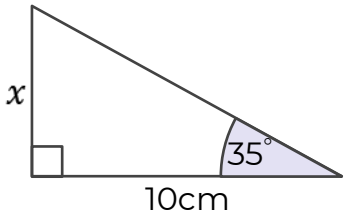
Use Tangent to Find a Length

Maths

Miss Davies

Use Tangent to Find a Length

1. Complete the working out to find the length labelled x to 1 decimal place.



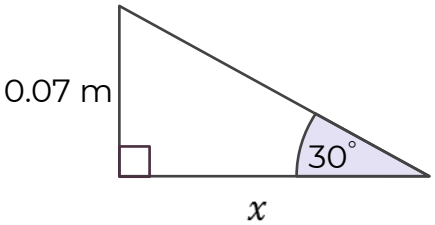
$$\tan(\theta) = \frac{\text{opp}}{\text{adj}}$$

$$\tan(\square) = \frac{x}{\square}$$

$$\square \times \tan(\square) = x$$

$$\square = x$$

2. Complete the working out to find the length labelled x to 1 decimal place.



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

$$\tan(30) = \frac{\square}{\square}$$

$$\square \times \tan(30) = \square$$

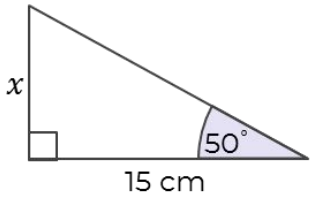
$$\frac{\square}{\tan(30)} = x$$

$$\square = x$$

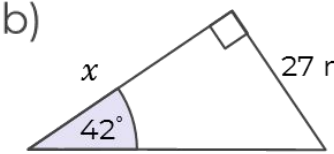
Use Tangent to Find a Length

3. Find the lengths labelled x.
Give your answers correct to 3 significant figures.

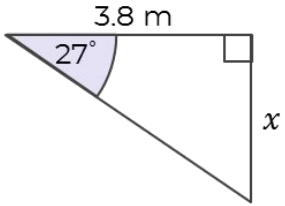
a)



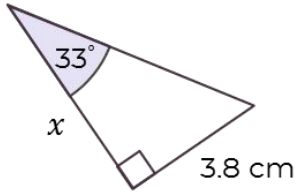
b)



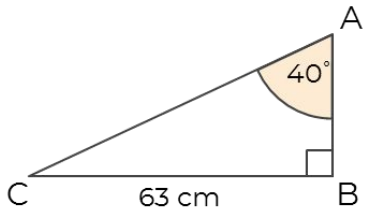
c)



d)



4. Lycia is finding the length AB.



$$\tan(40) = \frac{63}{AB}$$

$$63 \times \tan(40) = AB$$

$$52.9 \text{ cm} = AB$$

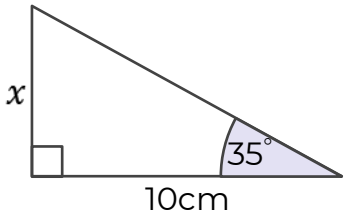
What mistake has she made?

5. A ladder is placed against a wall. The base is 3 m from the bottom of the wall, at an angle of 60° with the floor. How high up the wall does the ladder reach?

Answers

Use Tangent to Find a Length

1. Complete the working out to find the length labelled x to 1 decimal place.



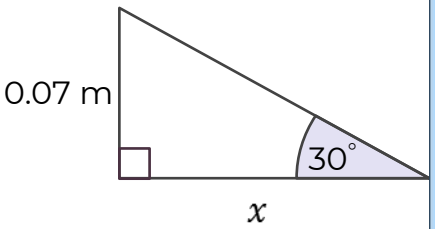
$$\tan(\theta) = \frac{\text{opp}}{\text{adj}}$$

$$\tan(\boxed{35}) = \frac{x}{\boxed{10}}$$

$$\boxed{10} \times \tan(\boxed{35}) = x$$

$$\boxed{7\text{ cm}} = x$$

2. Complete the working out to find the length labelled x to 1 decimal place.



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

$$\tan(30) = \frac{\boxed{0.07}}{\boxed{x}}$$

$$\boxed{x} \times \tan(30) = \boxed{0.07}$$

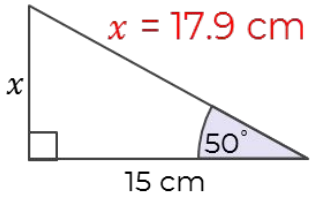
$$\frac{\boxed{0.07}}{\tan(30)} = x$$

$$\boxed{0.12\text{ m}} = x$$

Use Tangent to Find a Length

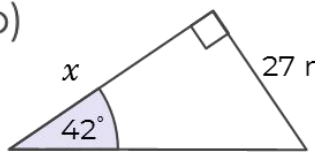
3. Find the lengths labelled x.
Give your answers correct to 3 significant figures.

a)



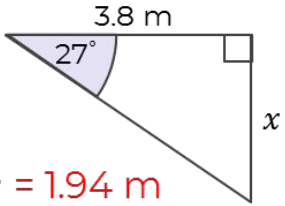
$x = 17.9$ cm

b)



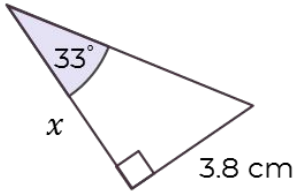
$x = 30.0$ mm

c)



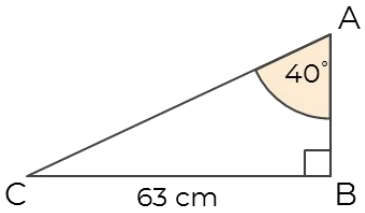
$x = 1.94$ m

d)



$x = 5.85$ cm

4. Lycia is finding the length AB.



$$\tan(40) = \frac{63}{AB}$$

$$63 \times \tan(40) = AB$$

$$52.9 \text{ cm} = AB$$

What mistake has she made?

She has multiplied by 63. She should have multiplied by AB, then divide by tan(40).

5. A ladder is placed against a wall.
The base is 3 m from the bottom of the wall, at an angle of 60° with the floor.
How high up the wall does the ladder reach? 5.2 m