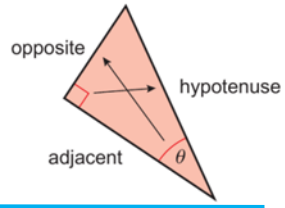
KS4 Knowledge Organiser

Topic 5: Angles and Trigonometry (HT)

St LUKE'S SCIENCE AND SPORTS COLLEGE



In a right-angled triangle, the longest side is called the hypotenuse and is opposite the right-angle.

The side opposite the angle θ is called the **opposite.**

The side that is next to angle θ is the **adjacent**.

When one side of a triangle is extended at the vertex, it forms an **exterior** angle.
x is the **interior** angle.
y is the **exterior** angle.

$$x + y = 180^o$$

The sum of the interior angles of a polygon with n sides = (n-2) x 180°

The sum of the **exterior** angles of a polygon is always 360°

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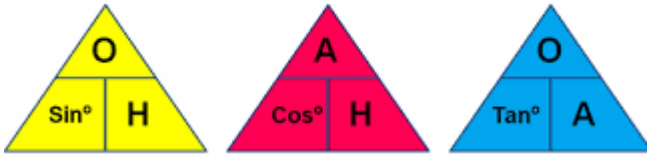
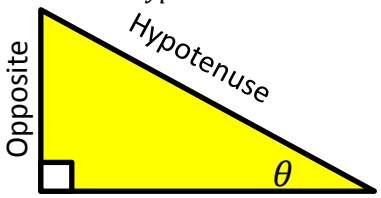


Sine Ratio

$Opp = sin\theta \times Hyp$

$Hyp = \frac{Opp}{sin\,\theta}$

$\sin^{-1}\theta = \frac{Opp}{Hyp}$

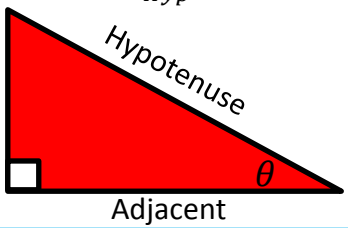


Cosine Ratio

$Adj = cos\theta \times Hyp$

$Hyp = \frac{Adj}{cos\,\theta}$

$\cos^{-1}\theta = \frac{Adj}{Hyp}$

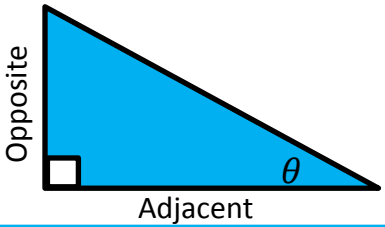


Tangent Ratio

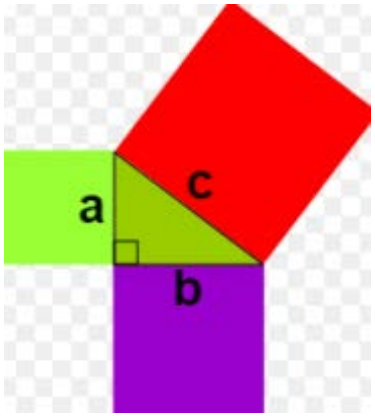
$Opp = tan\theta \times Adj$

$Adj = \frac{Opp}{tan\,\theta}$

$\tan^{-1}\theta = \frac{Opp}{Adj}$



To get $\sin^{-1}$, $\cos^{-1}$ and $\tan^{-1}$ press shift on the calculator and then the corresponding ratio.



Pythagoras' Theorem

$a^2 + b^2 = c^2$

To find **hypotenuse**:
Square side a
Square side b
Add together
Square root

To find shorter side:
Square side c
Square side a or b
Subtract a or b from c
Square root

V257

θ	0°	30°	45°	60°	90°
$\sin\theta$	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
$\cos\theta$	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
$\tan\theta$	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	

The exact **sine**, **cosine** and **tangent** of some angles are in this table.

V329
V330
V331