

MATHEMATICS



Topic: The Theorem of Pythagoras.

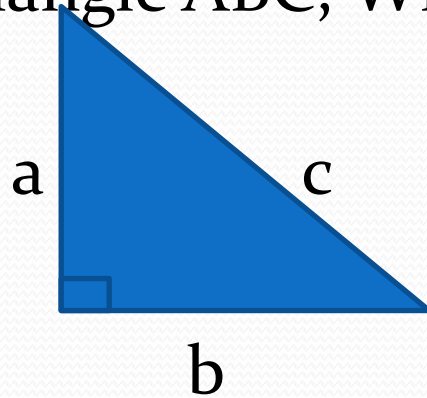
Pythagoras was a Philosopher and a Mathematician. Who discovered some interesting facts about right-angled triangles.

Note how sides are named in a triangle.

- ❑ The hypotenuse is always the longest line in a right-angled triangle and is always opposite the right angle.
- ❑ The side opposite an angle is named after the angle, but in the lower case.

The theorem of Pythagoras state that: In a right angled triangle the square of the hypotenuse is equal to the sum of the squares on the other two sides.

In right-angle triangle ABC, Where c is the hypotenuse
 $a^2 + b^2 = c^2$

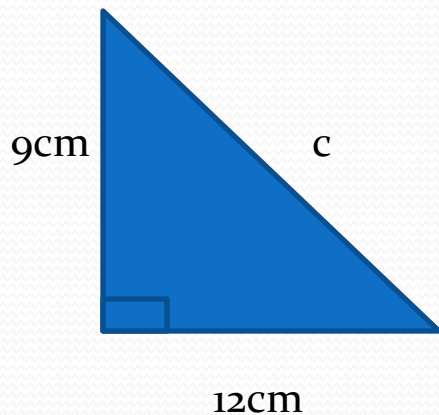


In words, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

$$\boxed{a^2} + \boxed{b^2} = \boxed{c^2}$$

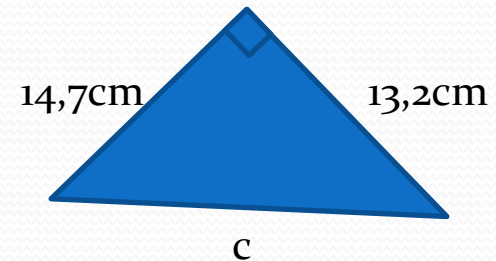
Worked Examples

1. Find the value of c in the triangle below:



$$\begin{aligned}a^2 + b^2 &= c^2 \\9^2 + 12^2 &= c^2 \\81 + 144 &= c^2 \\\sqrt{225} &= \sqrt{c^2} \\c &= 15\text{cm}\end{aligned}$$

2. Find the value of c in the triangle below.

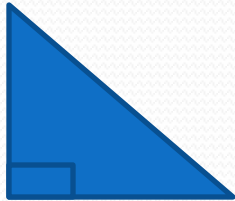


$$\begin{aligned}a^2 + b^2 &= c^2 \\(14,7)^2 + (13,2)^2 &= c^2 \\390,33 &= c^2 \\\sqrt{390,33} &= \sqrt{c^2} \\c &= 19,76\text{ cm}\end{aligned}$$

Complete the following exercise

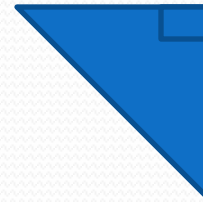
1. Find the value of the hypotenuse in each triangle below.

a. 12cm



16cm

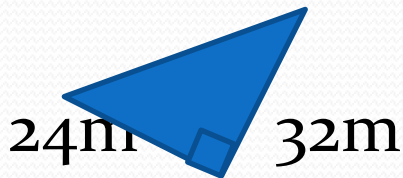
b.



30cm

40cm

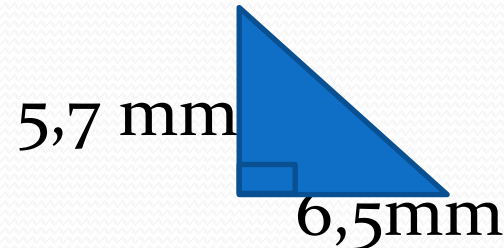
c.



24m

32m

d.



5,7 mm

6,5mm