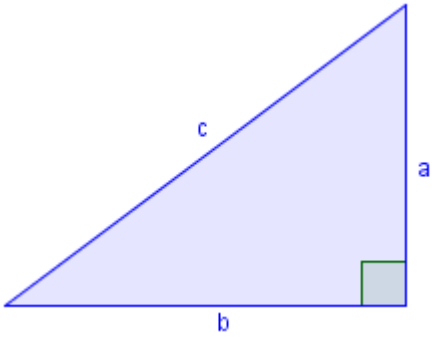
Pythagoras' Theorem

The rule:



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

Where c is the length of the hypotenuse and a and b are the lengths of the other two sides.

*This formula is **not** given at the front of the exam paper, so make sure you memorise it.*

When to use it:

Note: Only valid for right-angled triangles!

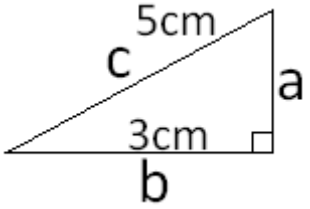
When you know the lengths of any two sides and want to find the length of the third side.

What to watch out for:

Make sure you label the sides correctly – the hypotenuse (which is always opposite the right angle and always the longest side) must be labelled c. a and b can go either way round.

If you're trying to find a or b, make sure you rearrange the equation properly, and don't forget that $\sqrt{a^2 + b^2}$ is **not** the same as $a + b$.

How to answer the questions:

Step 1:	Write out the formula.	$a^2 + b^2 = c^2$
Step 2:	Identify the **Hypotenuse**. This is opposite the right angle and is always the longest side. This side must be labelled $\boldsymbol{c}$, and the other two $\boldsymbol{a}$ and $\boldsymbol{b}$ (in either order).	
Step 3:	Substitute the numbers into the formula.	$a^2 + 3^2 = 5^2$
Step 4:	Simplify, rearrange, and solve the equation.	$a^2 + 9 = 25$ $a^2 = 16$ $a = 4$
Step 5:	Remember to round your answer if the question asks you to, and include the units.	$a = 4cm$

Practice Question:

The two shortest sides of a right-angled triangle are $5cm$ and $12cm$.
Find the length of the longest side. Show your method.