

Year 5 Shape Mastery Assessment: The Geometry of Nature

Learning objective: To identify, describe, and classify 2D and 3D shapes, calculate perimeter and area, and understand angles in relation to turns and lines.

Read each question carefully. Show your working out for all calculations. Use a ruler for any drawings. Max the monkey is watching closely—ensure your logic is as precise as his!

Max the monkey is helping his friends build a new woodland playground. He needs to ensure the triangular climbing frames, square platforms, and rectangular balance beams are geometrically sound before the animals start playing.

Word bank: acute · obtuse · reflex · isosceles · scalene · equilateral · parallel · perpendicular · vertices · faces · edges

1. Max has a wooden board in the shape of a regular pentagon. How many lines of symmetry does a regular pentagon have? Explain your reasoning. (2 marks)

2. A rectangular garden has a perimeter of 24 metres. If the width is 4 metres, what is the area of the garden? Show your calculations. (3 marks)

3. Identify the type of triangle that has three sides of different lengths and no equal angles. Draw an example of this triangle. (2 marks)

4. Zara the zebra is creating a pattern. She draws two lines that intersect at a 90-degree angle. What is the mathematical term for these lines? If these lines were part of a larger shape, what could that shape be? (2 marks)

5. A 3D shape has 6 faces, 8 vertices, and 12 edges. What is the name of this shape? If you were to draw its net, how many squares would you need? (2 marks)

6. Compare and contrast a rhombus and a square. Justify why a square can be considered a special type of rhombus. (4 marks)

7. Max is buying fencing for a triangular enclosure. The sides measure 5m, 7m, and 9m. If the fencing costs £4.50 per metre, calculate the total cost. Show your working clearly. (5 marks)

8. What might happen to the internal angles of a parallelogram if you were to 'push' the top side to the right while keeping the base fixed? Explain the change in the angles. (5 marks)

Draw: Using a ruler, draw a composite shape made of one rectangle (length 6cm, width 3cm) and one right-angled triangle attached to the side. Label the lengths of all sides.



Extension challenge: Imagine you are designing a new structure for the woodland park. Write a brief justification for why you have chosen specific shapes for your design, referencing angles, perimeter, and symmetry. Total: /25