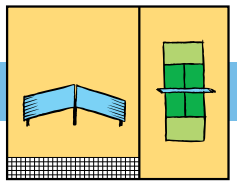
Area

This Concept Dictionary consists of Teaching Points extracted from Maths Builder's worksheets and shows the development of important maths concepts from the Area strand, Year 0 to Year 6.

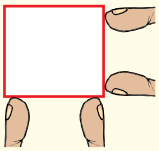
1:04 Area



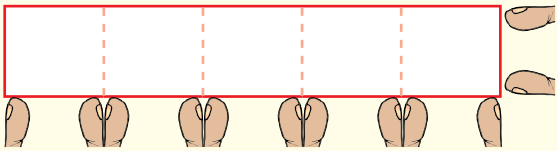
Teaching

To estimate the area of a shape you can visualise or measure one unit with your fingers and see how many times it will fit.

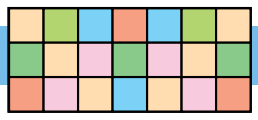
Use:



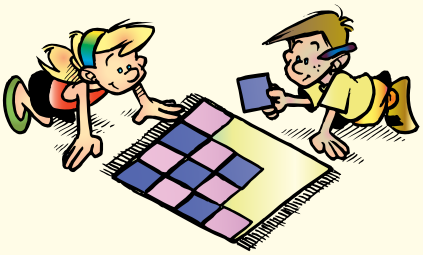
Estimate the area.



2:03 Using a grid



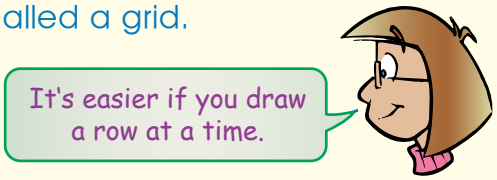
Teaching



To find the area of a shape, we can draw the repeated unit over its whole surface.
This pattern is called a grid.

The area is

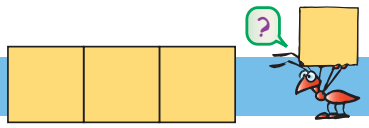
------ squares.



©Alan McSeveny

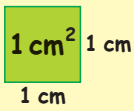
Copyright Alan McSeveny 2012

3:02 Using square centimetres

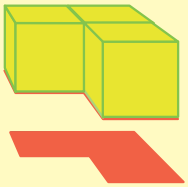


(Area)

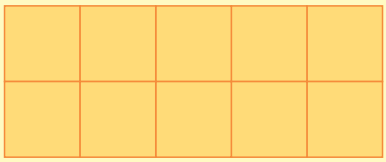
We use square centimetres to measure small areas.



This is one square centimetre.



Three Base 10 shorts would cover 3 cm².



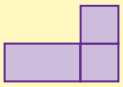
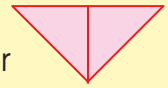
The area of this rectangle is 10 square centimetres.
Area = 10 cm²

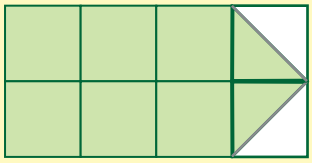
3:02 Extension

The square centimetre

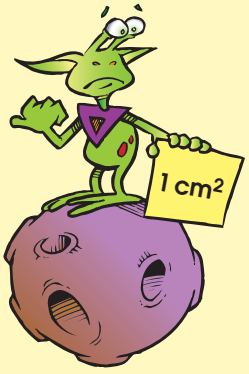
(Area)

A square centimetre can have any shape.

1 cm² can be or or  or 



The area of this shape
$= 6 + \frac{1}{2} + \frac{1}{2} \text{cm}^2$
$= 7 \text{cm}^2$



4:03 Making a square metre

flats make one square metre.

