Name: _____ Date: Dec 17 Hour: 6th

Unit 4A: Day 12: Using the Pythagorean Theorem in Word Problems

Focus Question: How do I know when to use the Pythagorean Theorem?

A. State the ENTIRE Pythagorean Theorem.

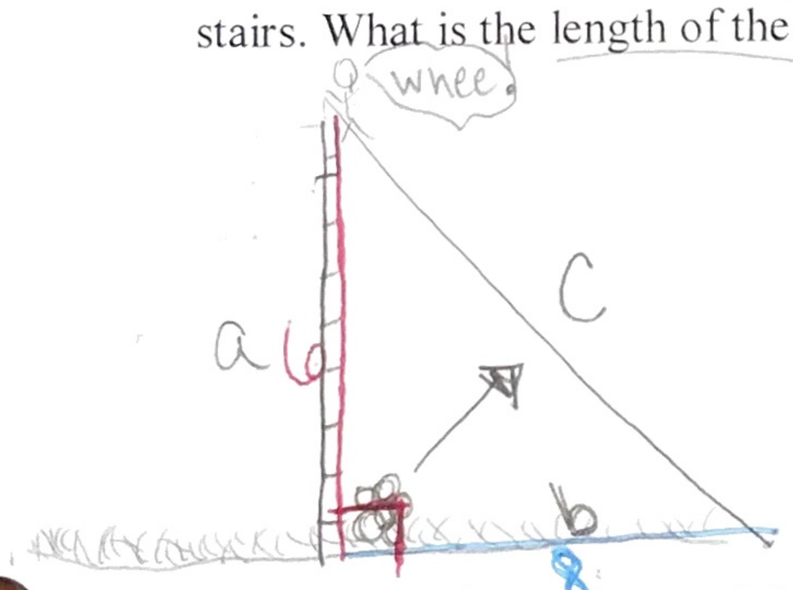
For right △s $a^2 + b^2 = c^2$

B. The Pythagorean Theorem is so easy that typically problems do not tell you to use it. So, how do you decide when to use the Pythagorean theorem?

If its a right △ (▷ pic hyp, leg) & you need a side lengths.

C. For each problem below, DRAW A PICTURE and then answer the question.

1. The slide at the playground has a height of 6 feet. The base of the slide is 8 feet from the bottom of the stairs. What is the length of the slide?



$6^2 + 8^2 = c^2$

$36 + 64 = c^2$

$\sqrt{100} = \sqrt{c^2}$

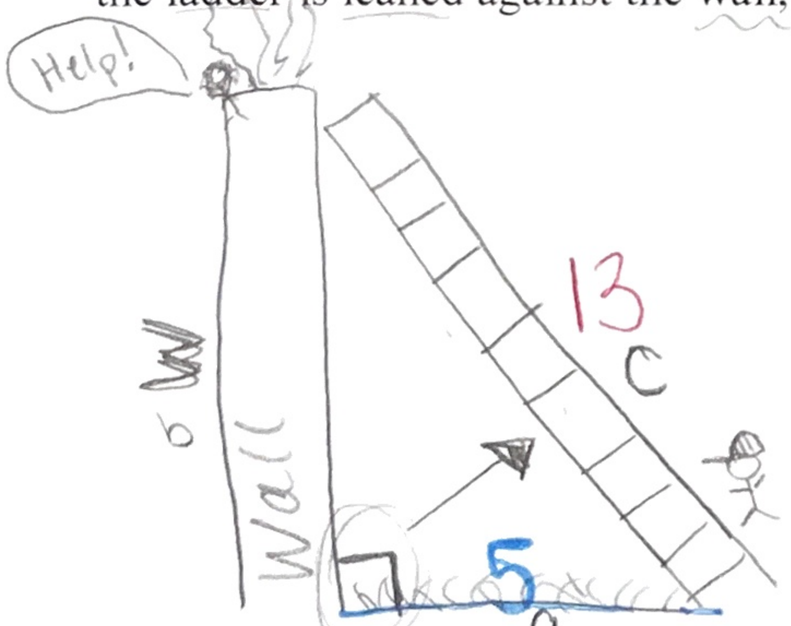
$10_{feet} = c$

60%

70%

95%

2. 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?



