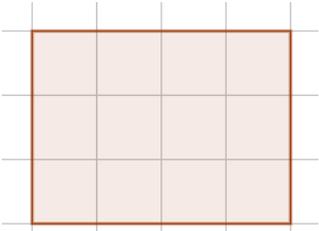


# Area

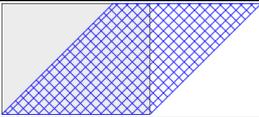
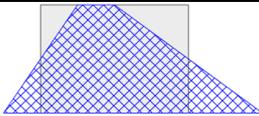
Area is **flat space (2-D)**

Length is distance (1-D), Volume is 'real' space (3-D)

## Common Examples:

<p><b>Square centimetres (<math>cm^2</math>)</b> 5p coin: <math>1cm^2</math></p> 	<p>Area is the <b>number of squares</b> that would fit in a shape:</p>  <p>3 rows of 4 <math>\Rightarrow 3 \times 4 = 12cm^2</math> or 4 columns of 3 <math>\Rightarrow 4 \times 3 = 12cm^2</math></p> <p><b>Rectangle Area = length <math>\times</math> width</b></p>
<p><b>Square metres (<math>m^2</math>)</b> Dining table: <math>1m^2</math></p> 	
<p><b>Hectares (<math>ha</math>)</b> Small field: <math>1ha = 10,000m^2 = 0.01km^2</math></p>	
<p><b>Square kilometres (<math>km^2</math>)</b> Small village: <math>1km^2</math></p> 	

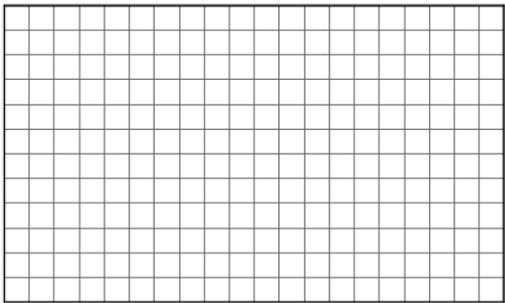
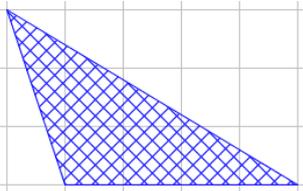
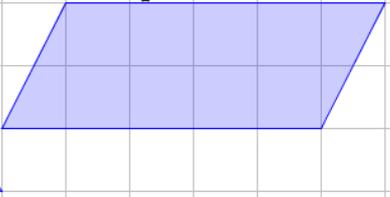
## Important Results:

<p>A <b>triangle</b> covers exactly <b>half of a rectangle</b> with the same height and width:</p> 	<p><b>Triangle:</b> <math>Area = \frac{1}{2}(base \times height)</math></p>
<p>A <b>parallelogram</b> covers a <b>whole rectangle</b> with the same height and width:</p> 	<p><b>Parallelogram:</b> <math>Area = base \times height</math></p>
<p>A <b>trapezium</b> covers a <b>whole rectangle</b> with the same height and <i>average</i> width.</p> 	<p><b>Trapezium:</b> <math>\frac{1}{2}(a + b)h</math></p>

To find the area of a **compound shape**, first split it up into rectangles and triangles.

To **estimate** the area of an **irregular shape**, draw on a square grid and count the number of squares it covers.

