WAMC Lab Template

Math Concept(s): Trig (Finding sides and angles)Source / Text: Old / COREDeveloped by: Eric PaulE-Mail: paulem@puyallup.k12.wa.usDate: SummerConference 2016

Attach the following documents:

Lab Instructions Hand out outdoor activity WS. Have students group together in three (2 smallest - 4 largest) if needed. Have them read how to use a clinometer

Names:

Student Handout(s)

1 page

Outdoor Activity Trigonometry

Supplies needed: Tape measure Clinometer (protractor, tape, straw, string, paperclip) Scientific Calculator

Background

Clinometers are used by foresters to calculate the height of trees. It is much easier than actually climbing them. Using a clinometer, we can calculate the angle of elevation from the ground to a tree top. Along with the distance along the ground to the base of the tree, a trig set-up can be used to find the height.

Using the below directions try to find the height to the ceiling. _____ cm or m

Paste pg 78 Geo chapter 9 resource book.

Picture of a clinometer... Make sure it shows the relationship compared to horizontal/vertical.

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Did you find the height to the ceiling to be about 270-280 cm high?

How far were you off?

Is your answer reasonable?

If not please see Mr. Paul for help finding error.

If you were close you are ready for the "Real World"

You are to measure 2 tall objects.

Object # 1

Person's Height (label)	Angle of Elevation	Distance to Object	Trig Set-up	Approximate Height

Object #2

Person's Height	Angle of	Distance to	Trig Set-up	Approximate
(label)	Elevation	Object		Height
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Indicate "SPECIFIC" relationship to Science, Technology, or Engineering

Science measuring tree/light post heights Technology Basic clinometers and scientific calculators Engineering Finding heights of buildings.

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

<u>Lab Plan</u>

Lab Title: Trig Outdoor activity

Prerequisite skills: Trig set up and use.

Lab objective: Find the heights of various items

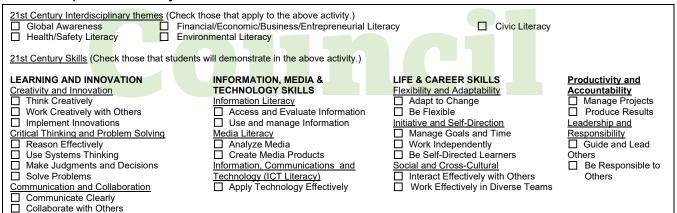
Standards:

Mathematics K-12 Learning Standards: Geo SRT A 1

Standards for Mathematical Practice:

K-12 Learning Standards-ELA (Reading, Writing, Speaking & Listening):

Leadership/21st Century Skills:



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Teacher Preparation: (What materials and set-up are required for this lab?)

Materials

- Clinometer
- Scientific calculator
- Tape measures

Set-Up Required:

• Make enough clinometers for each group. (Extra's are nice if they get tangled or fall apart.)

Lab Organization Strategies:

Leadership (Connect to 21st Century Skills selected):

Cooperative Learning:

Expectations:

Timeline:

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Post Lab Follow-Up/Conclusions:

Discuss real world application of learning from lab

- Career Applications
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Optional or Extension Activities

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