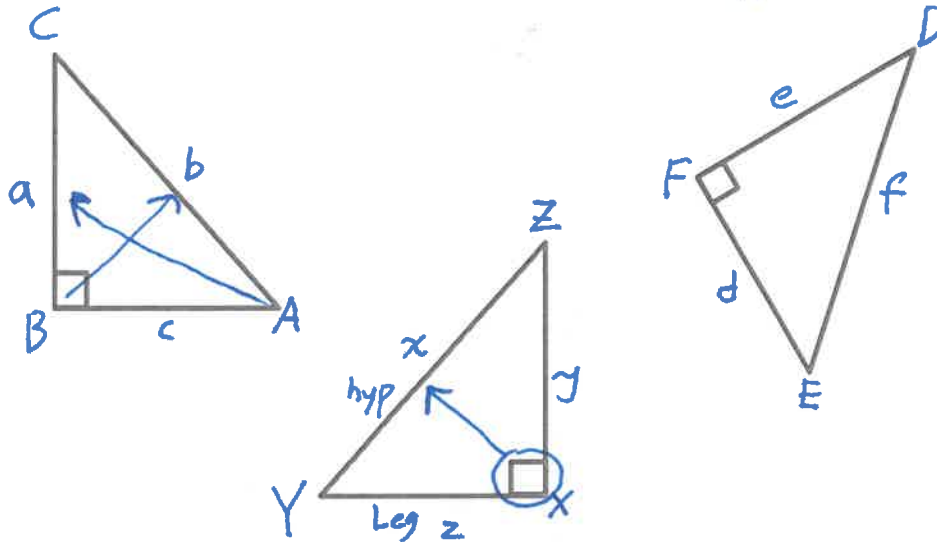


Pythagorean Theorem Notes

Labeling Right Triangles

Sides lengths of triangles are always labeled using Lower case letters.

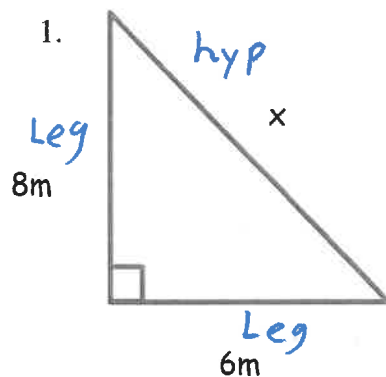
Corresponding angles of triangles are always labeled using upper case letters.



As well, the longest side is always called the hypotenuse. The hypotenuse is always located across or opposite to the 90 degree angle.

The two shorter sides are called Legs.

Examples:

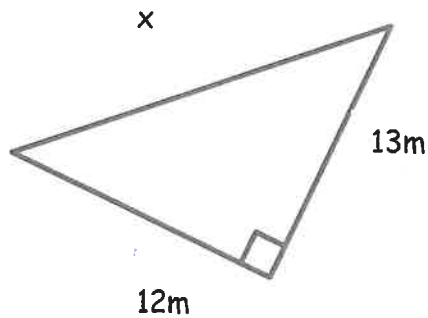


$$\begin{aligned} \textcircled{1} \quad \text{Leg}^2 + \text{leg}^2 &= \text{hyp}^2 \\ \textcircled{2} \quad 8^2 + 6^2 &= x^2 \\ \sqrt{100} &= \sqrt{x^2} \\ 10\text{m} &= x \end{aligned}$$

APP 12

L1

Show you know



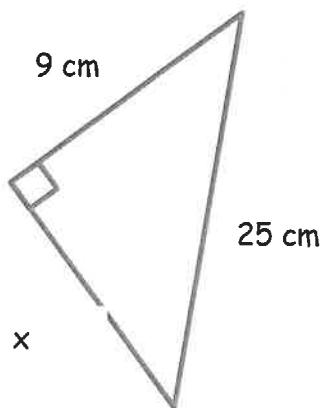
$$\text{Leg}^2 + \text{Leg}^2 = \text{hyp}^2$$

$$12^2 + 13^2 = x^2$$

$$\sqrt{313} = \sqrt{x^2}$$

$$17.69\text{m} = x$$

Ex 2



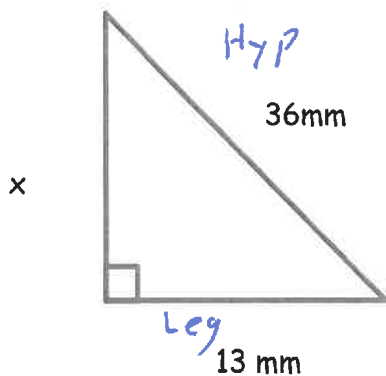
$$\text{hyp}^2 - \text{leg}^2 = \text{leg}^2$$

