubes A and D are ruled out because the faces with the concentric circles and squares cannot be next to each other. Cubes C and E are ruled out because the small black square and the large black circle cannot be next to each other.
2	D	Cubes A and C are ruled out because the large + and the face with two diagonal parallel lines cannot be next to each other. Cube B is ruled out because the black face and the spiral cannot be next to each other. Cube E is ruled out because the white square and two parallel lines are on the wrong side of each other.
3	A	Cube C is ruled out because the vertical lines are on the opposite face to the diagonal lines. Cube B is ruled out because the straight lines are on the opposite face the the diagonal lines. Cube D cannot be made because the net has the triangle on the wrong side of the two other visible faces. Cube E cannot be made because when ÷ is in the position shown on the cube, the straight lines are not on top.
4	E	Cube A cannot be made because the face with the three parallel lines cannot be next to the face with the white circle. Cube B is ruled out because the black semicircle is on the wrong side of the two other visible faces and is in the wrong orientation. The small black circle and black semicircle shown on cube C cannot be next to each other. Cube D is ruled out because the black and white chequerboard face and the face with the white square cannot be next to each other.
5	D	Cubes A and E are ruled out because the half-black, half-white face and the face with the W cannot be next to each other. On cube B, the orientation of the half-black, half-white face is incorrect. Cube C shows the top of the W symbol facing the diagonal line, which is not possible.
6	C	Cubes A and E are ruled out because the black stripe and question mark faces are incorrectly oriented relative to each other. Cubes B and D cannot be made because the □ shape is incorrectly oriented relative to the face with the black stripe and the face with four black spots respectively.
7	B	Cubes A and E are ruled out because the symbols on the three visible faces are in a straight line when the net is assembled. The orientation of the top face on cube C is incorrect relative to the two other visible faces. Cube D cannot be made because the arrow on the net is pointing away from the face with two pairs of parallel lines.
8	E	Cubes A and C cannot be made because the face with the three circles is incorrectly positioned and/or oriented relative to the other faces. Cubes B and D are ruled out because the V shape is incorrectly positioned and/or oriented relative to other faces.

Reflections (p33)

1	D	
2	C	

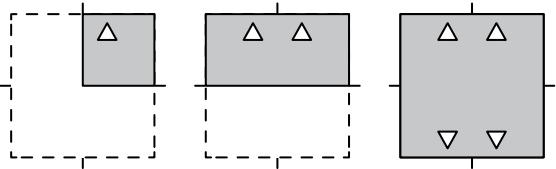
3	B	
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Rotations (p34)

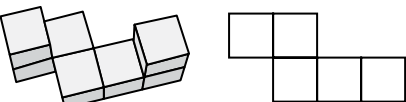
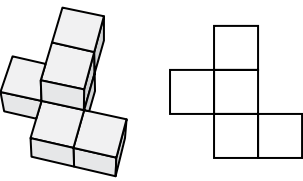
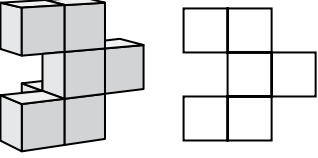
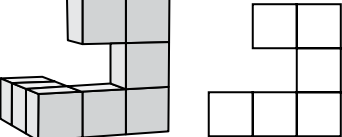
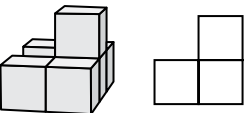
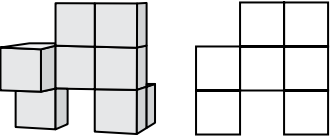
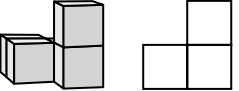
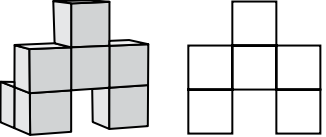
1	E	
2	A	
3	D	
4	B	

Folding and Punching (p35–36)

