

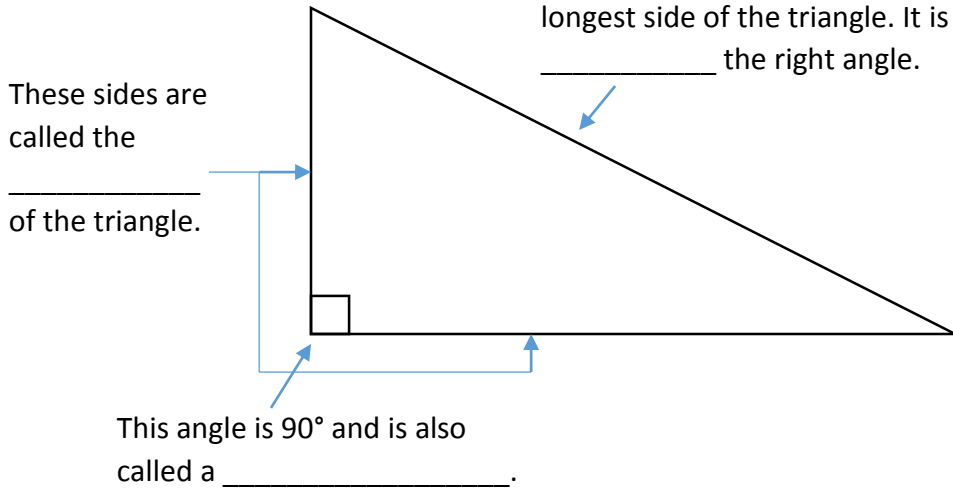
Name _____ Date _____

The Pythagorean Packet

Everything Pythagorean Theorem

Directions: Fill in each blank for the right triangle by using the words in the Vocab Box.

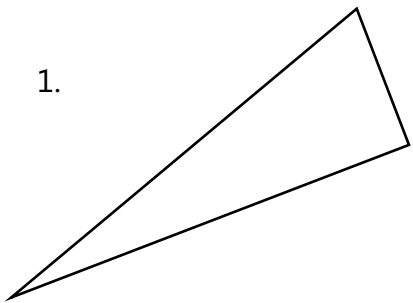
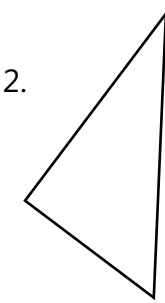
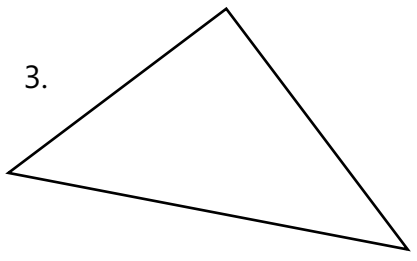
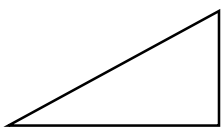
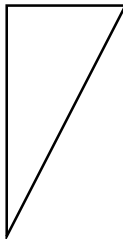
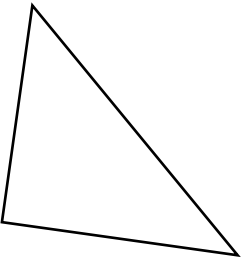
A Right Triangle



Vocab Box
Legs
Hypotenuse
Right angle
Opposite

Quick Practice

Directions: Label the hypotenuse with an "H" on each of the right triangles below.

1. 	2. 	3. 
4. 	5. 	6. 

Follow-Up Question

In the exercise above, how did you know which side of the triangle the hypotenuse was?