$$25^2 - 9^2 = x^2$$

$$\sqrt{544} = \sqrt{x^2}$$

$$23.32\text{cm} = x$$

Show you know



$$\text{hyp}^2 - \text{leg}^2 = \text{leg}^2$$

$$36^2 - 13^2 = x^2$$

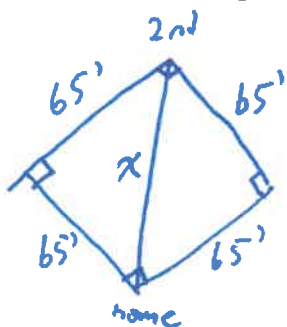
$$33.57\text{mm} = x$$

Word Problems

Draw all triangles. Label with opposite, adjacent and hypotenuse. Round to 2 decimal places.

Ex 1

In softball, the bases are often set 65 feet apart in the shape of a square. The catcher throws the ball from home plate to second base. How far is the catcher's throw?



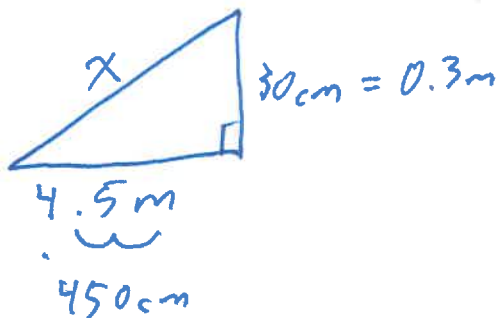
$$\text{Leg}^2 + \text{leg}^2 = \text{hyp}^2$$

$$65^2 + 65^2 = x^2$$

$$91.92' = x$$

Show you know

A ramp from a walkway to a doorway has a height of 30 cm. The length along the ground is 4.5 m. Calculate the distance a wheelchair travels along the ramp.



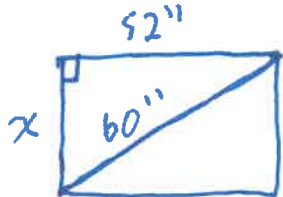
$$\text{leg}^2 + \text{leg}^2 = \text{hyp}^2$$

$$0.3^2 + 4.5^2 = x^2$$

$$4.51\text{m} = x$$

Ex 2

The size of a TV is determined by the length of its diagonal. For example, a 60-in TV measures 60 in along the diagonal of the rectangular screen. A 60 in TV measures 52 inches along the top of the screen. How tall is the TV?



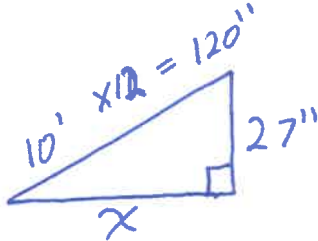
$$\text{hyp}^2 - \text{leg}^2 = \text{leg}^2$$

$$60^2 - 52^2 = x^2$$

$$29.93'' = x$$

Show you know

The loading ramp of a moving van is 10 feet long. The floor of the storage compartment of the van is 27 inches off the ground. What is the distance along the ground from the back of the van to the point where the ramp touches the ground?



$$\text{hyp}^2 - \text{leg}^2 = \text{leg}^2$$

$$120^2 - 27^2 = x^2$$

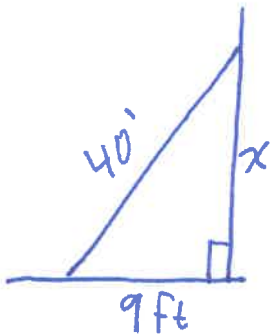
$$116.92'' = x$$

$$9.74'$$

Ex 3

Marc is going to paint the exterior of his house. He has a 40-foot ladder and knows that for safety reasons the base of the ladder must be between 9 and 12 feet from the base of the wall.

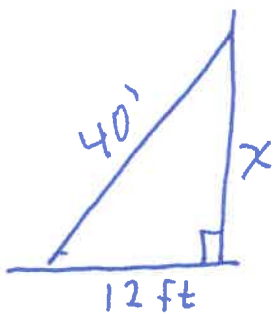
What are the maximum and the minimum heights the ladder will reach up the wall?



$$\text{hyp}^2 - \text{leg}^2 = \text{leg}^2$$

$$40^2 - 9^2 = x^2$$

$$38.97' = x$$



$$40^2 - 12^2 = x^2$$

$$38.16' = x$$