

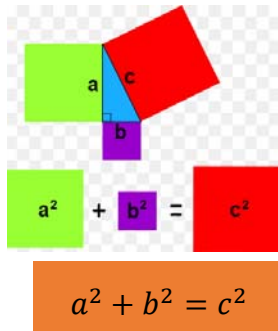
Maths Knowledge Organiser

Year 10 (F) Right angled triangles



Pythagoras

Used only in right angled triangle to find missing lengths using other lengths



Longest side

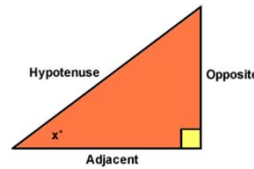
- 1) Square
- 2) Add
- 3) Square root

Shortest side

- 1) Square
- 2) Subtract
- 3) Square root

Trigonometry

Used to find missing sides or angles involving other sides and angles

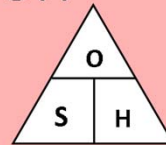


Hypotenuse = longest side
Opposite = Opposite side to angle
Adjacent = in-between angle and right angle

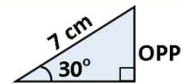
Once sides have been identified identify the trigonometric function required.

Use the sine (sin) function when sides **opposite** and **hypotenuse** are involved.

SOH



$$\sin = \frac{\text{OPPOSITE}}{\text{HYPOTENUSE}}$$



$$\sin 30 = \frac{\text{OPP}}{7}$$

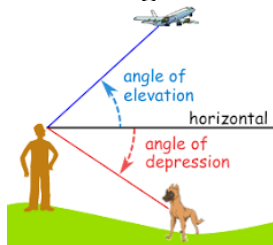
$$\sin 30 \times 7 = \text{OPP}$$

$$\text{OPP} = \underline{3.5 \text{ cm}}$$

Elevation and depression

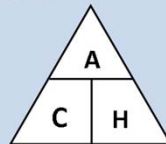
Angles of Elevation and Depression. The angle of elevation of an object as seen by an observer is the angle between the horizontal and the line from the object to the observer's eye.

Elevation is an angle above eye line
Depression is an angle below eye line



Use the cosine (cos) function when sides **adjacent** and **hypotenuse** are involved.

CAH



$$\cos = \frac{\text{ADJACENT}}{\text{HYPOTENUSE}}$$



$$\cos 60 = \frac{\text{ADJ}}{8}$$

$$\cos 60 \times 8 = \text{ADJ}$$

$$\text{ADJ} = \underline{4 \text{ cm}}$$

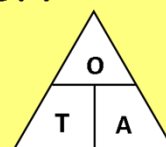
Exact trig values

Certain trigonometric values can be written exactly, which means we can answer questions without a calculator.

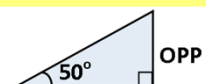
	0°	30°	45°	60°	90°
sin	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
tan	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	-

Use the tangent (tan) function when sides **adjacent** and **opposite** are involved.

TOA



$$\tan = \frac{\text{OPPOSITE}}{\text{ADJACENT}}$$



$$\tan 50 = \frac{\text{OPP}}{9}$$

$$\tan 50 \times 9 = \text{OPP}$$

$$\text{OPP} = \underline{10.7 \text{ cm}}$$