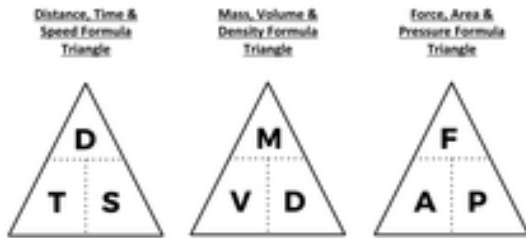


<b>Maths Subject/Topic: Measure</b>	<b>Subject/Topic: Congruence, Symmetry, Similarity</b>
<b>Key ideas: Conversion of units. Compound measures.</b>	<b>Key ideas Congruent triangles. Similar shapes. Line and rotational symmetry. Properties of similar shapes.</b>

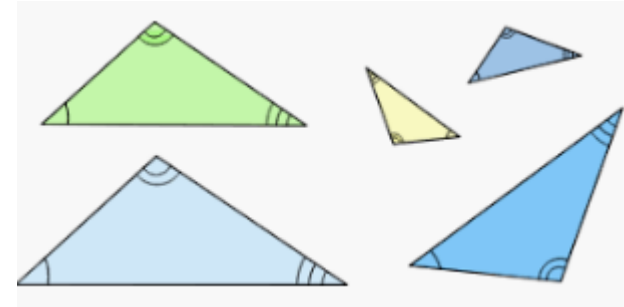
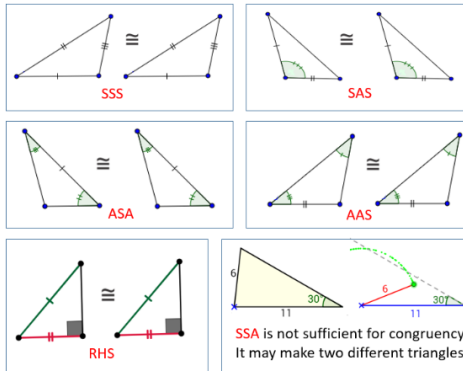
Length	Weight	Volume
1 km = 1,000 m	1 kg = 1,000 g	1 kL = 1,000 L
1 m = .001 km	1 g = .001 kg	1 L = .001 kL
1 m = 100 cm	1 g = 100 cg	1 L = 100 cL
1 cm = .01 m	1 cg = .01 g	1 cL = .01 L
1 m = 1,000 mm	1 g = 1,000 mg	1 L = 1,000 mL
1 mm = .001 m	1 mg = .001 g	1 mL = .001 L



Congruent triangles are identical.

Similar triangles are enlargements.

**Rules for Triangle Congruency**



**Keywords /Key Language:**


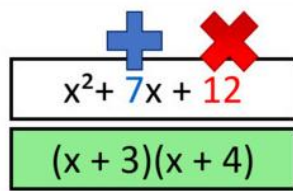
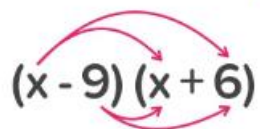
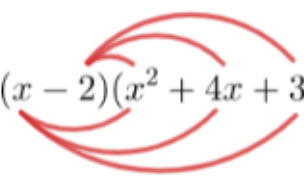
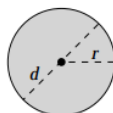
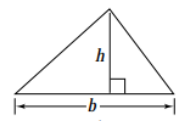
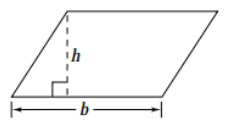
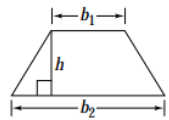
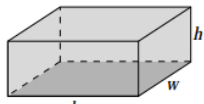
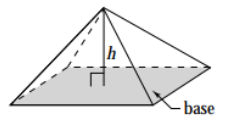
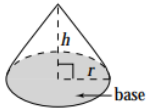
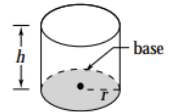

**Keywords /Key Language:**

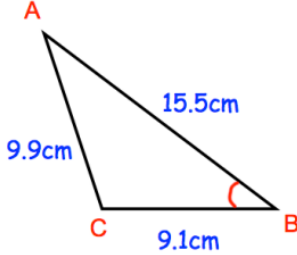
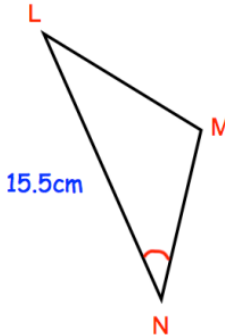