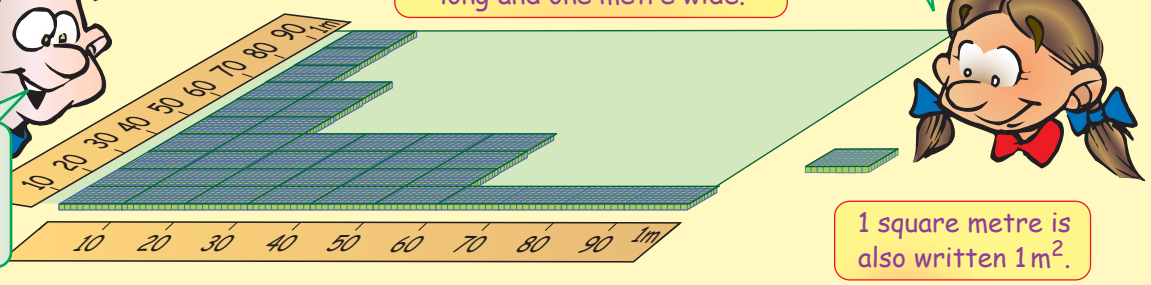
(Area)

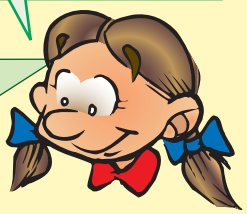
To measure larger areas we use the square metre (1 m²).

A square metre is one metre long and one metre wide.

We are going to need a lot more Base 10 flats.

A square metre is 10 flats long and 10 flats wide.





1 square metre is also written 1 m².

©Alan McSeveny

Copyright Alan McSeveny 2012

5:03 Calculating area

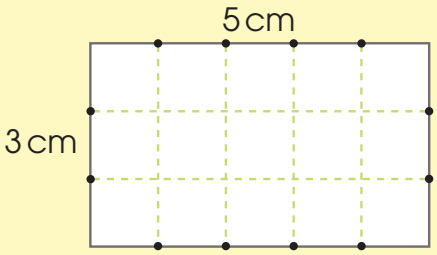
You can count the squares to find the area.

(Area)

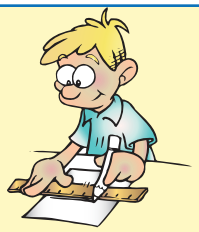
This is called a formula.

Area = length × breadth = 5 cm × 3 cm

= 15 cm²



I marked the sides in centimetres and joined the dots. The area is 15 cm².



A = L × B

B

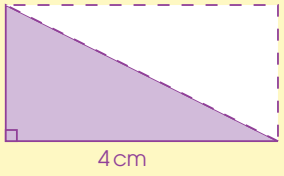
L

5:06 Area of triangles

Triangles have three straight sides.

(Area)

The triangle is half the rectangle.



Area of rectangle = L × B

= 4 cm × 2 cm

= 8 cm²

Area of triangle

= $\frac{1}{2}$ L × B

= $\frac{1}{2}$ of 4 cm × 2 cm

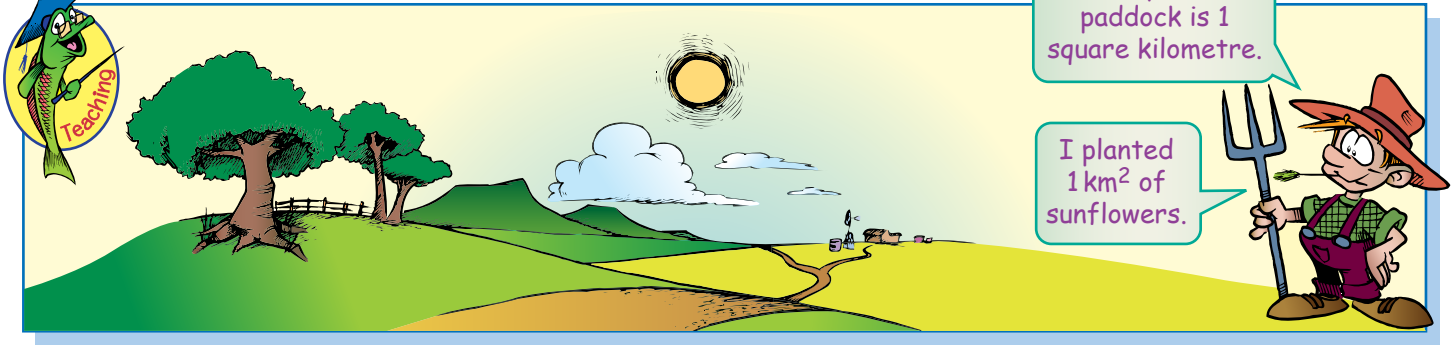
= 4 cm²

The area of the triangle is half the area of the rectangle.

