

Rotational Symmetry

Zome System

Builds Genius!

tribute the Zome System elements. The challenge for each group is to build a more complicated object with the type of symmetry displayed by the latter shapes. Their models should NOT contain reflection symmetry. Allow the students to build for 15 to 20 minutes before choosing a representative from each group to explain the group's design. Pass a mirror around the classroom as they build their designs. *Does the design have another kind of symmetry? What is repeating on this shape? In what way is it repeating?* As they discover the way in which the pattern repeats, ask them what name they would give this kind of symmetry, based on the way it repeats. After discussion, if they have not named rotational symmetry, write it on the board.

Use the mirror to show how an object with reflection symmetry has no "handedness." In other words, it is the same in the reflection as the original. Use the mirror to contrast a rotationally symmetric object, which is *not* the same as its reflection, but comes in a right-handed and left-handed form as described in the picture.

Complete the class with a discussion about different manifestations of rotational symmetry. *Where do we see this kind of symmetry in nature? In art? In the classroom?*

The students should make a drawing of an object with rotational symmetry in their math journals. The drawing should be accompanied by their own definition of this symmetry.

Assessment:

Discuss the definitions offered by the students individually and with the class, and review their math journals. To meet the standard students must build a model and correctly show how a rotation of it gives a repeating symmetry. To exceed the standard they must verbalize a correct definition of rotational symmetry.

Standards Addressed:

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

Transfer Possibilities:

The class is a prerequisite for the following plans on symmetries ("Translation Symmetries and Tilings," "Tilings with Multiple Symmetries," and "Spiral Symmetries"). It is also a good introduction to discussions on rotational symmetry in nature, and its use in art and design.

