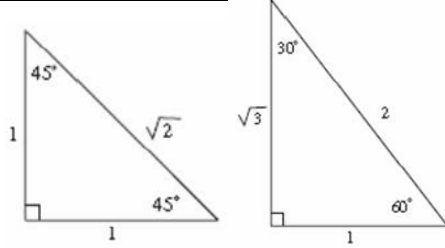
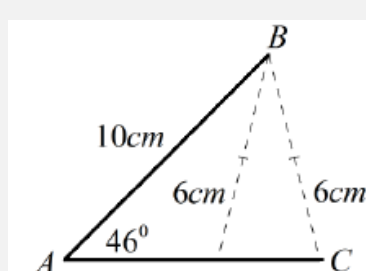
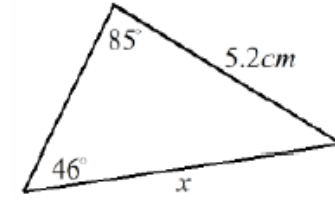
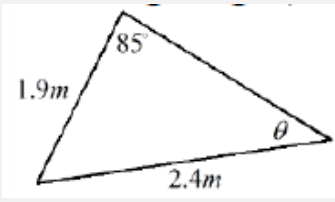
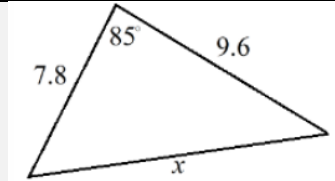
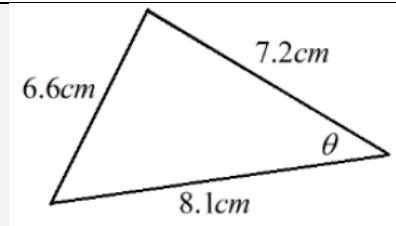


Topic: Angles 2

Topic/Skill	Definition/Tips						Example
Exact Values for Angles in Trigonometry		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	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	----	
Sine Rule	Use with non right angle triangles. Use when the question involves 2 sides and 2 angles. For missing side: $\frac{a}{\sin A} = \frac{b}{\sin B}$ For missing angle: $\frac{\sin A}{a} = \frac{\sin B}{b}$ There is an ambiguous case (where there are two potential answers)  To find the two angles, use sine to find one, and then subtract your answer from 180 to find the other answer.						 $\frac{x}{\sin 85} = \frac{5.2}{\sin 46}$ $x = \frac{5.2 \times \sin 85}{\sin 46} = 3.75\text{cm}$  $\frac{\sin \theta}{1.9} = \frac{\sin 85}{2.4}$ $\sin \theta = \frac{1.9 \times \sin 85}{2.4} = 0.789$ $\theta = \sin^{-1}(0.789) = 52.1^\circ$
Cosine Rule	Use with non right angle triangles. Use when the question involves 3 sides and 1 angle. For missing side: $a^2 = b^2 + c^2 - 2bccosA$ For missing angle: $cos A = \frac{b^2 + c^2 - a^2}{2bc}$						 $x^2 = 9.6^2 + 7.8^2 - (2 \times 9.6 \times 7.8 \times \cos 85)$ $x = 11.8$



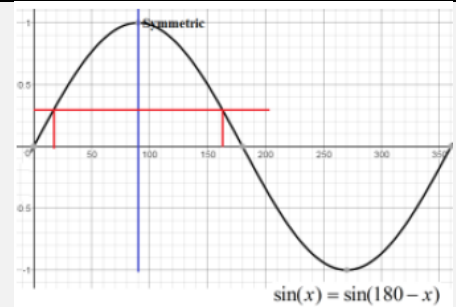
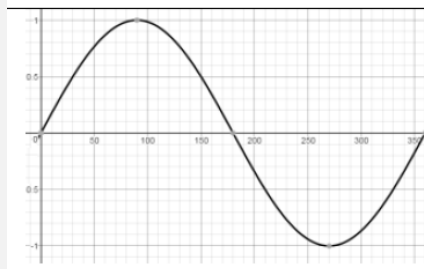
$$\cos \theta = \frac{7.2^2 + 8.1^2 - 6.6^2}{2 \times 7.2 \times 8.1}$$

