

WAMC Lab Template

Math Concept(s): Geometric Measurement and Dimensions; Modeling with Geometry

Source / Text: Mathematics for Carpentry and the Construction Trades

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Attach the following documents:

Lab Instructions

Student Handout(s)

Rubric and/or Assessment Tool

- Formative – Informal observation of students using proper measurement techniques while exploring different methods of measurement.
- Summative – Measurement worksheet on specific items/objects in the lab/classroom.

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

The lesson will open with students measuring a penny with a yard stick. We will then discuss appropriate tools for measurement of various items. We will delineate 1 inch down to 1/16 of an inch and discuss, as a class, the level of precision needed in different trades. After that, we will distribute different measurement tools (tape measure, cloth tape, ruler, etc.) to groups of four. Each group will go to different places in the classroom/lab and measure items/objects of their choice. The students will then report on their measurements and then specific successes and failures throughout the process. After a pair and share, the students will be tasked to individually measure items predetermined by the instructor with a tape measure.

Lab Plan

Lab Title: Measurement

Prerequisite skills: Using correct units of measurement, experience with fractions.

Lab objective: To accurately report measurements down to a 1/16 of an inch using a tape measure.

Standards:

CCSS-M:

- Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems
- Apply geometric methods to solve design problems

Standards for Mathematical Practice:

- MP1.3, 1.4, 1.8; MP5 & MP 6

Reading:

-

Writing:

-

Leadership/21st Century Skills:

21st Century Interdisciplinary themes (Check those that apply to the above activity.)

- | | | |
|--|--|---|
| <input type="checkbox"/> Global Awareness | <input checked="" type="checkbox"/> Financial/Economic/Business/Entrepreneurial Literacy | <input type="checkbox"/> Civic Literacy |
| <input checked="" type="checkbox"/> Health/Safety Literacy | <input checked="" type="checkbox"/> Environmental Literacy | |

21st Century Skills (Check those that students will demonstrate in the above activity.)

LEARNING AND INNOVATION

Creativity and Innovation

- Think Creatively
- Work Creatively with Others
- Implement Innovations

Critical Thinking and Problem Solving

- Reason Effectively
- Use Systems Thinking
- Make Judgments and Decisions
- Solve Problems

Communication and Collaboration

- Communicate Clearly
- Collaborate with Others

INFORMATION, MEDIA & TECHNOLOGY SKILLS

Information Literacy

- Access and Evaluate Information
- Use and manage Information

Media Literacy

- Analyze Media
- Create Media Products
- Information, Communications and Technology (ICT Literacy)
- Apply Technology Effectively

LIFE & CAREER SKILLS

Flexibility and Adaptability

- Adapt to Change
- Be Flexible

Initiative and Self-Direction

- Manage Goals and Time
- Work Independently
- Be Self-Directed Learners

Social and Cross-Cultural

- Interact Effectively with Others
- Work Effectively in Diverse Teams

Productivity and Accountability

- Manage Projects
- Produce Results

Leadership and Responsibility

- Guide and Lead Others
- Be Responsible to Others

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

Materials

- Tape measures
- Cloth Tape
- Ruler
- Yard Stick
- Pencil
- Lab sheet to record data

Set-Up Required:

- Predetermined objects to measure
- Lab sheet

Lab Organization Strategies:

Grouping/Leadership/Presentation Opportunities:

- Groups of 4 (all with equal responsibilities)

Expectations:

- Students will be able to correctly use a tape measure and report precise measurements.

Timeline:

- 2 days

Post Lab Follow-Up/conclusions:

Discuss real world application of learning from lab

- Building trades, life

Career Applications

- Construction
- Engineering
- Architecture
- Material estimator

Alternate Strategies:

- Online measurement games
- Use of manipulative
- Large scale tape

Washington Applied Math Council

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