Lab Framework

Text: **CORD**
Unit number and title: **Unit 3 - Measuring in English and Metric Units**
Short Description: **Students will participate in the Metric Olympic Games. Optional prizes can be awarded.**
Developed by: **Paul K. Hill**
(adapted from activity created by Cindy Kroon of Montrose School, Montrose, South Dakota)
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METRIC OLYMPICS

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**
  Students will use compete in events using the metric system as measurements.
  Students will also be required to estimate values using the metric system.
- **Statement of pre-requisite skills needed**
  Students must know how to use a ruler, graduated cylinder, and scale to measure.
- **Vocabulary**
  Estimate
  Graduated cylinder
- **Materials List**

Graduated cylinder	2 Towels
6 Metric tape measures	Cotton Balls
Sponge	Tape
Straws	Marbles
Metric Scale	Paper plate
Stopwatch	Plastic Cup
2 large containers (to hold marbles)	Thermometer

2 "Buckets" of water (the "buckets" must be large enough for a student to put his or her hand into)
Circular target (cut from a sheet of paper, 2" diameter)
Results Form paper (paperclip together for the groups, the paperclip will be used at the end)
Glass or clear container of water on display at the front of the room

- **State Standards addressed**
  Math: 2.3.B – Estimate length using metric unit.
  3.5.C – Estimate and measure weight and mass using metric units.
  3.5.D - Estimate and measure capacity using metric units.
  Communication: 1.2 – Observe to gain information.
- **Leadership Skills**
  2.8 - The student will demonstrate the ability to incorporate and utilize the principles of group dynamics in a variety of settings.
- **SCAN Skills/Workplace Skills**
  Resources C: Materials and Facilities.
  Interpersonal A: Participates as a Member of a Team.
  Interpersonal F: Works with Diversity.
  Information A: Acquires and Evaluates Information.
- **Set-up information**
  You will need space for 10 stations. (See attached document titled "Metric Olympic Events Guidelines")
  This document is from Cindy Kroon of Montrose School in Montrose, South Dakota!
  Lab organization
  It is best for students to complete this lab in partners, although a group of three will work.
- **Teacher Assessment of student learning**
  Data Collection Sheets will contain assessment questions.
- **Summary of learning**
  Students will be asked to share what they have learned in class verbally.
- **Career Applications**
  Construction, Business

LAB TITLE: METRIC OLYMPICS

- **Statement of problem addressed by lab**
  Students will practice their measuring and estimation skills within the Metric System.

- **Grouping instructions and roles**
  This can be done in partners or groups depending on how many students you have. One partner will do the activity while the other records the data.

- **Procedures**
  Set-up 10 stations as follows:
  Station 1: STANDING LONG STEP
  Place a piece of masking tape as the "STARTING LINE"
  Place a tape measure next to the starting line. Do not unroll/stretch it.

  Station 2: COTTON BALL PUT
  Place a piece of masking tape as the "THROW LINE"
  Place a tape measure next to the THROW LINE.

  Station 3: STRAW JAVELIN THROW
  Place a piece of masking tape as the "THROW LINE"
  Place a tape measure next to the THROW LINE.

  Station 4: SWIMMING SPONGE SQUEEZE
  Place a "bucket" of water on a table.
  Place a graduated cylinder next to the water.
  Place a sponge into the bucket of water.

  Station 5: WEIGHT-LIFTING MARBLE GRAB
  Place the marbles into a container.
  Place a metric scale next to the container.
  Place a 2nd empty container on the scale to put marbles into.

  Station 6: DISCUS THROW
  Place a piece of masking tape as the "THROW LINE"
  Place a tape measure next to the THROW LINE.

Station 7: BASKETBALL
Place a piece of masking tape as the "THROW LINE"
Place a plastic cup 1 meter away from the THROW LINE.
Place a tape measure next to the THROW LINE.

Station 8: GYMNASTICS
Make a X on the floor with masking tape.
Place a stopwatch next to the X.

Station 9: TEMPERATURE DIVING
Place a "bucket" of water on a table. (Preferably near a window)
Place a thermometer next to the water.
Place a towel next to the water.

Station 10: GOLF
Place a piece of masking tape as the "STARTING LINE"
Place a bag of cotton balls next to the STARTING LINE.
Place the circular target 1 meter from the STARTING LINE.
Place a ruler next to the STARTING LINE.

- **Outcome instructions**
  Students will fill out the "RESULTS FORM." Their group mates will check for accuracy.

- **Assessment instructions** (peer-teacher)
  Because this is a competition, the students will "police" each other to check for accuracy.

NAME_____Per____

RESULTS FORM

	ESTIMATE	ACTUAL	DIFFERENCE (use absolute value)
STANDING LONG STEP			
COTTON BALL PUT			
STRAW JAVELIN THROW			
SWIMMING SPONGE SQUEEZE			
WEIGHT-LIFTING MARBLE GRAB			
DISCUS THROW			
BASKETBALL			
GYMNASTICS			
TEMPERATURE DIVING			
GOLF			
TOTALS			

1. Estimate the length of the line below in both inches and centimeters.

The line is _____ inches or _____ centimeters.

Use a ruler to measure the actual length of the line.

Actual length = _____ inches or _____ centimeters.

Were you closer with your inches measurement or your centimeter measurement?

2. Estimate the weight of the paperclip that held your papers together in both ounces and grams.

The paperclip is _____ ounces or _____ grams.

Use a scale to measure the actual weight of the paperclip.

Actual weight = _____ ounces or _____ grams.

Were you closer with your ounces measurement or your grams measurement?

3. Estimate the capacity of the water in the container on Mr. Hill's desk in both fluid ounces and liters.

The paperclip is _____ fluid ounces or _____ liters.

Mr. Hill will measure the actual capacity toward the end of class.

Actual weight = _____ fluid ounces or _____ liters.

Were you closer with your fluid ounces measurement or your liters measurement?