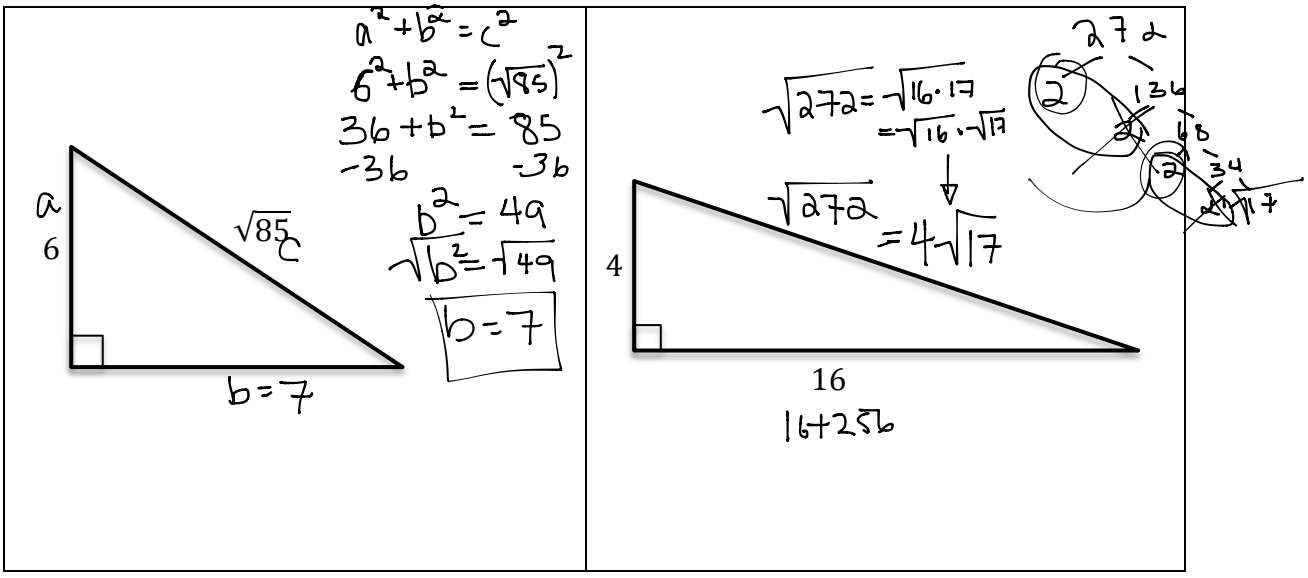
Name: _____ Math 7.2, Period _____

Mr. Rogove Date: _____

**Learning Objective:** We will apply the Pythagorean Theorem and its converse to solve problems. (Lesson 76)

## Activating Prior Knowledge:

We know how to apply the Pythagorean Theorem to find the lengths of sides of right triangles.

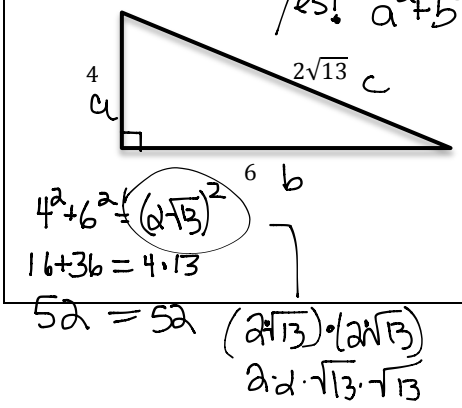



## Concept Development:

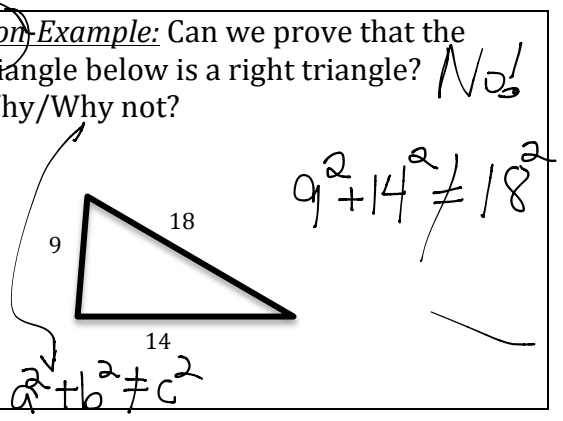
**The Converse of the Pythagorean Theorem**

If the lengths of three sides of a triangle, $a$, $b$ and $c$ satisfy $a^2 + b^2 = c^2$, then the triangle is a right triangle, and furthermore, the side of length $c$ is opposite the right angle (it's the hypotenuse).

*Example*: Can we prove that the triangle below is a right triangle? Why/Why not?




*Non-Example:* Can we prove that the triangle below is a right triangle? Why/Why not?



Name: _____ Math 7.2, Period _____

Mr. Rogove Date: _____

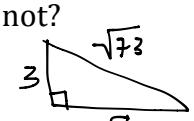
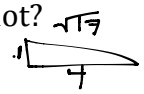
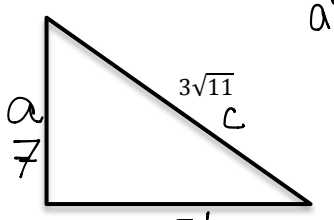
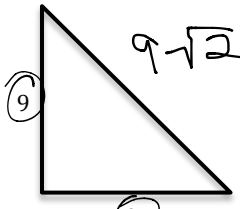
## Guided Practice:

**Steps for Identifying a Right Triangle**

1. Identify the lengths of the sides of a triangle.
2. Determine if the sum of the squares of the lengths of the 2 shorter sides is equal to the square of the longest sides.

2a. If yes to above, then you triangle is a right triangle, and the longest side is the hypotenuse, located opposite the right angle.

2b. If no to above, then you do not have a right triangle.

| | |
|---|---|
| Is the triangle with side lengths of 3 inches, 8 inches and $\sqrt{73}$ inches a right triangle? Why or why not?<br>$3^2+8^2=(\sqrt{73})^2$<br>$9+64=73$<br>$73=73$<br>  <br><br>Yes! Right $\triangle$<br>$a^2+b^2=c^2$ | Is the triangle with side lengths of 1 meter, 4 meters, and $\sqrt{17}$ meters a right triangle? Why or why not?<br>$1^2+4^2=(\sqrt{17})^2$<br>$1+16=17$<br>$17=17$<br>  <br><br>Yes!<br>$a^2+b^2=c^2$ |
| What is the length of the unknown side that would make this a right triangle?<br>$a^2+b^2=c^2$<br>  <br><br>$a^2+(5\sqrt{2})^2=(3\sqrt{11})^2$<br>$a^2+50=99$<br>$a^2=49$<br>$a=7$ | What is the length of the unknown side that would make this a right triangle?<br>  <br><br>$9^2+9^2=c^2$<br>$81+81=c^2$<br>$162=c^2$<br>$c=\sqrt{162}$<br>$c=\sqrt{81\cdot 2}$<br>$c=9\sqrt{2}$ |
| Is the triangle with lengths of 9 feet, 9 feet, and $\sqrt{175}$ a right triangle? Why? Why not?<br>NO<br>b/c $a^2+b^2\neq c^2$ | Is the triangle with lengths of 2 centimeters, 6 centimeters, and $3\sqrt{5}$ centimeters a right triangle? Why or why not? |

Name: _____ Math 7.2, Period _____

Mr. Rogove Date: _____

## Independent Practice:

Problem Set for Independent Practice??

## Closure:

Give exit ticket for lesson 16 module 7 grade 8

## Notes:

Lesson maps to Lesson 16, Grade 8, Module 7