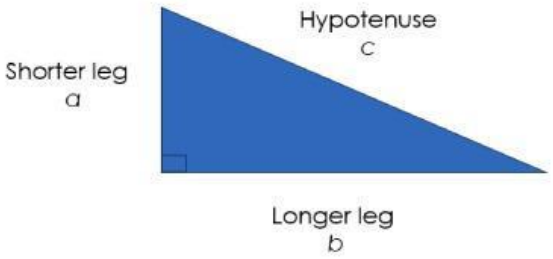
Guide Card 2

Consider the right triangle below

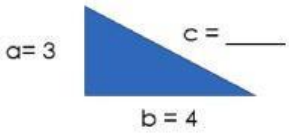


In the given right triangle, you can name the shorter leg/side as "a" & longer leg/side as "b" and the hypotenuse or the side opposite the right angle as "c".

By using the Pythagorean theorem, we can solve the measure of any of the unknown sides of a right Triangle.

Example 1:

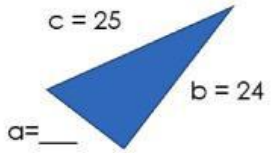
What is the measure of the hypotenuse of the right triangle below given that the longer side is 4cm,and the shortest side is 3 cm?



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

Example 2:

What is the measure of the other leg of the right triangle below given that the leg b is 24 cm, and the hypotenuse is 25 cm?



$$a^2 + b^2 = c^2$$
$$a^2 = c^2 - b^2$$
$$\boldsymbol{a = \sqrt{c^2 - b^2}}$$

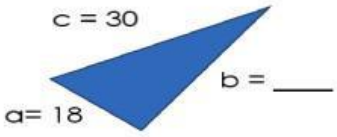
Derived formula to solve **leg a**

Applying the formula we solve the shortest side/leg as

$$\boldsymbol{a = \sqrt{c^2 - b^2}}$$
$$\boldsymbol{a = \sqrt{25^2 - 24^2}}$$
$$a = \sqrt{625 - 576}$$
$$a = \sqrt{49}$$
$$\mathbf{a = 7}$$

Example 3:

What is the measure of the longer side b of the right triangle below given that the shorter side a is 24 cm, and the hypotenuse side is 25 cm?



$$a^2 + b^2 = c^2$$
$$b^2 = c^2 - a^2$$
$$\boldsymbol{b = \sqrt{c^2 - a^2}}$$

Derived formula to solve for **leg b**

Applying the formula we solve the longer side/leg as

$$\boldsymbol{b = \sqrt{c^2 - a^2}}$$
$$\boldsymbol{b = \sqrt{30^2 - 18^2}}$$
$$\boldsymbol{b = \sqrt{900 - 324}}$$
$$\boldsymbol{b = \sqrt{576}}$$
$$\mathbf{b = 24}$$