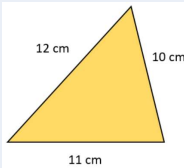
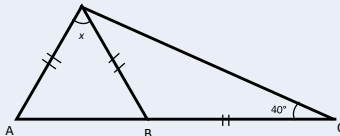
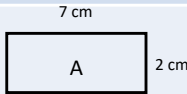
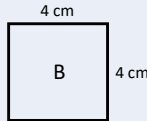


CONGRUENCE AND SIMILARITY

Keywords:	Scale factor / Ratio / Enlargement / Similar / Congruent / Identical /					
Definition / Description:	Scale factor: The ratio of the enlarged distance to the original value	Ratio: A part to part comparison	Enlargement: Changing the size of a shape by a given scale factor	Similar: Two shapes whose sides are in proportion to one another	Congruent: How to mathematically describe 2 shapes that are identical	Identical: Exactly alike
Knowledge points:	Use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS) Understand and identify congruent triangles; prove congruency using formal arguments		Use congruence and similarity to prove missing angles and sides Recognise similar shapes when rotated or reflected; apply mathematical reasoning		Compare lengths, areas and volumes using ratio notation Make links to similarity and scale factors	Apply the concepts of congruence and similarity, including relationships between lengths, areas and volumes
Knowledge point examples:	<p><i>Condition for Congruency = Side, Side, Side (SSS)</i></p> 		<p>ABC is a straight line. Work out x.</p>  <p><i>Triangle AB and Triangle BC are both isosceles triangles -> Angles at A and B are equal and angles at C and corresponding base are equal.</i></p> <p><i>Angle at B in Triangle BC: $180^\circ - (40^\circ + 40^\circ) = 100^\circ$</i></p> <p><i>Angles on a straight line total 180°, therefore angle at B in Triangle AB = 80°.</i></p> <p><i>Angles at A and B are equal, so x is $180^\circ - (80^\circ + 80^\circ) = 20^\circ$.</i></p>		<p style="text-align: center;">7 cm 4 cm</p>  <p>Write the ratio perimeter A : perimeter B in its simplest form.</p> <p><i>Perimeter A: $2(7 + 2) = 18 \text{ cm}$</i></p> <p><i>Perimeter B: $4 + 4 + 4 \text{ cm} + 4 = 16 \text{ cm}$</i></p> <p><i>Ratio = $18 : 16$) $\div 2$</i> <u>9 : 8</u></p> <p>Write the ratio area A : area B in its simplest form.</p> <p><i>Area A: $7 \times 2 = 14 \text{ cm}^2$</i></p> <p><i>Area B: $4 \times 4 = 16 \text{ cm}^2$</i></p> <p><i>Ratio = $14 : 16$) $\div 2$</i> <u>7 : 8</u></p>	<p>These boxes are similar.</p>  <p>What is the ratio of the volume of box A to the volume of box B?</p> <p><i>Ratios of side lengths = $2 \text{ cm} : 6 \text{ cm} = 1 : 3$ (in simplest form)</i></p> <p><i>If length ratio is $a : b$, then area ratio is $a^2 : b^2$ and volume ratio is $a^3 : b^3$.</i></p> <p><i>Therefore, ratio of volumes = $1^3 : 3^3 = 1 : 27$</i></p>
Linked	Constructions / Angles / Transformations (Enlargement)					