

Grade Level: Geometry

Lesson Plan Title: Perfect Pools

Content Area: Mathematics

Concept/Topic to Teach: Three Dimensional Figures

General Goal(s):

In this lesson plan, students will take their knowledge of 3-Dimensional shapes and calculate surface area, volume, and lateral area of an above ground pool. They will use the dimensions to determine the amount of material they need to buy to construct the pool and how much water they will need to fill it. This lesson plan will increase the students understanding of surface area and volume of 3-dimensional shapes.

Specific Lesson/Unit Objectives and Goals/Learning Outcomes

Students will be able to do the following at completion of the lesson:

- calculate the area of a circle
- calculate the surface area of a cylinder
- calculate the lateral area of a cylinder
- calculate the volume of a cylinder

Introduction/Development:

As students enter the room, the teacher will give each student a copy of the project in which they will read it over look for questions they may have. The teacher will tell the class that for the next two days they will be working on a project in which they will be applying their knowledge of surface area and volume. She will then hold a class discussion in which she talks about the project with the students as a whole class. She will ask the students if they have any questions about the project and will clarify the project if needed.

Individual Activity:

Directions: Imagine you are looking to build a pool in your back yard. You have decided that it is cheaper to buy the materials yourself and set up the pool with your friends. You are researching different pools and came across the dimensions of a pool you would want to have: 26 feet in diameter by 60 inches in height. You think that this would be perfect size pool for you, but are not positive if it will be a good fit in your back yard.

Your task is as follows:

1. Determine how much space this pool would take up in your back yard. (in feet)

2. You need to buy the material to construct the pool. The material needs to create the bottom of the pool as well as the sides. How much material will you need to get (measured in feet) to create the bottom and the walls of your pool?
3. Next, determine how much liner (in feet (you would need to fill the inside of the pool. For pools, liners are sold in every 3 **inches**, so how big will your liner need to be?
4. After you have found all your dimensions, calculate how much water you will need to fill up the pool.

This project will be worth a total of 16 points. The students will be required to determine how much space the pool would take up by calculating the area of the base of the pool. They will then be required to use surface area to determine how much material they will need to construct the pool. Once they have calculated surface area, they will need to determine how much liner the pool needs by calculating the lateral area of the pool. Using the number they come up with, they will need to determine how many inches of liner they must buy. For the fourth step, the students will need to calculate the volume of the pool to figure out how much water it will hold.