

8th Grade Lesson Plan

Title:	Pythagorean Theorem: Prove It
Overview/Annotation:	During this lesson, eighth grade students will be introduced to the Pythagorean Theorem: $a^2+b^2=c^2$. They will construct a right triangle on graph paper and draw squares on each side of the triangle.
Content Standard(s):	8.G.6 Explain a proof of the Pythagorean Theorem and its converse. 8.G.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
Primary Learning Objective(s):	At the end of this lesson, students should know and be able to explain the attributes of a right triangle. They should be able to apply their new found knowledge of the Pythagorean Theorem to a real life scenario.
Materials and Equipment:	<ul style="list-style-type: none">• graph paper (1 cm)• colored pencils• copies of Pythagorean assignment (one per student)• Each group of three needs one of the triangle lengths.
Technology Resources Needed:	<ul style="list-style-type: none">• Interactive Whiteboard• Computer with access to the following video: Pythagorean Theorem demo (attached)• Access to the following Internet website: http://www.quia.com/cc/65631.html
Background/Preparation:	Student Prerequisite Knowledge needed: Students need to understand how to square numbers as well as the inverse operation: square roots. Students should have a list of perfect squares through 225. Students should understand that the hypotenuse is the longest side in a right triangle. It is also opposite the largest angle. Teacher Preparation: Cut out triangle side lengths attachment. Make sure that you have one for each group of students.

STUDENT ACHIEVEMENT PARTNERS

- Procedures/Activities:**
- 1.) To begin, review how to find the perfect square of a number by playing the following interactive game: <http://www.quia.com/cc/65631.html>. If using an interactive whiteboard, students may come up to the board and tap to find matching pairs.
 - 2.) Students will watch the demo video on the Pythagorean Theorem (attached)
 - 3.) Use an interactive whiteboard to display the Pythagorean Theorem. Lead a class discussion to see what conclusions the students can draw about the relationship between the sum of the squares of the legs and the square of the hypotenuse.
 - 4.) Divide students into cooperative groups. Groups of three would be ideal for this lesson.
 - 5.) Remind the students that the hypotenuse is the longest length because it is opposite the largest angle. The "right" angle should be between the other two side lengths.
 - 6.) Students will test this theory with different size triangles. Hand out a slip of paper with three lengths on it to each group. Students will use these lengths to build a triangle. They will apply what they saw in the video to this particular lesson. They will build squares off of each side of the triangle and see if it does prove to be a right triangle.
 - 7.) Students will complete attached assignment to assess their understanding of the application of the Pythagorean Theorem.

**Assessment
Strategies:**

Students will complete the attached assignment. This assignment requires them to read and interpret a real life scenario. They will need to be able to represent their mathematical thinking in words as well as pictorially.

Extension:

Cross-Curricular Connection: In eighth grade world history, students study ancient Greek philosophers. Students will use the following websites to research Pythagoras. They will create a slide show presentation to present five interesting facts about the philosopher.