

## Essential knowledge

Know trigonometric ratios.  
 Know the exact values of sin, cos, tan for required angles.  
 Know how to identify the sides in a triangle. **Know the sine and cosine rule. Know the area of triangle rule. Know how to find lengths using the sine and cosine rule.**

## Key Vocabulary

Trigonometry - the study of the relationship between the sides and angles of a right-angled triangle

Hypotenuse – The longest side in a right angles triangle

Adjacent –The side next to the angle you are finding/using

Opposite- The side opposite the angle you are finding/using

## Prior learning links

Right angles triangles, Pythagoras

## Sine and cosine rules

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} \quad \text{To find a side.}$$

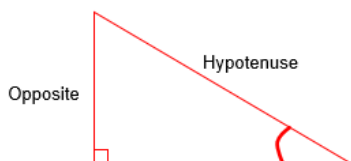
$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c} \quad \text{To find an angle.}$$

$$a^2 = b^2 + c^2 - 2bc \cos(A)$$

## Trigonometric ratios

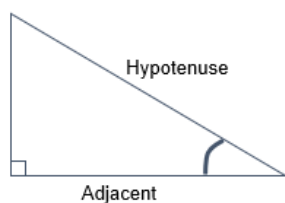
Sine Ratio:

$$\sin \theta = \frac{\text{Opposite}}{\text{Hypotenuse}}$$



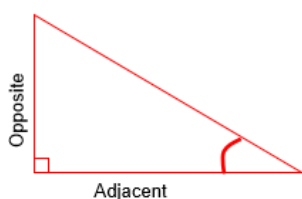
Cosine Ratio:

$$\cos \theta = \frac{\text{Adjacent}}{\text{Hypotenuse}}$$



Tangent Ratio:

$$\tan \theta = \frac{\text{Opposite}}{\text{Adjacent}}$$



## Exact Trig values

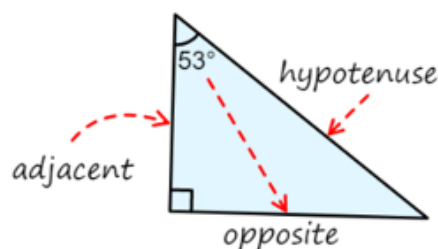
|     | 0° | 30°                  | 45°                  | 60°                  | 90°       |
|-----|----|----------------------|----------------------|----------------------|-----------|
| sin | 0  | $\frac{1}{2}$        | $\frac{\sqrt{2}}{2}$ | $\frac{\sqrt{3}}{2}$ | 1         |
| cos | 1  | $\frac{\sqrt{3}}{2}$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

## Labelling a triangle

Hypotenuse – The longest side opposite the right angle

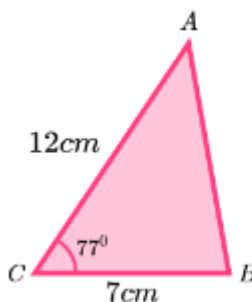
Adjacent- The angle next to the angle you are using

Opposite- The angle opposite the angle you are using.



## Area of triangle

$$\text{Area of a triangle} = \frac{1}{2} ab \sin C$$

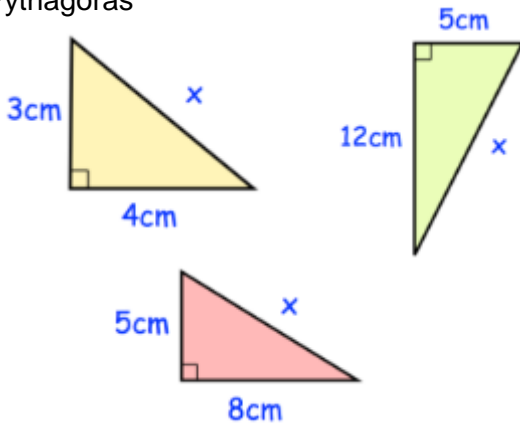


$$\text{Area} = \frac{1}{2} \times 7 \times 12 \sin (77)$$

$$\text{Area} = 40.92 \quad (2\text{dp})$$

## Prior learning links

Find the missing side lengths using Pythagoras



## Key Vocabulary

Write the definition of the following keywords

Trigonometry

Hypotenuse

Adjacent

Opposite

## Exact trig values

Write down the exact values of each of the following

(a)  $\sin 30^\circ$

(b)  $\cos 0^\circ$

(c)  $\tan 45^\circ$

(d)  $\sin 90^\circ$

(e)  $\sin 0^\circ$

(f)  $\cos 60^\circ$

(g)  $\tan 0^\circ$

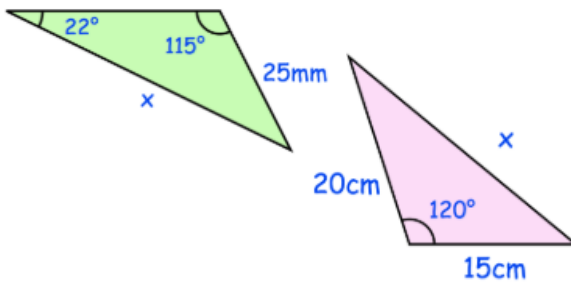
(h)  $\sin 45^\circ$

(i)  $\cos 30^\circ$

(j)  $\tan 60^\circ$

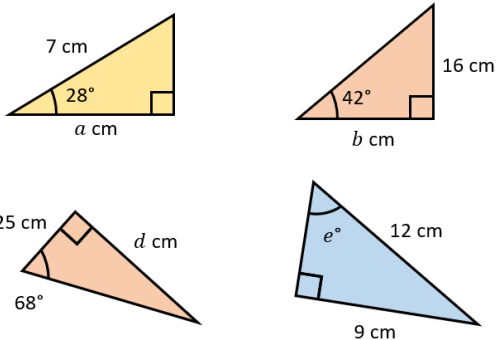
## Sine and cosine rules

Decide if you would use Sine or cosine rule on the triangles below



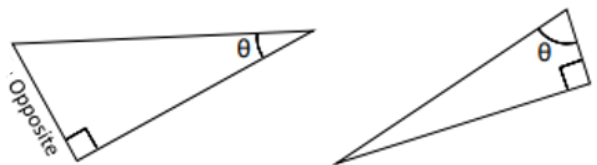
## Trigonometric ratios

Decide which Trigonometric ratios to use to find the missing side in each triangle.



## Labelling a triangle

Label the sides of the triangles below



## Area of triangle

Use the formula to find the area of the triangles below

