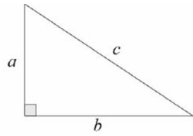## Pythagoras to find the hypotenuse

This is only for right angled triangles

$a^2 + b^2 = c^2$

To find the hypotenuse (longest side); square, add and square root.

What careers would use these skills?

Urban and regional planners, surveying engineers, architects, cartographer (for drawing maps), building inspectors.
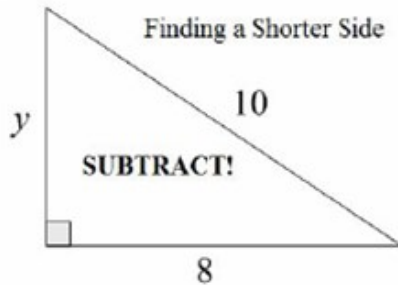
Pythagoras practical problems

Eg. A fireman has a ladder that is 13m long, if he wants to reach the window that is 12m above the ground, how far from the wall should he put the bottom of the ladder?

1. Draw a diagram
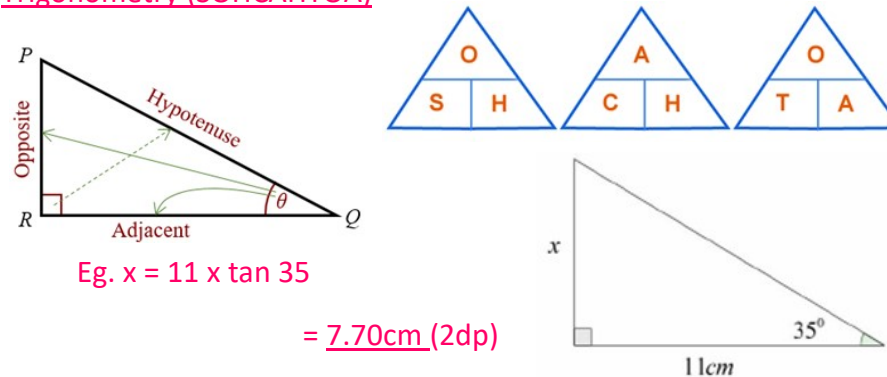
2. Label   3. Calculate

12m

13m
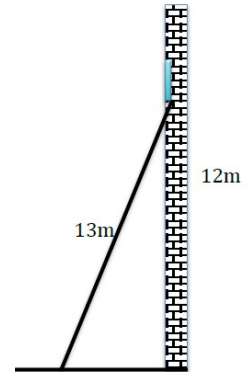
Pythagoras to find a shorter side

To find one of the shorter sides; square, subtract and square root.

Finding a Shorter Side

y 10

SUBTRACT!

8

$a = y, \; b = 8, \; c = 10$

$a^2 = c^2 - b^2$

$y^2 = 100 - 64$

$y^2 = 36$

$y = 6$

Trigonometry (SOHCAHTOA)

P

Opposite

Hypotenuse

R Adjacent θ Q

O		A		O	
S	H	C	H	T	A

Eg. x = 11 x tan 35

= 7.70cm (2dp)

x

35^0

11cm

Exact values of sin, cos and tan

	0°	30°	45°	60°	90°
sin	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
tan	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	----

Trigonometry practical problems

A hotel is located 3km east and 2km north of the beach. Calculate the bearing of the hotel from the beach to the nearest degree.

1. Draw a diagram

2. Label

3. Calculate using SOHCAHTOA

N

Hotel

N

056°

θ

Beach

2km

3km