Name: _____
Class/Block: _____ Date: _____

Applying the Pythagorean Theorem

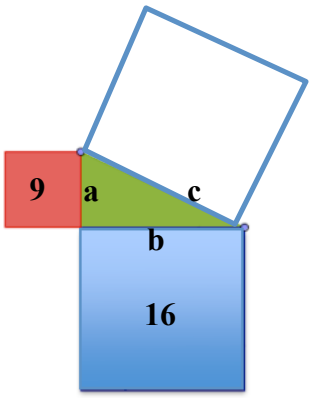
Introduction

In this exploration you will use the Pythagorean Theorem to solve for the length of the sides of a right triangle.

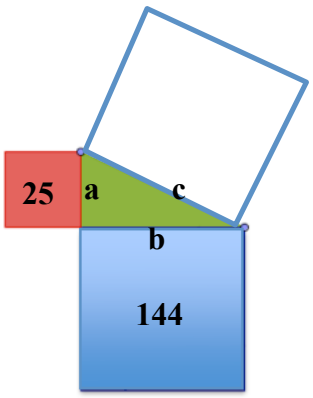
Part I – Background Knowledge

Use what you know about squares and square roots to solve the following problems. Find the area of the large square and sides a, b, and c of the triangle. (The triangle shown is a right triangle.)

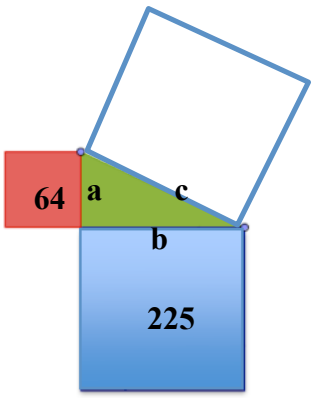
1) side a = _____
side b = _____
side c = _____



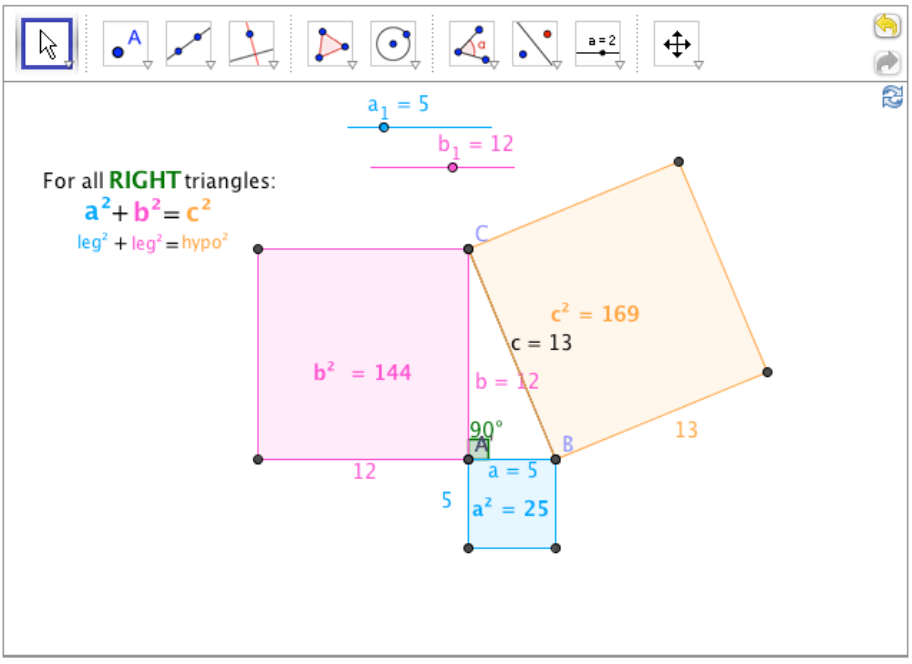
2) side a = _____
side b = _____
side c = _____



3) side a = _____
side b = _____
side c = _____



Launch the ***Pythagorean Theorem*** applet. (Check your answers)
http://www2.esc9.net/math/geogebra/Pythagorean%20Theorem/pythagorean_theorem.html



Name: _____
Class/Block: _____ Date: _____

Part II – Create and Solve Problems

Use the applet to create and solve problems related to the Pythagorean Theorem.

Before beginning each problem, **refresh** and then click on **Options**, **Side lengths**, **on figure**, **Areas of Squares**, and **on figure**.

1. Click on a and c. Drag point B so side a is 8 units. Drag point A until side c is 10 units.
   a. What is the value of b^2? ____ Explain how you know.

   b. What is the value of b? _____ Explain how you know.

   c. Check by clicking on b^2 and b.

2. Drag b so it is 12 units. Drag c so it is 13 units.
   a. What does a^2 have to equal? How do you know?

   b. What does a have to equal? How do you know?

   c. Check by clicking on a^2 and a.

   d. Given what you have done above, how would you find the missing side if you are given the length of one side and the length of the hypotenuse?

   e. Click on *Pythagorean Theorem* and *Substitute values selected above* to see the equations. Click on *Solve for the missing value*. How is this different from finding the length of the hypotenuse if you are given both side lengths?

4. Using the applet, make a and c be any number. Find b. Write out or explain what you did.