

## **WAMC Lab Template**

Math Concept(s): Measures of central tendency

Source / Text: Worksheet

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### **Attach the following documents:**

Lab Instructions: worksheet attached

Student Handout(s): worksheet attached

Rubric and/or Assessment Tool: observation and discussion

### **Indicate “SPECIFIC” relationship to Science, Technology, or Engineering**

Science

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

This lab will be part of the statistics and probability section.

### **Lab Plan**

Lab Title: pulse rate

Prerequisite skills: knowing how to calculate measure of central tendency

Lab objective: reinforce calculations of measures of central tendency

### **Standards:**

Mathematics K–12 Learning Standards:

- Making inferences and justifying conclusions
- Make inferences and justify conclusions from sample surveys, experiments, and observational studies.
  - S-IC4 Use data from a sample survey to estimate a population mean or proportion, develop a margin of error through the use of simulation models for random sampling

Standards for Mathematical Practice:

- Make sense of problems and persevere in solving them.
- Construct viable arguments and critique the reasoning of others
- Model with mathematics
- Use appropriate tools strategically
- Attend to precision
- Look for and make use of structure
- Look for and express regularity in repeated reasoning.

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

- Craft and structure - 4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone)

Leadership/21st Century Skills:

<b>21st Century Interdisciplinary themes</b> (Check those that apply to the above activity.)			
<input type="checkbox"/> Global Awareness	<input type="checkbox"/> Financial/Economic/Business/Entrepreneurial Literacy	<input type="checkbox"/> Civic Literacy	
<input checked="" type="checkbox"/> Health/Safety Literacy	<input type="checkbox"/> Environmental Literacy		
<b>21st Century Skills</b> (Check those that students will demonstrate in the above activity.)			
<b>LEARNING AND INNOVATION</b>	<b>INFORMATION, MEDIA &amp; TECHNOLOGY SKILLS</b>	<b>LIFE &amp; CAREER SKILLS</b>	<b>Productivity and Accountability</b>
<u>Creativity and Innovation</u>	<u>Information Literacy</u>	<u>Flexibility and Adaptability</u>	<input checked="" type="checkbox"/> Manage Projects
<input checked="" type="checkbox"/> Think Creatively	<input checked="" type="checkbox"/> Access and Evaluate Information	<input type="checkbox"/> Adapt to Change	<input type="checkbox"/> Produce Results
<input checked="" type="checkbox"/> Work Creatively with Others	<input checked="" type="checkbox"/> Use and manage Information	<input checked="" type="checkbox"/> Be Flexible	<input type="checkbox"/> Leadership and Responsibility
<input checked="" type="checkbox"/> Implement Innovations	<u>Media Literacy</u>	<u>Initiative and Self-Direction</u>	<input checked="" type="checkbox"/> Guide and Lead Others
<u>Critical Thinking and Problem Solving</u>	<input type="checkbox"/> Analyze Media	<input type="checkbox"/> Manage Goals and Time	<input checked="" type="checkbox"/> Be Responsible to Others
<input type="checkbox"/> Reason Effectively	<input type="checkbox"/> Create Media Products	<input type="checkbox"/> Work Independently	
<input checked="" type="checkbox"/> Use Systems Thinking	<u>Information, Communications and Technology (ICT Literacy)</u>	<input type="checkbox"/> Be Self-Directed Learners	
<input checked="" type="checkbox"/> Make Judgments and Decisions	<input type="checkbox"/> Apply Technology Effectively	<u>Social and Cross-Cultural</u>	
<input checked="" type="checkbox"/> Solve Problems		<input checked="" type="checkbox"/> Interact Effectively with Others	
<u>Communication and Collaboration</u>		<input type="checkbox"/> Work Effectively in Diverse Teams	
<input checked="" type="checkbox"/> Communicate Clearly			
<input checked="" type="checkbox"/> Collaborate with Others			

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

### Materials

- Worksheet
- Stopwatch
- Calculators

### Set-Up Required:

- Can be done in class but make sure there is enough space between tables for them to run.

### **Lab Organization Strategies:**

#### Leadership (Connect to 21<sup>st</sup> Century Skills selected):

- Students will learn how to be responsible how to measure, record and work as a group
- How to be responsible for their health.
- Can connect with elderly community and help check pulse and maybe do blood pressure.

#### Cooperative Learning:

- Working in group collecting data and doing calculations

#### Expectations:

- Students need to work as a group to collect data and perform calculations.

#### Timeline:

- 50 minutes

### **Post Lab Follow-Up/Conclusions:**

#### Discuss real world application of learning from lab

- Students will learn that measure and record accurately is important because it may not only effect your results but whole class

#### Career Applications

- Medical field, sports

#### Optional or Extension Activities

- Graph your findings.

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Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

Lab Instructions:

The students of a group of three will compare their pulse rate to the average pulse rate of their classmates following three different states of physical activity. As a group you will collect three different pulse readings: resting, exercising, and recovery pulse.

Resting pulse:

Pulse measurer find pulse of your partner and count the number of beats in a 10-second period. Multiply this number by 6 to get the number of beats per minute for their heart. Recorder write down number in appropriate column.

Exercising pulse:

Run in place for one minute. Immediately after pulse measurer, count the number of beats in a 10-second period. Multiply this number by 6 to get the number of beats per minute for their heart. Recorder write down number in appropriate column.

Recovery pulse:

Rest for five minutes. Count the number of beats in a 10-second period. Multiply this number by 6 to get the number of beats per minute for their heart. Recorder write down number in appropriate column.

Please complete the following steps:

- 1) As a group, select who will perform the following tasks (each team member must have an assignment (recorder, pulse measurer/timer, lab rat)
- 2) Collect stopwatch and calculator with your partner to complete the lab.
- 3) Fill in the data into the table

Resting pulse	Exercising pulse	Recovery pulse

- 4) Gather the data from other groups

Groups	Resting pulse	Exercising pulse	Recovery pulse
Your group			
1			
2			
3			
4			
5			
6			

5) Calculate mean, median and mode for a class

# Washington

6) How your pulses measures to group

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7) Which measure gives you more accurate comparison

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