

Max's Pattern Detective Log

Learning objective: To identify, analyse, and continue complex sequences and spatial patterns using logical reasoning.

Welcome, Pattern Detective! Join Max the monkey in his quest to solve the secrets of shape and space. Use this log to record your observations about sequences, rotations, and reflections. Look closely at how shapes change, move, or grow, and use your detective skills to predict what comes next. Write your explanations clearly to show your mathematical thinking.

Word bank: rotation · reflection · sequence · symmetry · clockwise · anticlockwise · pattern · transform · increase · attribute

1. Pattern Analysis: Describe the rule governing the sequence of shapes you have observed. Explain why you chose this specific pattern. (3 marks)

2. Spatial Transformation: If a shape is rotated 90 degrees clockwise, what does its new position look like? Compare this to a 180-degree turn. (3 marks)

3. Logical Deduction: Justify your answer for the 'missing' shape in your sequence. What specific features (e.g., colour, number of sides, size) helped you decide? (3 marks)

4. Comparative Reasoning: Contrast a reflective pattern with a repeating pattern. How do they differ in their structure? (3 marks)

5. Hypothesis: What might happen if you reversed the direction of the pattern's rotation? Explain the outcome. (3 marks)

6. Creative Synthesis: Design a new sequence that follows two rules at once (e.g., rotating and increasing in size). Describe your design below. (4 marks)

Extension challenge: Challenge: Create a complex, three-step pattern sequence on a separate sheet of paper. Swap your pattern with a partner and attempt to justify the logic behind their sequence. If you find an error in their logic, explain how it could be corrected to keep the pattern consistent.