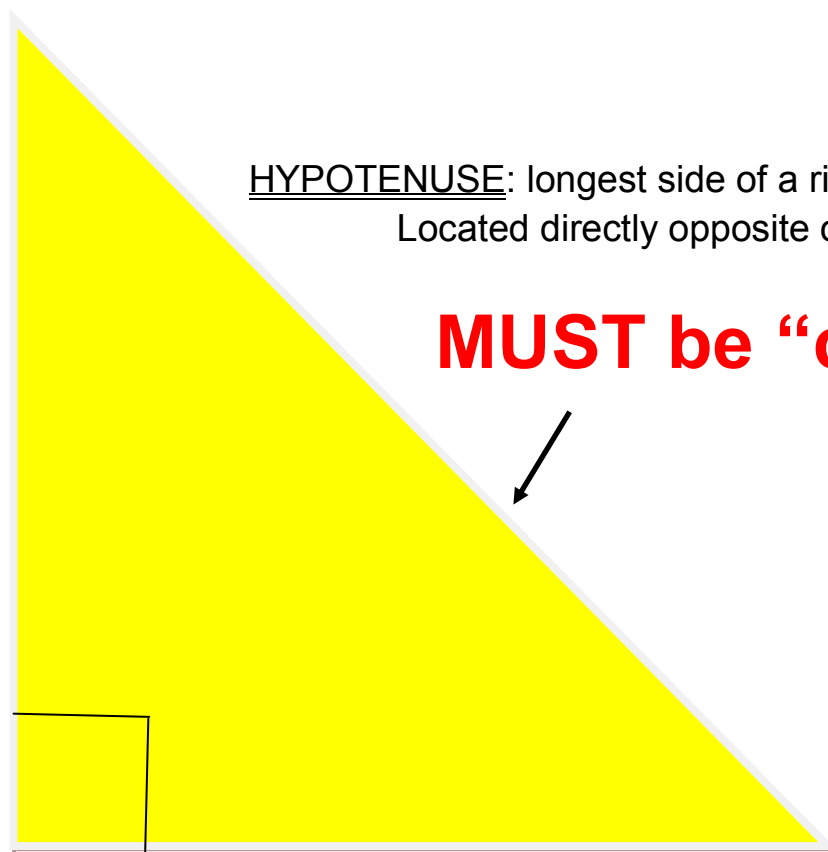
Pythagorean Theorem Facts

1. You can only use the Pythagorean Theorem on a **RIGHT** triangle (one with a 90° angle).

2. For any triangle, if $a^2 + b^2 = c^2$

holds true, then that triangle is a RIGHT triangle.

3. It doesn't really matter what leg (side) you label a or b, what matters is that **c is the HYPOTENUSE** (located directly opposite the 90° angle.)



A cartoon illustration of a young boy with a friendly expression, wearing a blue shirt. He is holding a large, bright yellow star with a brown outline. The star is the central focus of the page, containing text about Pythagorean Triples. The boy's head is on the left side of the frame, and his hands are visible at the bottom corners of the star.

Pythagorean Triples

3 whole numbers that satisfy the equation $a^2 + b^2 = c^2$, where c is the length of the longest side (the largest number).

3, 4, 5

6, 8, 10

5, 12, 13

8, 15, 17

10, 24, 26

Name _____ Date _____ Period _____

Pythagorean Theorem Practice Worksheet

SHOW ALL WORK for full credit!

I. Determine whether each set of measures can be the sides of a right triangle.

1. 3, 4, 5 2. 5, 5, 10 3. 8, 12, 13 4. 26, 24, 10

II. Use the Pythagorean Theorem to find the length of the missing third side. Round to the nearest tenth if necessary.

5. $a=5$, $b=7$, $c=$ _____

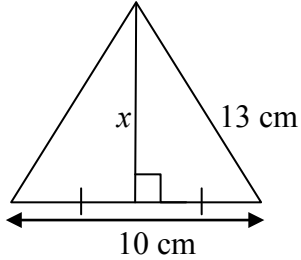
6. $a=$ _____, $b=8$, $c=10$

7. $a=9$, $b=$ _____, $c=15$

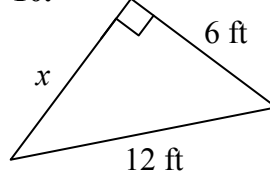
8. $a=$ _____, $b=4/12$, $c=5/12$

III. Find the value of each variable. Round to the nearest tenth.

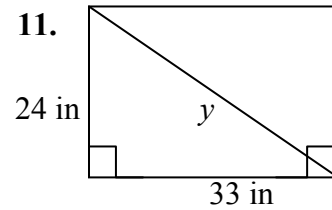
9.



10.



11.



Read each problem carefully. Start by drawing a picture to illustrate each problem.

12. Maria leaves her house and walks north 6 blocks. She then turns and heads east 8 blocks until she reaches Sally's house. What's the shortest distance between Sally's house and Maria's house?

13. Adrian is standing on the ground 12 ft from the base of a tree that is 5 ft tall. Sofi is standing on the ground 8 ft closer to the base of the tree than Adrian. What's the distance from Adrian's location on the ground to the top of the tree? What's the distance from Sofi's location on the ground to the top of the tree?

