

Max's Magnificent Mirror Patterns

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.

Max the monkey has been busy decorating his jungle treehouse with geometric tiles. However, he has made some mistakes with his symmetrical patterns. Look at the shapes and lines provided in the questions below. Your task is to complete the missing halves of the patterns or identify the lines of symmetry correctly. Use a ruler to ensure your lines are precise.

Word bank: Line of symmetry · Reflection · Vertical · Horizontal · Diagonal · Congruent · Vertex

1. Max has drawn a regular pentagon. How many lines of symmetry does a regular pentagon have? Draw the lines on the shape and explain your answer. (2 marks)

2. A square has a horizontal line of symmetry. Does it also have diagonal lines of symmetry? Sketch a square and show all possible lines of symmetry. (2 marks)

3. Max is designing a tile. He draws a shape at coordinates (2, 2), (2, 4), and (4, 2). If he reflects this shape across the vertical line $x = 5$, what will be the new coordinates of the vertex that was at (2, 2)? (2 marks)

4. Look at the letter 'A'. Does it have a vertical or horizontal line of symmetry? Explain why the letter 'B' does not have the same type of symmetry. (2 marks)

5. Max buys a triangular mirror for £4.50. The mirror is an isosceles triangle. How many lines of symmetry does it have? If he buys two, how much change would he get from a £10 note? (2 marks)

Draw: Draw a 6x6 grid. In the left half, draw a complex, irregular polygon. Then, draw the reflected image of that polygon on the right side of the grid, using a vertical line at the 3rd column as your mirror line.



Extension challenge: Challenge: Create your own 'Max-style' pattern on squared paper. Ensure your design uses at least one reflection and one translation. Can you swap with a partner and identify the lines of symmetry in their design?