

Mathematics Basic Concept

Lesson Objective:

Students will be able to identify properties of triangles and learn the term **equilateral**.

Prerequisite Skills:

Knowledge of basic geometric shapes ("Geometric Shapes," "Shape and Number," and "Similar Triangles").

Time Needed:

One class period of 45-60 minutes.

Materials Needed:

- One Zome System Creator Kit for 25-30 students.

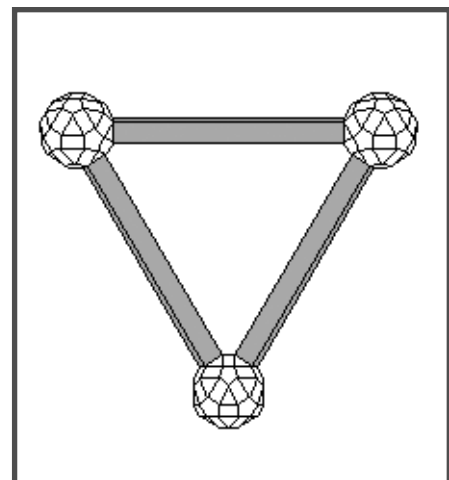
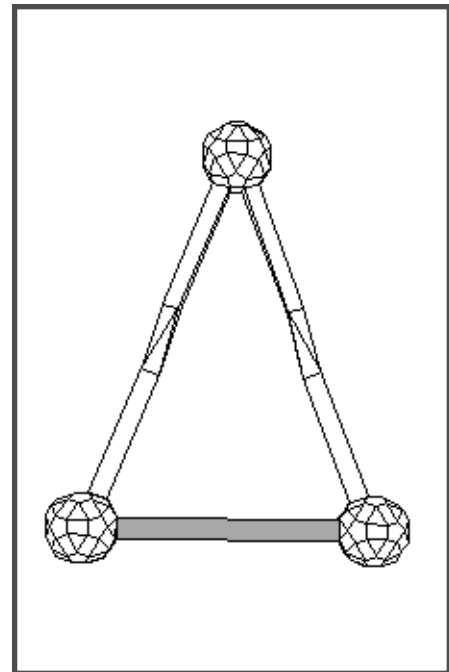
Procedure:

Prepare by building one triangle using 3 medium blue struts of the same length, one with 2 medium red struts and 1 medium blue strut, and one with 1 medium blue strut and two medium yellow struts. Write the "recipe" for these triangles on the board.

Divide the class into teams of 2-3 students, and distribute the Zome System pieces. Show the students the three different types of triangles. *Are they all triangles? Why are they triangles?* The challenge for the teams is to build the three triangles following the recipe on the board.

When all the teams have completed their work, their attention should be directed to the triangle made with 3 blue struts. *Are all the sides in this triangle the same length?* Ask the students to pick up three blue struts so that they can confirm that this is the case. Introduce the term **equilateral**, and explain that equilateral shapes have sides of exactly the same size.

Now show the class the red and blue triangle. *Is this is an equilateral triangle?* Most students will think it is because it looks very similar to the first triangle they saw. Point



The Equilateral Triangle

Zome System

Builds Genius!

out the struts. *Are the struts the same color? Are all the struts the same size? How can we know for sure?* Ask the students to pick up a blue strut and a red strut and compare the sizes. The students will be able to see that the blue strut is longer, therefore coming to the conclusion that this is not an equilateral triangle.

Repeat the process using the yellow and blue triangle. Once again, discuss the struts and ask the class to decide if this is an equilateral triangle. Compare the lengths of all three color struts.

Allow the students to build more equilateral triangles. *Can they be built in other sizes? Is it possible to build equilateral triangles using only red, or only yellow struts (not without bending the struts)?* Students should describe the properties of the equilateral triangle, either orally or written. Older students (i.e., second graders) can be asked to draw an equilateral triangle using a ruler and a piece of paper. Discuss the concept of an equilateral shape. *Can shapes other than triangles be equilateral? Are some shapes always equilateral (the square)?*

Assessment:

Observe students while they work, and review their notes and drawings. To meet the standard, students must build the three triangles, and clearly understand how the equilateral triangle is different than the two others. To exceed the standard they must determine that equilateral triangles can only be made using three blue struts.

Standards Addressed:

- * Mathematics standards addressing **geometry and spatial sense** (NCTM Standard 9).
- * Mathematics standards addressing **measurement** (NCTM Standard 10).

Transfer Possibilities:

Expansion into more advanced 2-, and 3-dimensional forms, and their nomenclature ("2-D and 3-D Shapes," "What are Quadrilaterals?" and "Naming 2-D and 3-D Shapes").

