PYTHAGORAS THEOREM
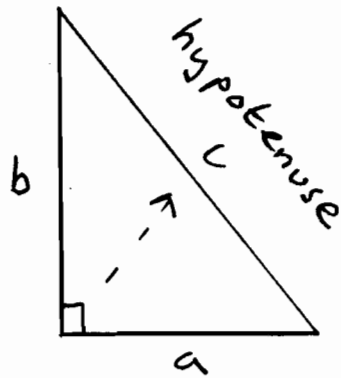
Given any two sides in a right-angled triangle, we can use Pythagoras Theorem to find the third side.

PYTHAGORAS THEOREM

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

So Pythagoras Theorem states a relationship between the three sides of a right-angled triangle. Notice that the side that is on its own in the relationship is the hypotenuse, which is the longest side and is found opposite the right-angle.

Example 1

Find x
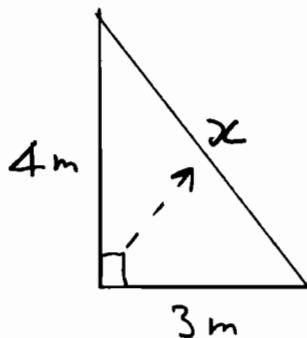
By Pythagoras:

$$3^2 + 4^2 = x^2$$
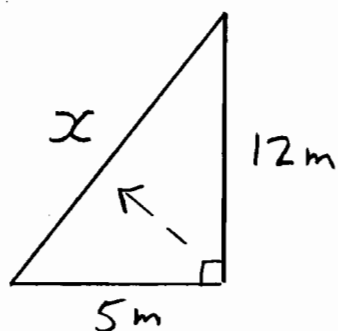$$9 + 16 = x^2$$
$$25 = x^2$$
$$\sqrt{25} = x$$
$$x = 5m$$

Example 2

By Pythagoras:
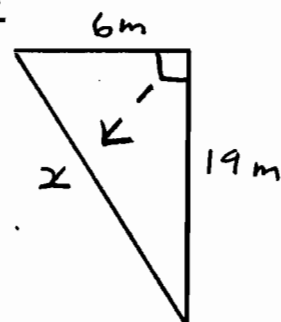
$$5^2 + 12^2 = x^2$$

$$169 = x^2$$

$$\sqrt{169} = x$$
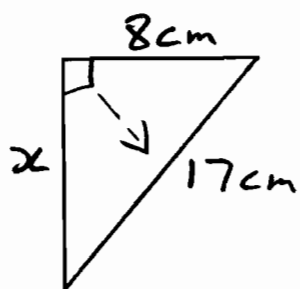
$$x = 13\,m$$

Example 4

By Pythagoras:

$$6^2 + 19^2 = x^2$$

$$397 = x^2$$

$$\sqrt{397} = x$$

$$x = 19.9\,m$$

Example 3

By Pythagoras:

$$x^2 + 8^2 = 17^2$$
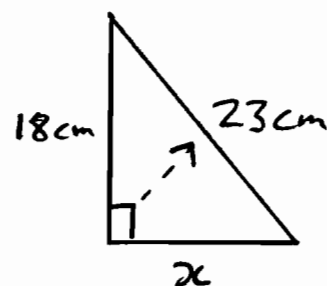
$$x^2 = 17^2 - 8^2$$

$$x^2 = 225$$

$$x = \sqrt{225}$$

$$x = 15\,cm$$

Example 5

By Pythagoras:

$$x^2 + 18^2 = 23^2$$

$$x^2 = 23^2 - 18^2$$

$$x^2 = 205$$

$$x = \sqrt{205}$$

$$x = 14.3\,cm$$