**Proving the Pythagorean Theorem**

**Lesson Plan/Annotated materials**

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Objectives:

* SWBAT prove the Pythagorean theorem using triangle similarity

**Introduction:**

During a unit on similarity and trigonometry, this lesson would naturally fit in as you head into the special case of right triangles and for an introduction to the Pythagorean Theorem. The GeoGebra applet used here requires students to use a slider to separate a right triangle so they can more clearly see the proportional relationships within the Pythagorean theorem.

**Computer Investigation:**

To start, have each team of students go to the website: <http://tedcoe.com/math/?page_id=137>. Keep in mind that the overall goal of this computer-based activity is for students to prove the Pythagorean theorem using triangle similarity, which is one of the Common Core Geometry standards. Consider having the students follow the following process to help direct them along the most fruitful path of discovery of the Pythagorean Theorem:

1. Describe the diagram that is displayed on your screen initially. Explain what *a, b, c, h, y,* and *x* are being used to label.
2. Be sure to note that there are three right triangles in this diagram. Name them.
3. SLOWLY move the slider labeled “move slider to separate triangles” and ***pay real close attention*** to where each side started and where it ended. Describe where the two smaller right triangles on the left of your screen came from compared to the largest right triangle.
4. Adjust point *A* and make a conjecture about corresponding sides using the segmented lines on the right of the screen to help you.
5. Adjust point *C* and make a conjecture about corresponding sides using the segmented lines on the right of the screen to help you.
6. Finally, click on the “Show Proof” box and write out in sentences what each line of the proof is showing as well as why it is true to conclude each statement.

Note: Be sure to leave enough time to pull the lesson together and emphasize the major learnings that should have occurred – corresponding sides of the right triangles are proportional and can be used to develop the Pythagorean Theorem.