Lab Framework

Text: Cord

Unit number and title: 12 – Scientific Notation

 Short Description: Using Sampling to find number of fish in Brown Bag Lake

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Lab Title
Brown Bag Lake

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**

  Using scientific notation, find the number of fish in Brown Bag Lake

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

  Scientific notation

  Sampling

  Proportions

- **Vocabulary**

  Scientific Notation

  Sampling

  Proportions

- **Materials List**

  Brown paper lunch bags – 1 per team

  2 lbs of brown dry beans – per team (8 teams = 16lbs)

  .5 lb of off color dry beans – per team (8 teams = 4 lbs)

  Small cup (net)

  Sandwich bag

- **State Standards addressed**

  Math: A.1.2.A, A.1.2.D, A.1.8.A, A.1.8.B

  Reading: (Reading)

  Writing: (Writing)

- **Leadership Skills**

  Group collaboration, defined roles, being a good listener.

- **SCAN Skills/Workplace Skills**

- **Set-up information**
  1. Put 2 lbs of the brown dry beans in the brown paper bags (1 bag per team)
  2. Also give each team a sandwich bag full of .5 lb of off-colored beans, and 1 small paper cup (net)

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required)**
  1. Use small cup (net) to take a sample out of the brown paper lunch bag. (3/4 full)
  2. Count the number of brown beans collected with the cup.

3. Replace the number of brown beans with the same number of off colored beans and shake up the bag. (Remember this number)
4. Take a second sample using the net (3/4 full) and count the number of brown beans collected and the number of off colored beans collected.
5. Using the number of brown beans collected in the first sampling, the number of brown beans collected in the second sampling, and the number of white beans collected in the second sampling, set up a proportion and solve for total number of fish in Big Brown Lake.

- **Teacher Assessment of student learning** (scoring guide, rubric)
  Visual observation
  Collection of steps 4-6
- **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**
  Gaming and wild life

LAB TITLE: Brown Bag Lake
STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**

    Find out how many fish are in Brown Bag Lake

- **Grouping instructions and roles**

Task Manager: Monitor the groups progress on the task and ensure the group remains on task.

Recorder/Reporter: Take notes for the group on all tasks and ensure all students participate in presentations, for example each student talks about the presentation.

Resource Manager: Obtains all necessary materials for the project and returns the materials in the correct location within the room.

Facilitator: Begins the task for the group and ensures the group understands each portion of the problem. If the group is stuck on the task brings this fact to the attention of the teacher.

- **Procedures** – steps to follow/instructions
    - Use small cup (net) to take a sample out of the brown paper lunch bag. (3/4 full)
    - Count the number of brown beans collected with the cup.
    - Replace the number of brown beans with the same number of off colored beans and shake up the bag. (Remember this number)
    - Take a second sample using the net (3/4 full) and count the number of brown beans collected and the number of off colored beans collected.
    - Using the number of brown beans collected in the first sampling, the number of brown beans collected in the second sampling, and the number of white beans collected in the second sampling, set up a proportion and solve for total number of fish in Big Brown Lake.

- **Outcome instructions**

    You should have a number written in scientific notation representing the number of fish in Brown Bag Lake.

- **Assessment instructions** (peer-teacher)

    Your teacher will be watching for preciseness on your measurements and how well you work with each other.

Lab Data Collection

Student: _____ **Date:** _____

Unit: 12 – Scientific Notation

Lab Title: Brown Bag Lake

Find the number of fish that are in Brown Bag Lake.

Data Collection:
1. How many total fish were caught and tagged in sampling #1_____
2. How many tagged fish were caught in sampling #2_____
3. How many total fish were caught in sampling #2_____

Calculations: Set up the proportion and show all calculations needed to find an answer(s)

According to your calculations from above, how many fish do you believe there are in Brown Bag Lake?