

Grade 3 Mathematics: Measuring Space and Boundaries

Learning objective: To measure and calculate the perimeter of rectilinear figures and find the area by counting squares.

Read each question carefully. Show your working out clearly in the space provided. Remember to include units (cm or cm^2) in your final answers.

Max the monkey is helping his friends design their garden plots. Each square on the grid represents 1cm by 1cm. Use your knowledge of shapes to help them solve their layout puzzles.

Word bank: Perimeter · Area · Rectilinear · Square centimetres · Boundary · Length · Width · Calculate

1. Max has a rectangular flower bed that is 5cm long and 3cm wide. Calculate the perimeter of this flower bed. Show your calculation. (2 marks)

2. Zara the zebra is painting a pattern on a square tile that measures 4cm on each side. What is the area of the tile in cm^2 ? (2 marks)

3. A rectilinear shape has sides measuring 2cm, 4cm, 3cm, 2cm, 5cm, and 6cm. Calculate the total perimeter. Explain your method for ensuring no sides were missed. (3 marks)

4. Compare and contrast: If you double the length and the width of a 2cm by 2cm square, what happens to the perimeter and what happens to the area? Justify your answer with calculations. (4 marks)

5. Kit the fox has a rectangular storage box with an area of 24cm^2 . If the length of the box is 8cm, what is the width? How did you reach this conclusion? (3 marks)

6. Nova the owl wants to build a stargazing platform with a perimeter of 20cm. Draw and label two different rectilinear shapes that have this perimeter but different areas. Explain why their areas are different even though the perimeters are the same. (6 marks)

7. Extended Writing: Imagine you are designing a playground for our animal friends. You have a total budget of £100 for fencing. Fencing costs £2 per centimetre. If you design a rectangular playground with a perimeter of 40cm, how much will the fencing cost? What area would your playground cover if the length is 12cm? Explain the relationship between the perimeter and the area in your design. (5 marks)

Draw: Draw a rectilinear shape on a 1cm squared grid that has an area of 10cm^2 and a perimeter of 14cm.



Extension challenge: Total: /25. Challenge: What might happen if you were asked to design a shape with an area of 10cm^2 but a perimeter of 22cm ? Is this possible with whole-number side lengths? Explain your reasoning.