

What's So Special About Triangles? Geometry and Measurement		Student/Class Goal Students will be familiar with common geometric shapes and formulas, but will further apply these formulas to their everyday lives.
Outcome <i>(lesson objective)</i> Students will demonstrate their knowledge of geometric relationships by using measurements and applying theorems to solve problems based on everyday objects and activities.		Time Frame 6-8 Hours
Standard <i>Use Math to Solve Problems and Communicate</i>		NRS EFL 5-6
Components of Performance (COPs) Understand, interpret, and work with pictures, numbers, and symbolic information.	Activity Addresses COPs <i>(process)</i> Students will solve problems using different geometric theorems/formulas, while creating/identifying different shapes and calculating measurement.	
Apply knowledge of mathematical concepts and procedures to figure out how to answer a question, solve a problem, make a prediction, or carry out a task that has a mathematical dimension.	Students will use problem solving strategies to assess and appraise various measurements. Students will diagram various shapes and figures. Students will evaluate/compare geometric figures to predict changes.	
Define and select data to be used in solving the problem.	Students will choose the correct unit of measure and the appropriate formula.	
Determine the degree of precision required by the situation.	Students will compare/contrast calculated measurements; students will estimate whole numbers and square roots.	
Solve problem using appropriate quantitative procedures and verify that the results are reasonable.	Students will use a ruler to confirm results from calculated results of special triangles. Students will check results with calculators.	
Communicate results using a variety of mathematical representations, including graphs, charts, tables, and algebraic models.	Students communicate with each other in pairs for the purpose of ordering and classifying shapes.	
Activity Addresses Benchmarks <i>(content)</i> M.6.6, M.6.8, M.6.10, M.6.26, M.6.27, M.6.28		
Materials Pencils Construction Paper Colored Markers Rulers Protractors Formula Sheet Graph Paper Calculators Contextual Problems Hand-out Assessment		
Learner Prior Knowledge Square roots, exponents, PEMDAS, measuring with rulers, equivalent fractions, solving proportions, experience with theorems/formulas to calculate perimeter, circumference, area, and volume, comparing units of measure, measuring scales, conversions, rounding		
Instructional Activities Step 1 Instructor creates visual representation of all geometric shapes, patterns, and figures; including correct		

labels for each. Students will then create their own "cheat sheet" by note taking with colored markers at their desks.

Step 2

Students will create geometric shapes and patterns by observing construction paper cut-outs of basic angles, triangles, spheres, etc. Next, have students measure each cut-out with a ruler and determine the unit of measure, and label each cut-out with the correct length for each side. Students should round to the nearest whole number. Then, students will calculate perimeter, area, circumference, etc. for each shape.

Step 3

After completing step 2, students will find a partner to order and compare shapes. Students will identify equivalent shapes and patterns such as similar triangles; students will represent their findings in the form of a proportion and can be written as an equivalent fraction.

Step 4

Instructor passes out previously measured and labeled shapes (special triangles) for the purpose of applying the Pythagorean theorem and special triangle theorems. Prior to instruction, instructor should post special triangle theorems. Students will algebraically solve the missing sides and then measure the physical side with a ruler to confirm answers.

Step 5

Have the students find 3-dimensional objects in the room and determine whether the object could be classified as a cone, cylinder, cube, rectangular solid, sphere, or prism. Now, have the students measure an object, identify the proper formula, and use it to solve for volume.

Step 6

Instructor will distribute hand-outs with contextualized word problems for practice applying the concepts. Hand-outs could be considered homework depending on class length/time.

Assessment/Evidence *(based on outcome)*

Cord Algebra 1 Chapters 2 and 13 with 80% accuracy (complete as take home or partially in-class).

Teacher Reflection/Lesson Evaluation

Not yet completed

Next Steps