



Instructions: No answer bank: show your working for the shape maths. Number the steps in order, answer the case study questions, explain the key terms, then write full-sentence answers and plan the extended answer.

1. Shape maths (show your working)

Question	Working and answer
Rectangle with $P = 46$ cm and length 15 cm. Width?	
Regular octagon with $P = 60$ cm. Side?	
Rhombus with side 2.4 m. Perimeter in cm	
Square with the same perimeter as a $3 \text{ cm} \times 13 \text{ cm}$ rectangle. Side?	
L-shape: a 10×8 cm rectangle with a 4×3 cm corner removed. Perimeter?	

Did you know?

- Cutting a square corner out of a rectangle does not change its perimeter.
- Of all rectangles with perimeter 40 cm, the 10 cm square holds the most space.
- The formula $2 \times (l + w)$ works for any parallelogram, using its two side lengths.
- Mapmakers once found that coastlines get longer the more closely you measure them.

Background

The perimeter is the total distance around the outside of a flat shape. Imagine an ant walking all the way round the edge: the distance it walks is the perimeter. Perimeter is a length, so we measure it in mm, cm, m or km. To find it, add up the lengths of all the sides. Make sure all sides are in the same unit first!

2. Steps in order

Number the steps 1 to 5 (1 = first).

1	Missing sides: Work out any sides that are not labelled
2	Label: Write the answer with its unit
3	Mark a start: Put a dot at one corner
4	Units: Change all sides to the same unit
5	Add: Go round adding every side once

4. Key terms

Key term	What does it mean? Give an example.
Perimeter	
Length	
Regular	
Rectangle	
Isoperimetric	

3. Case study

Tayo has 24 m of fencing for a rectangular vegetable patch. He wants whole-metre sides and the most planting space.

Case study: Tayo plans a vegetable patch

1. What must length + width add up to?

2. List three rectangles he could make.

3. Which gives the most space, and how much?

5. Think it through

1. Explain why removing a corner rectangle from a rectangle keeps the same perimeter.

2. Explain how to find a rectangle's width from its perimeter and length.

6. Longer answers (full sentences)

1. Compare the perimeters of a 4×9 cm rectangle and a 6×6 cm square.

2. Explain why $P = n \times s$ works for regular polygons.

3. A rectangle's length is three times its width and its perimeter is 48 cm. Find its sides.

4. Explain in your own words: Explain how two shapes can have the same perimeter but look different.

7. Extended answer

Extended answer: 'Shapes with the same perimeter are the same size.' How far do you agree?

Plan: introduction · point for (example) · point against (example) · conclusion with your judgement.
