

Lab Template

Text: Cord Algebra 1 (hardbound)

Volume: 1 **Chapter:** 4

Unit number: _____ **Title of unit:** Non-linear functions

Developed by: Dave Wetzel (dwetzel@puyallup.k12.wa.us)

Date: 6/28/12

- 1. Lab Instructions: Attached**
- 2. Student Handout(s): Diagram sheet attached**
- 3. Assessment Tool : See student expectations below**

Short Description (Be sure to include where in your unit this lab takes place):

Students will estimate the horizontal distance between two points by measuring a distance along the slope of a hill outside the building. Maps use horizontal distances ONLY!

Estimating Horizontal Distance from Slope Distance

LAB PLAN

TEACHER: *(Teacher Prep/Lab Plan)*

- ⤴ **Lab Objective:** Students will use a home-made clinometer to estimate a slope on a hill and a tape to measure distance between 2 points along the slope. Given the slope distance, the student will estimate the horizontal distance between the two points.
- ⤴ **Statement of prerequisite skills needed** *(Familiarity with the Pythagorean Theorem)*
- ⤴ **Vocabulary** (See student instructions)
- ⤴ **State Standards addressed:** *(Highlight "Green" Standards, you may use your District's Power Standards if applicable)*
 - ⤴ **Math:** State Standard A1.3.B Represent a function with a symbolic expression, as a graph, in a table, and using words, and make connections among these representations.
- ⤴ **Teacher Preparation:** *(What materials and set-up are required for this lesson?)*
 - ⤴ **Materials:** 1 measuring tape and 1 clinometer / team, student journals to record measurements and calculate distances as directed
 - ⤴ **Set-Up Required:** Hand out lab "Student Instructions" and diagram and review the use of the clinometer and tape before running this lab.

⤴ **Lab Organizational Strategies:**

- ⤴ Student Expectations: Each team of students will be able to measure a distance on a slope and convert that distance to horizontal distance to the nearest 0.5 foot.
- ⤴ Time-line: Outdoor time: 30 min., wrap up time: 20 min.

⤴ **Post Lab Follow-Up/Conclusions** *(to be covered after student completes lab)*

- ⤴ Real world application of learning from lab: The differences between slope and horizontal distances must be accounted for in timber cruising, preparing for timber sales.
- ⤴ Career Applications: Forestry and environmental sciences employ rough survey techniques like these as part of the job.
- ⤴ Optional or Extension Activities: How could you estimate the amount of lumber needed to build a boardwalk over a hill vs. between two banks of a stream?

<https://wa-appliedmath.org/>