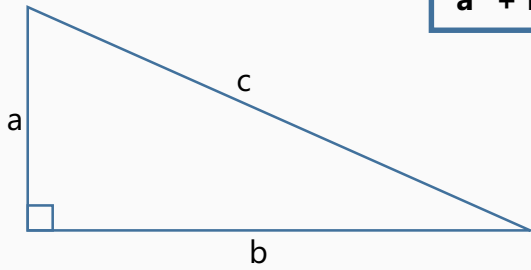
14. Find the perimeter of a square with diagonal 10 centimeters. Round to the nearest tenth.

15. Determine whether the following statement is TRUE or FALSE. If FALSE, provide a counterexample. "The lengths of the three sides of any isosceles triangle always satisfy the Pythagorean Theorem."

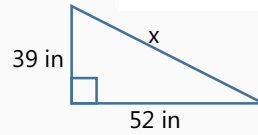
Name _____ Date _____

The Pythagorean Theorem

$$a^2 + b^2 = c^2$$

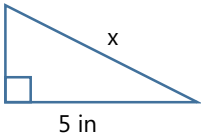
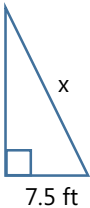
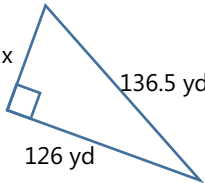
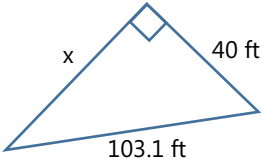
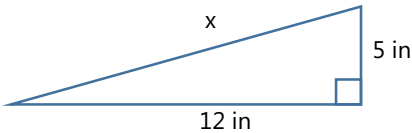
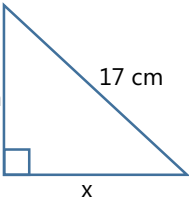
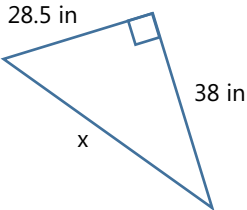
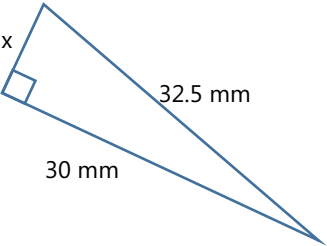


Example:



$$\begin{aligned} 39^2 + 52^2 &= x^2 \\ 1521 + 2704 &= x^2 \\ 4225 &= x^2 \\ \sqrt{4225} &= \sqrt{x^2} \\ 65 \text{ in} &= x \end{aligned}$$

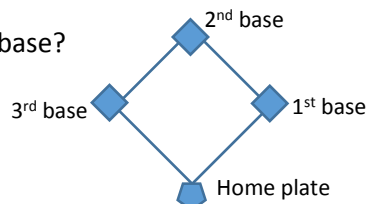
Directions: Solve each problem using the Pythagorean Theorem. Round answers to the nearest tenth.

<p>1. </p> <p>3. </p> <p>5. </p> <p>7. </p>	<p>2. </p> <p>4. </p> <p>6. </p> <p>8. </p>
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9. A baseball diamond has four right angles and four equal sides. Each side is 90 feet.

What is the shortest distance between home plate and second base?

Round your answer to the nearest tenth.



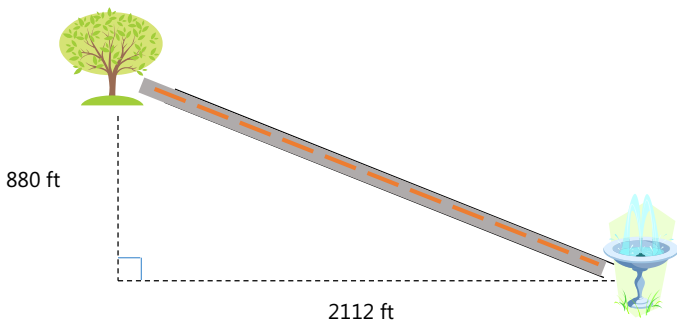
Name _____ Date _____

Pythagorean Theorem Word Problems

Directions: Solve each problem. Round your answer to the nearest tenth and show all of your work.