$5^2 + w^2 = 13^2$

$25 + w^2 = 169$

$-25 \quad -25$

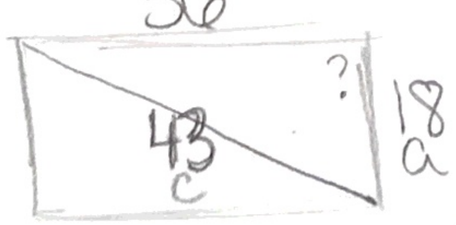
$w^2 = 144$

$w = 12$ feet

3. In shop class, you make a table. The sides of the table measure 36" and 18". If the diagonal of the table measures 43", is the table "square"? (In construction, the term "square" just means the table has *right angles* at the corners.)

corner to corner

inches



$18^2 + 36^2 = 43^2$

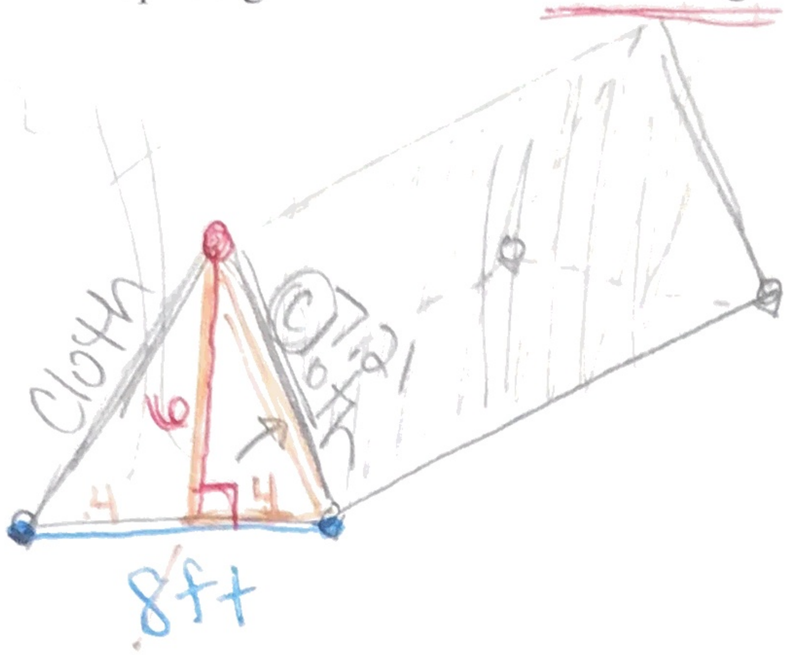
$324 + 1296 = 1849$

$1620 \neq 1849$

False

No!

4. In the Old West, settlers made tents out of a piece of cloth thrown over a clothesline and then secured to the ground with stakes forming an isosceles triangle. How long would the cloth have to be so that the opening of the tent was 6 feet high and 8 feet wide?



$4^2 + 6^2 = c^2$

$16 + 36 = c^2$

$\sqrt{52} = \sqrt{c^2}$

$c = \sqrt{52} \approx 7.21$ feet

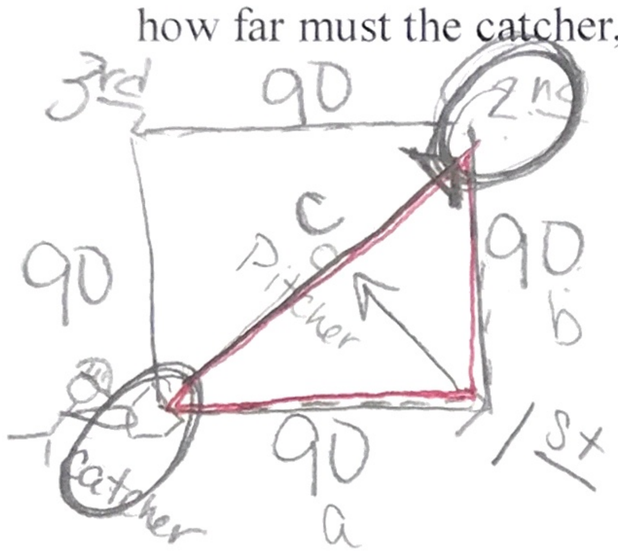
tent has 2 sides

7.21

+7.21

14.42 feet

5. 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"?



$90^2 + 90^2 = c^2$

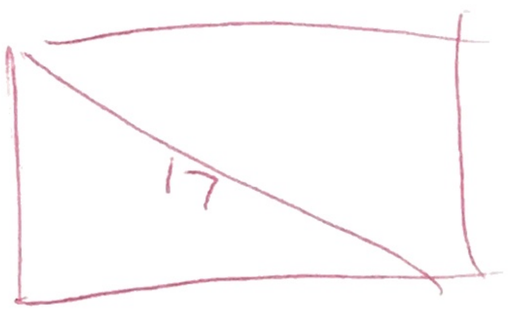
$8100 + 8100 = c^2$

$\sqrt{16200} = \sqrt{c^2}$

$c = \sqrt{16200}$

$c \approx 127.28$ feet

6. 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 the width of the laptop to the nearest tenth of an inch.



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

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