

## Solving Trig Problems

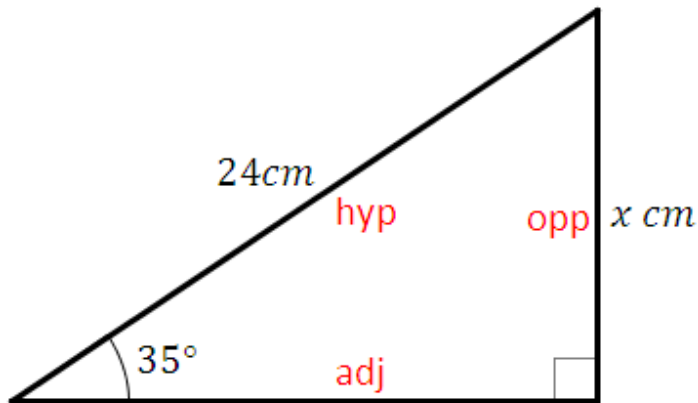
$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

### Version 1: Finding the top side

i.e. Finding the opposite for *sine* or *tangent* or the adjacent for *cosine*.



1. **Label** the triangle.
2. Choose the appropriate **formula**.

$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

3. **Substitute** in the numbers.

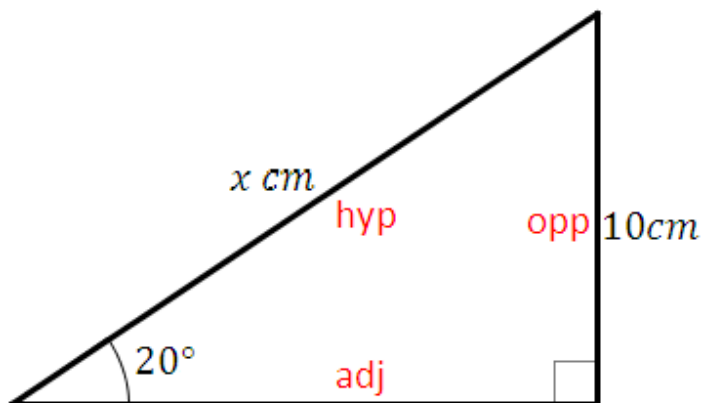
$$\sin 35 = \frac{x}{24}$$

4. **Rearrange** for  $x$ .

$$x = 24 \sin 35 = \mathbf{13.77\text{cm to 2 d.p.}}$$

### Version 2: Finding the other side

i.e. Finding the hypotenuse for *sine* or *cosine* or the adjacent for *tangent*.



1. **Label** the triangle.
2. Choose the appropriate **formula**.

$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

3. **Substitute** in the numbers.

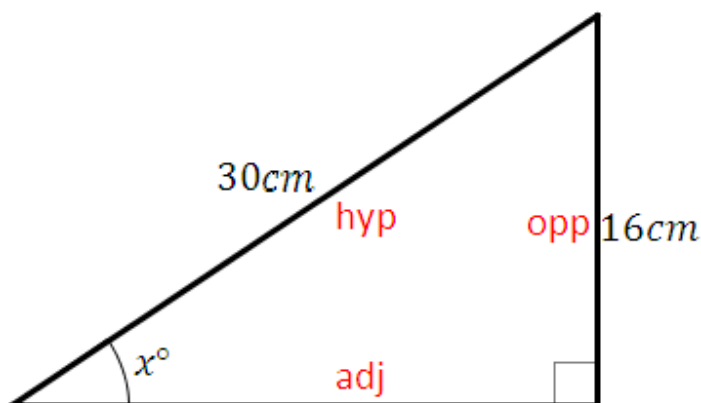
$$\sin 20 = \frac{10}{x}$$

4. **Rearrange** for  $x$ .

$$x = \frac{10}{\sin 20} = \mathbf{29.24\text{cm to 2 d.p.}}$$

### Version 3: Finding the angle

i.e. Finding a missing angle when you know the length of two sides.



1. **Label** the triangle.
2. Choose the appropriate **formula**.

$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

3. **Substitute** in the numbers.

$$\sin x = \frac{16}{30} = 0.5333 \dots$$

4. **Rearrange** for  $x$ .

$$x = \sin^{-1}(0.5333 \dots) = \mathbf{32.2^\circ \text{ to 1 d.p.}}$$