Lab Framework

Text:CORD

Unit number and title: Unit 2 Estimation

Short Description: Students are given a pint container to fill up with a dry substance from home. The class makes an estimation of the amount of the substance in the container.

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Lab Title
Estimation Jar

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**
  Students will learn estimation techniques and make intelligent estimations about the number of items in a pint jar.

- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)
  Ability to compare and contrast.
  Problem solving skills
  Measuring in metric and English units

- **Vocabulary**
  Estimation
- **Materials List**
  1 quart container for each student
  1 cup container for each student
  Large sheet of paper
  Post-it notes
  Tape

- **State Standards addressed**
  Math: GLE 1.1.8 Apply understanding estimation strategies to determine the reasonableness of results in situations involving multi-step computations with rational numbers.

- **Leadership Skills**
  Students will work on data keeping skills, problem solving skills and the ability to compare.

- **SCAN Skills/Workplace Skills**
  Writing
  B. Records information completely and accurately.
  Arithmetic
  A. Performs basic computations

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

- **Set-up information**
  - Provide a quart container and a cup container to each student
  - Give each student a post-it note
  - Tape a large sheet of paper in the front of the class

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required)**
  - Students present a quart container in front of the class filled with a dry substance (the amount is known to the student but unknown to the group).
  - Student presents a cup container filled with the same substance and let the group know the amount in the cup container.
- **Teacher Assessment of student learning** (scoring guide, rubric)

  Criteria Checklist:

Criteria	Points
1. Materials organized	/ 1
2. Accuracy of count	/ 1
3. Presentation	/1
4. Participation	/1
5. Completed data sheets	/6

  Final Result: / 10
- **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

  Real World Applications: Problem solving, making estimations, gathering information, redefining estimation

  Opportunities for students: Students will present their item to the class in the large container for the group to see. Students in the group will make estimations. The presenter will then show the known 1 cup quantity to the group. The group will be allowed to make adjustments to their initial estimate.

- **Optional activities**

  Students could use the skills learned outside of the classroom to identify estimates in a store. For example, estimates of the number of bite-sized candy bars in a bag (actual weight on the bag and an estimate to the number of units in the bag).

- **Career Applications**

  Construction – estimating cost of materials
  Agriculture – estimating amount of seed and fertilizer for a field
  Retail – estimating the demand for a certain item

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LAB TITLE: How much is in my container?

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**
  Estimate the number of units of a substance in a 1 quart container.
  Modify your estimate once you know how many units of the substance are contained in a 1 cup container.

- **Grouping instructions and roles**
  Grouping: Students will independently to make estimates and record individual student responses on a data collection sheet.

- **Procedures** – steps to follow/instructions

1. Given a quart container you are to take it home and fill it to the top (with just enough space left to seal the lid) with a dry substance. (examples are; marbles, jelly beans, batteries, macaroni noodles, bolts)
2. Count and record the number of units of that substance that fit into the container.
3. Present your container before the class.
4. Students estimate the number of units of the substance in your container and record their estimate on a post-it note.
5. Students line up in order of their estimation from highest to lowest and place their post-it note on a paper taped in the front of the room.
6. While the students are lining up and placing their estimates on the board, presenter is taking one cup of the substance out of the original container and counting the amount.
7. After the class is seated, the presenter tells the class how many units are in the one cup container.
8. Students then modify their estimates and place a new post-it note on the board in order from lowest (left side) to highest (right side)
9. All students record final estimations on a number line on their data recording sheet.
10. The presenter gives the actual number of units in the quart container to the class, who record the actual number.
11. A new student is given the empty quart container to repeat this lab tomorrow. (The lab is repeated for 5 days)

- **Outcome instructions**
  a. Students learn techniques of estimation
  b. Students learn data keeping skills.
  c. Data sheets will be turned in Friday with each student's name.

- **Assessment instructions** (peer-teacher)
  At the conclusion of this assignment each student is to turn in a completed data sheet with number lines completed for all five substances presented this week.

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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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