

MODIFIED UBD LESSON PLAN

COURSE: Introduction to Engineering

UNIT: Measurement 2.0

EXERCISE: Ruler Activity

TIME FRAME: 1 Hour



PREPARATION: *Summary of “to do’s” that the teacher should understand and prepare before bringing this lesson to the classroom.*

Teachers will need to ensure that the proper supplies are available for students to build their solutions.

Materials

- Steel Ruler
- Computer Paper

Tools

- Internet

Information

Before starting this exercise, students should have an understanding of

- ✓ Presentation: Measurement



SAFETY: *Summary of safety strategies in the lesson.*

There are no safety exercises for this exercise.

S1

DESIRED RESULTS:

ESTABLISHED GOALS:

Problem Solving Techniques and Applications Standards:

Teachers should use the STEM Academy Standards Correlation System available in the STEM Connections area of a unit to extract specific standards and insert these standards here.

TRANSFER:

Students will be able to independently use their learning to...

- Demonstrate the correct use of micrometers, rulers, calipers, protractors and screw gauges in experiments;
- Use measurement tools accurately according to a rubric.

MEANING:

UNDERSTANDINGS

Students will understand that...

- Different tools are needed to take different types of measurements;
- Imperial and metric measurements are vastly different.

ESSENTIAL QUESTIONS

Students will keep considering...

- How accurate different types of measurements are;
- If there is a better tool for a certain task.
-

ACQUISITION OF KNOWLEDGE AND SKILL:

Students will know...

- Specific uses and operations of various measurement tools;
- How specific measurement tools work.

Students will be skilled at...

- Choosing the correct tool for a task;
- Diagraming results of peer data compilation in an experiment.

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S2 EVIDENCE:	
EVALUATIVE CRITERIA:	ASSESSMENT EVIDENCE:
<ul style="list-style-type: none"> Completed Correct test answers 	<p><i>Performance Task(s):</i></p> <p><u>Ruler Activity</u> Students will learn and be tested on proper use of rulers.</p>
<ul style="list-style-type: none"> Correct answers Accurate measurements 	<p><i>Other Evidence:</i></p> <ul style="list-style-type: none"> Corresponding test questions Collected measurement sheets

S3 LEARNING PLAN: *Summary of Key Learning Events and Instruction*

- Set Introduction**
This activity will take one class day to complete.
- Familiarity**
The instructor should be familiar with and present the materials or PowerPoint associated with measurement in this activity previous to the hands-on activity.
- Pass Out Paper**
Students will need one sheet of standard printer paper to make measurements.
- Group Students**
The instructor will determine if the activity is to be done in groups or individually. If the activity is done individually, additional metric rulers will be needed.
- Review**
Have your students review the information via the online web portal under Content Knowledge. While the students are reading, pass out the necessary tools and textbooks to complete this exercise as needed.
- Student Time**
Give each student ample time to complete the activity. Circulate the room to verify each student is on tasks and progressing forward.
- Collect**
At the completion of the activity, collect each student's tools.
- Class Review**
If time permits, review the activity as a class and discuss the correct measurements and answers.
- Remind Students**
Remind your students to review all of the material from this unit in preparation for the test.

Progress Monitoring:

- The instructor will need to monitor the classroom, checking student's work and ensuring students are on task and following directions.
- Ensure students store their projects at the end of class and leave all materials in the room.
- At the end of the activity, post student projects in the room and provide appropriate feedback

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 **DIFFERENTIATION:** *Summary of Key Differentiation Techniques*

Please use this space to insert your differentiation techniques. Depending on the needs of students, various techniques might be needed in a classroom, therefore use the information below and experts in the area needed to design your plan for differentiation.

The ASCD Study Guide for Integrating Differentiated Instruction and Understanding by Design: Connecting Content and Kids.
by Carol Ann Tomlinson, Jay McTighe

Integrating Differentiated Instruction and Understanding by Design: Connecting Content and Kids.
by Carol Ann Tomlinson, Jay McTighe
ISBN-13: 978-1416602842
ISBN-10: 1416602844

Differentiating Reading Instruction
by Laura Robb.
ISBN13: 9780545022989

A Teacher's Guide to Differentiating Instruction
The Center for Comprehensive School Reform and Improvement

 **CAREER CONNECTIONS:** *Summary of Career Opportunities Associated with this Lesson*

Civil Engineer

Civil engineers rely on accurate measurements to design and construct various structures.

Architect

Architects use accurate measurements to design various structures.

Health Science

Many of those in the health science field rely on accurate measurements when working with humans and animals.

 **KEYWORDS:** *Please Insert Keywords from this Lesson with their Definitions*

ACCURATE—the quality or state of being correct or precise.

MEASUREMENT—the action of measuring something.

INSTRUMENT—a tool or implement, especially one for delicate or scientific work.