The Length of a Right Triangle's Leg

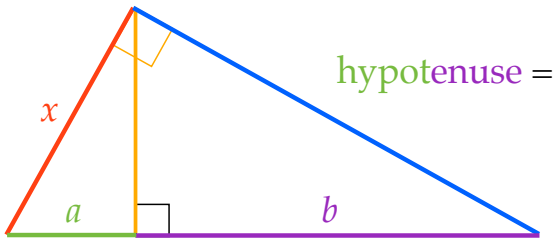
Name _____

Date _____ Period _____

Given an altitude drawn to the hypotenuse of a right triangle, the length of one leg of the triangle is the geometric mean of the length of the entire hypotenuse and the length of the segment of the hypotenuse adjacent to that leg.

red leg = x

adjacent segment = a



hypotenuse = $a + b$

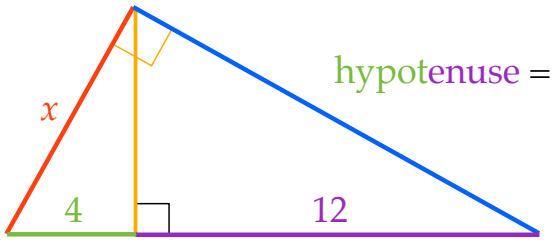
The length of the red leg, x, is the geometric mean of the length of the entire hypotenuse $a + b$, and the length of the segment of hypotenuse adjacent to the leg, a.

$$\frac{a}{x} = \frac{x}{a+b}$$

Given an altitude drawn to the hypotenuse of a right triangle, the length of one leg of the triangle is the geometric mean of the length of the entire hypotenuse and the length of the segment of the hypotenuse adjacent to that leg.

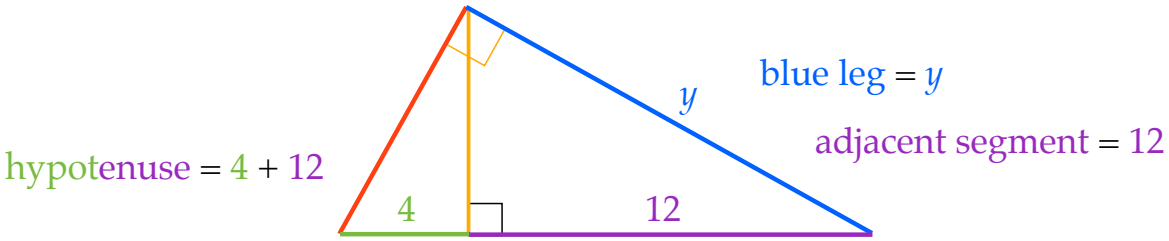
red leg = x

adjacent segment = 4

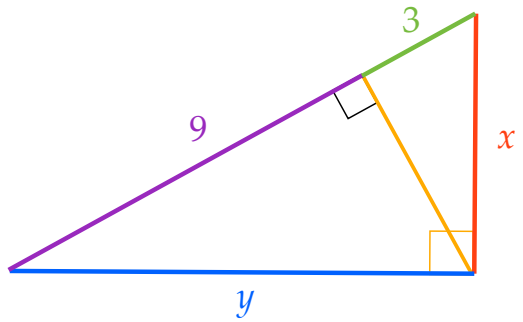


hypotenuse = 4 + 12

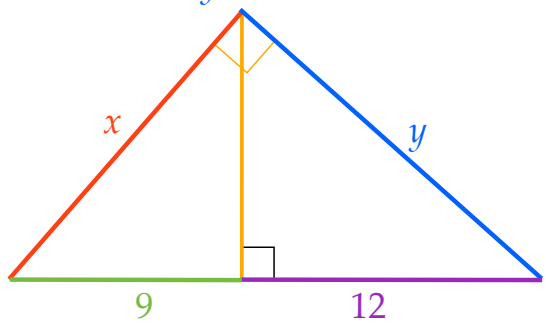
Given an altitude drawn to the hypotenuse of a right triangle, the length of one leg of the triangle is the geometric mean of the length of the entire hypotenuse and the length of the segment of the hypotenuse adjacent to that leg.



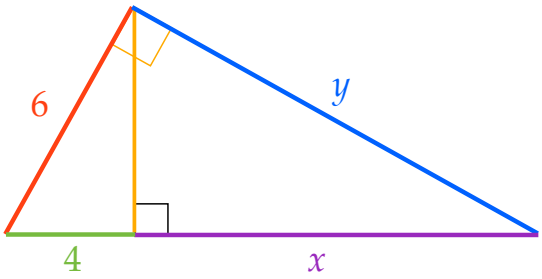
Solve for x and y



Solve for x and y



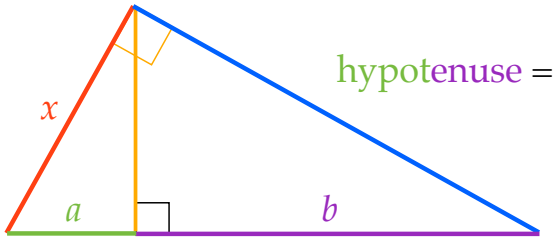
Solve for x and y



The length of the red leg, x, is the geometric mean of the length of the entire hypotenuse $a + b$, and the length of the segment of hypotenuse adjacent to the leg, a.

red leg = x

adjacent segment = a



$$\frac{a}{x} = \frac{x}{a+b}$$