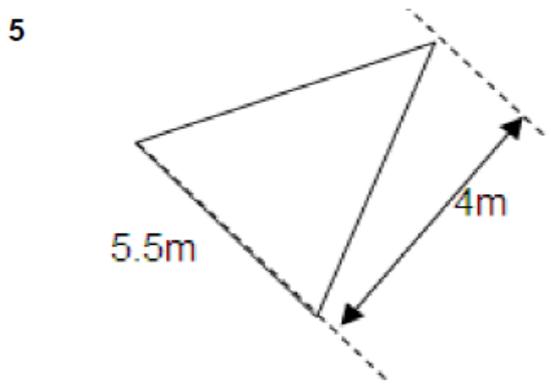
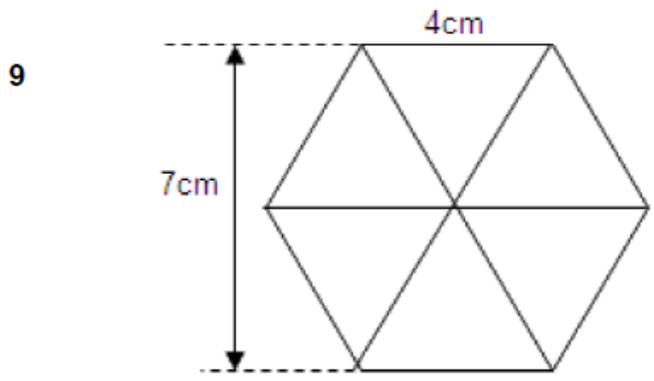
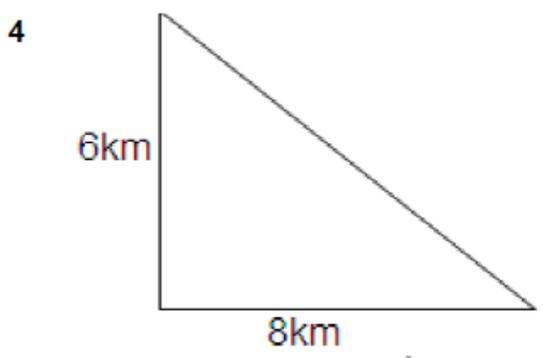
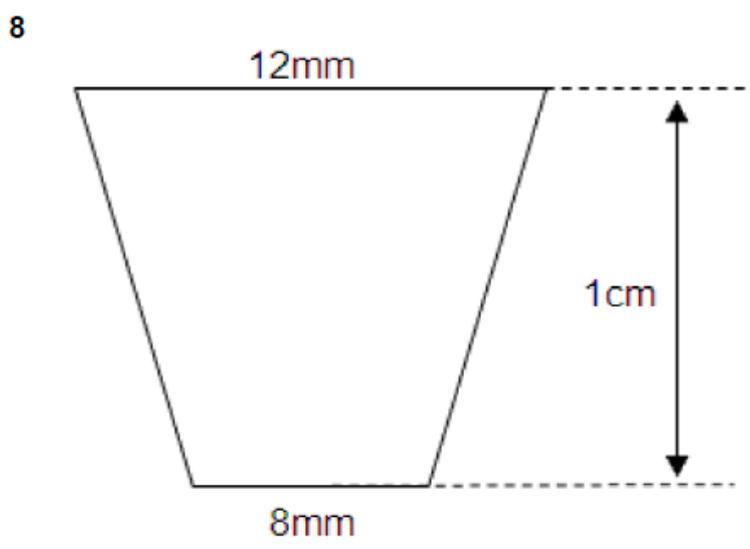
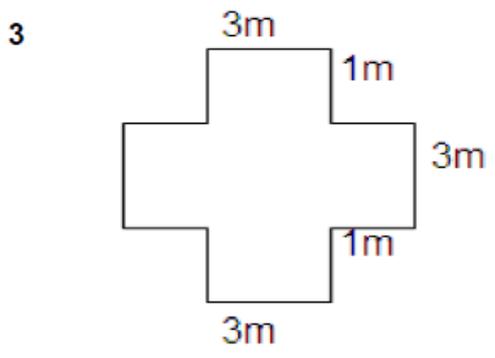
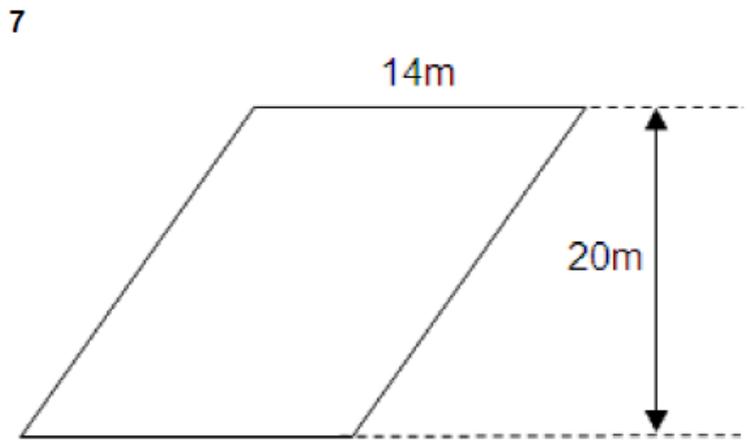
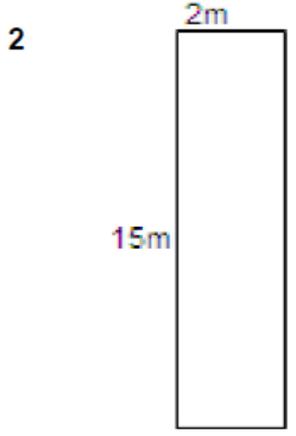
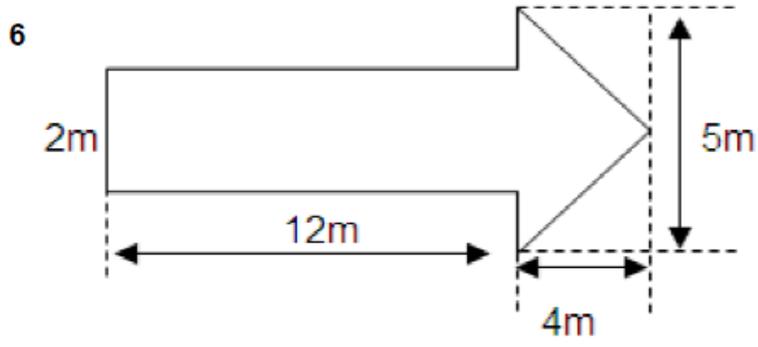
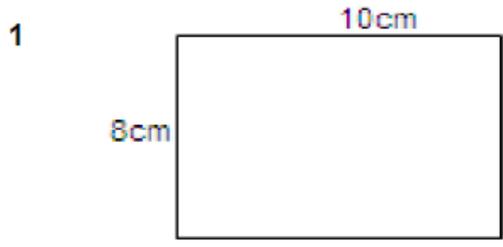
## Practice Questions:

