

Max's Pattern Puzzles: A Non-Verbal Reasoning Challenge

Learning objective: To identify, continue, and complete sequences and patterns using spatial awareness and logical deduction.

Max the monkey has been sorting his collection of geometric shapes and patterns. Use your observation skills to solve these non-verbal challenges. Look closely at how the shapes rotate, grow, and change color.

Max is currently organising his jungle workshop. He loves to create patterns using different shapes. He has noticed that when he rotates a square by 90 degrees, it looks the same, but when he rotates an arrow, it points in a new direction. To solve these puzzles, you must look at the rule governing each sequence. Does the shape turn clockwise? Does the number of sides increase? Is there a mirror image hidden within the pattern? Put on your detective hat and help Max find the missing pieces of his puzzles.

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

1. A sequence shows a triangle, then a square, then a pentagon. If the pattern continues by adding one side each time, draw what the fourth shape should be and justify why you chose it. (2 marks)

2. Max has a shape that rotates 90 degrees clockwise in each step. If the shape is currently pointing upwards, what direction will it point after three rotations? Explain your reasoning. (2 marks)

3. Compare and contrast a circle and a hexagon in terms of their lines of symmetry. How does this affect how they look when reflected in a mirror? (3 marks)

4. A pattern consists of a shaded circle, an unshaded square, a shaded circle, an unshaded square. If the pattern repeats, what is the 10th shape in the sequence? Justify your answer. (2 marks)

5. What might happen to a pattern if the rule changed from 'rotate 90 degrees' to 'rotate 180 degrees' at every stage? Describe the visual difference. (2 marks)

Draw: Draw a 3x3 grid. In the first row, draw a sequence of three shapes that increase in size. In the second row, draw a pattern that shows a shape rotating 45 degrees clockwise in each step. Label your patterns clearly.



Extension challenge: Design your own complex non-verbal reasoning sequence using at least three different variables (e.g., color, rotation, and size). Swap with a partner and challenge them to identify the 'rule' that governs your pattern. Write a short paragraph explaining the logic behind your sequence.