# Finding an unknown side in a right-angled triangle

Year 11 General Maths
Units 1 and 2

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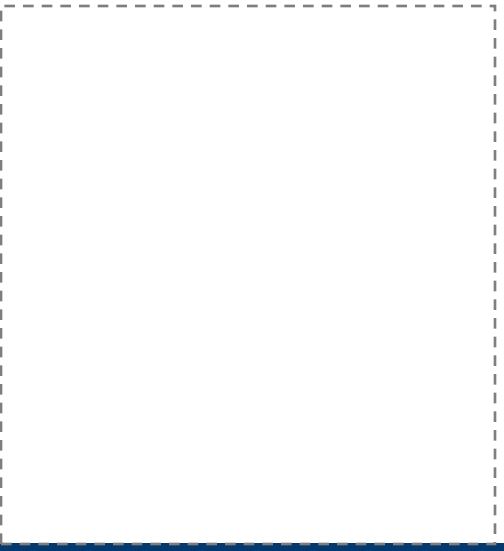
## Learning Objectives

By the end of the lesson I hope that you understand and can apply the following to a range of questions from the Unit 1 and 2 General Mathematics course.

- Know how to find the length of an unknown side in a right angled triangle
- Use the CAS to be able to find side lengths



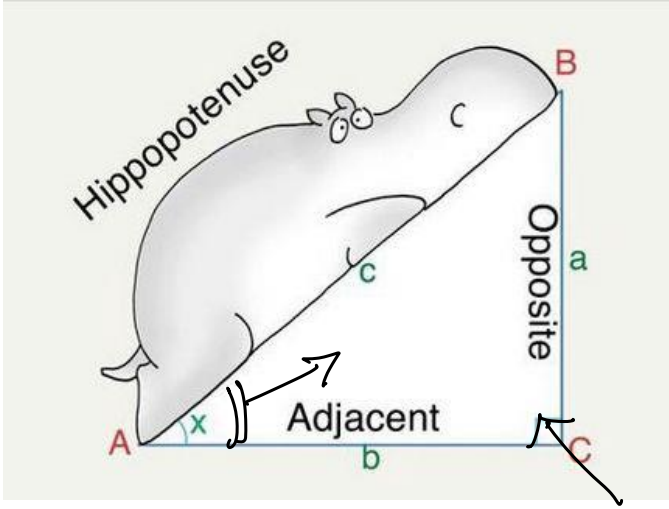
# Recap of past learning

We are now going to use SOHCAHTOA and the work we have done in the previous lesson to be able to find missing sides of right angled triangles.

We remember that we can use SOHCAHTOA to help us remember the following trigonometric ratios:

$$\sin\theta = \frac{opposite}{hypotenuse} \qquad cos\,\theta = \frac{adjacent}{hypotenuse} \qquad \tan\theta = \frac{opposite}{adjacent}$$

The ratio and SOHCAHTOA will only work if we have labelled the right-angled triangle correctly!



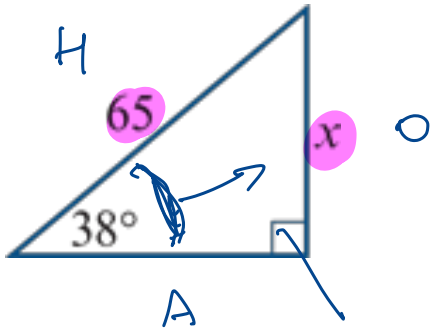

$$\sin\theta = \frac{O}{H} \qquad \cos\theta = \frac{A}{H}$$

$$\tan\theta = \frac{O}{A}$$

# Finding the missing side length

This is really a recap of the work you have done in previous years, so there isn't too many questions I can do in this video … which means it's going to be really short! Just remember to use SOHCAHTOA once you have labelled the sides correctly.

Example:
Find the length of the unknown side $x$ in the triangle shown, correct to two decimal places.




$\sin\theta = \frac{\text{Opp}}{\text{Hyp}}$ ①

F

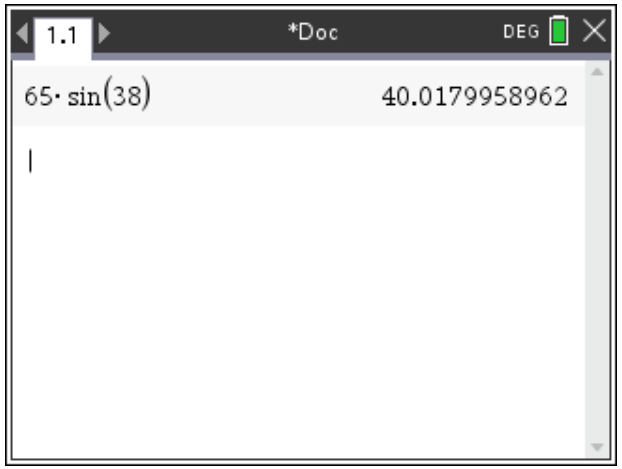
$\sin 38° = \frac{x}{65}$

S

S

$65 \times \sin 38° = x$

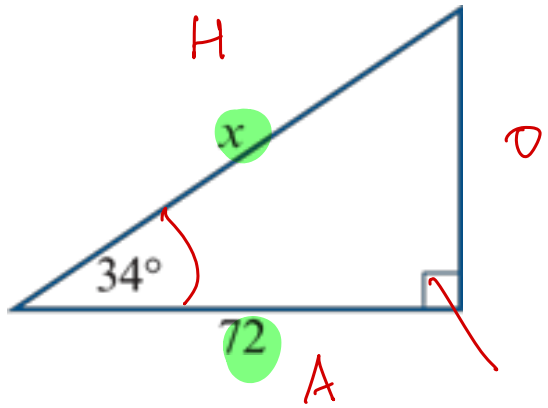
$x = 40.02$




S°H C⁴H T°A

# Finding the missing side length

Example:
Find the value of $x$ in the triangle shown, correct to two decimal places.




H

O

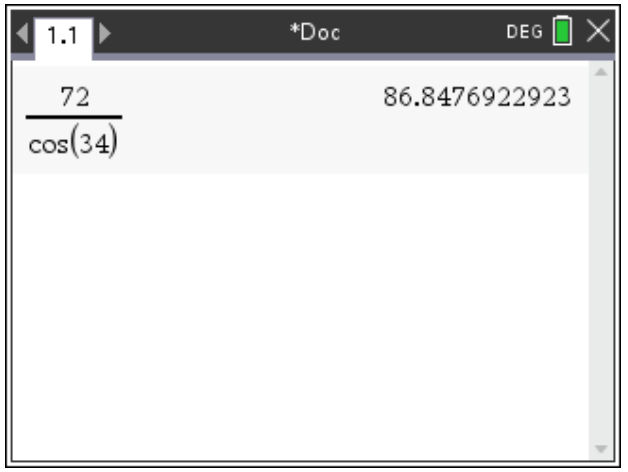
A

$$\cos\theta = \frac{A}{H} \quad (1)$$

$$\cos 34 = \frac{72}{x}$$

$$x = \frac{72}{\cos 34}$$

$$= 86.85$$




SOH CAH TOA

## Learning Objectives: Revisited

By the end of the lesson I hope that you understand and can apply the following to a range of questions from the Unit 1 and 2 General Mathematics course.

- Know how to find the length of an unknown side in a right-angled triangle
- Use the CAS to be able to find side lengths