

Cross Section Lesson

Objectives:

- 1) Students will develop spatial-visualization skills through creating cross sections of solids.
- 2) Students will sketch solids that contain given cross sections.

Term(s):

Cross Section is defined as the geometric figure formed when a solid is cut by a plane.

Materials:

Play dough, plastic knives, hollow solids for molds (optional)

Lesson Outline:

- Launch

Ask students “What is a cross section?”, place a good definition of this on the board. Demonstrate cuts that would form a plane and cuts that would not form a single plane. The solids they are to work with can be formed by hand with play dough or using solids as molds.

- Explore

Students are to complete the Cross Sections of Three-Dimensional Shapes Handout.

- Summarize

Ask students: “What solids could be used to create this triangle shaped cross section?”
“What cross section is formed when a cut is parallel to the base of the solid?”

An extension relating area to volume is Cavalieri’s Principle which states:

Consider two geometric solids and a plane. If every plane parallel to this plane that intersects one of the solids also intersects the other so that the resulting cross sections have the same area, then the two solids have the same volume.

Recipe for Play Dough

1 C. flour	2 T. salad oil
½ C. salt	1 C. water
2 tsp. cream of tartar	2 drops of food coloring

Add food coloring to water. Mix all ingredients together and bring to a boil. Turn onto wax paper and knead. Store covered in refrigerator. A single recipe makes approximately 27 in³, it is recommended the recipe be doubled for a class of 24 students.

Source: Navigating through Geometry in Grades 6-8

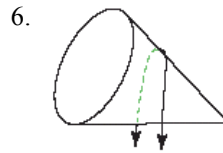
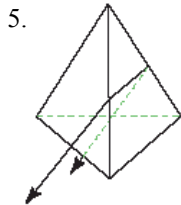
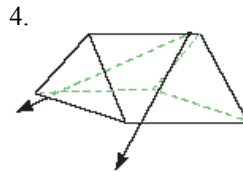
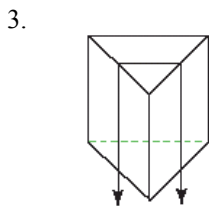
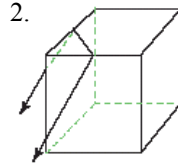
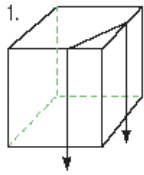
Lesson available at <http://www.mnstate.edu/harms/Lessons/LessonsActivities.htm>

Electronic manipulative at <http://matti.usu.edu/nlvm/nav/vlibrary.html>

Cross Sections of Three-Dimensional Shapes

Name _____

I. For each of the solids below, draw the cross section formed when the plane indicated by the lines intersects the figure.



II. For each of the cross sections below, draw the solid (cube, tetrahedron, cone, or right triangular prism) along with lines indicating the plane cutting the solid that would form the cross section.

