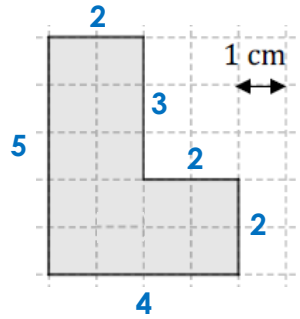
Y7 Mastery: Unit 11 – Area and Perimeter of 2D Shapes

Perimeter

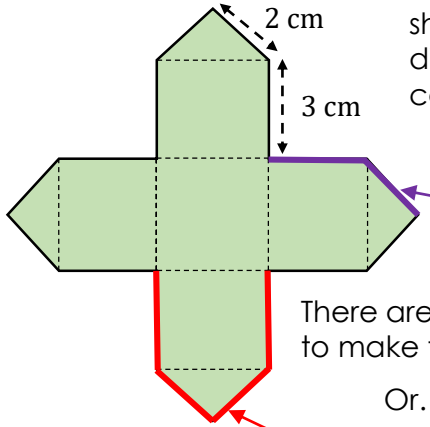
Perimeter is the **distance** all the way around the **edge** of a shape.

By **counting edges** of **squares** along the **sides** of a shape on a grid, we can work out the perimeter of that shape.



The perimeter of this L shape is 2 + 3 + 2 + 2 + 4 + 5 = 18 cm

For more complicated shapes, we can use different strategies to calculate the perimeter.



$8 \times (2 + 3)$ cm

There are 8 lots of 2cm + 3cm to make the whole perimeter.

Or…

$4 \times (2 + 2 + 3 + 3)$ cm

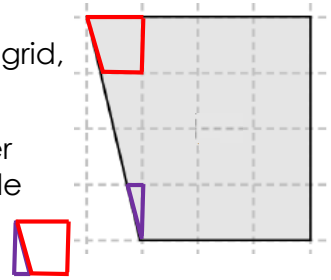
There are 4 lots of 2cm + 2cm + 3cm + 3cm to make the whole perimeter.

Area – counting squares

Area is the amount of **space** inside a shape.

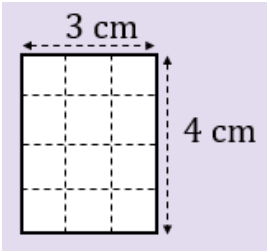
By **counting squares inside** a shape on a grid, we can work out the **area** of that shape.

For part squares, we can put these together to create whole squares. The purple triangle can be counted with the red trapezium to form a whole square.



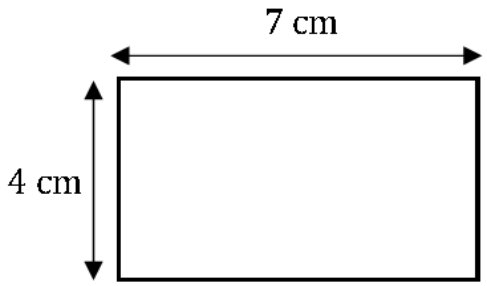
Area of a rectangle

We can calculate the area of a rectangle by multiplying:



There are four rows, with three squares in each row. $4 \times 3 = 12$ so the area is 12 cm^2

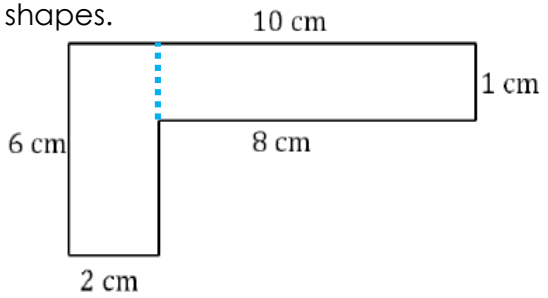
There are four rows, with seven squares in each row. $4 \times 7 = 28$ so the area is 28 cm^2



Compound Shapes

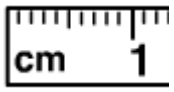
By splitting compound shapes into simple shapes, we can find the total area by adding the areas of the simple shapes.

There are two rectangles: 8 x 1 and 2 x 6, so the total area is 8 + 12 = 20 cm^2



Other Topics/Units this could appear in:

- Perimeter and Area
- Plans and Elevations
- Surface Area and Volume

Keyword/Skill	Definition/Tips
Perimeter	Distance around the edge of a shape. Start and finish at the same point.
Area	The amount of space inside a shape. Measured in square units, such as cm^2, mm^2, m^2 …
Compound	Where more than one shape have been stuck together to form a new shape.
Centimetre 	Metric unit of measurement for lengths.
Millimetre 	Smaller unit of measurement than centimetres. 1cm = 10mm
Metre	Larger unit of measurement than centimetres. A door is about 2m tall. 100cm = 1m
Kilometre	Larger unit of measurement, usually used for distances between towns and cities in Europe. (The UK uses miles) 1000m = 1km

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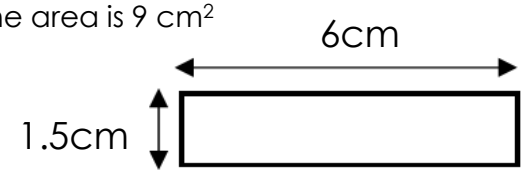
Area of a Rectangle

The **area** of a **rectangle** is calculated by multiplying the **length** by the **width**.