<p>Find the area of this sheet of squared paper:</p>  <p>12cm</p> <p>20cm</p> <p>Area = _____ <math>cm^2</math></p> <p>(Multiplying is usually quicker than counting squares)</p>	<p>Find the area of this triangle, drawn on a <math>cm^2</math> grid:</p> 
<p>These shapes are also drawn on a <math>cm^2</math> grid. Which has larger area, and by how much?</p> <p><b>Shape A</b>                      <b>Shape B</b></p>  	

A4 paper measures approximately 20cm by 30cm. Work out the area of a single sheet of A4 paper: \_\_\_\_\_  $cm^2$

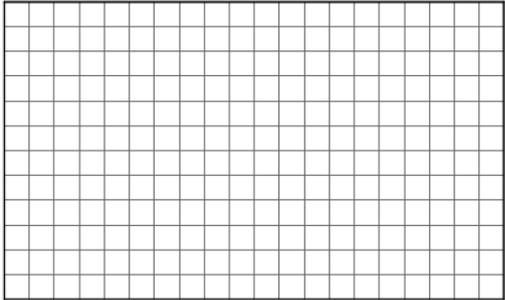
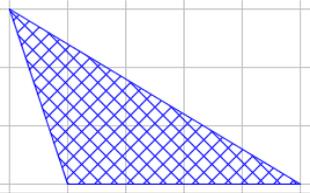
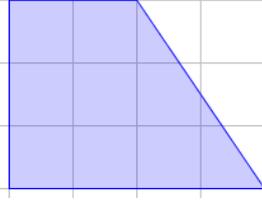
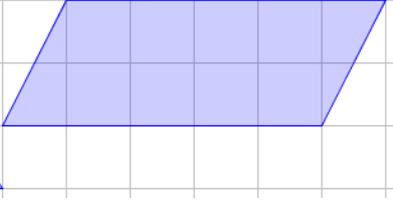
If you halve the length and the width, you get A6 paper. Work out the area of a single sheet of A6 paper: \_\_\_\_\_  $cm^2$