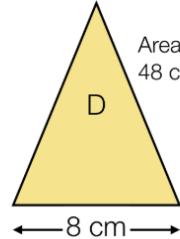
- 1 centimetre = 10 millimetres
- 1 gram = 1000 milligrams
- 1 kilogram = 1000 grams
- 1 centilitre = 10 millilitres
- 1 litre = 100 centilitres
- 1 mile = 1.61 kilometres

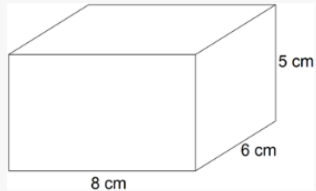
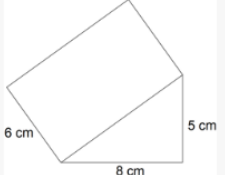
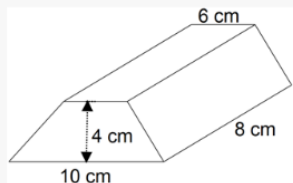
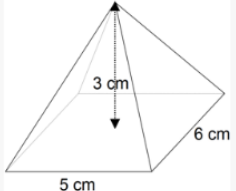
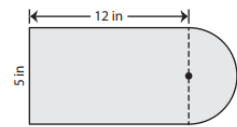
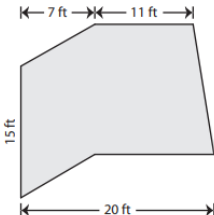


Compound measures  
Metric  
Imperial

- Congruent – Exactly the same size and shape
- Similar – All sides enlarged by the same scale factor
- Enlargement – Shape enlarged or reduced by a scale factor
- Scale factor – The multiplier of enlargement
- Line symmetry - A line from where a shape is mirrored
- Rotational symmetry. – A shape is rotated about a point to see how many times it fits onto itself exactly in a 360 degree turn. Rotational symmetry order 1 means no rotational symmetry.

<b>Maths Subject/Topic: Expanding brackets and factorising</b>	<b>Subject/Topic: Area and Volume I</b>
<p><b>Key ideas:</b></p> <p style="text-align: right;">Factorising. Put the brackets back in</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <math display="block">2x(4x - 3) = 2x \times 4x - 3 \times 2x</math> <math display="block">= 8x^2 - 6x</math> </div> <div style="text-align: center;">  <math display="block">x^2 + 7x + 12</math> <math display="block">(x + 3)(x + 4)</math> </div> </div> <p><b>Expand and simplify.</b></p> <div style="text-align: center;">  <math display="block">(x - 9)(x + 6)</math> <math display="block">x^2 + 6x - 9x - 54</math> </div> <div style="text-align: center; margin-top: 20px;">  <math display="block">(x - 2)(x^2 + 4x + 3) = x^3 + 4x^2 + 3x - 2x^2 - 8x - 6</math> </div>	<p><b>Key Ideas:</b></p> <div style="display: grid; grid-template-columns: repeat(3, 1fr); gap: 10px;"> <!-- Circle --> <div style="text-align: center;">  <p><math>C = 2\pi r</math> or <math>C = \pi d</math> <math>A = \pi r^2</math></p> <p>Circle</p> </div> <!-- Triangle --> <div style="text-align: center;">  <p><math>A = \frac{1}{2}bh</math></p> <p>Triangle</p> </div> <!-- Parallelogram --> <div style="text-align: center;">  <p><math>A = bh</math></p> <p>Parallelogram</p> </div> <!-- Trapezoid --> <div style="text-align: center;">  <p><math>A = \frac{1}{2}(b_1 + b_2)h</math></p> <p>Trapezoid</p> </div> <!-- Rectangular Prism --> <div style="text-align: center;">  <p><math>V = Bh</math> <math>V = lwh</math></p> <p>Rectangular Prism</p> </div> <!-- Pyramid --> <div style="text-align: center;">  <p><math>V = \frac{1}{3}Bh</math></p> <p>Pyramid</p> </div> <!-- Cone --> <div style="text-align: center;">  <p><math>V = \frac{1}{3}Bh</math> <math>V = \frac{1}{3}\pi r^2 h</math></p> <p>Cone</p> </div> <!-- Cylinder --> <div style="text-align: center;">  <p><math>V = Bh</math> <math>V = \pi r^2 h</math></p> <p>Cylinder</p> </div> <!-- Sphere --> <div style="text-align: center;">  <p><math>V = \frac{4}{3}\pi r^3</math></p> <p>Sphere</p> </div> </div>
<p><b>Keywords /Key Language:</b></p>	<p><b>Keywords /Key Language:</b></p>
<p>Expand: Multiply out the bracket. Multiply everything inside the bracket by everything on the outside. Factorise: Put the brackets back in by finding common factors.</p>	<p>Area: The space inside a 2D shape. Measured in square units. Volume: The space inside a 3D shape. Measured in cube units.</p>

