

Shaping Up 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 3 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 Pencils Rulers Protractors Formula Sheet Graph Paper Calculators Contextual Problems Handout Assessment		
Learner Prior Knowledge Square roots, exponents, PEMDAS, measuring with rulers, equivalent fractions, solving proportions, experience with theorems/formulas to calculate perimeter and area, compare 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. Students will be given a review sheet identifying regular polygons (triangles, squares, rectangles, and parallelograms).

Here are the steps to creating the "cheat sheet":

Give the students sheets of cardstock and draw a line down the middle of the page (or fold in half). Teacher will perform an example of area and perimeter for each regular polygon on the board. Have them draw a visual representation of each regular polygon down the left hand side of the page. Then, students will be given a formula sheet that simply states the formulas for area and perimeter. Instructor should spend time reviewing this sheet with the students.

Step 2

Students will create geometric shapes and patterns by tracing cardboard cut-outs patterns onto construction paper. Students will trace one shape for each of the following: basic angles, triangles, squares, rectangles, and parallelograms. After students have cut-out their shapes, students will measure each cut-out with a ruler and determine the unit of measure. Students will label each cut-out with the correct length for each side. Students should round to the nearest whole number. Then, students will calculate perimeter, and area for each shape, and then write it in the inside of the shapes.

Step 3

Students should then choose one regular polygon and draw/create their own shape/pattern. Students will then trade/compare side lengths, area, and perimeter with their friends. 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 should turn the focus to triangles by properly labeling and identifying the kinds of triangles. (Students should create another "cheat sheet" with the varying kinds of triangles through note-taking like in Step 2). Instructor should draw a right triangle on the board and should show a few examples of using the theorem. Instructor passes out previously measured/labeled right triangles for the purpose of applying the Pythagorean theorem. . Students will algebraically solve the missing sides and then measure the physical side with a ruler to confirm answers.

Step 5

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)*

McGraw Hill's *Number Power 4: Geometry* page 70-72 with 80% accuracy (completed as take home or partially in-class).

Teacher Reflection/Lesson Evaluation

Not yet completed

Next Steps