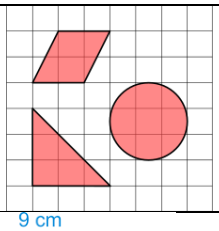
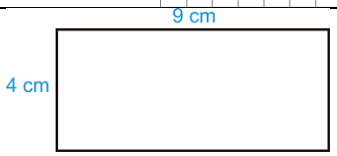
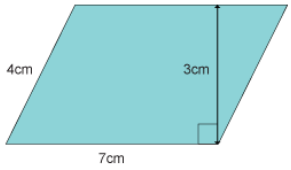
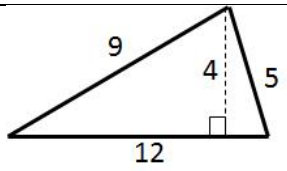
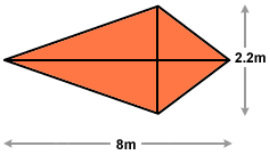
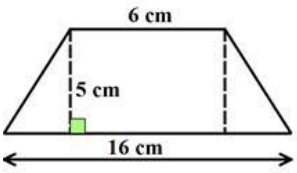
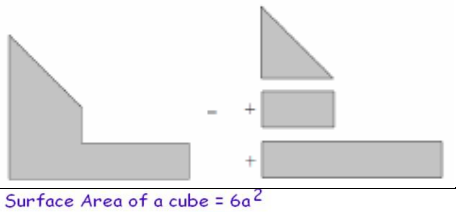
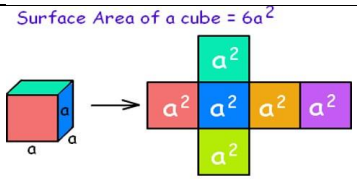
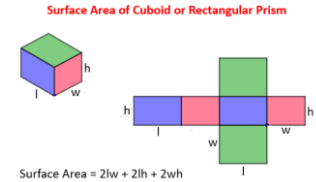
STM Knowledge Organiser Year: 10 Subject: Maths

Topic: Area and surface area (non-circular)

Core Knowledge

Topic/Skill	Definition/Tips	Example
1. Area	The amount of **space inside** a shape. Units include: mm^2, cm^2, m^2	
3. Area of a Rectangle	**Length x Width**	 $A = 36cm^2$
4. Area of a Parallelogram	**Base x Perpendicular Height** Not the slant height.	 $A = 21cm^2$
5. Area of a Triangle	**Base x Height ÷ 2**	 $A = 24cm^2$
6. Area of a Kite	Split in to **two triangles** and use the method above.	 $A = 8.8m^2$
7. Area of a Trapezium	$\frac{(a+b)}{2} \times h$ "Half the sum of the parallel side, times the height between them. That is how you calculate the area of a trapezium"	 $A = 55cm^2$
8. Compound Shape	A shape made up of a **combination of other known shapes** put together.	
9. Surface area	The total area of faces on a shape	 

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Core Knowledge

<table>
<tr>
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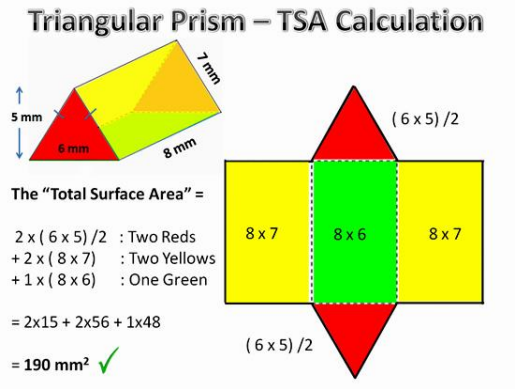
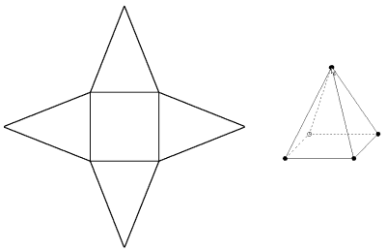
<td>Triangular prism – It could be one of 3 types – 1) equilateral triangle, 3 rectangles the same, 2) isosceles triangle with 2 rectangles the same and a different base 3) scalene triangle with 3 rectangles all different.

The key is to identify the faces you have, label and colour them, write down formulae you need, calculate each then add together</td>
<td> 

 </td>
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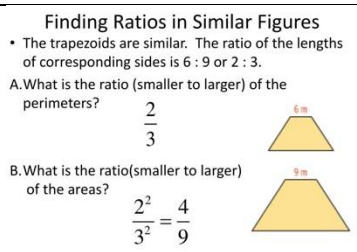
<tr>
<td>10. Areas of similar shapes</td>
<td>Two shapes are said to be similar when you can multiply each edge length by a scale factor – a fixed number that when multiplied by the side-lengths of the smaller shape gives us the side-lengths of the bigger shape.</td>
<td> 

Then multiply the area of the smaller shape by the ratio in B (scale factor) to find the area of the larger shape</td>
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<td>11. Area unit conversions</td>
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<table>
<tr><td></td><td>mm</td><td>cm</td><td>m</td></tr>
<tr><td>mm</td><td></td><td>÷ 10^2</td><td>÷ 1000^2</td></tr>
<tr><td>cm</td><td>X 10^2</td><td></td><td>÷100^2</td></tr>
<tr><td>m</td><td>X1000^2</td><td>X100^2</td><td></td></tr>
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Links to four operations, substitution, surface area, volume