1	B	
2	D	
3	B	
4	A	
5	E	

6	C	
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3D Shapes (pp37–38)

1	C	
2	A	
3	B	
4	B	
5	D	
6	E	
7	C	
8	A	

Practice Test 1

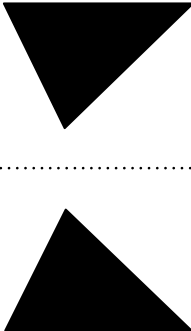

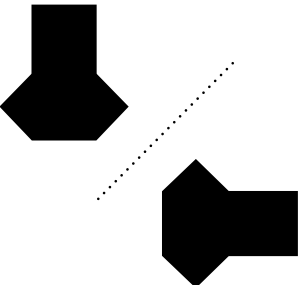
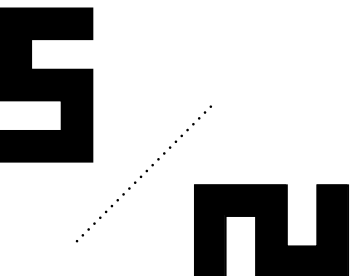
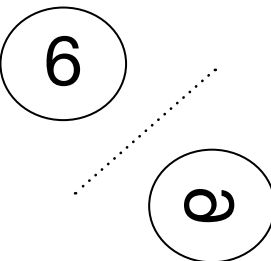
Codes (In a Box) (pp40–42)

1	A	The upper letter indicates the orientation of the triangle – G means triangle pointing north. The lower letter indicates the direction of the stripes – Y means horizontal stripes.
2	E	The upper letter indicates the direction of the individual arrow on the right – M means pointing to the right. The lower letter indicates the style of the arrowhead – S means a triangular arrowhead.
3	B	The upper letter indicates the shape at the top – V means curved. The lower letter indicates the shape at the bottom – H means three spikes.
4	D	The upper letter indicates the number of horizontal lines in the top half of the shape – N means two. The lower letter indicates the number of lines in the bottom half of the shape – X means two.
5	C	The upper letter indicates the orientation of the line(s) – Q means diagonal. The lower letter indicates the number of lines – Z means two.

6	E	The upper letter indicates the type of shading – U means striped. The lower letter indicates the position of the shape – N means at the bottom of the box.
7	A	The upper letter indicates the combination of < and > shapes – H means one of each. The lower letter indicates the number of black dots – K means three.
8	C	The upper letter indicates the orientation of the T shape – R means an upside-down T. The lower letter indicates the position of the small white square – V means on the right.
9	B	The upper letter indicates the triangle shading – T means stripes. The lower letter indicates the arc shading – L means white.
10	D	The upper letter indicates the number of lines crossing the edge of the square – Q means two. The lower letter indicates the size of the square – Y means large.
11	C	The upper letter indicates the direction of the ^ shapes – G means they point left/right. The lower letter indicates how many point in each direction – K means two in one direction and two in the opposite direction.
12	A	The upper letter indicates the number of shaded quarters – P is for zero. The lower letter indicates the way in which the rectangle is divided into quarters – U is for one vertical line and one horizontal line.
13	E	The upper letter indicates the mathematical symbol – H means a –. The lower letter indicates the orientation of the white shape – Y means a gap in the bottom left.

Reflections (pp43–45)

14	C	
15	D	
16	B	
17	A	

18	E	
19	C	
20	B	
21	A	
22	C	

23	C	
24	E	
25	B	
26	C	

Practice Test 2

Odd One Out (pp47–49)

1	D	The shapes that belong are identical. The odd one out is a reflection of the other four shapes.
2	C	The shapes that belong have an equal number of circles and crosses. The odd one out has four crosses and only three circles.
3	B	The shapes that belong have dots connected in a linear formation. The odd one out does not have dots connected in a linear formation as the line splits in two at one of the dots.
4	E	The shapes that belong have two small circles on opposite vertices. The odd one out has two small circles on neighbouring vertices.
5	D	The shapes that belong are shaded half in white and half in black. The odd one out is not shaded exactly in half.
6	A	The shapes that belong are right-angled triangles. The odd one out is an isosceles triangle.
7	D	The shapes that belong have five lines. The odd one out has four lines.
8	C	The shapes that belong have a small circle at the midpoint of the shape. The odd one out has a small circle that is not halfway along the line.
9	E	The shapes that belong have an equal number of 'eyes' to triangular 'horns'. The odd one out has two 'eyes' but only one triangular 'horn'.
10	A	The shapes that belong have three vertical lines and three horizontal lines. The odd one out has three vertical lines but only two horizontal lines.
11	B	The shapes that belong have four circles that each overlap one or two circles. The odd one out has four circles that each overlap one or three circles.

12	D	The shapes that belong have a circle diagonally opposite a triangle and a square diagonally opposite a + symbol. The odd one out has a circle diagonally opposite a + symbol and a square diagonally opposite a triangle.
13	C	The shapes that belong are divided into four sections. The odd one out is divided into five sections.

