

Max's Geometric Geometry Journal

Learning objective: To identify, compare, and classify 2D shapes based on their properties, including angles and symmetry.

Help Max the monkey solve the mysteries of geometry! Choose three different 2D shapes you can find in your classroom or at home. Use your mathematical knowledge to describe their features, calculate their interior angles, and identify their lines of symmetry. Aim to use technical vocabulary like 'parallel', 'perpendicular', and 'quadrilateral' in your descriptions.

Word bank: polygon · quadrilateral · parallel · perpendicular · symmetry · acute · obtuse · right angle · vertex · vertices

1. Shape Name and Classification: Identify your chosen shape and justify why it belongs to its specific family (e.g., Is it a quadrilateral? Is it a regular polygon?). (2 marks)

2. Properties Investigation: Describe the side lengths and the types of angles found within the shape. Are any sides parallel or perpendicular? (3 marks)

3. Symmetry Study: Draw the lines of symmetry for your shape. Explain how you know these are accurate lines of symmetry. (2 marks)

4. Compare and Contrast: Compare your chosen shape to a square. What features do they share, and what makes them different? (3 marks)

5. Justify your answer: If you were to cut this shape in half along a diagonal, what two new shapes would be created? Explain the reasoning behind your prediction. (3 marks)

6. What might happen if: Imagine this shape had one side length increased significantly while the others remained the same. Would it still be a regular polygon? Why or why not? (3 marks)

Extension challenge: Design a complex pattern using only two of the shapes you studied. Explain the mathematical 'rule' you used to create the pattern and calculate how many lines of symmetry your finished design has in total.