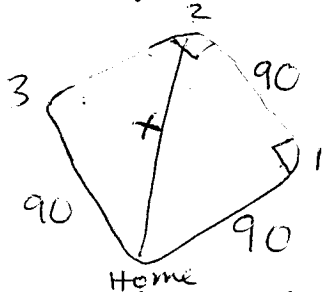


Pythagorean Theorem Application Problems

For each problem 1) Draw a picture 2) Write out the Pythagorean Theorem 3) Substitute in the appropriate values 4) Solve 5) Label answers

1. 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"? Given this information, explain why runners more often try to steal second base than third.



$$90^2 + 90^2 = x^2$$

$$8100 + 8100 = x^2$$

$$\sqrt{16,200} = \sqrt{x^2}$$

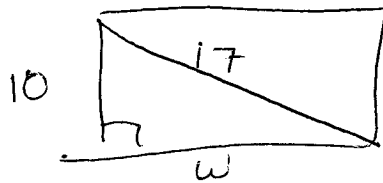
$$127.3 = x$$

127.3 feet

It's only 90 feet from home to 3rd but 127 feet to 2nd.

2. Your family wants to purchase a new laptop with a 17" widescreen. Since the 17 inches represents the diagonal measurement of the screen (upper corner to lower corner), you want to find out the actual dimensions of the laptop. When you measured the laptop at the store, the height was 10 inches, but you don't remember the width. Calculate and describe how you could figure out the width of the laptop to the nearest tenth inch.



$$10^2 + w^2 = 17^2$$

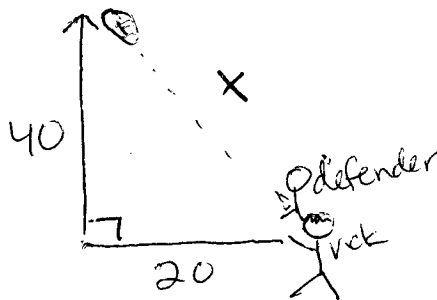
$$100 + w^2 = 289$$

$$\begin{array}{r} 100 + w^2 = 289 \\ -100 \phantom{+ w^2} \\ \hline w^2 = 189 \end{array}$$

$$\sqrt{w^2} = \sqrt{189}$$

$$w = 13.7 \text{ in}$$

3. During a football play, DeSean Jackson runs a straight route 40 yards up the sideline before turning around and catching a pass thrown by Michael Vick. On the opposing team, a defender who started 20 yards across the field from Jackson saw the play setup and ran a slant towards Jackson. What was the distance the defender had to run to get to the spot where Jackson caught the ball?



$$40^2 + 20^2 = x^2$$

$$1600 + 400 = x^2$$

$$\sqrt{2000} = \sqrt{x^2}$$

$$44.7 = x$$

about 45 yards

~~X~~ In construction, floor space must be planned for staircases. If the vertical distance between the first and second floors is 3.6 meters, and a contractor is using the standard step pattern of 28 cm wide for 18 cm high, then how many steps are needed to get from the first to the second floor and how much linear distance (ie "width" or "base") will be needed for the staircase? What is the length of the railing that would be attached to these stairs?