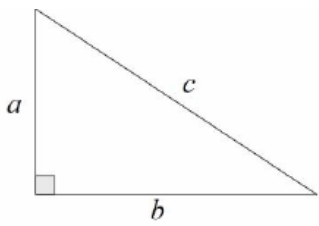
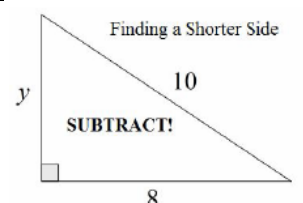
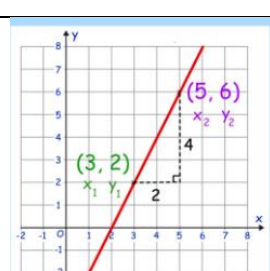
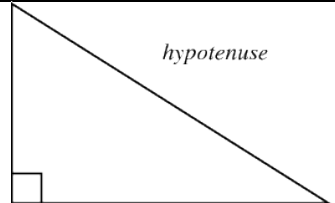
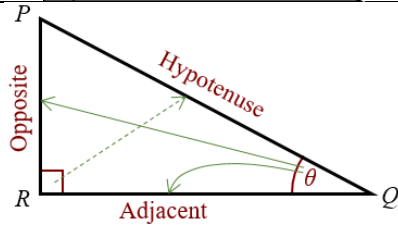
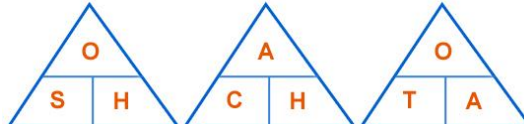
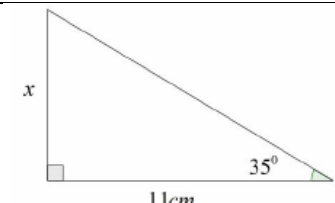
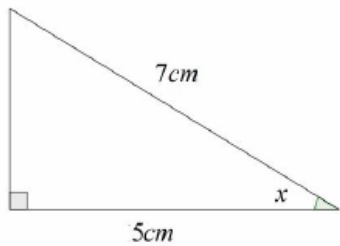
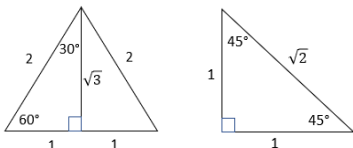
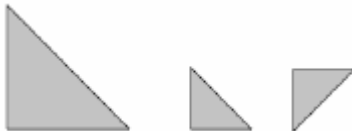
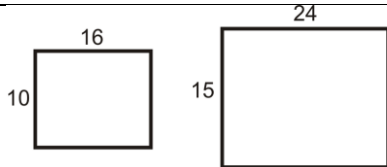
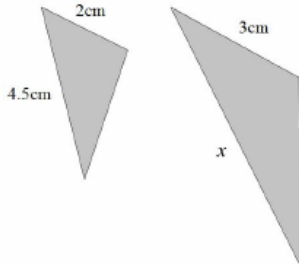
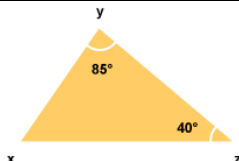
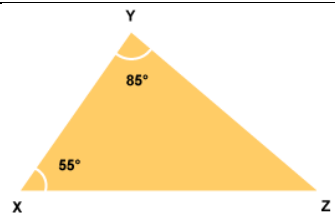
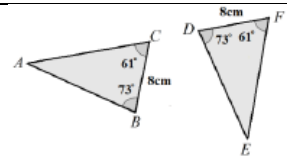


