Name _____ Date _____

Pythagorean Theorem Word Problems in 2D and 3D

Directions: Answer each question. Type number answers with digits, and use a decimal point when needed.

1. A right triangle has legs of 20 centimeters and 21 centimeters, and the right angle is between the two legs. How long is the hypotenuse, the side across from the right angle, in centimeters?

_____ centimeters

2. A 17-foot ladder leans against a vertical wall, with its foot on level ground 8 feet from the base of the wall. How high up the wall does the top of the ladder reach, in feet?

_____ feet

3. A right triangle has legs of 4 centimeters and 6 centimeters, with the right angle between them. What is the exact length of the hypotenuse, the side across from the right angle?

A. 10 centimeters B. 52 centimeters C. $\sqrt{52}$ centimeters D. $\sqrt{20}$ centimeters

4. A rectangular park is 45 meters wide and 60 meters long. Jun walks from one corner to the opposite corner straight across the park instead of along two sides. How many meters shorter is the straight path?

_____ meters

5. A hiker walks 1.2 kilometers due north, then 0.5 kilometer due east, on flat ground. How far is she from her starting point in a straight line, in kilometers? Type your answer as a decimal.

_____ kilometers

6. A right triangle has legs of 3 centimeters and 8 centimeters, with the right angle between them. Between which two consecutive whole numbers is the length of the hypotenuse, in centimeters?

A. 7 and 8 B. 4 and 5 C. 8 and 9

7. A shipping box is 18 inches long, 12 inches wide and 4 inches tall, with square corners. Find the length of the diagonal that runs through the inside of the box from one bottom corner to the top corner farthest from it, in inches.

_____ inches

8. A right triangle has a hypotenuse of 25 meters and one leg of 7 meters. Mateo finds the length b of the other leg. His work is shown.

1. $7^2 + b^2 = 25^2$
2. $49 + b^2 = 625$
3. $b^2 = 625 + 49 = 674$
4. $b = \sqrt{674}$

Which step has the first mistake?

A. $7^2 + b^2 = 25^2$ B. There is no mistake. C. $b^2 = 625 + 49 = 674$
D. $49 + b^2 = 625$ E. $b = \sqrt{674}$