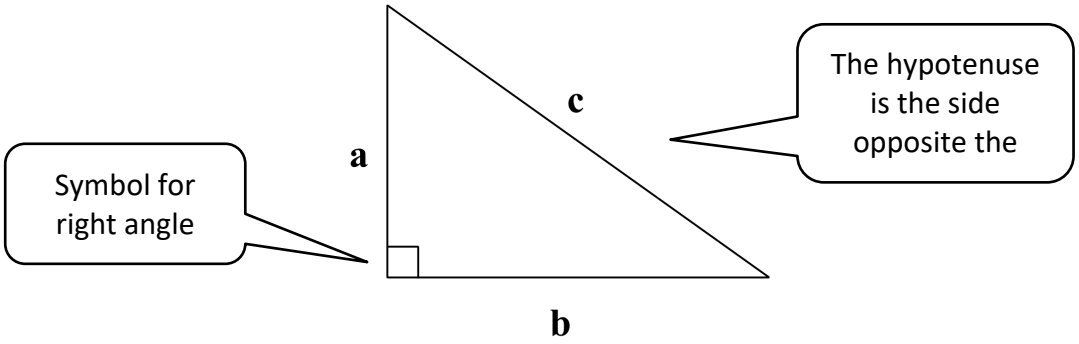
MATHS AND STATS

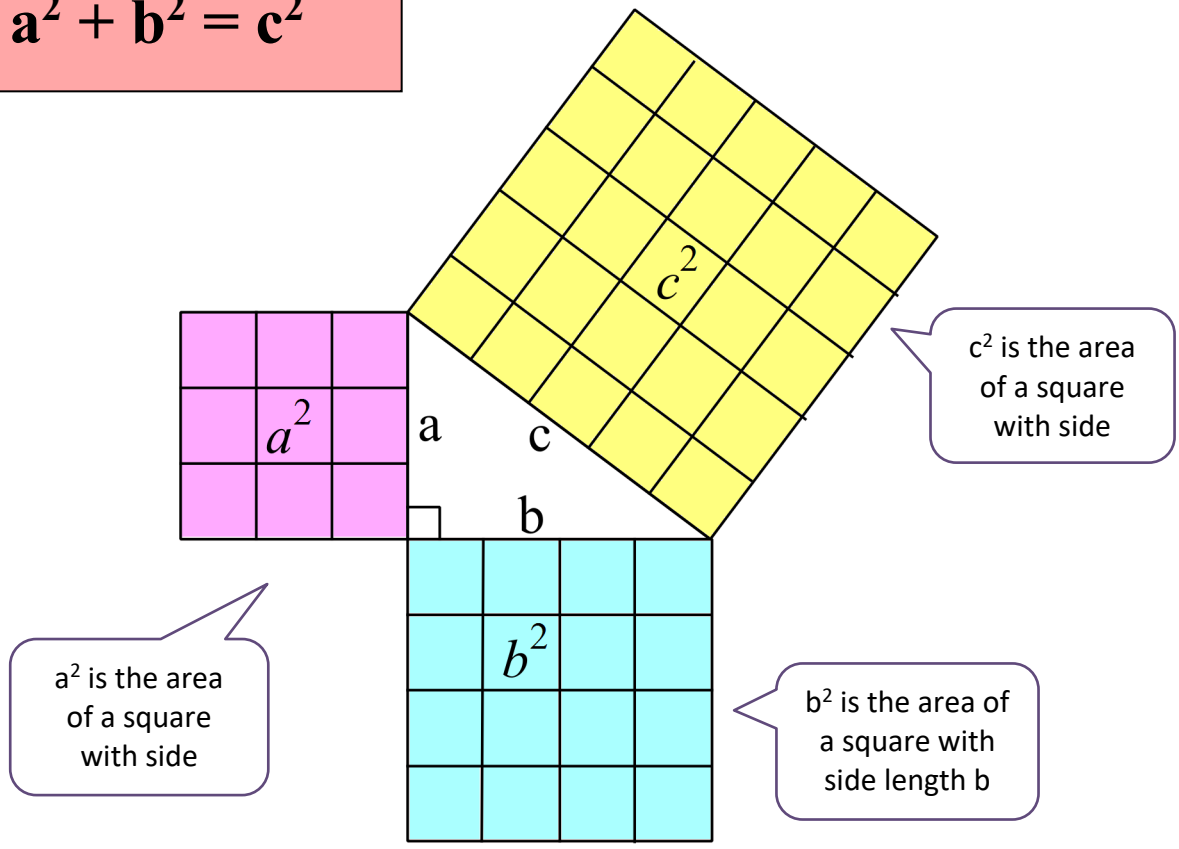
Pythagoras' Theorem

The Pythagorean Theorem describes the relationship between the lengths of the sides of a right-angled triangle.



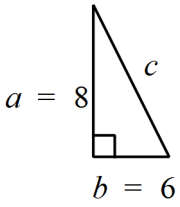
Pythagorean Theorem

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



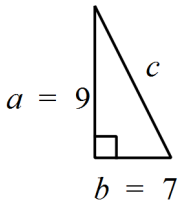
Finding the length of the hypotenuse

Given the lengths of two sides (a and b), you can find the length of the hypotenuse.



$$c^2 = a^2 + b^2$$
$$c^2 = 8^2 + 6^2$$
$$c^2 = 64 + 36$$
$$c^2 = 100$$
$$c = \sqrt{100}$$
$$c = 10$$

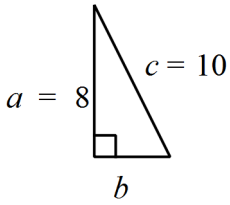
Your answers may not be nice whole numbers



$$c^2 = a^2 + b^2$$
$$c^2 = 9^2 + 7^2$$
$$c^2 = 81 + 49$$
$$c^2 = 130$$
$$c = \sqrt{130}$$
$$c = 11.40 \ (2\text{ d.p.})$$

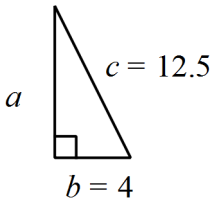
Find the length of a side

Given the hypotenuse and one other side you can find the length of the third side.



$$c^2 = a^2 + b^2 \quad \text{rearranging gives}$$
$$c^2 - a^2 = b^2$$
$$10^2 - 8^2 = b^2$$
$$100 - 64 = b^2$$
$$36 = b^2$$
$$b = \sqrt{36}$$
$$b = 6$$

Your answers may not be nice whole numbers



$$c^2 = a^2 + b^2$$
$$c^2 - b^2 = a^2$$
$$12.5^2 - 4^2 = a^2$$
$$165.25 - 16 = a^2$$
$$140.25 = a^2$$
$$a = \sqrt{140.25}$$
$$a = 11.84\ (2\text{ d.p.})$$

Now practice this using the available worksheets.