Max’s Magnificent Symmetry Challenge

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

Help Max the monkey solve these symmetry puzzles! Use your knowledge of lines of symmetry and reflections to complete each task accurately.

Max the monkey has been collecting symmetrical leaves and patterns in the jungle. He needs your help to complete his maths journal by checking shapes and drawing their mirror images.

Word bank: Line of symmetry · Reflect · Mirror line · Vertex · Horizontal · Vertical · Diagonal · Congruent

1. Max has a regular pentagon. How many lines of symmetry does it have? Draw the pentagon and mark the lines of symmetry clearly. (2 marks)

2. Look at the letter 'A'. If you draw a vertical mirror line through the centre, does it show symmetry? Explain your reasoning. (2 marks)

3. A triangle has one line of symmetry. What type of triangle is it? Sketch an example. (2 marks)

4. On a squared grid, a right-angled triangle has one vertex at (2, 2), one at (2, 5), and one at (5, 2). If you reflect this shape across a vertical mirror line at x = 6, what will the new coordinates of the vertices be? (3 marks)

5. Max finds a leaf. He says, 'This leaf has diagonal symmetry.' Is it possible for a shape to have only diagonal lines of symmetry? Explain why or why not. (2 marks)

Draw: Draw a 6x6 grid. In the left half, draw an irregular shape. Then, draw a mirror line down the middle of the grid and shade in the reflection of your shape on the right side.

Extension challenge: Max wants to create a symmetrical pattern using tiles. Each tile costs £1.50. If he creates a pattern using 12 tiles, what is the total cost? If the pattern is symmetrical, how many tiles must be on each side of the mirror line?