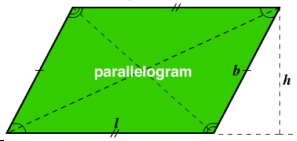
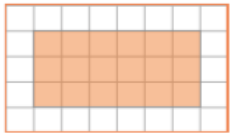
Area and Perimeter. Year 6

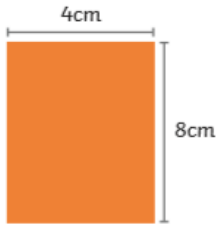
Key vocabulary	Definition
Perimeter	distance around the outside of a shape, calculated by adding the length of all sides together
Area	the size a surface takes up area is measured in square units (e.g. cm^2)
Volume	amount of space occupied by an object volume is measured in cubic units (see below)
Cubic units (cm^3)	The units used to measure volume
Cuboid 	A 3d shape. A right prism with six rectangular faces, sometimes referred to as a right rectangular prism
Width	distance across from side to side
Length	distance from one end to the other
Rectangle	has two pairs of opposite equal parallel sides, four right angles and two diagonals
Rectilinear	characterised by straight lines
Parallelogram 	has opposite sides that are parallel and of equal length and opposite angles that are equal
Perpendicular height	the height of the pyramid measured at a right angle from the base

Area of Rectangles

length × width = area of a rectangle



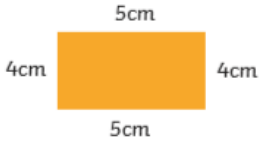
Counting squares:
area = $18cm^2$
Use formula:
6cm × 3cm
area = $18cm^2$



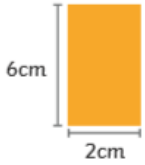
8cm × 4cm area = $32cm^2$

Perimeter of Rectangles

perimeter = length + width + length + width or (length + width) × 2



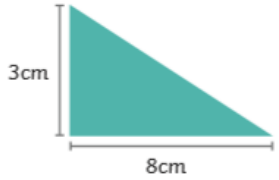
5cm + 4cm + 5cm + 4cm
area = $18cm^2$



(6 + 2) × 2
area = $16cm^2$

Area of Triangles

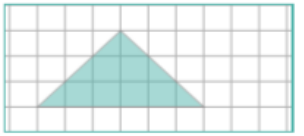
base × perpendicular height ÷ 2 = area of a triangle



8cm × 3cm ÷ 2
area = $12cm^2$

perpendicular height = 5cm

6cm × 5cm ÷ 2
area = $15cm^2$



Counting squares:
6 whole squares = $6cm^2$
6 half squares = $3cm^2$
$6cm^2 + 3cm^2 = 9cm^2$
area = $9cm^2$

Using formula:
6cm × 3cm
÷ 2 = $9cm^2$

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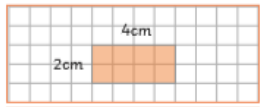
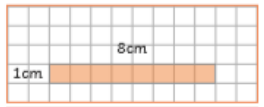
Perimeter and Area

Shapes with the same area can have different perimeters.

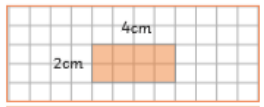


area = 8cm² perimeter = 12cm

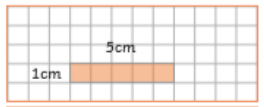


area = 8cm² perimeter = 18cm

Shapes with the same perimeter can have different areas.

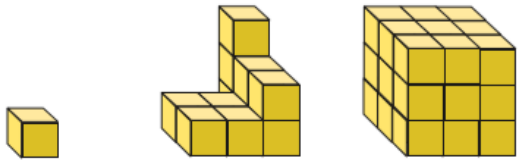


area = 8cm² perimeter = 12cm



area = 5cm² perimeter = 12cm

Volume - Counting Cubes

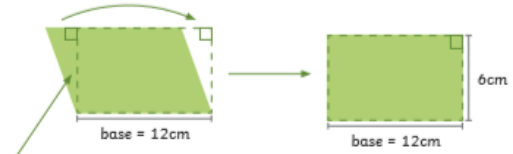


= 1cm³ 11cm³ 27cm³

Area of Parallelograms

base × perpendicular height = area of a parallelogram

A parallelogram can be transformed into a rectangle.

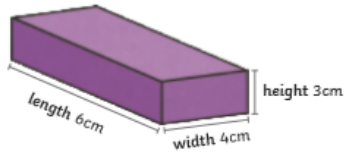


perpendicular height = 6cm

12cm × 6cm = 72cm²

Volume of Cuboids

length × width × height = volume of a cuboid

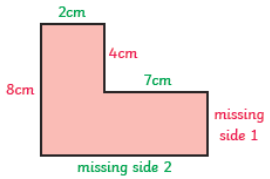


Multiply dimensions in **any** order:
3cm × 6cm × 4cm
volume = 72cm³

Prior Knowledge

Calculate Perimeter

Calculate the missing sides of this rectilinear shape to find the perimeter:



* *This shape is not drawn to the dimensions specified.*

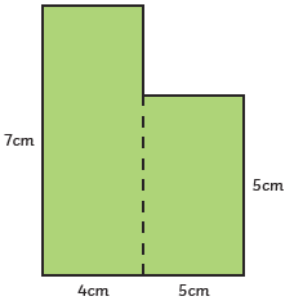
Missing side 1 + 4cm = 8cm,
so missing side 1 = 4cm.

Missing side 2 = 2cm + 7cm = 9cm

Perimeter = sum of all sides =
2cm + 4cm + 7cm + 4cm + 9cm + 8cm = 34cm

Area of Compound Shapes

To find the area of a compound shape, divide the shape into rectangles with known dimensions:



Area = 7cm × 4cm + 5cm × 5cm
= 28cm² + 25cm²
= 53cm²