

Max's Geometric Garden Design

Learning objective: To identify, describe, and classify 2D shapes, including quadrilaterals and triangles, based on their properties and sizes of angles.

Max the monkey is designing a symmetrical garden. He has used various shapes to mark out his flower beds. Look at the shapes in his sketch and classify them by their properties. For each shape identified, you must justify its classification using correct geometric vocabulary.

Word bank: quadrilateral · isosceles · scalene · equilateral · parallelogram · rhombus · trapezium · perpendicular · parallel · acute · obtuse · right-angled

1. Max has a flower bed shaped like a quadrilateral with two pairs of parallel sides and four right angles. Identify the shape and explain why a square is a special type of this shape. (2 marks)

2. One triangular bed has three sides of different lengths and no right angles. Name this triangle and justify your answer using the properties of its sides. (2 marks)

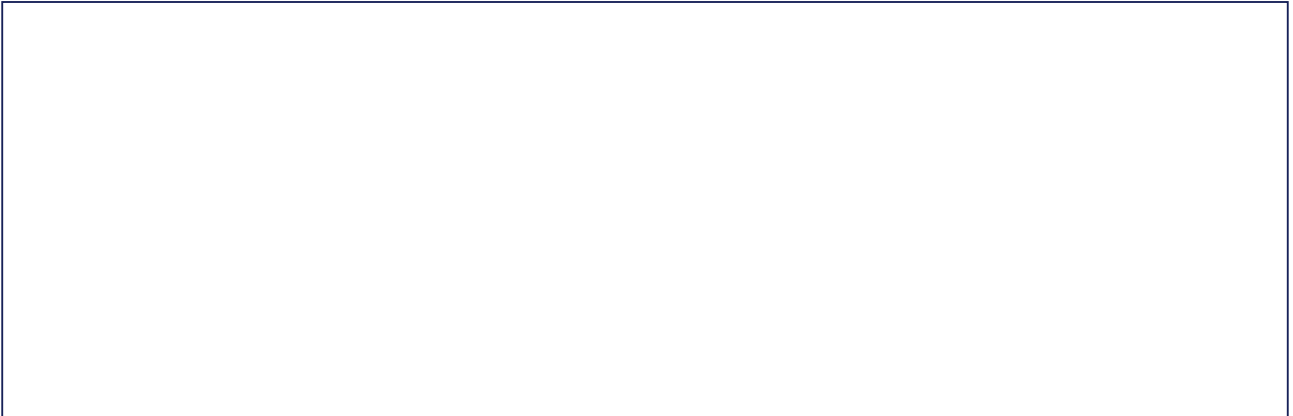
3. Compare and contrast a rhombus and a parallelogram. What features do they share, and what is the key difference between their side lengths? (3 marks)

4. Max wants to add a shape with exactly one pair of parallel sides. Which quadrilateral should he choose? Justify your choice. (2 marks)

5. Explain why an equilateral triangle must also be an acute triangle. Use your knowledge of angle properties to justify your answer. (2 marks)

6. What might happen to the classification of a shape if all four of its angles were changed to obtuse angles? Is this possible for a quadrilateral? Explain your reasoning. (3 marks)

Draw: Draw a complex garden layout using at least one square, one scalene triangle, one parallelogram, and one trapezium. Label each shape clearly using a ruler.



Extension challenge: Design a 'Shape-Master' challenge for a partner. Create a list of three clues describing a secret polygon (e.g., 'I have four sides, I have no right angles, and my opposite sides are parallel'). See if your partner can identify the shape based solely on your geometric descriptions.