Area of rectangle = length × width

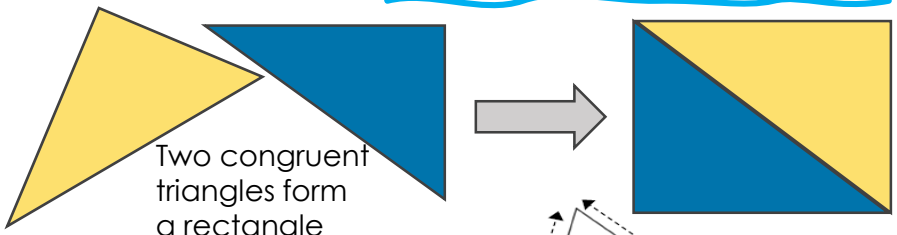
The length is 6cm, the height is 1.5cm.
6 × 1.5 = 9 so the area is 9 cm²



Area of a triangle

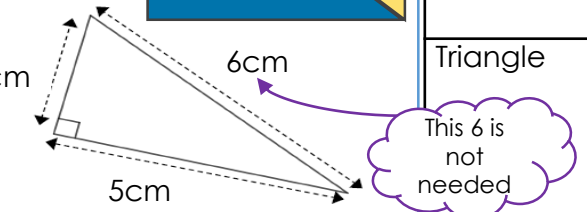
The **area** of a **triangle** is calculated by multiplying the **height** by the **base**, then **dividing by 2**.

Area of triangle = $\frac{\text{height} \times \text{base}}{2}$



Two congruent triangles form a rectangle

The height is 3cm, the base is 5cm.
$\frac{3 \times 5}{2}$ = 7.5 so the area is 7.5 cm²

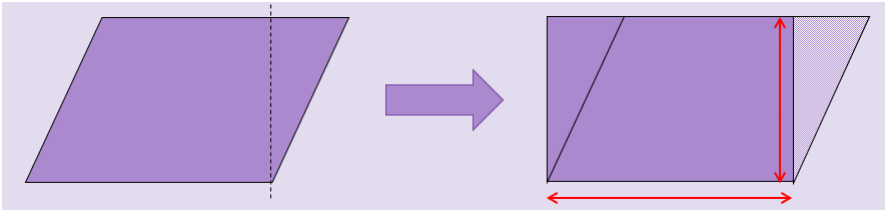


This 6 is not needed

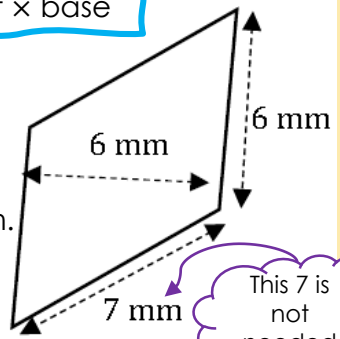
Area of a parallelogram

The **area** of a **parallelogram** is calculated by multiplying the **perpendicular height** by the **base**.

A parallelogram can be split and rearranged to form a rectangle



Area of parallelogram = height × base



The height is 6cm, the base is 6cm.
6 × 6 = 36 so the area is 36 cm²

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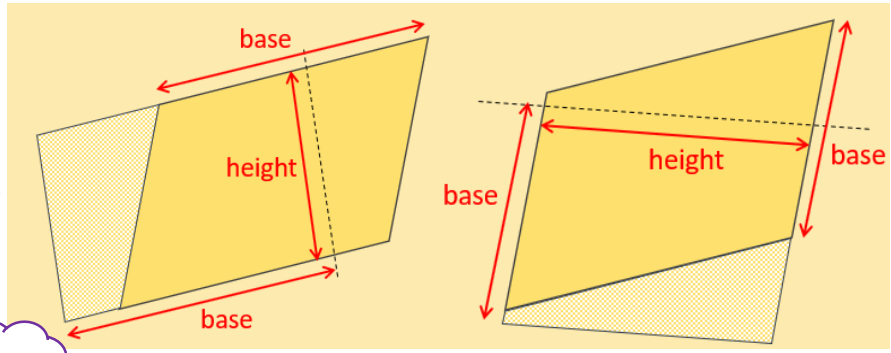

The height must be **perpendicular** to the base.

Other Topics/Units this could appear in:

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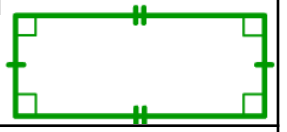
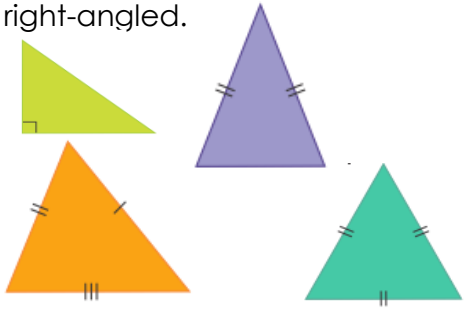
Keyword/Skill	**Definition/Tips**
Rectangle	4 right-angles 2 pairs of opposite equal parallel sides 
Triangle	3 sides and 3 angles. Scalene, isosceles, equilateral, right-angled. 
Parallelogram	2 pairs of equal parallel sides 2 pairs of opposite equal angles 
Perpendicular	Meeting at right angles (90°)