

Max's Geometric Garden: A Study of Shape and Symmetry

Learning objective: To identify, describe, and compare 2D shapes, recognize lines of symmetry, and classify angles as acute, obtuse, or right angles.

Max the monkey is organising his garden into precise geometric zones. Use your knowledge of shape properties to help him complete his calculations. Show your working out clearly.

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

1. Max has drawn a regular pentagon on his garden map. Explain why this shape is classified as a polygon and identify how many lines of symmetry it possesses. (2 marks)

2. Compare a square and a rhombus. Identify one geometric property they share and one property that makes them different. Justify your answer using mathematical vocabulary. (3 marks)

3. Max observes a triangle with angles measuring 45° , 45° , and 90° . Classify this triangle by its angles and explain why it cannot contain an obtuse angle. (2 marks)

4. A quadrilateral has two pairs of parallel sides and four right angles. If one side measures 7cm and the adjacent side measures 4cm, calculate the perimeter of this shape. (2 marks)

5. If Max replaces a square-shaped flower bed with a regular hexagon of the same side length, what might happen to the total perimeter of the garden? Explain your reasoning. (3 marks)

6. Draw a composite shape made of one rectangle and one triangle. Label all acute angles with an 'A' and all obtuse angles with an 'O'. (3 marks)

Draw: Draw a design for a garden path using only regular polygons. Ensure at least one line of symmetry is evident in your overall design.



Extension challenge: Design a 'Shape Hunt' for your classmates. Create a list of three complex shapes found in the classroom or playground. For each shape, provide a riddle based on its properties (e.g., 'I have six sides and six vertices, but I am not a square. What am I?').