# Finding a side from a triangle

To find a missing side from a right-angled triangle we need to know one angle and one other side.

Note: If

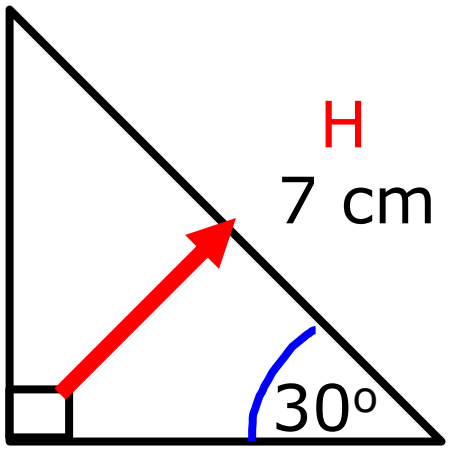
$$\text{Cos}45 = \frac{x}{13}$$

To leave x on its own we need to move the ÷ 13.

It becomes a "times" when it moves.

$$\text{Cos}45 \times 13 = x$$

4.




We have been given the adj and hyp so we use COSINE:

$$\text{Cos A} = \frac{\text{adjacent}}{\text{hypotenuse}}$$

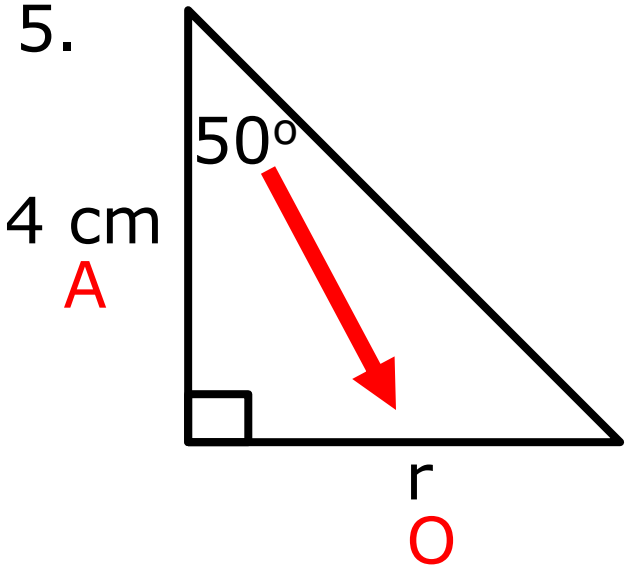
$$\text{Cos A} = \frac{a}{h}$$

$$\text{Cos } 30 = \frac{k}{7}$$

$$\text{Cos } 30 \times 7 = k$$

$$6.1 \text{ cm} = k$$

5.




We have been given the opp and adj so we use TAN:

$$\text{Tan A} = \frac{\text{opposite}}{\text{adjacent}}$$

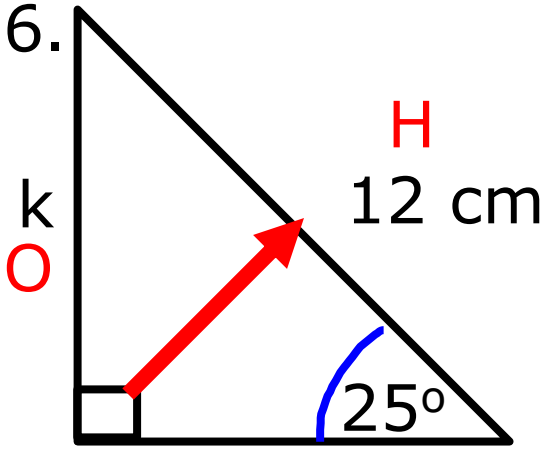
$$\text{Tan A} = \frac{o}{a}$$

$$\text{Tan } 50 = \frac{r}{4}$$

$$\text{Tan } 50 \times 4 = r$$

$$4.8 \text{ cm} = r$$

6.




We have been given the opp and hyp so we use SINE:

$$\text{Sin A} = \frac{\textbf{opposite}}{\textbf{hypotenuse}}$$

$$\sin A = \frac{o}{h}$$

$$\sin 25 = \frac{k}{12}$$

$$\text{Sin } 25 \times 12 = k$$

$$5.1 \text{ cm} = k$$

# Finding a side from a triangle

There are occasions when the unknown letter is on the bottom of the fraction after substituting.

$$\text{Cos}45 = \frac{13}{u}$$

Move the u term to the other side.