<b>Maths Subject/Topic: Measure</b>	<b>Subject/Topic: Congruence, Symmetry, Similarity</b>			
<p><b>Questions:</b></p> <h2 style="text-align: center;">Speed, Distance, Time</h2> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center; vertical-align: top;"> <div style="text-align: center;"><span style="color: red; font-size: 2em;">★</span></div> <p>Calculate the average speed</p> <ol style="list-style-type: none"> <li>1) A car travels 60 km in 2 hours</li> <li>2) A cyclist travels 18 miles in 1 hour 30 minutes</li> <li>3) A girl cycles 4 km in 20 minutes</li> <li>4) A train travels 140 km in 1 hour 45 minutes</li> <li>5) A car travels 6 km in 5 minutes</li> <li>6) A cyclist travels 3 km in 10 minutes</li> </ol> </td> <td style="width: 33%; text-align: center; vertical-align: top;"> <div style="text-align: center;"><span style="color: yellow; font-size: 2em;">★★</span></div> <p>Calculate the distance</p> <ol style="list-style-type: none"> <li>1) A car travels at a speed of 40 km/h for 2 hours</li> <li>2) A train travels at a speed of 60 mph for 1 hour 20 minutes</li> <li>3) A cyclist travels at a speed of 20 km/h for 15 minutes</li> <li>4) A snails travels at a speed of 4 cm per minute for 210 seconds</li> <li>5) A car travels at a speed of 72 mph for 35 minutes</li> <li>6) A train travel at a speed of 84 mph for 3 hours 10 minutes</li> </ol> </td> <td style="width: 33%; text-align: center; vertical-align: top;"> <div style="text-align: center;"><span style="color: green; font-size: 2em;">★★★</span></div> <p>Calculate the time</p> <ol style="list-style-type: none"> <li>1) A car covers a distance of 150 km at a speed of 60 km/h</li> <li>2) A cyclist covers a distance of 12 km at a speed of 18 km/h</li> <li>3) A train travels a distance of 60 miles at a speed of 80 mph</li> <li>4) A taxi travels a distance of 4 miles at a speed of 24 miles per hour.</li> <li>5) A car travels 100 km at a speed of 80 km/h</li> <li>6) A train travels 210 km at a speed of 90 km/h</li> </ol> </td> </tr> </table>	<div style="text-align: center;"><span style="color: red; font-size: 2em;">★</span></div> <p>Calculate the average speed</p> <ol style="list-style-type: none"> <li>1) A car travels 60 km in 2 hours</li> <li>2) A cyclist travels 18 miles in 1 hour 30 minutes</li> <li>3) A girl cycles 4 km in 20 minutes</li> <li>4) A train travels 140 km in 1 hour 45 minutes</li> <li>5) A car travels 6 km in 5 minutes</li> <li>6) A cyclist travels 3 km in 10 minutes</li> </ol>	<div style="text-align: center;"><span style="color: yellow; font-size: 2em;">★★</span></div> <p>Calculate the distance</p> <ol style="list-style-type: none"> <li>1) A car travels at a speed of 40 km/h for 2 hours</li> <li>2) A train travels at a speed of 60 mph for 1 hour 20 minutes</li> <li>3) A cyclist travels at a speed of 20 km/h for 15 minutes</li> <li>4) A snails travels at a speed of 4 cm per minute for 210 seconds</li> <li>5) A car travels at a speed of 72 mph for 35 minutes</li> <li>6) A train travel at a speed of 84 mph for 3 hours 10 minutes</li> </ol>	<div style="text-align: center;"><span style="color: green; font-size: 2em;">★★★</span></div> <p>Calculate the time</p> <ol style="list-style-type: none"> <li>1) A car covers a distance of 150 km at a speed of 60 km/h</li> <li>2) A cyclist covers a distance of 12 km at a speed of 18 km/h</li> <li>3) A train travels a distance of 60 miles at a speed of 80 mph</li> <li>4) A taxi travels a distance of 4 miles at a speed of 24 miles per hour.</li> <li>5) A car travels 100 km at a speed of 80 km/h</li> <li>6) A train travels 210 km at a speed of 90 km/h</li> </ol>	<p><b>Questions:</b></p> <ol style="list-style-type: none"> <li>1. ABC and LMN are congruent triangles. Angle B = Angle N</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p>(a) Write down the length of MN.</p>
<div style="text-align: center;"><span style="color: red; font-size: 2em;">★</span></div> <p>Calculate the average speed</p> <ol style="list-style-type: none"> <li>1) A car travels 60 km in 2 hours</li> <li>2) A cyclist travels 18 miles in 1 hour 30 minutes</li> <li>3) A girl cycles 4 km in 20 minutes</li> <li>4) A train travels 140 km in 1 hour 45 minutes</li> <li>5) A car travels 6 km in 5 minutes</li> <li>6) A cyclist travels 3 km in 10 minutes</li> </ol>	<div style="text-align: center;"><span style="color: yellow; font-size: 2em;">★★</span></div> <p>Calculate the distance</p> <ol style="list-style-type: none"> <li>1) A car travels at a speed of 40 km/h for 2 hours</li> <li>2) A train travels at a speed of 60 mph for 1 hour 20 minutes</li> <li>3) A cyclist travels at a speed of 20 km/h for 15 minutes</li> <li>4) A snails travels at a speed of 4 cm per minute for 210 seconds</li> <li>5) A car travels at a speed of 72 mph for 35 minutes</li> <li>6) A train travel at a speed of 84 mph for 3 hours 10 minutes</li> </ol>	<div style="text-align: center;"><span style="color: green; font-size: 2em;">★★★</span></div> <p>Calculate the time</p> <ol style="list-style-type: none"> <li>1) A car covers a distance of 150 km at a speed of 60 km/h</li> <li>2) A cyclist covers a distance of 12 km at a speed of 18 km/h</li> <li>3) A train travels a distance of 60 miles at a speed of 80 mph</li> <li>4) A taxi travels a distance of 4 miles at a speed of 24 miles per hour.</li> <li>5) A car travels 100 km at a speed of 80 km/h</li> <li>6) A train travels 210 km at a speed of 90 km/h</li> </ol>		
<ul style="list-style-type: none"> <li>• Convert <math>1\text{cm}^3</math> to <math>\text{mm}^3</math></li> <li>• <math>1\text{mm}^3</math> to <math>\text{cm}^3</math></li> <li>• <math>1\text{m}^3</math> to <math>\text{cm}^3</math></li> </ul>	<p>Here are two similar triangles. The area of C is <math>12\text{ cm}^2</math> and the area of D is <math>48\text{ cm}^2</math>.</p> <div style="display: flex; justify-content: center; align-items: center;"> <div style="text-align: center; margin-right: 20px;"> <p>Area = <math>12\text{ cm}^2</math></p>  <p><math>x\text{ cm}</math></p> </div> <div style="text-align: center;"> <p>Area = <math>48\text{ cm}^2</math></p>  <p><math>8\text{ cm}</math></p> </div> </div> <p>c) Work out the value of <math>x</math>.</p>			

