

Max's Magnificent Garden Designs

Learning objective: To calculate the area and perimeter of rectilinear shapes and solve multi-step problems involving money and measurement.

Read the story below and help Max calculate the requirements for his community garden project. Show your working out clearly.

Max the monkey is helping his friends design a new community garden. He wants to create a rectangular vegetable patch that is 8 metres long and 5 metres wide. To protect the carrots, he needs to place a wooden fence around the entire perimeter. Later, Max wants to add a decorative patio area shaped like an L (a composite rectilinear shape). The patio has a total length of 10 metres and a width of 6 metres, with a smaller rectangular section of 3 metres by 2 metres cut out from the corner. Max needs to buy paving slabs which cost £4 per square metre to cover the patio area.

Word bank: rectilinear · perimeter · area · composite · centimetres · metres · dimensions · calculation

1. Calculate the perimeter of the rectangular vegetable patch. If the wooden fencing costs £2 per metre, how much will it cost Max to fence the entire patch? (3 marks)

2. Calculate the total area of Max's L-shaped patio. Explain your method for partitioning the shape into two rectangles. (3 marks)

3. Using your answer from the previous question, calculate the total cost of the paving slabs for the patio at £4 per square metre. (2 marks)

4. Max decides to increase the length of his vegetable patch by 2 metres. Compare and contrast how this change affects the perimeter versus the area. Justify your answer. (4 marks)

5. If Max had a budget of £200, what is the maximum area of square paving he could afford if each square metre costs £5? (2 marks)

Draw: Draw Max's L-shaped patio on centimetre squared paper. Label the dimensions of each side clearly and shade the area you calculated.



Extension challenge: Design a new garden layout for your school. Create a composite shape that has a perimeter of exactly 40 metres. Calculate the area of your design and provide a quote for the cost of grass seed, which costs £3 per square metre.