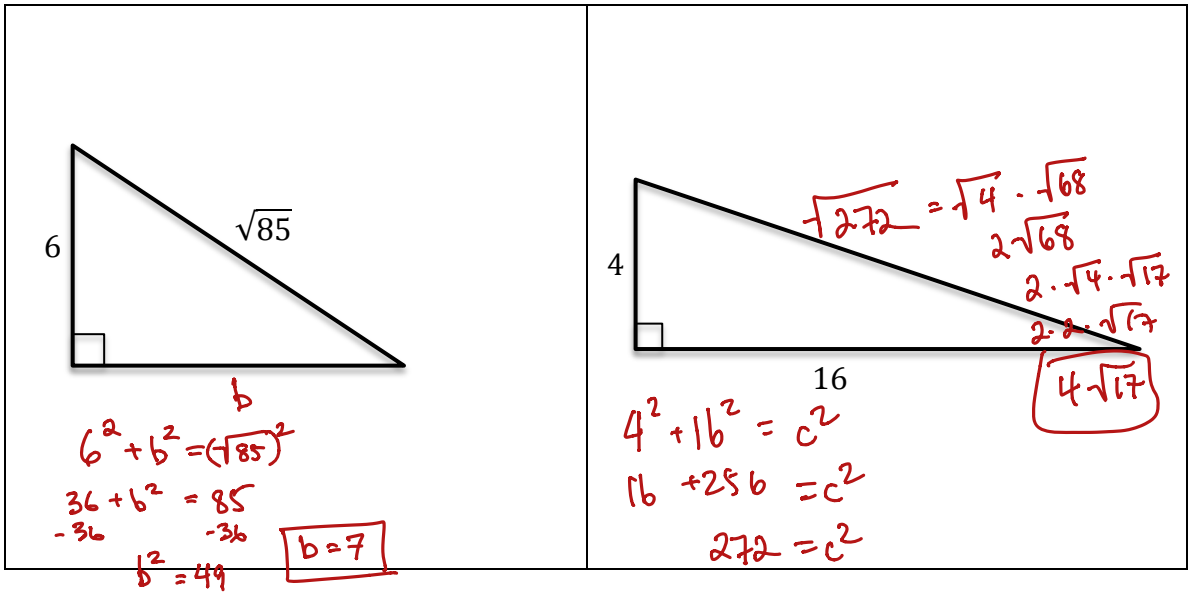
Name: _____ Math _____, Period _____

Mr. Rogove Date: _____

Learning Objective: We will apply the Pythagorean Theorem and its converse to solve problems. (G8M7L10)

Activating Prior Knowledge:

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

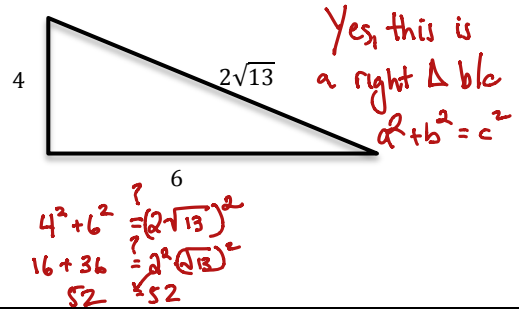


Concept Development:

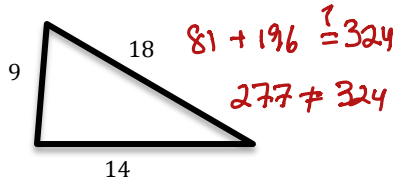
The Converse of the Pythagorean Theorem

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?



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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? $3^2+8^2 \stackrel{?}{=} (\sqrt{73})^2$ $9+64 \stackrel{?}{=} 73$ $73 = 73$ Yes. we have a right Δ because $a^2+b^2=c^2$	Is the triangle with side lengths of 1 meter, 4 meters, and $\sqrt{17}$ meters a right triangle? Why or why not? $1^2+4^2 \stackrel{?}{=} (\sqrt{17})^2$ $1+16 \stackrel{?}{=} 17$ $17 = 17$ Yes. we have a right Δ because $a^2+b^2=c^2$
What is the length of the unknown side that would make this a right triangle? $\sqrt{149}$ 7 $\sqrt{49}$ $3\sqrt{11} = \sqrt{99}$ $5\sqrt{2} = \sqrt{50}$ $(5\sqrt{2})^2+7^2 = (3\sqrt{11})^2$	What is the length of the unknown side that would make this a right triangle? 9 9 $c = \sqrt{162}$ $= \sqrt{2}\cdot\sqrt{81}$ $c = 9\sqrt{2}$ $9^2+9^2 = c^2$ $81+81 = c^2$ $162 = c^2$
Is the triangle with lengths of 9 feet, 9 feet, and $\sqrt{175}$ a right triangle? Why? Why not? No $9^2+9^2 \neq (\sqrt{175})^2$	Is the triangle with lengths of 2 centimeters, 6 centimeters, and $3\sqrt{5}$ centimeters a right triangle? Why or why not? No $2^2+6^2 = (3\sqrt{5})^2$ $4+36 = 9\cdot 5$ $40 \neq 45$

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Independent Practice:

Problem Set for Independent Practice?? Students DO have to approximate to tenths place!!

Closure:

Give exit ticket for lesson 16 module 7 grade 8

Notes:

Lesson maps to Lesson 16, Grade 8, Module 7