WAMC Lab Template

Math Concept(s): Look for and make use of structure. Attend to precision. Model with Mathematics. Construct viable arguments and critique the reasoning of others.

Source / Text: Cord Algebra 1

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Attach the following documents:

- Lab Instructions
- Student Handout(s)
- Rubric and/or Assessment Tool

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

This lab will take place before the inequalities exploration. Students will measure each other's heights and graph them on a number line. Then they will use inequalities to compare the heights.

Lab Plan

Lab Title: Distribution of Student Heights

Prerequisite skills: read a metric tape measure, use a number line, and know the meanings of <, =, >.

Lab objective: Through the lab the students will develop real world skills using inequalities.

Standards: *(Note SPECIFIC relationship to Science, Technology, and/or Engineering)*

Mathematics K–12 Learning Standards:

- A-CED.1 Create equations and inequalities in one variable and use them to solve problems.

Standards for Mathematical Practice:

- Look for and make use of structure. Attend to precision. Model with mathematics. Construct viable arguments and critique the reasoning of others.

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

- Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.

K-12 Science Standards

- Directly compare two objects with a measurable attribute in common, to see which object has "more of" / "less of" the attribute, and describe the difference.
- Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Technology

- Gain competency in using calculators for real world situations

Engineering

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Leadership/21st Century Skills:

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

Materials

- Calculator, Tape measure with metric scales

Set-Up Required:

- Review how to read a metric tape measure, draw a number line, <. >, =.

Lab Organization Strategies:

Leadership (Connect to 21st Century Skills selected):

Students will be assigned positions of responsibility on rotation every 3 weeks. These positions are:

- Group Facilitator- in charge of keeping the group on task, coordinating group responsibilities.
- Resource manager- in charge of collecting and returning materials
- Project manager- in charge of making sure all projects are completed and turned in on time
- Scribe- in charge of writing down solutions, explanations, and questions from the group
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Cooperative Learning:

- Students will have to work together to measure, plot, graph, and develop states of inequality.
- They will have to listen to each other's ideas and plans.

Expectations:

- Students are expected to work together respectfully, ensure all group members understand each step, and clean up after they are finished.

Timeline:

- 10 minutes to review lab expectations with students
- 30 minutes to collect measurements from fellow students and graph them
- 10 minutes to calculate the percentages
- 10 minutes to discuss the lab

Post Lab Follow-Up/Conclusions:

Discuss real world application of learning from lab

- Can you use your inequalities to predict the heights of other students in the same age group in your school?
- How else can this lab be used in the real world?

Career Applications

- What kinds of jobs might use a similar process?

Optional or Extension Activities

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Lab Instructions:

The students will graph the heights of the students in the class (start with the members in your group). Then the students will make inequality comparisons among the heights of the students.

Student Handout(s)

Use the tape measure to determine the height of each member in your group. Record to the nearest centimeter.

Create a number line that includes the height measurements for each member of your group. Graph the height measurements on your number line (include names). Collect data the other groups and include on your number line.

Use the three relationships (<,>, =) to write a statement comparing heights of varies people.

Determine how many students from your class represent 20% of all the members in the class. Round to the nearest whole number. Use this number to identify students who are in the top and lower 20% according to height.

The remaining students are in the middle 60%. Write a compound inequality that describes the range of the heights of the middle 60%. Let H represent the height of the middle 60%. (For example: 156cm<H<170cm.

Rubric and/or Assessment Tool

Assessment will include the completion of the lab, with explanations for their conclusions. I will be looking for students to correctly write inequality statements, define the top and bottom 20%, and write an accurate range for the middle 60%.