

Lab Framework

Text: Cord Bridges

Unit number and title: Chapter 12 (Unit 8 Applied Math)

Short Description:

Developed by: David Lund

Contact Information: Summit View High School 360-885-5335

Date: 6/24/2009

Lab Title

Cylinder volume comparison

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective:** To increase student understanding the difference in volume/area of round objects using cylinders.
- Statement of pre-requisite skills needed: 1. Concept of volume and review of formula for finding area of circle and volume of a cylinder.
2. Improve estimating skills
- **Vocabulary**
Cylinder/Volume
- **Materials List**
Two cylinders, the same length, one cylinder must be $\frac{1}{2}$ the diameter of the other. Measuring tape/ruler. Canister of water
- **State Standards addressed**

Math: A1.8.A Analyze a problem situation and represent it mathematically.

A1.8.B Select and apply strategies to solve problems.

G.6.C Apply formulas for surface area and volume of Three-dimensional figures to solve problems.

G.6.D Predict and verify the effect that changing

One, two, or three linear dimensions has on

Perimeter, area, volume, or surface area of

Two- and three-dimensional figures.

Reading: (Reading)

Writing: (Writing)

- **Leadership Skills**

Student voicing possible solutions to the problem, and testing theory.

- **SCAN Skills/Workplace Skills**

Recognizing the lab as a tool to increase knowledge and understanding of volume.

- **Set-up information** Have material readily available, with water on hand.

- **Lab organization** 3 minutes to discuss idea of the volume comparison student forms an opinion. 5 minutes to test /retest opinion. 4 minutes to find solution by finding the volume of the two cylinders.

Teacher Assessment of student learning: Can the student explain the difference in cylinders and why they need to measure.

- **Summary of learning** (to be finished after student completes lab)
 - discuss real world application of learning from lab. This skill is a necessity for several occupations
 - opportunity for students to share/present learning
 - Discussion of what other applications of these skills can be used in life.
- **Optional activities**
 - Have student explore rates of increase in other objects.
- **Career Applications**
 - Persons working in fields of plumbing, pipefitting, hydraulics.

LAB TITLE: Cylinder volume comparison

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**
 - Is a cylinder with half the diameter of another cylinder, half the volume?
- **Grouping instructions and roles**
 - Student in discussion format.
- **Procedures** – steps to follow/instructions
 - Student verbalizes the task and develops a plan to test theory using given materials.
- **Outcome instructions**
 - Understanding of cylinder comparisons
- **Assessment instructions** (peer-teacher)
 - Teacher will watch the procedures.

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Lab Data Collection

Student: _____ Date: _____

Unit: _____

Lab Title:

Criteria: Write the problem/objective in statement form

Data Collection: Record the collected/given data

Calculations: Complete the given calculations to solve for an answer(s)

Summary Statement:

Other Assessment(s)

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