



TEACHER PAGE
Lesson: Similar Triangles—Applied Problems
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New AZ Standard 4 Geometry and Measurement **Grades 9-12**
Articulated 4MH4-10 Solving applied problems using similar triangles.

Learning Objectives: The student will be able to:

- Demonstrate mastery of applied word problems by illustrating and labeling the angles of triangles
- Demonstrate mastery through a written statement of similarity based on matching congruent triangles
- Explain proportion by “setting up” a similarity statement
- Exhibit understanding and proficiency by substituting for known values
- Demonstrate solutions to proportion problems by using cross-products.

Materials:

Calculator, cardboard, straw, string and metric measuring tape for the “Talk About It” project.

Overview and Content:

This lesson defines the terms Similar Triangles and demonstrates the use of a 5-step problem-solving method to solve word problems and applications. The method is:

- 1) make a drawing of two similar triangles,
- 2) label the drawing,
- 3) write a similarity statement,
- 4) set up and
- 5) solve a proportion by using cross-products.

Students are then guided through each type of problem, with feedback.

Engaging Students:

Students can be introduced to the concept of similar triangles by means of a whole class or small group discussion about how one would go about finding the height of a very tall tree, or the depth of the Grand Canyon, since neither one can be measured directly. Discussion should center around the fact that corresponding sides of similar triangles are in proportion. Some review of SSS, SAS, and AA similarity theorems may be required as well as the means/extremes property of solving a proportion.

Follow-up and Extensions:

Students may further explore applications of similar triangles through maps, scale drawings of building projects, right triangle trigonometry, and similarity in polygons, perspective, conversion factors and surveying techniques. In SO WHAT! surveyors measure inaccessible distances





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DIG DEEPER challenges students to determine height using a hypsometer. A hands-on construction of a simple surveying instrument is offered in TALK ABOUT IT!

Assessment:

Students will demonstrate the ability to solve given word problems by the 5-step method.

