

Lab Framework

Text: Applied Mathematics

Unit number and title: 17

Short Description: With a balloon, gather, record and graph data to develop an understanding of slope-intercept equation use.

Developed by: Your Name

Contact Information: (Your contact information for clarification)

Date:

Lab Title Balloon Math

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**
 - To be able to collect, organize and graph data to understand the use of calculating slope.
 - Usage of the slope-intercept equation to extrapolate data for use in fields related to health professions and construction.
- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)
- **Vocabulary**
 - y-intercept – the coordinate where the graph intersects the y-axis.
- **Materials List**
 - 1 balloon per team
 - fabric tape measure
 - optional : large caliper
 - material to record information
 - brains
- **GLEs (State Standards) addressed**
 - Math: (Math)
 - Reading: (Reading)
 - Writing: (Writing)
- **Leadership Skills**
- **SCAN Skills/Workplace Skills**
- **Set-up information**
- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required**)
- **Teacher Assessment of student learning** (scoring guide, rubric)
- **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**

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UNIT: 17

LAB TITLE: Balloon Math

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**
Using a balloon, gather, record and graph data to develop an understanding of slope-intercept equation use.
- **Grouping instructions and roles**
 1. Select **one** member of your team to blow up the balloon.
 2. A **second** member is to measure the circumference of the balloon at each step.
 3. A **third** member is to create a chart and record breaths and balloon circumference for each successive test.
 4. The **fourth** member is to do the calculations and graph the information.
- **Procedures – steps to follow/instructions**
 1. The team is to blow up their balloon and measure the circumference as each breath is added.
 2. All the air is to be let out of the balloon after each test.
Trial one,
 You use one breath to blow up the balloon.
 Measure the balloons circumference and record it on your chart.
 Then use two breaths to blow up the balloon.
 Again measure and record the circumference on your chart.
 3. Repeat these steps for a total of 10 breaths.
 4. Using your data and graph paper plot the ordered pairs from your chart.
 5. Place the number of breaths on the Y axes and the circumference on the X axes.
 6. Find the Y-intercept and calculate the slope of your line. *Show your work.*
Y-intercept = b
Slope = $m = \frac{y_2 - y_1}{x_2 - x_1}$
What is your Y-intercept? _____
What is your slope? _____
 7. Place your data in the slope-intercept equation, $y = mx + b$
 8. Using your graph and extrapolating, what would the circumference be if you were able to blow the balloon up to 25 breaths? _____
 9. What information would you enter in the formula to find "y"?

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

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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)

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