Find the area of each of the following shapes (by splitting them into simpler shapes first if necessary). Don't forget to include the units with your answers.



# Area SOLUTIONS

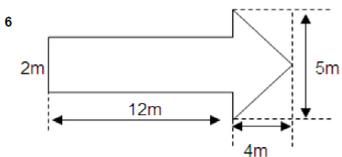
## Practice Questions:

<p>Find the area of this sheet of squared paper:</p>  <p style="text-align: center;"><b>20cm</b></p> <p><b>Area = <math>12 \times 20 = 240\text{cm}^2</math></b> (Multiplying is usually quicker than counting squares)</p>	<p>Find the area of this triangle, drawn on a <math>\text{cm}^2</math> grid:</p>  $\frac{1}{2}(b \times h)$ $= \frac{1}{2}(4 \times 3) = 6\text{cm}^2$
<p>These shapes are also drawn on a <math>\text{cm}^2</math> grid. Which has larger area, and by how much?</p>	
<p><b>Shape A</b></p> 	<p><b>Shape B</b></p> 
<p><b>Trapezium:</b></p> $\frac{1}{2}(2 + 4) \times 3$ $= 3 \times 3 = 9\text{cm}^2$	<p><b>Parallelogram:</b></p> $5 \times 2 = 10\text{cm}^2$

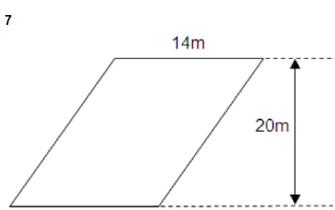
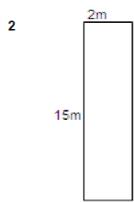
A4 paper measures approximately 20cm by 30cm. Work out the area of a single sheet of A4 paper:  
 $20 \times 30 = 600\text{cm}^2$

If you halve the length and the width, you get A6 paper. Work out the area of a single sheet of A6 paper:  
 $10 \times 15 = 150\text{cm}^2$

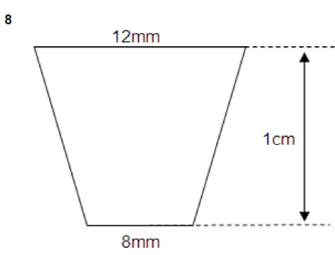
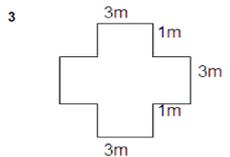
Find the area of each of the following shapes (by splitting them into simpler shapes first if necessary). Don't forget to include the units with your answers.



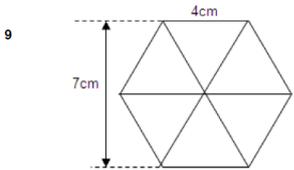
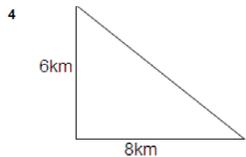
1.  $80\text{cm}^2$     6.  $34\text{m}^2$



2.  $30\text{m}^2$     7.  $280\text{m}^2$

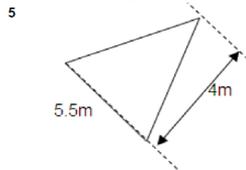


8.  $1\text{cm}^2$  (or  $100\text{mm}^2$ )



3.  $21\text{m}^2$

4.  $12\text{km}^2$     9.  $42\text{cm}^2$



5.  $11\text{m}^2$

