Lab Framework

Text: CORD
Unit number and title: Unit 20 Working with Probabilities
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Short Description: This session requires students to use measuring apparatus, collect data, and solve a meaningful problem in a laboratory situation.

Lab Title
M&M's

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan
- **Lesson Objectives**
    1. Find the probability of some simple events.
    2. Count the number of ways an event can happen.
    3. Draw diagrams and charts to help find probability.
    4. Use your calculator to find probabilities.
- **Statement of pre-requisite skills needed**

    Students need to have an understanding of how to make tables, charts, and use central tendencies to help make predictions.
- **Vocabulary**
    - Axis, horizontal, vertical, histogram, central tendency, mean, mode, range, median, data, bar graph, circle graph, histogram, stem-and-leaf graph, box-and-whisker
- **Materials List**

    Paper, pencil, calculators, rulers, markers, crayons, color pencils, graph paper, snack size of M&M's (regular, peanut, or peanut butter)

- **State Standards addressed:**

    Math: A1.1.A, A1.1.B, A1.6.A, A1.6.B, A1.6.C, A1.6.E
    Reading: 1.2, 1.2.2, 1.3.2, 3.1, 3.3, 3.3.1
    Writing: 1.1, 1.1.1, 1.2, 1.3, 3.1.1
- **Leadership Skills**

    Srtudents will work in groups of 2-3 that must communicate in order to collect their data in a timely manner. Grouping may be 2-3 students per group. Once grouped, job responsibilities rotate within the group allowing each student to collect measurements and record data.
- **SCAN Skills/Workplace Skills**

    Writing: Record information completely and accurately.
    Math: perform basic computations (use tables, graphs, diagrams, and charts to obtain or convey quantities.

- **Set-up information (Remind students to follow these basic rules.)**

    This will be done in the classroom. Make sure students understand the vocabulary and how to collect data, graph it, and find central tendencies.

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required)**
    1. Day 1—Students will create their tables to gather information on each student and gather their data. They will start to organize their data to find the central tendencies.
    2. Day 2—Students finish finding their central tendencies. They will then create an appropriate graph to display their data.
    3. Day 3—Give a couple minutes to do some final touches to their lab. Open up one bag to see if their predictions were correct. Write conclusion to their lab.
- **Teacher Assessment of student learning (scoring guide, rubric)**
    Graph (10 pts.)
    – Label x/y-axis (2pts)
    – Title (2 pts)
    – Used correct graph (1 pt)
    – Correct units (2 pts)
    – Appearance (3pts)
    Table (10 pts)
    – Title (2 pts)
    – Label each part (2 pts)
    – Record data (1 pt)
    – Found each central tendency (5 pts)
    Answer (10 pts)
    – Answer the question (2 points)
    – Uses data to back up answer (6 points)
    – Predicts what would happen next (2 pts)

- **Summary of learning**
    Check the answers and data that the students found and check to see if it all matches up. See if they labeled graphs, tables, and were able to make a logical prediction.

- **Optional activities**
    1. Make another graph or graphs that can also be used
    2. If computers are possible, use excel to create your data table, find averages, make different types of graphs.

- **Career Applications**
    Any type of data manager, marketing, productivity analysis, computers

LAB TITLE: <u>How Many Letters in a Name</u>
STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**
  How many &M's come in a snack size bag, and how many colors of each?

- **Grouping instructions and roles**
  Groups of 2-3
  1. Leader- Makes sure everyone is on task
  2. Recorder- Writes down the data
  3. Recorder- Writes down the data

- **Procedures** – steps to follow/instructions
  1. As a group create a data table
  2. Have Recorder(s) go out and ask everyone in class their data results
  3. Leader tells other groups the results for each person in their groups
  4. Figure out the central tendencies for each color and total amount
  5. Create an appropriate graph that has all the necessary parts on it

- **Assessment instructions** (peer-teacher)
  Write a conclusion that uses your data and predict how many colors and how many M&M's will be in the bag that the teacher opens.

Data Chart

Student	red	Yellow	green	blue	orange	brown	total
	red	Y	gr	bl	o	br	total
mean							
mode							
median							
range							
Total							
prediction							
ratio							
correct							
actual amount							

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