

Max's Magnificent Garden Designs

Learning objective: Calculate and compare the area and perimeter of rectilinear shapes to solve practical problems.

Max the monkey is helping his friends design vegetable patches for the community allotment. Each square on the grid represents 1 square metre (1m x 1m). Help Max calculate the measurements for each plot below. For each shape, calculate the perimeter (the total distance around the edge) and the area (the number of square metres inside). Then, answer the deeper thinking questions to help Max finalise his plans.

Word bank: Perimeter · Area · Rectilinear · Metres · Square metres · Dimensions · Calculation · Formula

1. Pip the caterpillar wants a rectangular patch that is 4m long and 3m wide. Calculate the area and the perimeter. Show your working out. (2 marks)

2. Zara the zebra has a L-shaped patch. The vertical side is 6m, the horizontal base is 5m, and the inner indent is 2m. Explain why the perimeter of this shape is not simply the sum of the two longest sides. (3 marks)

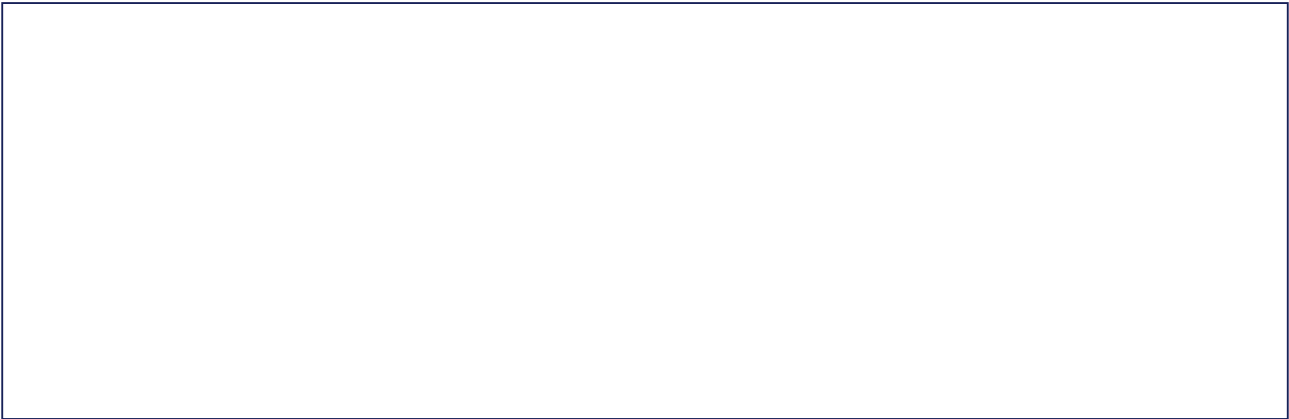
3. Max has £50 to buy fencing. Fencing costs £2 per metre. If Nova the owl's rectangular garden has a perimeter of 22m, does Max have enough money? Justify your answer. (3 marks)

4. Compare and contrast a square with a side length of 4m and a rectangle with sides of 2m and 8m. What do you notice about their areas and perimeters? (3 marks)

5. What might happen to the area of a rectangle if you double the length but keep the width the same? Provide an example to prove your theory. (3 marks)

6. If a rectilinear shape has an area of 24 square metres, suggest two different possible perimeters the shape could have. Draw or describe the dimensions. (4 marks)

Draw: Draw a rectilinear garden patch on squared paper that has an area of exactly 16 square metres but a perimeter of 20 metres. Label the length of each side.



Extension challenge: Design a 'dream allotment' for the whole group. It must contain at least three different rectilinear patches for different vegetables. Calculate the total area of the allotment and the total amount of fencing required if the patches are placed side-by-side without sharing walls.