3-D Figures and Changing Dimensions

Grade Level	Eighth Grade
Subject	Mathematics
Curriculum Objective	2.01 Determine the effect on perimeter, area, or volume when one or more dimensions of 2-D and 3-D figures are changed. 3.01 Represent problem situations with geometric models.
Guiding Question	How is the volume and surface area affected by a change in the dimensions of a 3-D figure?
Lesson Summary	Students will understand how changing one, two, or three dimensions affect the volume of a three-dimensional figure.
Activating Strategy	1. Group students into pairs. 2. Inform students that they will each be talking about topic area and volume for two minutes. They will need to select which student will begin first. An easy way to do this is to say something like: "Find out whose birthday comes first in a calendar year." Then tell students that, "That person gets to go second!" 3. Using a stop watch or other timing device, tell students to begin talking. 4. At two minutes, instruct students to switch. At this point, the other partner begins talking. It is okay for the second person to repeat some of the things the first person said. However, they are encouraged to try and think of new information to share. 5. Have a few groups share some of their responses with the entire class when the activity is done.
Cognitive Strategy	1. Show the students how to double one, two, or three dimensions of 3D figures. 2. Now try tripling the dimensions of a 3D figure. 3. In the computer lab, have the student open the Excel document provided and fill in the information. 4. Once they have completed the Excel document, have students choose a type of swimming pool from the websites provided. 5. After choosing a pool type, the students will determine the effects of shortening the length and width by half and lengthening the sides by three halves.

	6. Have the students save and print the Excel document.
Summarizing Strategy	1. Prior to using the Exit Slip as a summary activity in your classroom, decide upon its purpose (including whether or not it will be used as an assessment or evaluation tool). 2. During the last 5-10 minutes of class, inform students that they need to answer the question, "What happens when you double one dimension, two dimensions, and three dimensions of a 3D figure?" on their Exit Slip. 3. Tell students to take out a half-sheet of paper and answer the Exit Slip question. 4. As students exit your classroom that day, collect their Exit Slips as a pass out the door.
Evaluation	You will have both the Excel document and the Exit Slips as an assessment tool.
Resources	http://www.alohafiberglasspools.com/web/gallery2.html http://www.endlesspools.com/plan/plan_configsize.html