

Name Key Date _____ Period _____

Using the Pythagorean Theorem in Word Problems - WS #3

Solve by drawing a picture, identifying a, b, and c, and applying the Pythagorean Theorem. Don't forget to give your answer with units!

If the legs of an isosceles right triangle are 5 inches long, approximate the length of the hypotenuse to the nearest whole number.



$$5^2 + 5^2 = c^2$$

$$25 + 25 = c^2$$

$$\sqrt{50} = c$$

$x \approx 7 \text{ in}$ or $5\sqrt{2} \text{ in}$

Two joggers run 8 miles north and then 5 miles west. What is the shortest distance, to the nearest tenth of a mile, they must travel to return to their starting point?



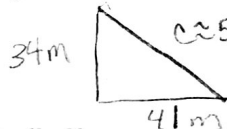
$$8^2 + 5^2 = c^2$$

$$64 + 25 = c^2$$

$$\sqrt{89} = c$$

$c = \sqrt{89} \text{ miles}$
 $\approx 9.4 \text{ miles}$

To get from point A to point B you must avoid walking through a pond. To avoid the pond, you must walk 34 meters south and 41 meters east. To the nearest meter, how many meters would be saved if it were possible to walk through the pond?



$$34^2 + 41^2 = c^2$$

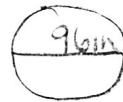
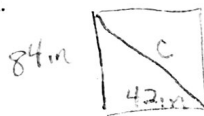
$$1156 + 1681 = c^2$$

$$\sqrt{2837} = c$$

$75 - 53 = 22$
22 meters saved

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? Explain.

$$c = 1.4\sqrt{45} \approx 93.9$$



$$42^2 + 84^2 = c^2$$

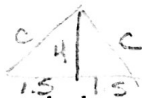
$$1764 + 7056 = c^2$$

$$8820 = c^2$$

$c = 144.5$
 8820
 1764
 4
 441
 21
 49
 77

It won't fit

In the Old West, settlers often fashioned tents out of a piece of cloth thrown over tent poles 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 4 meters high and 3 meters wide?



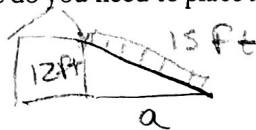
$$4^2 + 1.5^2 = c^2$$

$$16 + 2.25 = c^2$$

$$\sqrt{18.25} = c$$

$2(\sqrt{18.25})$
 $\approx 8.5 \text{ m}$

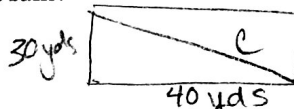
How far from the base of the house do you need to place a 15-foot ladder so that it exactly reaches the top of a 12-foot tall wall?



9 ft

3, 4, 5 multiple

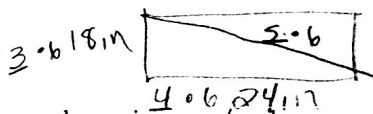
Tanya runs diagonally across a rectangular field that has a length of 40 yards and a width of 30 yards. What is the length of the diagonal, in yards, that Tanya runs?



50 yds

3, 4, 5 multiple

A suitcase measures 24 inches long and 18 inches high. What is the diagonal length of the suitcase to the nearest tenth of a foot?



30 in
 $\approx 2.5 \text{ ft}$

3, 4, 5 multiple