

* Application Problems with the Pythagorean Theorem *

Solve the problems on **separate paper** by drawing a triangle & labeling the sides to help you fill in the equation:

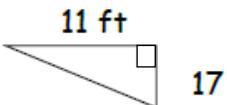
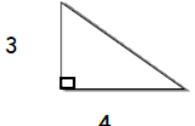
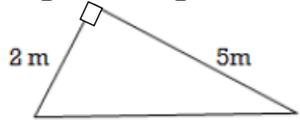
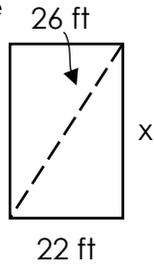
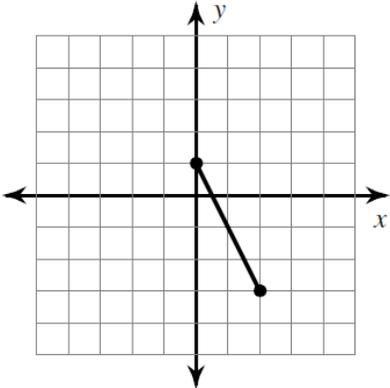
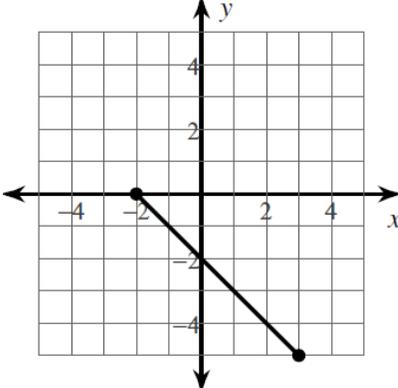
$$\text{leg}^2 + \text{leg}^2 = \text{hypotenuse}^2$$

1) A triangle shaped wall hiding a staircase is 7 feet tall and 9 feet wide along the bottom. How long would a railing be if it fit the diagonal of the triangle perfectly?	2) A car leaves home and drives 50 miles east, makes a 90 degree turn at the corner of 5 th and 6 th avenues, and then drives 40 miles north to work. To get back home, the driver decides to take a straight path back. How long is the diagonal road back from work to home?
3) Brett has leaned a five meter long ladder against his house to paint a window. He placed the base of the ladder 3 m away from the wall. How far up the side of the house is the base of the window (where the ladder meets the house). Draw a picture and label the measurements.	4) Nivia is 4 feet tall and the length of her shadow is 3 feet long. If Nivia is staring straight down to the end of her shadow, how far of a distance does this represent?
5) Harriett has to divide a rectangular cloth (measuring 5" x 12") in half creating a diagonal. What is the length of that diagonal?	6) A triangle shaped paper has sides with lengths of 30 inches, 40 inches, and 50 inches. Is this a true right triangle?
7) The front of a triangle shaped house has lengths of 16 km, 30 km, and 34 km. Is this a true right triangle?	8) There is a telephone pole that measures 25 feet tall. The support wire, which measures 24 feet in length, runs from the top of the pole to the ground at an angle. What is the distance from the base of the telephone pole to the end of the wire attached to the ground?

Write the correct answer in the column to the **right** of each question using the answer bank.

Answer Bank	Question	Your Answer
12	The geographic "triangle" of Raleigh has sides with lengths of 21 miles, 28 miles, and 35 miles. Is this a right triangle?	
63.71	Calculate the height of a triangle with a side length of 15 feet and hypotenuse of 39 feet.	
36	State "true" if the triangle is a right triangle. The triangle has sides measuring 24 km, 45 km, and 51 km.	
Yes	A triangle has sides with lengths 28 m and 32 m. What is the length of the hypotenuse?	
True	Lerontae gave a blanket to Richard that measured 6 feet long and has a diagonal measurement of 64 feet. What is the blankets width?	
42.5	Henry and Mauricio are twin brothers. Their mother wants to equally divide a rectangular shaped cake that is 5 cm wide and 6 cm long. What is the length of the third side of the cake along the diagonal cut?	
7.82	Andrew has a map of hidden treasure. From his starting point, he travels 5 meters 90 degrees north, then turns 45 degrees and travels another 13 meters east to the treasure. What is the distance between where he found the hidden treasure and his starting point? Draw a picture.	

* Pre-Quiz Review *

<p>1) In the given triangle, find the missing length to the nearest tenth.</p> 	<p>2) Find the length of the hypotenuse. Round to the nearest tenth if necessary.</p> 	
<p>3) A ladder is leaning against a house. The base of the ladder is 6 feet from the bottom of the house. The ladder leans against the house 14 feet high. What is the length of the ladder?</p>	<p>4) Find the missing side length:</p> 	
<p>5) Determine whether or not the measurements below will create a right triangle. $m = 14$, $p = 16$, and $s = 18$</p>	<p>6) What is the length of a diagonal of a rectangular picture whose sides are 9 inches by 12 inches? Round to the nearest tenth if necessary.</p>	
<p>7) Ross wants to find the area of his vegetable garden to know how many seeds to buy. He measures one side of his garden as 22 feet and the diagonal as 26 feet.</p> 	<p>a) Draw a sketch of Ross's garden. Use half the garden (triangle) to find the measure of the other side (leg) of the garden.</p> <p>b) Using this other side length, find the area of the entire garden (rectangle).</p>	
<p>8) Perimeter is found by adding the measurements of all sides of a figure. What is the perimeter of a right triangle when the hypotenuse is 7 cm and one of the legs is 4 cm?</p>	<p>9) Two sides of a right triangle are 9 cm and 15 cm. The third side is not the hypotenuse. How long is the third side?</p>	
<p>10) Which of the three measurements could be the dimensions of a right triangle?</p> <p>A) 6 in, 8 in, 11 in B) 9 in, 12 in, 15 in C) 12 in, 24 in, 48 in D) 5 in, 10 in, 15 in</p>	<p>11) The sides of triangle ABC measure 10, 12, and 15 centimeters. The sides of triangle DEF measure 12, 16, 20 inches. What statement about the triangles is true?</p> <p>A) Triangle DEF is a right triangle; triangle ABC is not. B) Triangle ABC is a right triangle; triangle DEF is not. C) Triangle ABC and triangle DEF are both right triangles. D) Neither triangle ABC nor triangle DEF is a right triangle.</p>	
<p>For questions 12 – 14 find the length of the drawn line. Hint: Create a right triangle so that the given line is the hypotenuse and you draw in the legs. Then use the Pythagorean Theorem.</p>		
<p>12)</p> 	<p>13)</p> 	<p>14)</p> 