$$\theta = 50.7^\circ$$

Graphs of Trigonometric Functions

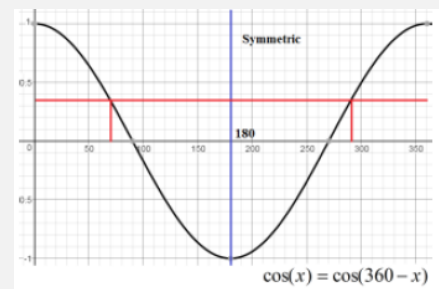
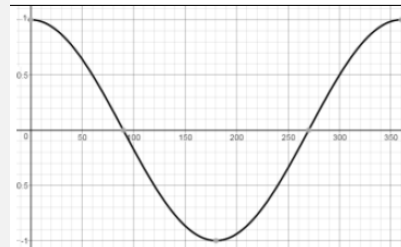
$$y = \sin(x)$$

for $0 \leq x \leq 360^\circ$



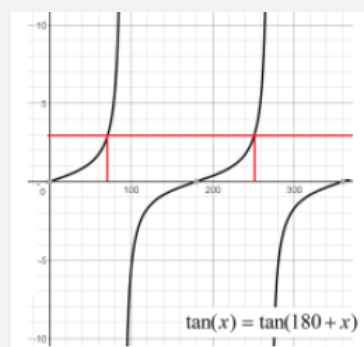
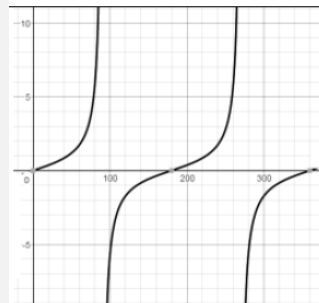
$$y = \cos(x)$$

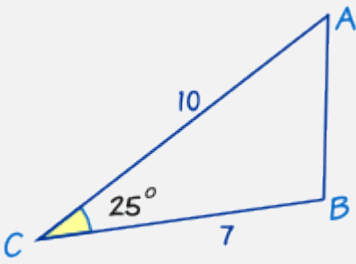
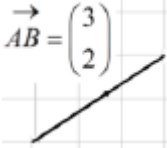
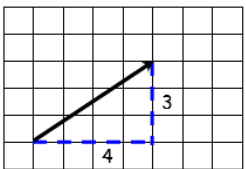
for $0 \leq x \leq 360^\circ$



$$y = \tan(x)$$

for $0 \leq x \leq 360^\circ$



Area of a Triangle	Use when given the length of two sides and the included angle. $\text{Area of a Triangle} = \frac{1}{2}ab \sin C$	 $A = \frac{1}{2}ab \sin C$ $A = \frac{1}{2} \times 7 \times 10 \times \sin 25$ $A = 14.8$
3D Pythagoras' Theorem	Find missing lengths by identifying right angled triangles. You will often have to find a missing length you are not asked for before finding the missing length you are asked for.	Can a pencil that is 20cm long fit in a pencil tin with dimensions 12cm, 13cm and 9cm? The pencil tin is in the shape of a cuboid. Hypotenuse of the base = $\sqrt{12^2 + 13^2} = 17.7$ Diagonal of cuboid = $\sqrt{17.7^2 + 9^2} = 19.8\text{cm}$ No, the pencil cannot fit.
Vector	A vector is a quantity represented by an arrow with both direction and magnitude. $\vec{AB} = -\vec{BA}$	
Magnitude	Magnitude is defined as the length of a vector.	 Magnitude (length) can be calculated using Pythagoras Theorem: $3^2 + 4^2 = 25$ $\sqrt{25} = 5$
Equal Vectors	If two vectors have the same magnitude and direction, they are equal.	
Parallel Vectors	Parallel vectors are multiples of each other.	$2\mathbf{a} + \mathbf{b}$ and $4\mathbf{a} + 2\mathbf{b}$ are parallel as they are multiple of each other. 