Lab Framework

Text: CORD

Unit number and title: Unit-B Naming Numbers in Different Ways

Short Description: Students collect data from class on specific genetic traits, then evaluate data to determine percent of population based upon data and then convert those percentages to decimals.

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Lab Title

Genetic Trait Percentage Lab

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**

  Use data collected from the class about different physical traits and calculate the percentage of the population which has those traits and then convert the percentage to a decimal.

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

Students should have a good understanding of the ideas covered in Unit A—Getting to Know Your Calculator

1.) Use mathematical calculation skills (+,-,x,÷) with signed numbers to solve problems.
2.) Know how to use a scientific calculator.
3.) Follow directions and work in a group.

- **Vocabulary**

Percent	Parts per hundred. Often represented by the symbol %. One percent of something means the same as one-hundredth of something.
Decimal Fraction	A proper or improper fraction written in a form that includes a decimal point, and number to the right and (sometimes) left of the decimal point.

- **Materials List**

  Data Sheet
  Scientific Calculator

- **State Standards addressed**

  Math:
  - 2.1.1 Analyze a situation to define a problem.
  - 2.2.2 Apply mathematical tools to solve the problem.
  - 4.2 Organize, represent and share information.
  - 5.3 Relate mathematical concepts and procedures to real-world situations.

  Reading:
  - 1.2 Use vocabulary (word meaning) strategies to comprehend text.

  Writing:
  - 1.3 Apply writing convention; know and apply correct spelling, grammar, sentence structure, punctuation, and capitalization.
  - 3.3.1 Uses legible handwriting.

- **Leadership Skills**
  1.4 The student will be involved in activities that require applying theory, problem-solving, and using critical and creative thinking skills while understanding outcomes of related decisions.
  1.6 The student will conduct self in a professional manner in practical career applications, organizational forums, and decision-making bodies.
- **SCAN Skills/Workplace Skills**
  1.2 The student will demonstrate the ability to acquire and use **information** in a family, community, business and industry settings. This means that the student can acquire and evaluate data, organize and maintain files, interpret and communicate, and use computers to process information.
  1.3 The student will demonstrate an understanding of complex inter-relationships (**systems**). This means that the student understands social, organizational, and technological systems; they can monitor and correct performance; and they can design or improve systems.
- **Set-up information**
  Have data sheets students collect information on printed (one for each person)
  Have master data sheet for entire class
  (USE SAME SHEET)
- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required)**
  - Put students in groups of at least 5. (depending on class size make groups as equal as possible)
  - Within their groups students should figure out between themselves the number of students that fall into specific traits.
  - Then the students should elect one group member to go up to the document camera and write on the main data sheet under their group the total number of students which fit into each genetic trait.
  - Once all groups have reported their findings, another student should total each column up.
    - Have the students on their own change each trait total to a percent. Change that percent to a decimal.
    - Have the students pick 2 traits and determine the percent of population that exhibits those two traits based on the data of the class. Change the percent to a decimal.
    - Have the students pick 3 traits. Change the percent to a decimal.
    - Have the students pick 4 traits. Change the percent to a decimal.
- **Teacher Assessment of student learning** (scoring guide, rubric)

Have students fill out their own individual data sheet and answer the trait questions at the bottom of it. Students should turn in data sheet for evaluation.

- **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

Figuring percent of population with certain inheritable traits and then converting those percentages to decimals.

- **Optional activities**
  Students could inventory other physical traits and perform the same functions as outlined in the lab data sheet. Can incorporate fractions, as well as graphing using bar, line and pie charts (if been taught).
- **Career Applications**

From everyday life to any specified career, you will find use for percents and decimals. This is a basic math literary skill that is used every day. Examples of specific careers include: engineers, bankers, construction workers, and servers at restaurants.

LAB TITLE: Genetic Trait Percentage Lab

STUDENT INSTRUCTIONS:

Through looking at genetic traits of the population within the class, we are going to determine percentages of population based upon the data and convert those percentages to decimals.

- **Statement of problem addressed by lab**

  Figuring percent of population with certain inheritable traits and then converting those percents to decimals.

- **Grouping instructions and roles**

  Class should divide into equal groups. (About 5 people per group)

  Each class member should have their own data sheet.

  Elect a group member to write group data on the class data sheet on document camera.

- **Procedures** – steps to follow/instructions
  - Collect the information on each student within your own group on which inheritable trait they have out of each of the four total traits and tally that under the respected column.

    Genetic Traits:

    1. Curly/ Straight Hair
    2. Left or Right Handed
    3. Attached or Unattached Earlobes
    4. Light or Dark Eye Color
  - The elected group member should translate their group's data onto the class data sheet on the document camera.
  - Each student should individually copy the data from the class data sheet on to their own paper.
  - Follow all directions on Student Data Sheet to complete lab, filling in all totals and computations.
- **Outcome instructions**

  Different percentages and decimals calculated by students depending upon traits selected for calculations are expected.
- **Assessment instructions** (peer-teacher)

  Turn in the data sheet once lab is completed and filled out. This is what will be graded.

Data Sheet for Genetic Trait Percentage Lab

Group Members: _____

Class period_____

Step 1: Fill in Data Sheet. First for group members, then copy down class data.

Group #	Curly Hair	Straight Hair	Left Handed	Right Handed	Attached Earlobes	Unattached Earlobes	Dark Eyes	Light Eyes
1								
2								
3								
4								
5								
Totals:								
%								
Decimal Value								

TOTAL POPULATION: _____

Step 2: Now choose two traits and calculate the percentage of population with these two traits.

Trait 1:_____

Trait 2:_____

Percentage: _____

Show your work

Step 3: Now choose three traits and calculate the percentage of population with these three traits.

Trait 1:_____
Trait 2:_____
Trait 3:_____
Percentage: _____
Show your work

Step 4: Convert your above answers to decimals.

Class Data Sheet

Genetic Trait Percentage Lab

Group #	Curly Hair	Straight Hair	Left Handed	Right Handed	Attached Earlobes	Unattached Earlobes	Dark Eyes	Light Eyes
1								
2								
3								
4								
5								