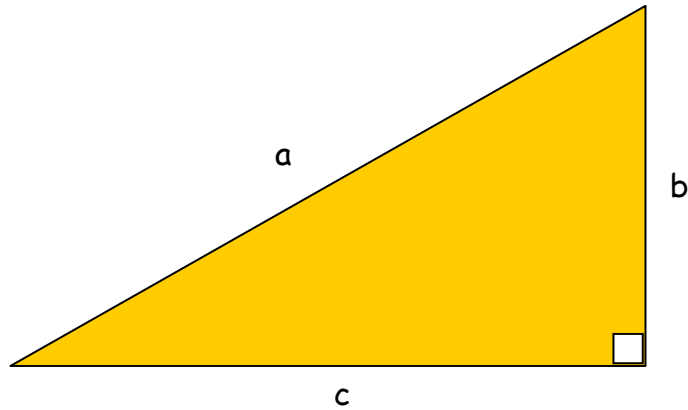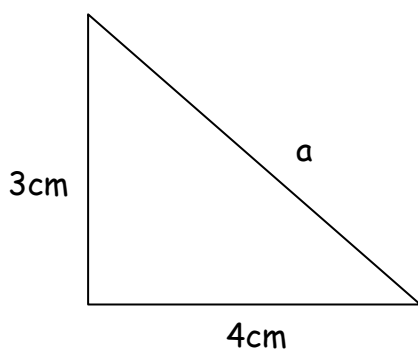## Pythagoras Theorem

You should be able to: Use Pythagoras theorem to find the size of any side of a right angled triangle.

Pythagoras theorem says that the square of the **hypotenuse** (i.e.) the longest side is equal to the sum of the squares of the other two sides.
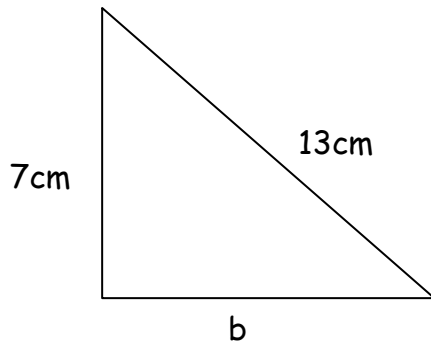
$$a^2 = b^2 + c^2$$

Example 1: Find the size of the missing side in this triangle.

$a^2 = b^2 + c^2$
$a^2 = 3^2 + 4^2$
$a^2 = 9 + 16$
$a^2 = 25$
$a = \sqrt{25}$
$a = 5cm$

Notice that we get rid of the a^2 by finding the square root of the number.

A right triangle with vertical side labelled 7cm, hypotenuse labelled 13cm, and base labelled b.

$$a^2 = b^2 + c^2$$
$$b^2 = a^2 - c^2$$
$$b^2 = 13^2 - 7^2$$
$$b^2 = 169 - 49$$
$$b^2 = 120$$
$$b = \sqrt{120}$$
$$b = 10.95cm$$

Here we are being asked to find one of the smaller sides, so all we do is just turn Pythagoras theorem around to say $b^2 = \dots$

Always remember and round your answer to 2 decimal places unless told otherwise.

You don't even have to remember the exact sequence of the letters for this. Just remember, when finding the bigger side, square the other sides and add them together. When finding one of the smaller sides, square the numbers and take the smaller one away from the bigger one.

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