

NAME: \_\_\_\_\_  
TRIANGLES

DATE: \_\_\_\_\_  
PERIOD: \_\_\_\_\_

**How Can You Solve Word Problems  
Using The Pythagorean Theorem?**  
(Topic #7)

**EXAMPLE 1:** A glider flies 8 miles south from the airport and then 15 miles east. Then it flies in a straight line back to the airport. What was the distance of the glider's last leg back to the airport?

*STEP 1: Draw a picture to represent the problem. Label all parts of the picture.*

*STEP 2: Write an equation you could use to find the missing side of the right triangle.*

*STEP 3: Then find the missing side. Show all work. (Round to the nearest tenth if necessary.)*

**PRACTICE:** Read each question carefully. Follow the three (3) steps outlined in EXAMPLE 1.

Question	Picture / Work
1. A cable supports a 28-foot utility pole. The cable is fastened to the ground at a point 21 feet from the base of the pole. Find the length of the cable.	

2. Mark and Colleen start walking at the same point, but Mark walks 50 feet north while Colleen walks 75 feet east. How far apart are Mark and Colleen when they stop?

3. A ramp was constructed to load a truck. If the ramp is 20 feet long and the distance from the base of the ramp to the truck is 12 feet, what is the height of the ramp?

4. An ice hockey rink is 200 feet long by 85 feet wide. What is the length of the diagonal of the rink?

5. The state of Wyoming is shaped like a rectangle that is about 360 miles by 280 miles. What is the longest distance you could go in a straight line and still remain in Wyoming?

NAME: \_\_\_\_\_  
TRIANGLES

DATE: \_\_\_\_\_  
PERIOD: \_\_\_\_\_

### HOMework #7

1. Draw a right triangle and label the right angle, the hypotenuse, and the legs.

**Read each question carefully. Draw and label a picture to represent each problem. Write an equation you could use to find the length of the missing side of each right triangle. Then find the missing length. Round to the nearest tenth if necessary.**

Question	Picture / Work
<p>2. The acceleration ramp for a skateboard competition is 20 meters long, and it extends 15 meters from the base of the starting point. How high is the ramp?</p>	
<p>3. A baseball diamond is actually a square. The distance from first base to second base is 90 feet. How far does the catcher have to throw when he throws a ball from home plate to second base?</p>	

4. Rachel bought a rug for her apartment. The rug is 11 feet long and 9 feet wide. Find the diagonal length of the rug.

5. A 15-foot tree casts a shadow that is 8 feet long. What is the distance from the tip of the tree to the tip of its shadow?

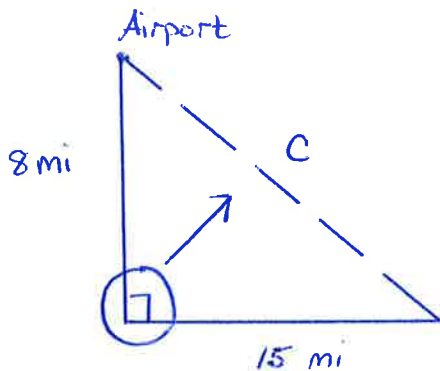
## How Can You Solve Word Problems Using The Pythagorean Theorem? (Topic #7)

**EXAMPLE 1:** A glider flies 8 miles south from the airport and then 15 miles east. Then it flies in a straight line back to the airport. What was the distance of the glider's last leg back to the airport?

STEP 1: Draw a picture to represent the problem. Label all parts of the picture.

STEP 2: Write an equation you could use to find the missing side of the right triangle.

STEP 3: Then find the missing side. Show all work. (Round to the nearest tenth if necessary.)



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

$$8^2 + 15^2 = c^2$$

$$64 + 225 = c^2$$

$$289 = c^2$$

$$\sqrt{289} = \sqrt{c^2}$$

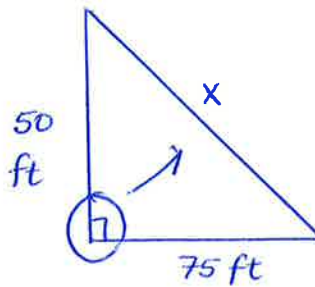
$$17 = c$$

mi

**PRACTICE:** Read each question carefully. Follow the three (3) steps outlined in EXAMPLE 1.

Question	Picture / Work
<p>1. A cable supports a 28-foot utility pole. The cable is fastened to the ground at a point 21 feet from the base of the pole. Find the length of the cable.</p>	$a^2 + b^2 = c^2$ $28^2 + 21^2 = c^2$ $784 + 441 = c^2$ $1225 = c^2$ $\sqrt{1225} = \sqrt{c^2}$ $35 = c$ <p style="text-align: center;">ft</p>

2. Mark and Colleen start walking at the same point, but Mark walks 50 feet north while Colleen walks 75 feet east. How far apart are Mark and Colleen when they stop?