5:07 The square kilometre

1 km² = 1000 m × 1000 m or 500 m × 2000 m

(Area)



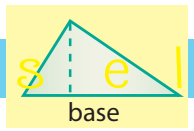
The yellow paddock is 1 square kilometre.

I planted 1 km² of sunflowers.

©Alan McSeveny

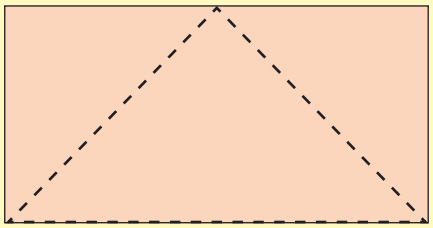
Copyright Alan McSeveny 2012

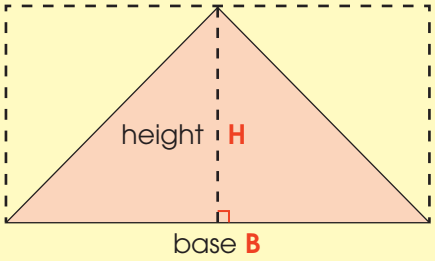
6:02 Triangles



The length of the triangle is called its base.

(Area)





Area of a triangle = $\frac{1}{2}$ the area of a rectangle.

= $\frac{1}{2}$ × base × height.

If I cut off the two sides I can make another triangle with the same area.

The perpendicular height of the triangle is the same as the breadth of the rectangle.

6:04 The hectare

1 ha = 10 000 m^2

1 km^2 = 100 ha

ha! ha! ha!

(Area)

A hectare is an area of land with 10 000 square metres.

1 ha = 10 000 m^2

I planted one hectare of daffodils.

I'd rather write 1 hectare than 10 000 square metres.

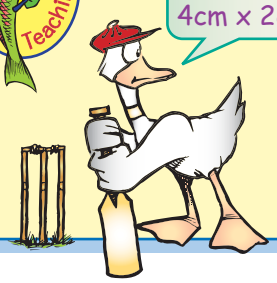
1 hectare = 100m × 100m. One hectare is written as 1 ha.

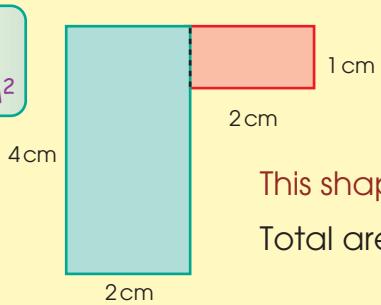
6:06 Calculating area of irregular shapes

Area of a rectangle = length × breadth

(Area)

The green rectangle is 4cm x 2cm = 8cm^2





The red rectangle is 2cm x 1cm = 2cm^2

This shape has two rectangles

Total area = 8 cm^2 + 2 cm^2

= 10 cm^2

©Alan McSeveny

Copyright Alan McSeveny 2012

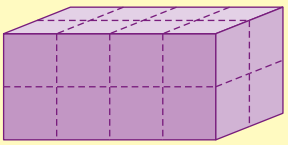
6:07 Surface area of rectangular prisms

(Area)

Surface area = the area of the net of the solid

The surface area is the total area of all the faces of an object.

This prism has 6 faces, therefore 6 areas.



I could count the squares using a grid overlay on each face.

The areas of the opposite sides of a rectangular prism are equal.

$8\,cm^2 + 8\,cm^2 + 8\,cm^2 + 8\,cm^2 + 4\,cm^2 + 4\,cm^2$

Surface area = $40\,cm^2$

©Alan McSeveny

Copyright Alan McSeveny 2012