

2/3/20 - Warm Up Problem

Find the value of x . Round to the nearest tenth.

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

185 ft.

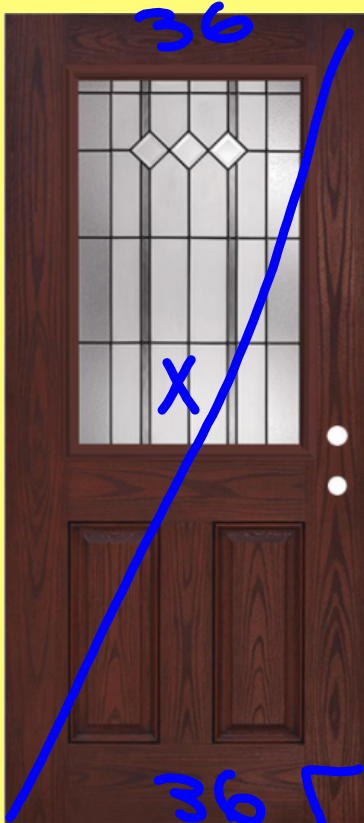
x ft.

510 ft.

$185^2 + 510^2 = x^2$
 $34225 + 260100 = x^2$
 $\sqrt{294325} = x$
 $542.51 = x$

Section 8.1 - The Pythagorean Theorem

Goal: Draw diagrams to represent situations and apply the Pythagorean Theorem to solve problems



The largest mattress size available is the Alaskan King. It is 108 inches by 108 inches. A standard door opening is 80 inches by 36 inches. Would the mattress squeeze through?

$$80^2 + 36^2 = x^2$$

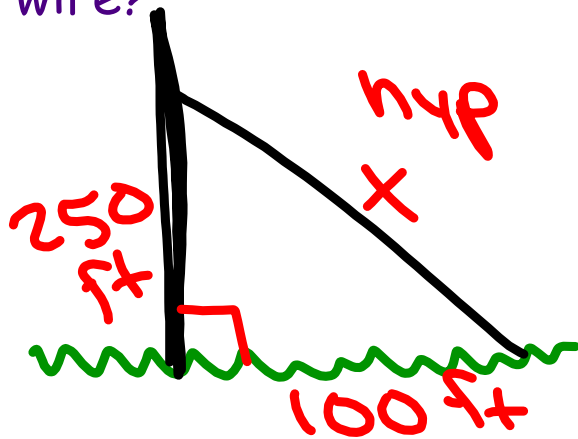
$$6400 + 1296 = x^2$$

$$\sqrt{7696} = \sqrt{x^2}$$

$$87.7 \text{ in} = x$$

Using the Pythagorean Theorem

A cell phone tower is supported by 3 wires. Each wire is attached to the tower 250 feet above the ground and anchored to the ground 100 feet from the base of the tower. How long is each wire?



$$\begin{aligned}250^2 + 100^2 &= x^2 \\62500 + 10000 &= x^2 \\ \sqrt{72500} &= \sqrt{x^2} \\ 269.3 \text{ ft} &= x\end{aligned}$$

A painter has a 15 foot ladder. He leans it against a house with the bottom of the ladder 3 feet away from the bottom of the house. How far up on the house will the painter be able to reach?



$$x^2 + 3^2 = 15^2$$

$$x^2 + 9 = 225$$

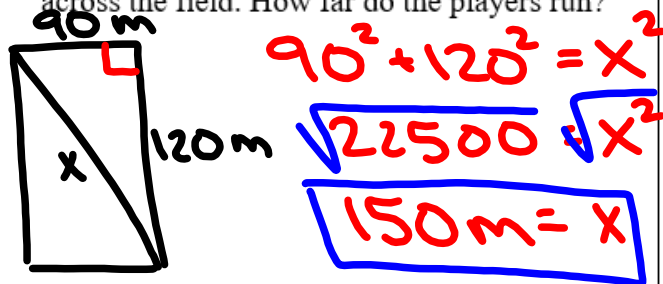
$$\begin{array}{r} x^2 + 9 = 225 \\ -9 \quad -9 \\ \hline \sqrt{x^2} = \sqrt{216} \end{array}$$

$$x = 14.7 \text{ ft}$$

Assignment:**Concept 19 Worksheet
(25-28)**

Draw and label a diagram of the situation. Use the Pythagorean Theorem to answer the question. Show your work.

25. A soccer field is a rectangle 90 meters wide and 120 meters long. The coach asks players to run from one corner to the corner diagonally across the field. How far do the players run?



26. The bottom of a 13-foot straight ladder is set into the ground 5 feet away from a wall. When the top of the ladder is leaned against the wall, what is the distance above the ground it will reach?

27. A baseball "diamond" is actually a square with sides of 90 feet. If a runner tries to steal second base, how far must the catcher, at home plate, throw to get the runner "out"?

28. Jill's front door is 42" wide and 84" tall. She purchased a circular table that is 96 inches in diameter. Will the table fit through the front door? How do you know for sure?