Year 5 · Geometry: Shapes That Fold, Flip and Slide

Name: _____ Date: _____

Hi there! This sheet helps you match 3D shapes to their nets and describe how shapes move, flips, slides and turns. Take your time and picture each shape in your head!

Warm-up

1. What do we call a flat drawing of a 3D shape that has been unfolded so you can see all its faces?

2. Name the transformation where a shape is flipped over a line to make a mirror image.

3. How many faces does a cube have?

4. When you slide a shape from one place to another without turning or flipping it, what is this called?

Practice

5. Kauri drew a net with 6 equal squares joined in a cross shape. Which 3D shape will this net fold up to make?

6. A net has 1 square in the middle with 4 triangles attached to its sides. What 3D shape does this net make?

7. A shape at position A is moved to position B. It stays exactly the same way up and the same way round, it has only moved 5 cm to the right. Which transformation is this?

8. Aroha holds a letter 'b' up to a mirror on its right-hand side. Describe the transformation and what the letter now looks like.

9. Mere is packing a rectangular box (a cuboid). She unfolds it flat. How many faces does the net have, and what shape are they?

10. Tama turns a triangle a quarter turn (90°) clockwise around one of its corners. Name the transformation and say how far the shape turned.

Challenge

11. A cube has faces numbered 1 to 6. On the net, the '1' is in the centre. Around it are '2', '3', '4' and '5', and '6' is joined to the '2'. When folded, which number will be on the opposite face to the '1'?

12. A shape is first reflected over a vertical line, and then the mirror image is translated 3 cm down. Describe, in order, the two transformations and whether the final shape is the same size as the original.

Answer key (for parents and tutors)

1. What do we call a flat drawing of a 3D shape that has been unfolded so you can see all its faces?
   A net. It shows every surface of the 3D shape spread out flat.
2. Name the transformation where a shape is flipped over a line to make a mirror image.
   A reflection. The shape looks like it does in a mirror on the other side of the line.
3. How many faces does a cube have?
   A cube has 6 faces, all of them squares that are the same size.
4. When you slide a shape from one place to another without turning or flipping it, what is this called?
   A translation. The shape stays the same way up and the same way round, it just moves position.
5. Kauri drew a net with 6 equal squares joined in a cross shape. Which 3D shape will this net fold up to make?
   A cube. Six equal squares are exactly what a cube needs, one for each of its 6 faces.
6. A net has 1 square in the middle with 4 triangles attached to its sides. What 3D shape does this net make?
   A square-based pyramid. The square is the base and the 4 triangles fold up to meet at a point on top.
7. A shape at position A is moved to position B. It stays exactly the same way up and the same way round, it has only moved 5 cm to the right. Which transformation is this?
   A translation (a slide). Nothing has been turned or flipped, so it is a translation of 5 cm to the right.
8. Aroha holds a letter 'b' up to a mirror on its right-hand side. Describe the transformation and what the letter now looks like.
   It is a reflection. The 'b' is flipped over the vertical mirror line, so it looks like a 'd' (a mirror image).
9. Mere is packing a rectangular box (a cuboid). She unfolds it flat. How many faces does the net have, and what shape are they?
   The net has 6 faces, and they are all rectangles. Opposite faces of a cuboid match: they come in 3 matching pairs.
10. Tama turns a triangle a quarter turn (90°) clockwise around one of its corners. Name the transformation and say how far the shape turned.
    It is a rotation. The triangle turned 90° (a quarter turn) clockwise around the fixed corner point.
11. A cube has faces numbered 1 to 6. On the net, the '1' is in the centre. Around it are '2', '3', '4' and '5', and '6' is joined to the '2'. When folded, which number will be on the opposite face to the '1'?
    The '6' is opposite the '1'. The centre face (1) meets four faces folding up around it (2, 3, 4, 5), so those four become the sides. The '6', joined beyond the '2', folds right over the top to sit opposite the centre '1'.
12. A shape is first reflected over a vertical line, and then the mirror image is translated 3 cm down. Describe, in order, the two transformations and whether the final shape is the same size as the original.
    First transformation: a reflection over the vertical line, this flips the shape into a mirror image. Second transformation: a translation of 3 cm down, this slides the mirror image straight down without turning it. Both reflections and translations keep the shape the same size and shape, so the final shape is exactly the same size as the original (it is congruent), just flipped and moved.