

In this unit, I will:

- Find and draw shapes with the same area or perimeter.
- Explore how the perimeter changes when the area changes and vice versa.
- Calculate the area of parallelograms and triangles
- Calculate and estimate the volume of cubes and cuboids.

National Curriculum Link - Year 6 Measurement

- Recognise that shapes with the same areas can have different perimeters and vice versa
- Recognise when it is possible to use formulae for area and volume of shapes.
- Calculate the area of parallelograms and triangles.
- Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³) and extending to other units (for example, mm³ and km³).

How does this unit build on prior learning?

This unit builds on the concepts of area and perimeter learned in Year 5. Previous methods (including doubling of the length and width to calculate perimeter, or multiplying the width and length of a rectangle to calculate its area) will be used as a starting point.

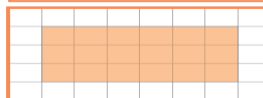
Before you start this unit, it is expected you:

- can define the concepts of area, perimeter and volume
- can make links between the length and width of a rectangle and its area
- can find the perimeter of shapes when all side lengths are given.

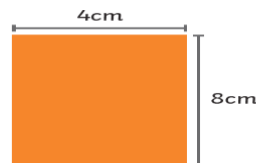
Year 6 – Measure – Perimeter, Area and Volume

Area of Rectangles

$$\text{length} \times \text{width} = \text{area of a rectangle}$$



Counting squares:
area = 18cm²
Use formula:
6cm × 3cm
area = 18cm²



$$8\text{cm} \times 4\text{cm} \text{ area} = 32\text{cm}^2$$

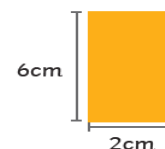
Perimeter of Rectangles

$$\text{perimeter} = \text{length} + \text{width} + \text{length} + \text{width} \text{ or } (\text{length} + \text{width}) \times 2$$



$$5\text{cm} + 4\text{cm} + 5\text{cm} + 4\text{cm}$$

$$\text{area} = 18\text{cm}^2$$



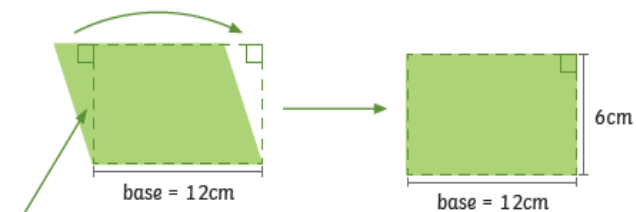
$$(6 + 2) \times 2$$

$$\text{area} = 16\text{cm}^2$$

Area of Parallelograms

$$\text{base} \times \text{perpendicular height} = \text{area of a parallelogram}$$

A parallelogram can be transformed into a rectangle.

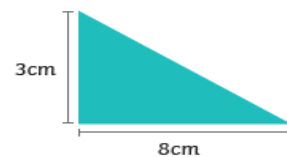


$$\text{perpendicular height} = 6\text{cm}$$

$$12\text{cm} \times 6\text{cm} = 72\text{cm}^2$$

Area of Triangles

$$\text{base} \times \text{perpendicular height} \div 2 = \text{area of a triangle}$$



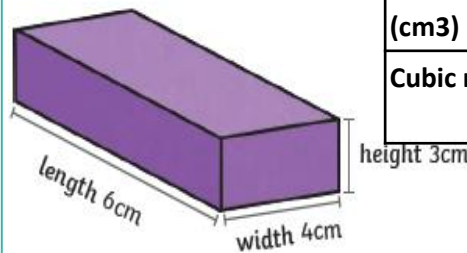
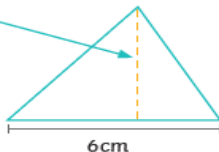
$$8\text{cm} \times 3\text{cm} \div 2$$

$$\text{area} = 12\text{cm}^2$$

$$\text{perpendicular height} = 5\text{cm}$$

$$6\text{cm} \times 5\text{cm} \div 2$$

$$\text{area} = 15\text{cm}^2$$



Volume of Cuboids

Multiply dimensions in **any** order:

$$3\text{cm} \times 6\text{cm} \times 4\text{cm}$$

$$\text{volume} = 72\text{cm}^3$$

Maths at Alice Ingham

Key Vocabulary

area	The size within a 2D shape.
volume	The size within a 3D shape.
perimeter	The length around a shape when you add up the length of every side.
parallelogram	A four-sided 2D shape: it has pairs of parallel sides and opposite sides are the same length
height	The distance from the bottom to the top.
enclosed	Everything that is inside something
width	The measurement of the distance of one side of a shape – this is usually the shorter side.
length	The measurement of the distance of one side of a shape – this is usually the longer side.
base	The bottom lone of a shape or the surface a 3D shape stands on.
formula	A way to represent a calculation.
compound shape	A shape made up of at least 2 other shapes.
Cubic centimetres (cm ³)	A way to measure volume when the dimensions are in cm.
Cubic metres (m ³)	A way to measure volume when the dimensions are in metres.