Lab Framework

Text:CORD

Unit number and title: Unit 16: Solving Problems that Involve Linear

  Short Description: relationship between height and volume of a cylinder

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Lab Title
Finding the volume and height of various cylinders

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**

    1. Involve students in using problem solving skill while better understanding linear equations.

- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)
    - Measuring skills
    - Using tool such as tape measures
    - Team and communication skills
    - Addition skills

- **Vocabulary**

    Linear, equation, linear equation, graph, length, centimeters, origin, slope,

- **Materials List**
    - cylinders of different heights
    - tape measure
    - graph paper
    - calculator

- **State Standards addressed**

    Math: 1.1; 1.2; 1.1.8;
    Reading: 1.2; 1.3; 2.1.6
    Writing: 1.3; 2.2; 2.4

- **SCAN Skills/Workplace Skills**

Arithmetic

A. Performs basic computations

B. Uses basic numerical concepts such as whole numbers and percentages in practical situations

C. Makes reasonable estimates of arithmetic results without a calculator

D. And uses tables, graphs, diagrams, and charts to obtain or convey quantities
    Information

Basic Skills

A. Locates, understands, and interprets written information prose and documents – including manuals, graphs and schedules – to perform tasks

B. Learns from text by determining the main idea or essential message

C. Identifies relevant details, facts and specifications

D. Infers vocabulary, and judges the accuracy, appropriateness, style and plausibility of reports, proposals, or theories of other writers.

- **Set-up information**
  - cylinders of different heights
  - tape measure
  - graph paper
  - calculator

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required)**
    One day lab
- **Teacher Assessment of student learning** (scoring guide, rubric)
- measure the radius of each cylinder
- measure the diameter of each cylinder
- graph the volume and height of each cylinder

- **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**

- **Career Applications**
    Scientist
    Marine biologist
    Oceanographer
    Teachers
    Home economist

LAB TITLE: <u>**Finding the volum and height of various cylinders**</u>

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**
  Student will find the relationship between height and volume of a cylinder
- **Grouping instructions and roles**
  Students will be put in groups of five. Each student will measure one (or more) cylinder (s) and then give the information to others in the group to record. Everyone in the group will do their own math to figure out the volume and height of the cylinders and then the graph can be done as a group. Record and save data in student files.

- **Procedures** – steps to follow/instructions
  1. Collect and distribute all needed tools
  2. Explain purpose of lab
  3. Discuss any questions
  4. Put students into groups
  5. Go over instructions on how to complete lab
  6. Teacher will walk around, observe, and help students as needed.
  7. Collect materials
  8. Discuss the lab (problems, etc.)

- **Outcome instructions**
  Each group will find the volume and height of each cylinder, and then graph the results.

- **Assessment instructions** (peer-teacher)
  1. Students will do a one page write up of their lab and discuss what they learned.

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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