

Lab Framework

Text: CORD

Unit number and title: Unit 2 Estimating Answers

Short Description: Students will estimate and then determine how many gallons of water it would take to fill their classroom with water.

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Contact Information: WAMC

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Lab Title

A Classroom Full of Water

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**

Given a problem the students will be able to apply the 4 Step Problem-Solving Process to solve a problem.

Students will apply their estimating skills to come up with a rough estimate.

- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)

Students will need to be able to find volume by computation, measure lengths and convert cubic feet to gallons.

- **Vocabulary**

Dimensions

Volume

Cubic Foot

- **Materials List**

Gallon Container

A box with 1 cubic foot

A yard stick or tape measure

- **State Standards addressed**

Math: **Math:**

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

A1.8.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.

Reading: NA

Writing: **EALR 3: The student writes clearly and effectively.**

Components:

3.1 — Develops ideas and organizes writing.

3.2 — Uses appropriate style.

3.3 — Knows and applies writing conventions

Appropriate for the grade level.

- **Leadership Skills**

Demonstrate ability to work in a team

- **SCAN Skills/Workplace Skills**

- Basic Skills

- Arithmetic/Mathematics: performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques.

- Thinking Skills

- Seeing things in the mind's eye: organizes and processes symbols, pictures, graphs, objects, and other information.

- **Set-up information**

- Students will get together into teams of four.

- Each team will have their Worksheet available.

- Students will have their equipment assigned to them.

- Each team will have a calculator.

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required**)

- a) **Lab will take approximately 45 minutes.**

- b) **Distribute Handout and make sure students understand the idea of the room being filled with water. Show the gallon container available for students to look at as they estimate water capacity of room.**

- c) **Have each team and discuss and write down their estimates.**

- d) **Tell students we will use calculations to find out how many gallons it will take to fill the room.**

- e) **Find the dimensions of the room by measuring the length, width of the room using a tape measure or yardstick OR measure a student's "step" and then have the student walk off the length and width**

- f) **Measure the height of the room by touching the ceiling with a broomstick or similar object.**

- g) **Review the formula for volume of 1 cubic foot is length x width x height**

- h) **Have teams do the calculations**

- i) **Review the formula for converting 1 cubic foot to cubic gallons is 7.5 gallons x # of cubic feet = # of cubic gallons. Have students calculate their gallons.**

- j) **Compare their estimates with the actual results.**

- k) **Discuss how this process might be used in the real world.**

- **Teacher Assessment of student learning** (scoring guide, rubric)

- Collect Worksheet

- Observation

- **Summary of learning** (to be finished after student completes lab)

- -discuss real world application of learning from lab

- -opportunity for students to share/present learning

- **Optional activities**
Could repeat the lab for another room
- **Career Applications**
List five jobs that could benefit from this kind of estimating skills

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Name of Team Members _____ Date: _____

Unit 2: Estimating Answers

Lab Title: A Classroom Full of Water

- **Statement of problem addressed by lab**
How do you estimate how much water a classroom can hold?
- **Grouping instructions and roles**
 1. Student will break into teams of four.
 2. Each student will have a particular responsibility: 1 recorder, 2 gathering the information and 1 presenting the results.
- **Procedures – steps to follow/instructions**

Look at a gallon container. Then estimate how many gallons it would take to fill your classroom. Write your estimate here: _____ gallons.

With your team, measure the size of the classroom, in feet.

Length: _____ feet

Width: _____ feet

Height: _____ feet

To find volume the formula is length x width x height = cubic feet

What is the volume of the room, in cubic feet? _____

One cubic foot is the same volume as 7.5 gallons. How many gallons would fill your classroom? _____

Explain your results:

Compare your team's estimate with the actual amount. Were you close? Why or why not?

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Lab Data Collection

Students: _____ **Date:** _____

Unit 2: Estimating Answers

Lab Title: Classroom Full of Water

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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