

Max the Monkey's Geometric Garden Assessment

Learning objective: To calculate and compare the area and perimeter of rectilinear shapes and compound shapes, and to solve multi-step problems involving measurements.

Read each question carefully. Show your working out clearly, as marks are awarded for your method even if the final answer is incorrect. Ensure all units of measurement are included in your answers.

Max the monkey is designing a series of vegetable plots for his garden. He needs to calculate the space required for his carrots, peas, and pumpkins to ensure they have enough room to grow. He uses square tiles that are 1 metre by 1 metre to map out his designs.

Word bank: rectilinear · compound shape · square centimetres (cm²) · perimeter · area · dimensions · formula · multiplication

1. Max has a rectangular plot that is 6 metres long and 4 metres wide. Calculate the area of this plot. Show your calculation. (2 marks)

2. Calculate the perimeter of the same plot (6m by 4m). Explain how you found your answer. (2 marks)

3. Max adds a smaller rectangular section to his plot, measuring 2 metres by 3 metres. What is the total area of this new compound shape? (3 marks)

4. A decorative stone border costs £5 per metre to install. If Max decides to put a border around a square plot with a side length of 5 metres, what will be the total cost? (3 marks)

5. Compare and contrast the perimeter of a rectangle measuring 8cm by 2cm and a square with sides of 5cm. Which one has the larger perimeter? Justify your answer using mathematical reasoning. (4 marks)

6. Max has a budget of £100 for fencing. If the fencing costs £4 per metre, what is the maximum area of a square plot he could enclose? Explain your steps clearly. (4 marks)

7. Max wants to build a new L-shaped plot. Describe a method you would use to find the area of an irregular L-shaped plot. What might happen to the total area if you were to move one of the sections to a different side of the shape? Justify your thinking. (5 marks)

Draw: In the space below, draw a rectilinear shape that has a perimeter of exactly 16cm. Label the length of each side clearly.



Extension challenge: Total: /25. Challenge: If Max doubled the dimensions of his 6m by 4m plot, would the area also double? Use an example to prove your theory.