CORDLab Framework

Text: CORD

Unit number and title: 17- Graphing Data

   Short Description: This LAB is focused on understanding Linear Equations and how to graph them by using the slope and y intercept

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Lab Title
Understanding Slope and Graphing Linear Equations

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**

    The objective of this lab is for students to have a hands-on experience solving a linear equation while developing insights to slope.

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

    Understand and be able to articulate the vocabulary of the previous lesson and to see that a line of the form $y = mx + b$ is a linear equation with a slope of m.

- **Vocabulary**
    1. Cartesian System   X and Y coordinate system
    2. Ordered Pair   Two numeric values that represent a point
    3. Slope   M = Rise/Run
    4. Linear Equation $y = mx + b$

- **Materials List**

    Lab sheet, 12 inch ruler, two sheets of plain paper

- **State Standards addressed**

    Math: 8.1.D – Determine the slope and y intercept of a linear function described by symbolic expression, table and or graph.

    Communications: 1.2 – Listen and observe to gain and interpret information.
               1.3 – Check for understanding by asking questions and paraphrasing.

- **Leadership Skills**

    Students can work in pairs and complete the lab. One will record data and one will present if called upon.

- **SCAN Skills/Workplace Skills**
- SCAN Skills A-D of Mathematics
- expectations; -**Timeline required)**
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    1. Hand out Cartesian System Graphs and rulers   3 minutes
    2. Explain procedures to accomplish task   5 minutes
    3. Have students demonstrate what y = x graph looks like   4 minutes
    4. Have students demonstrate what happens to linear equation when the y intercept changes.   4 minutes

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

  Students will do the study activity on page 14, Unit 17 which will be turned in at the end of the lab for grade.

- **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

  Students learn how to explain the identifying characteristics of a linear equation, how slope relates to a linear function and how to graph it. Slope is used in engineering design, construction and sports to name a few.

- **Optional activities**

  Ask students to give examples of how an understanding of slope relates to their lifes.

- **Career Applications**

Skill	Occupation
Construction	Roofer, Construction contractor, Manager
Design	All fields of Engineering, Architects
Sports	Golf course design, Ski hill design, etc.

LAB TITLE: _____

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**

  Using a _____ triangle made from a square piece of paper show that if the y intercept is zero the line y = x is a forty five degree line starting at zero and that as you move the triangle up the y axis the y intercept is changed and adds to the function.

- **Grouping instructions and roles**

  Work as pairs. One to record the results and other ready to present the data.

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

- **Outcome instructions**

  Each team will demonstrate 4 linear equations on their work sheets and explain how they arrived at the equations. Each team will design a triangle that results in a different slope them one and give the equation with a y intercept other than zero.

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

  Students will turn in graphs and activity.

Lab Data Collection

Student: _____ **Date:** _____

Unit: _____

Lab Title:

Criteria: Write the problem/objective in statement form
   What is a linear equation?   How does slope effect the equation? How does the y intercept effect the equation?

Data Collection: Record the collected/given data
   Record your results on the graph provided

Calculations: Complete the given calculations to solve for an answer(s)
   Show how y=mx +b relates to your equations.

Summary Statement:
   Explain the results of this lab

Other Assessment(s)
   You will be given a quiz next session on this lab

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