Max’s Garden Geometry Challenge

Learning objective: To calculate the area and perimeter of rectangles and composite shapes in centimetres and metres.

Read the story below about Max the monkey’s garden project. Use your knowledge of area and perimeter to help him solve his measurements. Show your working out clearly.

Max is planning a new garden for his forest friends. He wants to build a rectangular vegetable patch that is 8 metres long and 5 metres wide. Max also wants to build a small, L-shaped stone path for the visitors to walk on. The path is made of two joined rectangles: one is 4 metres by 2 metres, and the other is 3 metres by 2 metres. Max needs to calculate how much fencing he needs for the perimeter of the vegetable patch and how much space he has for planting in the total area of the L-shaped path.

Word bank: Perimeter · Area · Composite shape · Dimensions · Centimetres · Metres squared

1. Calculate the perimeter of Max’s 8m by 5m vegetable patch. Remember to include the correct units. (2 marks)

2. What is the total area of the vegetable patch in metres squared? (2 marks)

3. Split the L-shaped path into two rectangles. What is the total area of the path? (3 marks)

4. If fencing costs £4 per meter, how much will it cost Max to fence the entire perimeter of the vegetable patch? (2 marks)

5. Max decides to add a square flower bed with a side length of 3 metres. What is the perimeter and the area of this new square bed? (2 marks)

Draw: Draw a diagram of Max's L-shaped path, labelling the sides 4m, 2m, 3m, and 2m to show how you calculated the total area.

Extension challenge: Max wants to build a rectangular patio with an area of 36 metres squared. If the perimeter must be 24 metres, what are the length and width of the patio? Explain your reasoning.