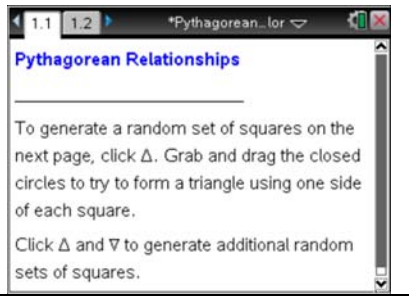
Pythagorean Relationships
Student Activity

Name _____
Class _____

Open the TI-Nspire document *Pythagorean_Relationships.tns.*

This activity lets you move sets of three squares to see what kind of triangles can be formed using one side of each square.



Move to page 1.2.

Press ctrl ▶ and ctrl ◀ to navigate through the lesson.

1. Click on the up or down arrows on the screen. Describe the numbers and figures that appear and the connections among them.

2. Drag the closed points to create a triangle so that one side of each square is a side of the triangle.
   a. Fill in the table for Trial 1. Record the side lengths and areas and classify the triangle. Enter the smaller side measures in rows A and B and the largest side measure in row C.

   b. Click on the up or down arrows to do three more trials with a different set of numbers for each trial, and record the results in the table.

		Trial 1				Trial 2		
		Side Length	**Area**	**Classify Δ by Angles**		**Side Length**	**Area**	**Classify Δ by Angles**
Small	**A**							
Medium	**B**							
Large	**C**							

		Trial 3				Trial 4		
		Side Length	**Area**	**Classify Δ by Angles**		**Side Length**	**Area**	**Classify Δ by Angles**
Small	**A**							
Medium	**B**							
Large	**C**							

3. Work with the others in your group to organize your results according to the type of triangle by angle.

Acute Triangles		
a^2	b^2	c^2

Obtuse Triangles		
a^2	b^2	c^2

Right Triangles		
a^2	b^2	c^2

No Triangles		
a^2	b^2	c^2

Describe the relationship among a^2, b^2, and c^2 that seems to be true for each class of triangles.

a. acute

b. obtuse

c. right

d. no triangle was formed

4. Brianna has five squares with areas 1 in^2, 2 in^2, 3 in^2, 4 in^2, and 5 in^2. Which sets of three squares will fit on the sides of a right triangle? Explain your reasoning.

5. If a, b, and c are the lengths of the three sides of a triangle with c the longest side, which of the following will be **never** true, **sometimes** true, and **always** true? Use the work you have done with squares and triangles above to justify your answers.

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

b. $a + b = c$

c. $a + b > c$

d. $c^2 - a^2 = b^2$