Cross References to Unit(s)/Concepts

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Lab Framework

Lab Title

Submitted by: Pat Davis
Short Description: How many trees in a forest

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- Lab Objective:
  - Students will use estimation and simulation to count toothpicks (trees)

- Statement of pre-requisite skills needed (i.e., vocabulary, measurement techniques, formulas, etc.)
  -simple measurement (whole inches)
  - multiplication/division
- New Vocabulary
  Approximation
  Estimate
  Reasonable answer

- Materials List
  Toothpicks
  String
  Tape
  Yardstick or other ruler

- GLEs addressed
  1.1.8 Estimation Strategies
  2.1.1 Investigate problems
  2.2 Apply strategies to construct solutions
  4.1.1 Gather Information
  3.3.1 Verify Results

- Set-up information
  -drop toothpicks from a height above your head

-Use the ruler and string to set up a 5x5 grid covering all the toothpicks.
- Count all the toothpicks in 5 squares
-Use the information about the 5 squares to determine the total number of toothpicks.

- Lab organization (-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required)**
  - -3 or 4 group members
    - one record keeper
    - one measurer and one person to help lay string
    - Two people count the toothpicks
  - 5 minutes to get materials and decide on group members
  - 10 minutes to carefully lay out the string grid.
  - 5-10 minutes to count the 5 squares.
  - 5 minutes to estimate total toothpicks.
  - 5-10 minutes cleanup
    - Total times approx 35-40 minutes

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

- Summary of learning (to be finished after student completes lab)
  - -estimating the number of trees in the forest
    - Compare estimates to actual amounts of toothpicks in each bundle.
  - -opportunity for student to share/present learning

- Optional activities
  - Give a dollar amount to each tree and estimate how much money would be in the forest if it were used as timber.

- Career Applications
  - Forestry
  - Wildlife manegement

LAB TITLE:_____
STUDENT INSTRUCTIONS:

- Statement of problem addressed by lab
- Grouping instructions – roles
- Procedures – steps to follow/instructions
- Outcome instructions
- Assessment instructions(peer-teacher)

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)