Angles 2

Topic/Skill	Definition/Tips	Example
Pythagoras' Theorem	For any right-angled triangle: $a^2 + b^2 = c^2$  Used to find missing lengths. a and b are the shorter sides, c is the hypotenuse (longest side).	Finding a Shorter Side  $a = y, b = 8, c = 10$ $a^2 = c^2 - b^2$ $y^2 = 100 - 64$ $y^2 = 36$ $y = 6$
Distance between two points	- Find the horizontal distance ie the difference in x between the two co-ordinates ($x_2 - x_1$) - Find the vertical distance ie the difference in y between the two co-ordinates ($y_2 - y_1$) - Use Pythagoras	 $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $d = \sqrt{(2)^2 + (4)^2}$ $d = \sqrt{4 + 16}$ $d = \sqrt{20} \text{ or } 4.47$
Trigonometry	The study of triangles .	
Hypotenuse	The longest side of a right-angled triangle. Is always opposite the right angle.	
Adjacent	Next to	
Trigonometric Formulae	Use SOHCAHTOA. $\sin \theta = \frac{O}{H}$ $\cos \theta = \frac{A}{H}$ $\tan \theta = \frac{O}{A}$ 	 Use 'Opposite' and 'Adjacent', so use 'tan' $\tan 35 = \frac{x}{11}$ $x = 11 \tan 35 = 7.70\text{cm}$

	When finding a missing angle, use the 'inverse' trigonometric function by pressing the 'shift' button on the calculator.	 Use 'Adjacent' and 'Hypotenuse', so use 'cos' $\cos x = \frac{5}{7}$ $x = \cos^{-1}\left(\frac{5}{7}\right) = 44.4^{\circ}$																								
Trigonometric ratio exact values	To be learnt or quickly worked out using: 	<table><tr><th>Angle/Ratio</th><th>0°</th><th>30°</th><th>45°</th><th>60°</th><th>90°</th></tr><tr><td>Sin</td><td>0</td><td>$\frac{1}{2}$</td><td>$\frac{\sqrt{2}}{2}$</td><td>$\frac{\sqrt{3}}{2}$</td><td>1</td></tr><tr><td>Cos</td><td>1</td><td>$\frac{\sqrt{3}}{2}$</td><td>$\frac{\sqrt{2}}{2}$</td><td>$\frac{1}{2}$</td><td>0</td></tr><tr><td>Tan</td><td>0</td><td>$\frac{\sqrt{3}}{3}$</td><td>1</td><td>$\frac{\sqrt{3}}{1}$</td><td>Undefined</td></tr></table>	Angle/Ratio	0°	30°	45°	60°	90°	Sin	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	Cos	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	Tan	0	$\frac{\sqrt{3}}{3}$	1	$\frac{\sqrt{3}}{1}$	Undefined
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Cos	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0																					
Tan	0	$\frac{\sqrt{3}}{3}$	1	$\frac{\sqrt{3}}{1}$	Undefined																					
Similar Shapes	Shapes are similar if they are the same shape but different sizes. The proportion of the matching sides must be the same, meaning the ratios of corresponding sides are all equal.																									
Scale Factor	The ratio of corresponding sides of two similar shapes. To find a scale factor, divide a length on one shape by the corresponding length on a similar shape.	 Scale Factor = $15 \div 10 = 1.5$																								
Finding missing lengths in similar shapes	1. Find the scale factor. 2. Multiply or divide the corresponding side to find a missing length. If you are finding a missing length on the larger shape you will need to multiply by the scale factor. If you are finding a missing length on the smaller shape you will need to divide by the scale factor.	 Scale Factor = $3 \div 2 = 1.5$ $x = 4.5 \times 1.5 = 6.75\text{cm}$																								
Similar Triangles	To show that two triangles are similar, show that: 1. The three sides are in the same proportion 2. Two sides are in the same proportion, and their included angle is the same																									

	3. The three angles are equal	
Congruent Shapes	Shapes are congruent if they are identical - same shape and same size. Shapes can be rotated or reflected but still be congruent.	
Congruent Triangles	4 ways of proving that two triangles are congruent: 1. SSS (Side, Side, Side) 2. RHS (Right angle, Hypotenuse, Side) 3. SAS (Side, Angle, Side) 4. ASA (Angle, Side, Angle) or AAS <u>ASS does not prove congruency.</u>	 $BC = DF$ $\angle ABC = \angle EDF$ $\angle ACB = \angle EFD$ $\therefore$ The two triangles are congruent by AAS.

Where else is the Angles topic used in maths?

Transformations

Algebra

Links to other subjects