Max’s Pattern Puzzles: Non-Verbal Reasoning Challenge

Learning objective: To develop spatial awareness and logical thinking by identifying patterns, sequences, and rotations in geometric shapes.

Max the monkey has been busy creating puzzles! Use your logic and observation skills to solve these non-verbal reasoning problems. Look closely at the shapes, rotations, and shading before choosing or drawing your answer.

Word bank: rotation · symmetry · sequence · transformation · geometric · clockwise · anticlockwise · reflection

1. Max has a sequence of shapes. Shape 1 is a triangle pointing up, Shape 2 is a triangle pointing right, and Shape 3 is a triangle pointing down. If the pattern continues, what direction will the triangle point in Shape 4? Explain your reasoning. (2 marks)

2. Look at a square that has been rotated 90 degrees clockwise. If the square has a small shaded circle in the top-left corner, where will the shaded circle be after the rotation? (2 marks)

3. Identify the odd one out from these four options: A) A square with two lines of symmetry, B) A rectangle with two lines of symmetry, C) A regular pentagon with five lines of symmetry, D) A scalene triangle with zero lines of symmetry. Explain your choice. (2 marks)

4. If a shape is reflected across a vertical mirror line, describe what happens to its horizontal coordinates. (2 marks)

5. Max has a pattern: a solid circle, then a circle with a cross, then a solid square, then a square with a cross. Draw the next two shapes in the sequence. (2 marks)

Draw: Draw a complex shape that has exactly one line of horizontal symmetry and one line of vertical symmetry.

Extension challenge: Create your own 3-step sequence using different geometric shapes and ask a partner to identify the rule governing the transformation.