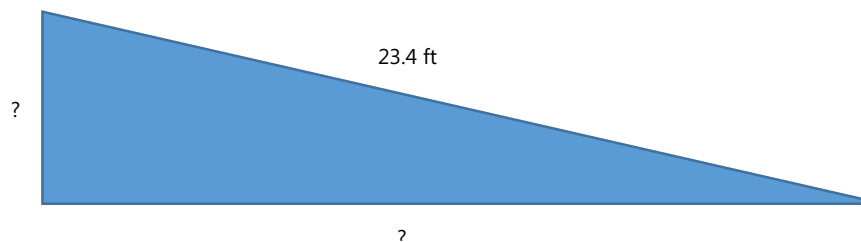
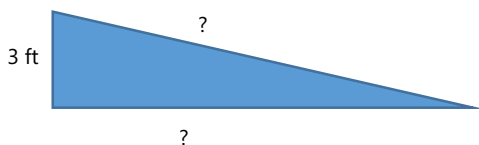
1. On a coordinate plane, $\triangle DEF$ has vertices $D(1, 2)$, $E(7, 2)$ and $F(1, 9)$. What is the distance between point E and F?

2. The city planning committee is discussing making a bike path extension in its city park. They have a \$5050 budget for the proposed project. The cost to construct the path is \$2.20 per foot. The path would be a straight line from the fountain to the large oak tree. In the right triangle formed, the height is 880 ft and the base is 2112 ft. How much will the path cost? Will this work with the city planning budget? Why or why not?



3. A bird feeder stands perpendicular to the ground. In the afternoon sun, the bird feeder's shadow is half its height. If the distance between the top of the bird feeder and the top of the shadow is 19 feet, how tall is the bird feeder and how long is its shadow?

4. In order for entrances to be accessible to all, ramps are being put in place in two different buildings. One will be smaller than the other, however, both ramps must be proportional in a 3:1 ratio. Two measurements are provided below. What are the measurements of the other sides?

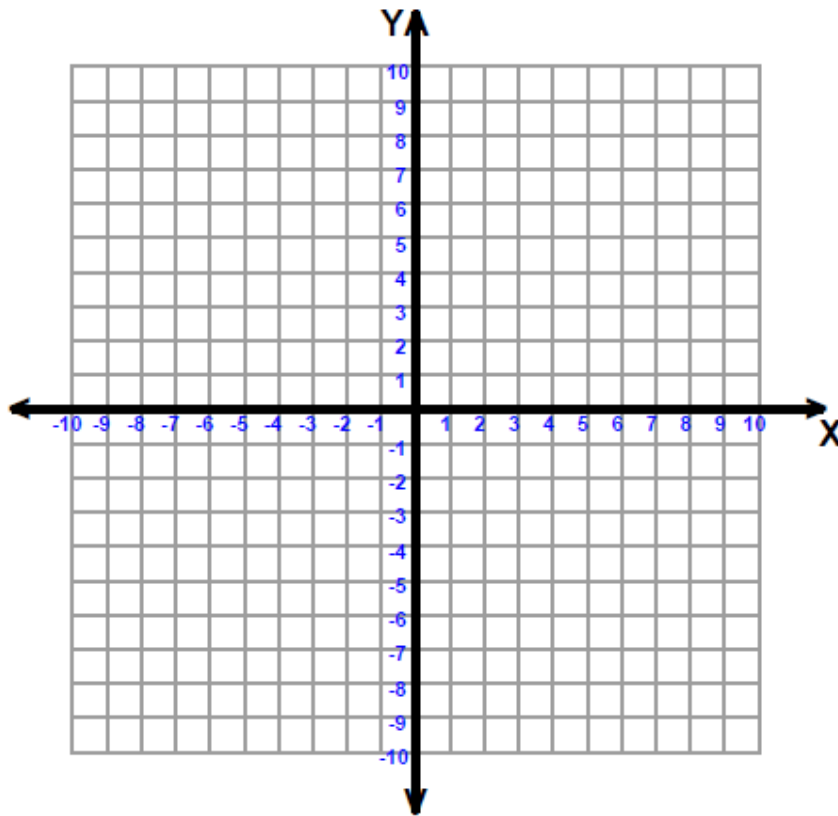


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Pythagorean Theorem Coordinate Geometry Practice Worksheet

SHOW ALL WORK for full credit!

Directions: Plot the following points on the coordinate plane below: A (-9, -3), B (1, -1), and C (-3, -7). Use the distance formula to find the length of all three sides: AB, BC, and AC. Leave your answers in radical form (leave in square root form unless the square roots equal whole numbers). Then use the Pythagorean Theorem to determine if triangle ABC is a right triangle. Remember that the square root of any number squared is equal to that same number. (For example: the square root of 7, squared, is just 7).



AB = _____

BC = _____

AC = _____

Is $\triangle ABC$ a right triangle? Yes or No?