

Comparing area and perimeter – an investigation

WHAT THIS LESSON TEACHES

Area is how much flat space a shape covers, found by counting the equal squares inside it. Perimeter is the distance all the way around the outside. Shapes can share the same area yet have different perimeters.

- A shape made from 12 square tiles has an area of 12 squares, no matter what rectangle you arrange them into.
- A long thin 1 by 6 and a chunky 2 by 3 both cover 6 squares, but the long thin one has a longer way around.

MODEL THIS ON THE BOARD

SAME AREA, DIFFERENT PERIMETERS

- 1 Start with a long thin strip that is 1 square tall and 6 squares long.
- 2 Count the squares inside: area = 6 squares.
- 3 Add the sides all the way round: $1 + 6 + 1 + 6 = 14$ units for the perimeter.
- 4 Now make a chunky block 2 squares tall and 3 squares long.
- 5 Count inside: area is also 6 squares.
- 6 Add its sides: $2 + 3 + 2 + 3 = 10$ units, so the chunky shape has the shorter way around.

DISCUSSION STARTER

REFLECT Can two shapes share the same area but different perimeters? What did you notice?

ANSWER KEY

a) 2×4 : $A=8$ $P=12$; 1×6 : $A=6$ $P=14$

b) 1×8 ($P=18$) ringed; 2×4 ($P=12$)

c) 2 by 6

Q1: 35

Q2: 1×8 ($P=18$) longer than 2×4 ($P=12$)

a) Never — A 1 by 6 and a 2 by 3 both have area 6 yet perimeters 14 and 10.

b) Always — Area only counts how many squares you used, not the shape.

c) Always — More edge is exposed when the same squares are stretched out.

d) Sometimes — A 3 by 3 has area 9 and perimeter 12, yet a 1 by 6 has smaller area 6 but larger perimeter 14.

EXTENSION SHEET · STRETCH ANSWERS

Investigation: Same perimeter, different area — open-ended; scan pupils' working for valid solution paths rather than a single answer.