Year 6 Assessment: Symmetry and Pattern

Learning objective: To identify, describe, and represent the position of a shape following a reflection or translation, and to identify lines of symmetry in 2D shapes.

Read each question carefully. Show your working out where possible. You may use a ruler for drawing lines of symmetry.

Max the monkey is helping Zara the zebra design a new banner for their school art show. They are working on a grid to ensure all their geometric patterns are perfectly balanced. Max is using his maths skills to calculate the coordinates, while Zara is focusing on the aesthetic symmetry of their colourful design.

Word bank: Reflection · Translation · Line of symmetry · Vertex · Horizontal · Vertical · Coordinate · Quadrant

1. Define what a 'line of symmetry' is in your own words. (2 marks)

2. How many lines of symmetry does a regular pentagon have? Draw a sketch to prove your answer. (2 marks)

3. A shape has one vertex at (2, 3). It is reflected across a vertical line at x = 5. What are the coordinates of the new vertex? (3 marks)

4. Describe the difference between a reflection and a translation. Give one example of each movement. (4 marks)

5. A rectangle has a width of 4cm and a length of 8cm. If you draw a line of symmetry connecting the midpoints of the two longest sides, what is the perimeter of one of the two resulting shapes? (4 marks)

6. Zara is creating a pattern. She says, 'If I translate a shape 3 squares right and 2 squares down, the shape remains symmetrical.' Explain why Zara is correct or incorrect, using mathematical reasoning to support your answer. (5 marks)

Draw: Draw a composite shape on a 1cm square grid that has exactly two lines of symmetry: one horizontal and one vertical.

Extension challenge: Total: /25