Use the tangent ratio to find missing side lengths

1 Solve the equations.

a) $5x = 83$

$x =$ ☐

b) $5 = \frac{83}{x}$

$x =$ ☐

c) $83 = \frac{x}{5}$

$x =$ ☐

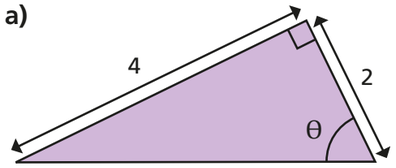
d) $5 = \frac{x}{83}$

$x =$ ☐

What is the same and what is different about the equations?

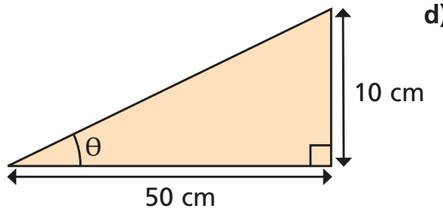
2 Work out the value of $\tan\theta$ for each triangle.

a)



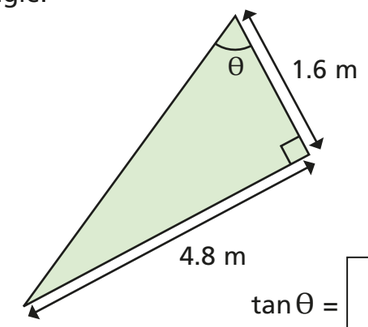
$\tan\theta =$ ☐

b)



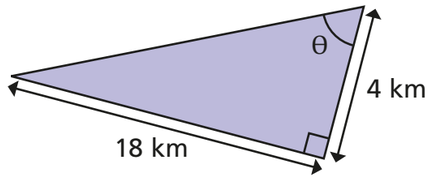
$\tan\theta =$ ☐

c)



$\tan\theta =$ ☐

d)



$\tan\theta =$ ☐

3 Work out the values using a calculator.

Give your answers to 2 decimal places.

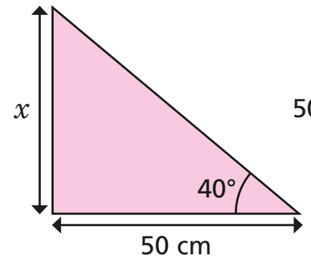
a) $\tan 32° =$ ☐

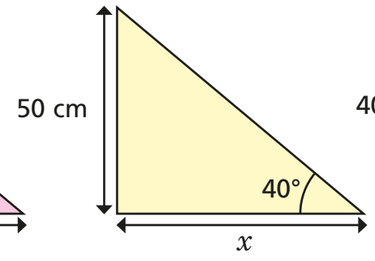
b) $\tan 47° =$ ☐

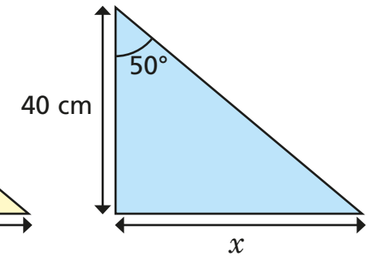
c) $\tan 84° =$ ☐

d) $\tan 9° =$ ☐

4 Match the diagrams to the equations.







$\tan 40° = \frac{x}{50}$

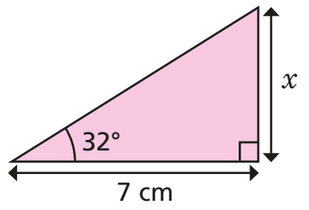
$\tan 50° = \frac{x}{40}$

$\tan 40° = \frac{50}{x}$

5 Work out the lengths of the sides labelled x.

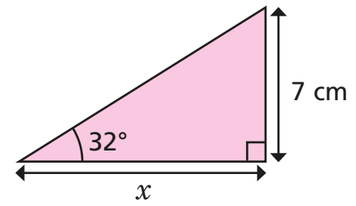
Give your answers to 3 significant figures.

a)



$x =$ ☐

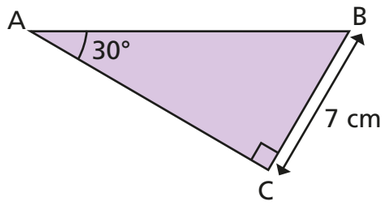
b)



$x =$ ☐

6 Filip is calculating the length of AC.

Here are his workings.



$\tan 30° = \frac{AC}{7}$

$AC = 7 \times \tan 30°$

$= 4.04$ cm (to 2 d.p.)

Do you agree with Filip? _____

Explain your answer.

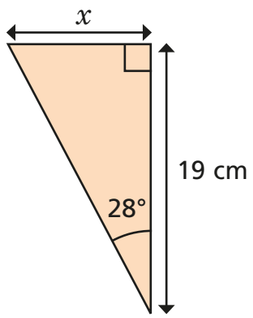
_____

_____

7 Find the unknown lengths.

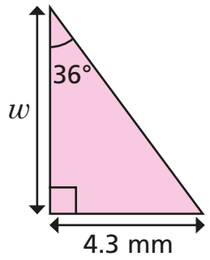
Give your answers rounded to 1 decimal place.

a)



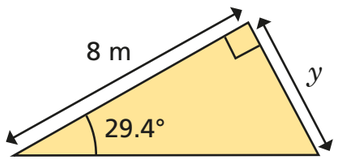
$x =$ ☐ cm

c)



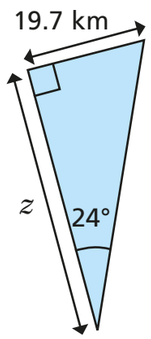
$w =$ ☐ mm

b)



$y =$ ☐ m

d)

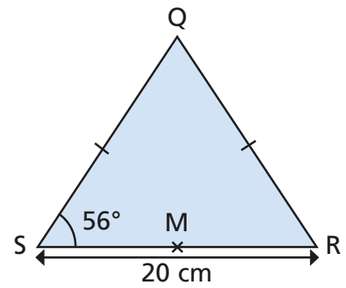


$z =$ ☐ km

8 QRS is an isosceles triangle.

M is the midpoint of RS.

Find the distance between Q and M, giving your answer to 1 decimal place.

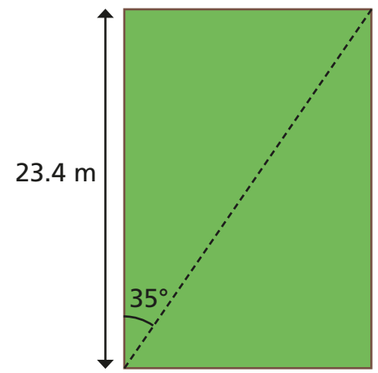


QM = ☐

9 A farmer wants to build a fence around the perimeter of a rectangular field.
The length of the field is 23.4 m.

A straight path runs diagonally between two opposite corners of the field.

The angle between the length and the path is 35°.



What is the total length of fencing that the farmer requires?

☐