<b>Maths Subject/Topic: Expanding brackets and factorising</b>	<b>Subject/Topic: Area and Volume I</b>
<p><b>Questions:</b></p> <p><b>Multiply out</b> the following:</p> <p>1) <math>(x+1)(x+3)</math></p> <p>2) <math>(x-2)(x-4)</math></p> <p>3) <math>(x+5)(x-5)</math></p> <p>4) <math>(2n+1)(3x-2)</math></p> <p>1) <math>(t+1)(x+y+z)</math>                      4) <math>(x+1)(x+2)(x+3)</math></p> <p>2) <math>(a+3)(a+b-c)</math>                      5) <math>(x-4)(x+7)(x-1)</math></p> <p>3) <math>(2q-1)(q-q^2+7)</math>                      6) <math>(x+y)(xy-y^2)(y+8)</math></p>	<p><b>Questions:</b></p> <div style="display: flex; flex-wrap: wrap;"> <div style="border: 2px solid red; border-radius: 15px; padding: 10px; width: 50%;"> <p>Calculate the volume</p>  </div> <div style="border: 2px solid yellow; border-radius: 15px; padding: 10px; width: 50%;"> <p>Calculate the volume</p>  </div> <div style="border: 2px solid green; border-radius: 15px; padding: 10px; width: 50%;"> <p>Calculate the volume</p>  </div> <div style="border: 2px solid blue; border-radius: 15px; padding: 10px; width: 50%;"> <p>Calculate the volume</p>  </div> </div>
<p>Factorise the following quadratic expressions:</p> <p>1) <math>3x^2+4x+1</math>                      4) <math>6x^2+x-12</math></p> <p>2) <math>2x^2+5x-3</math>                      5) <math>8x^2-26x+15</math></p> <p>3) <math>2x^2-3x-14</math>                      6) <math>4x^2-6x-18</math></p>	<p>Find the area of each figure. Round your answer to 2 decimal places if required. (Use <math>\pi = 3.14</math>)</p> <p>1)  Area = _____</p> <p>2)  Area = _____</p>