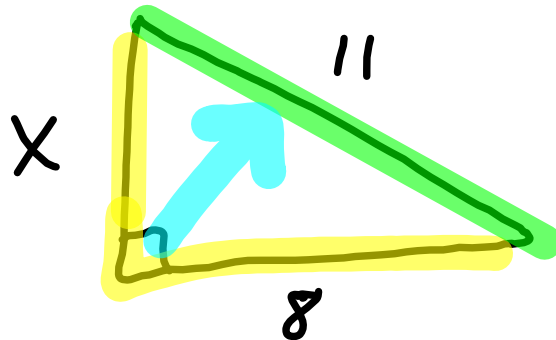


## Geometry Lesson 9.1

It is used to find missing SIDES in a right triangle. It can be used when you know 2 sides and want to find a third side.



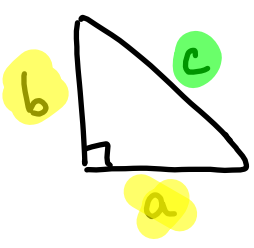
Ex: Find  $x$ .

Legs: The sides that make up the Right Angle

Hypotenuse: The side that is opposite the Right Angle

Identify the Legs & the Hypotenuse

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



$a$  &  $b$  are Legs  
 $c$  is the Hypotenuse

our Example  
 $leg^2 + leg^2 = Hype^2$

$$x^2 + 8^2 = 11^2$$

$$x^2 + 64 = 121$$

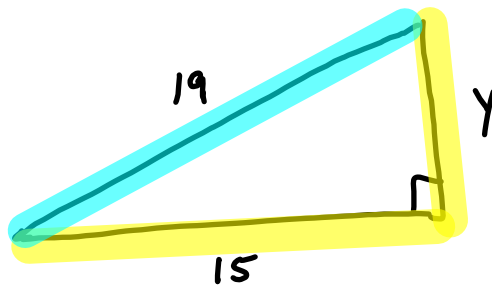
$$-64 \quad -64$$

$$\sqrt{x^2} = \sqrt{57}$$

$$x = \sqrt{57} \approx 7.5$$

## 9.1 Pythagorean Theorem

Ex: Solve for  $y$ .



Pythagorean Theorem:  $\text{leg}^2 + \text{leg}^2 = \text{Hypotenuse}^2$

$$15^2 + y^2 = 19^2$$

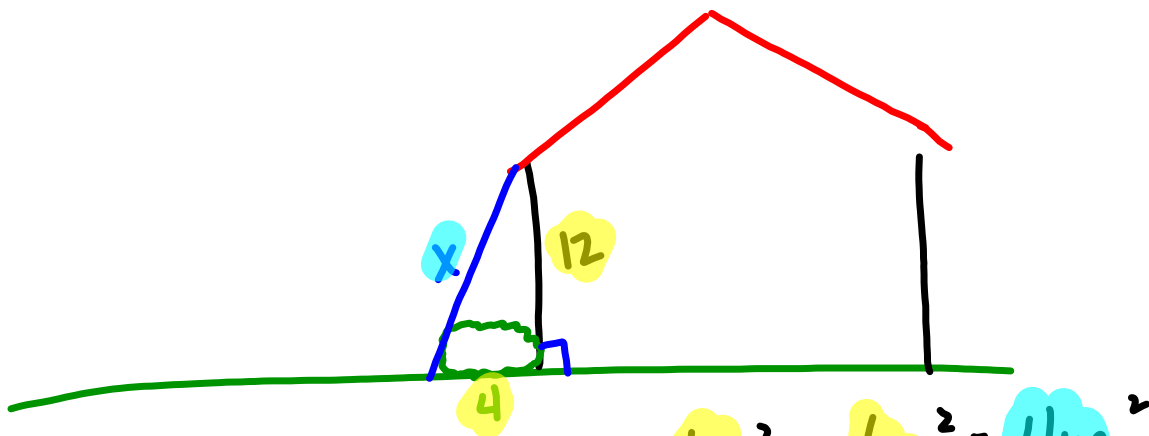
$$225 + y^2 = 361$$

$$\begin{array}{r} -225 \\ \hline \sqrt{y^2} = \sqrt{136} \end{array}$$

$$y = \sqrt{136} \approx 11.7$$

## 9.1 Pythagorean Theorem

Ex: You need to buy a ladder to get on the roof of your house. The distance from the ground to the edge of your roof is 12 feet. You have bushes surrounding the base of your house, so you can't put the ladder directly against the house. The bushes are 4 feet wide. What is the minimum length the ladder must be to avoid the bushes and reach the roof?



Pythagorean Theorem:  $\text{Leg}^2 + \text{Leg}^2 = \text{Hyp}^2$

$$4^2 + 12^2 = x^2$$

$$16 + 144 = x^2$$

$$\sqrt{160} = \sqrt{x^2}$$

$$x = \sqrt{160} \approx 12.65 \text{ Ft.}$$

## 9.1 Pythagorean Theorem

Homework:

Pg 420: 3-12, you don't need to talk about "pythagorean triples"