Cubes (Which Cube?) (pp50–52)

14	E	Cubes A and D cannot be made because the concentric circles cannot be next to the black and white triangles. Cubes B and C are ruled out because the three faces shown appear in a straight line on the net and therefore cannot all appear next to each other.
15	B	Cube A is ruled out because the three faces shown appear in a straight line on the net and therefore cannot all appear next to each other. W and the square cannot be positioned next to each other so cube C cannot be made. Cubes D and E are also ruled out because the X and O are opposite each other on the net and cannot appear next to each other.
16	B	Cube A cannot be made because the arrow shown cannot be next to the diagonal lines. Cube C is ruled out because the horizontal line with a short perpendicular line at each end cannot be next to the = symbol. On cube D, the = symbol is incorrectly oriented next to the black dot and on cube E the diagonal arrow cannot be next to the black dot.
17	A	Cube B is ruled out because there should be a π symbol on the front face. Cube C cannot be made because the K and Y symbols are wouldn't be oriented in the way shown when the net is made up. The three faces shown on cube D are in a line on the net and cannot all appear next to each other on a cube. Cube E cannot be made because the front face and right face are opposite each other on the net, not next to each other.
18	C	The question mark is incorrectly positioned on cubes A, D and E. Cube B is ruled out because I, O and U are in a line on the net and cannot all appear next to each other on a cube.
19	E	The three faces shown on cube A are in a line on the net and cannot all appear next to each other on a cube. On cube B, the arrow is pointing in the wrong direction. Cube C cannot be made because the two T shapes are incorrectly oriented and likewise for the T and Π shapes on cube D.
20	D	On cube A, the three shapes are incorrectly oriented in relation to each other. The line on cube B cannot appear on the front face oriented in the way shown with the circle and square in their given positions. Cube C is ruled out because the three faces shown are in a line on the net and cannot all appear next to each other on a cube. Cube E cannot be made because the triangle and line would appear on the opposite faces of a cube.
21	C	Cube A is ruled out because the shape on the top face is incorrectly oriented. On cube B, the three shapes are incorrectly oriented in relation to each other. The top and front faces of cube D cannot be next to each other and on cube E the top and right faces would be on opposite, not neighbouring faces.
22	A	Cube B and C cannot be made because the faces on the right show incorrect symbols based on the other visible faces. Cubes D and E are ruled out because the top faces show incorrect symbols based on the other visible faces.
23	B	Cube A cannot be made because the number 5 is incorrectly oriented, and the same for cube C because the number 1 is incorrectly oriented. Cube D is ruled out because the numbers 1 and 8 cannot be next to each other. Cube E cannot be made because the top face shows an incorrect symbol based on the two other visible faces.
24	D	Cubes A and B are ruled out because the visible faces appear in a line on the net and therefore cannot all appear next to each other on the cubes. Cube C cannot be made because the top and right faces cannot appear next to each other. On cube E the top symbol is incorrectly oriented in relation to the other two faces.
25	A	Cube B cannot be made because the right face should have three dots, not four. Cube C is ruled out because the faces with six dots and one dot cannot be next to each other. Cube D cannot be made because the visible faces appear in a line on the net and therefore cannot all appear next to each other on a cube. Cube E is ruled out because the top face should have one dot, not six.
26	E	Cube A is ruled out because the front face would need to show a black dot for it to be made from the net. Cube B cannot be made because the front faces are incorrectly oriented. On cubes C and D the top face is incorrect.

Practice Test 3

Like Figures (Two) (pp54–56)

1	B	Each shape is an arrow with an identical head and tail.
2	E	Each shape is divided exactly into thirds.
3	C	Each shape is a wavy line with two short perpendicular lines alternately positioned on either side of the wavy line.
4	A	Each shape is a regular 2D shape with a section cut out. A smaller version of the regular 2D shape appears inside the outer shape. The cut-out section is shaded in black, reduced in size and also appears inside the outer shape.
5	D	Each shape is made up of three same-length lines: one thin solid line, one thicker solid line and one dashed line.
6	C	Each shape is a regular polygon with the line forming each side extending beyond the shape at both ends.
7	E	Each shape is made up of six lines.
8	C	Each shape is a square with a full-length diagonal line, a second diagonal line to the centre and one eighth of the shape shaded black.

9	B	Each shape is a large white circle with a small black circle inside it and touching the edge of the larger circle.
10	D	Each shape is a line and arrow pointing clockwise.
11	D	Each shape is an isosceles triangle with half shaded white and half shaded black.
12	A	Each shape has a vertical arrow pointing down and a horizontal arrow pointing right.
13	B	Each shape has ten dots in total.

Folding and Punching (pp57–59)

14	D	
15	C	
16	B	
17	D	
18	E	
19	A	
20	E	
21	C	
22	A	

23

D