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

$$50^2 + 75^2 = x^2$$

$$2500 + 5625 = x^2$$

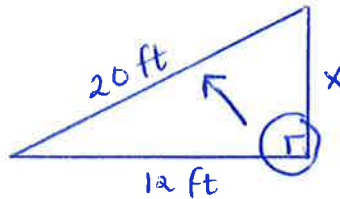
$$8125 = x^2$$

$$\sqrt{8125} = \sqrt{x^2}$$

$$90.1 = x$$

ft

3. A ramp was constructed to load a truck. If the ramp is 20 feet long and the distance from the base of the ramp to the truck is 12 feet, what is the height of the ramp?



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

$$x^2 + 12^2 = 20^2$$

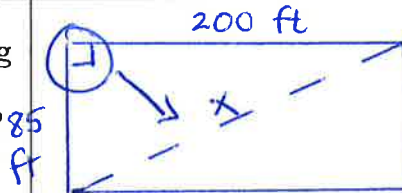
$$x^2 + 144 = 400$$

$$\begin{array}{r} -144 \\ -144 \\ \hline x^2 = 256 \end{array}$$

$$\sqrt{x^2} = \sqrt{256}$$

$$x = 16 \text{ ft}$$

4. An ice hockey rink is 200 feet long by 85 feet wide. What is the length of the diagonal of the rink?



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

$$85^2 + 200^2 = x^2$$

$$7225 + 40,000 = x^2$$

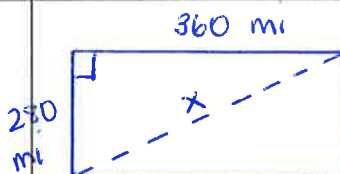
$$47,225 = x^2$$

$$\sqrt{47,225} = \sqrt{x^2}$$

$$217.3 = x$$

ft

5. The state of Wyoming is shaped like a rectangle that is about 360 miles by 280 miles. What is the longest distance you could go in a straight line and still remain in Wyoming?



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

$$280^2 + 360^2 = x^2$$

$$78,400 + 129,600 = x^2$$

$$208,000 = x^2$$

$$\sqrt{208,000} = \sqrt{x^2}$$

$$456.1 = x$$

mi

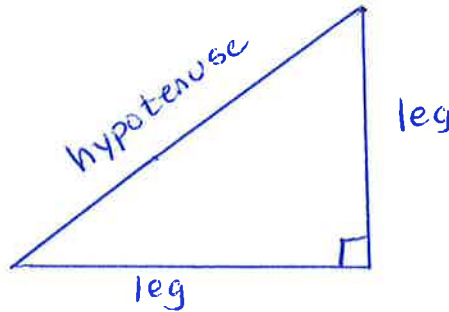
NAME: \_\_\_\_\_  
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DATE: \_\_\_\_\_  
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### HOMEWORK #7

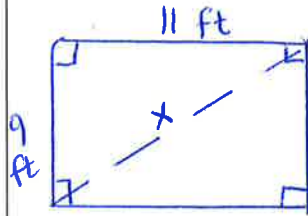
1. Draw a right triangle and label the right angle, the hypotenuse, and the legs.



Read each question carefully. Draw and label a picture to represent each problem. Write an equation you could use to find the length of the missing side of each right triangle. Then find the missing length. Round to the nearest tenth if necessary.

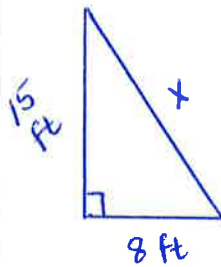
Question	Picture / Work
<p>2. The acceleration ramp for a skateboard competition is 20 meters long, and it extends 15 meters from the base of the starting point. How high is the ramp?</p>	$a^2 + b^2 = c^2$ $x^2 + 15^2 = 20^2$ $x^2 + 225 = 400$ $\begin{array}{r} -225 \quad -225 \\ \hline x^2 = 175 \end{array}$ $\sqrt{x^2} = \sqrt{175}$ $x = 13.2 \text{ m}$
<p>3. A baseball diamond is actually a square. The distance from first base to second base is 90 feet. How far does the catcher have to throw when he throws a ball from home plate to second base?</p>	$a^2 + b^2 = c^2$ $90^2 + 90^2 = x^2$ $8100 + 8100 = x^2$ $16200 = x^2$ $\sqrt{16,200} = \sqrt{x^2}$ $127.3 = x$ <p>ft</p>

4. Rachel bought a rug for her apartment. The rug is 11 feet long and 9 feet wide. Find the diagonal length of the rug.



$$\begin{aligned}a^2 + b^2 &= c^2 \\9^2 + 11^2 &= x^2 \\81 + 121 &= x^2 \\202 &= x^2 \\\sqrt{202} &= \sqrt{x^2} \\14.2 &= x \\ft\end{aligned}$$

5. A 15-foot tree casts a shadow that is 8 feet long. What is the distance from the tip of the tree to the tip of its shadow?



$$\begin{aligned}a^2 + b^2 &= c^2 \\8^2 + 15^2 &= x^2 \\64 + 225 &= x^2 \\289 &= x^2 \\\sqrt{289} &= \sqrt{x^2} \\17 &= x \\ft\end{aligned}$$