It becomes a "times" when it moves.

$$\text{Cos}45 \times u = 13$$

To leave u on its own, move the cos 45 to other side, it becomes a divide.

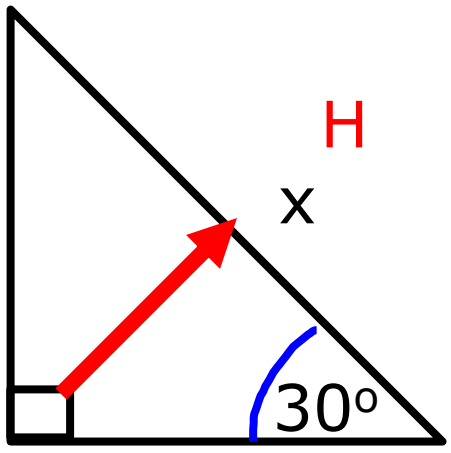
$$u = \frac{13}{\text{Cos } 45}$$

When the unknown letter is on the bottom of the fraction we can simply swap it with the trig (sin A, cos A, or tan A) value.

$$\text{Cos}45 = \frac{13}{u}$$

$$u = \frac{13}{\text{Cos } 45}$$

7.



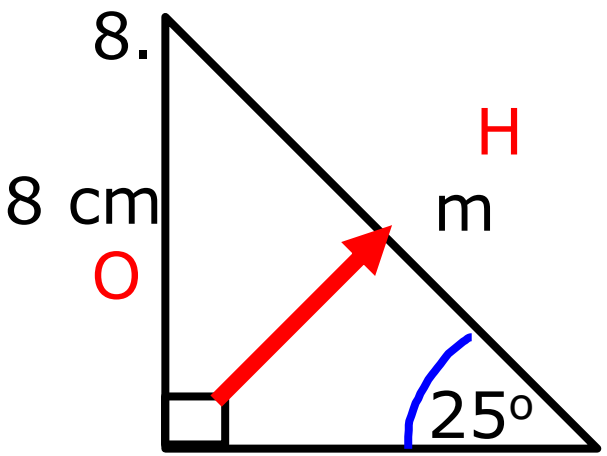

$$\text{Cos } A = \frac{a}{h}$$

$$\text{Cos } 30 = \frac{5}{x}$$

$$x = \frac{5}{\cos 30}$$

$$x = 5.8 \text{ cm}$$

8.




$$\sin A = \frac{o}{h}$$

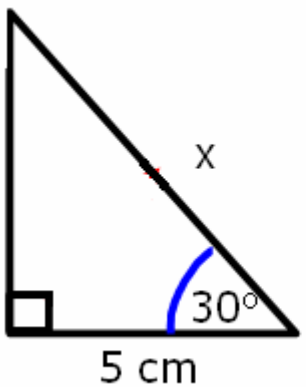
$$\sin 25 = \frac{8}{m}$$

$$m = \frac{8}{\sin 25}$$

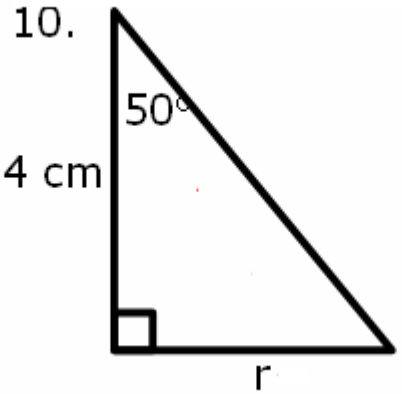
$$m = 18.9 \text{ cm}$$

## Your turn (Round answers to the nearest tenth)

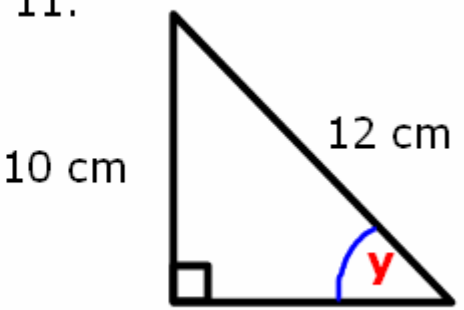
9.




10.




11.




sin 30 = 0.5

cos 30 = 0.866

tan 30 = 0.5774

sin 50 = 0.766

cos 50 = 0.6428

tan 50 = 0.1.1917