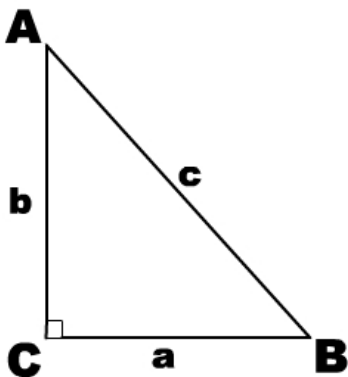


# Pythagorean Theorem

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



## Use for Pythagorean Theorem:

Check for square corners.  
Find distance between two points.

## New Terms:

Right triangle

Leg

Hypotenuse

## Finding the hypotenuse.

$$\text{Hypotenuse} = \sqrt{(\text{leg})^2 + (\text{leg})^2}$$

$$c = \sqrt{(a)^2 + (b)^2}$$

## Finding a leg.

$$\text{Leg} = \sqrt{(\text{hypotenuse})^2 - (\text{leg})^2}$$

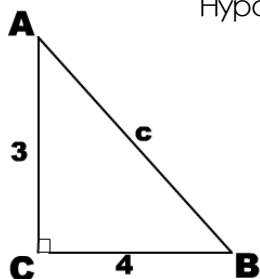
$$a = \sqrt{(c)^2 - (b)^2} \text{ or } b = \sqrt{(c)^2 - (a)^2}$$

## Examples

### Find the hypotenuse.

$a = 4$ ,  $b = 3$ ,  $c = ?$

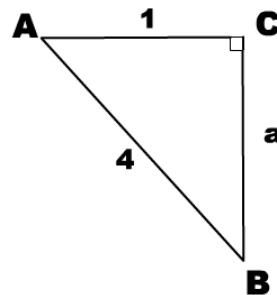
$$\text{Hypotenuse} = \sqrt{(\text{leg})^2 + (\text{leg})^2}$$



### Find the missing leg.

$a = ?$ ,  $b = 1$ ,  $c = 4$

$$\text{Leg} = \sqrt{(\text{hypotenuse})^2 - (\text{leg})^2}$$



## Practice

Given the parts of a right triangle, find the missing side. Round your answer to the nearest tenths place.

(1)  $a = 5$ ,  $b = 12$ ,  $c = ?$

(2)  $a = 2$ ,  $b = 3$ ,  $c = ?$

(3)  $a = 1.5$ ,  $b = 2.5$ ,  $c = ?$

(4)  $a = 6$ ,  $b = ?$ ,  $c = 10$

(5)  $a = 0.7$ ,  $b = ?$ ,  $c = 2.5$

(6)  $a = ?$ ,  $b = 2$ ,  $c = 5$

Homework: Page # 231 1 - 25 odd.

## Think About:

In the movie *The Wizard of Oz*, the scarecrow receives an honorary degree of Th.D. – *Doctor of Thinkology* from the wizard. The scarecrow shows his brain power by saying: “The sum of the square roots of any two sides of an isosceles triangle is equal to the square root of the remaining side. Oh, joy, oh rapture. I’ve got a brain!” What is wrong with this statement? What should he have said?