

<p><b>Grade Level/Course:</b> Grade 7 Life Science</p>
<p><b>Lesson/Unit Plan Name:</b> Metric Measurement</p>
<p><b>Rationale/Lesson Abstract:</b> Students will review metric measurement of length, volume and mass using appropriate metric measurement tools.</p> <p>Students will make accurate measurements of length, volume and mass using tools of science, such as graduated cylinders, meter sticks, metric sticks, and Triple Beam Balances.</p>
<p><b>Timeframe:</b> 1 class period</p>
<p><b>Standard(s)</b></p> <p>7 a: Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data.</p>

**Instructional Resources/Materials:**

- Metric Measurement Lab (see below)
- Lab worksheets (see below)
- Prentice Hall textbook, Focus on Life Science, 2008.
- P. 672-673 (Skills Handbook)

**Lab Materials: (for each group/station)**

1. 10 photocopied leaves of different sizes. (Teacher provided or student gathered)
2. 2 Metric sticks
3. 2 Meter sticks
4. 2 Triple Balance Beam
5. 2 Graduated cylinder
6. 2 Paper cups
7. Water
8. Ice cubes
9. Celsius thermometer
10. Stirring rod
11. Data record sheets (provided below)

Student lab worksheets (see lab below)

Student lab books

## **Activity/Lesson:**

### **Metric Measurement**

Students will measure length, volume and mass using appropriate metric measurement tools. See lab below.

## **Assessment:**

- Teacher will observe students at lab stations to ensure correct use of lab equipment, accuracy of metric calibration and, where necessary, unit conversions.
- Teacher evaluates lab reports for accuracy
- Teacher made metric quiz

# Metric Measurement Lab

**Objective:** Students will be able to (SWBAT) use metric measurement

**Purpose:** Practice using metric units of length, volume and mass to measure?

## Materials:

For each lab group:

1. 10 photocopied leaves of different sizes. (Teacher provides or have students gather)
2. 3 to 4 Metric sticks
3. 2 Meter sticks
4. 2 Triple Beam Balances
5. 2 Graduated cylinders
6. 2 Paper cups
7. Water (enough for two cups)
8. Ice cubes (enough for two cups )
9. 2 Celsius thermometers
10. 2 Stirring rods
11. Data record sheets for each student (provided below)
12. Student lab books

## Procedure:

1. Measure and record the length and width of each leaf (use the longest and widest part of the leaf).
2. Use the meter stick to measure your height. Record.
3. Fill paper cup half-way with water. Using Triple Beam Balance, measure and record the mass of the cup of water.
4. Pour water into the graduated cylinder. Measure and record the volume of the water.
5. Pour water back into cups. Take temperature of water with Celsius thermometer and record.
6. Add ice cubes to the water. Stir until the temperature stops falling. Measure the new temperature and record.

*Remember: Converting from a smaller unit (mm) to a larger unit (cm) involves division.  
Converting a larger unit (m) to a smaller unit (cm) involves multiplication.*

**Data and Observations:**

Record the measurements of each leaf. (If the leaf is 5 and 4/10 centimeters wide, you should write 5.4 cm.)

Leaf	Length	Width
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Record your height in meters. \_\_\_\_\_

Record the mass of the cup of water in grams. \_\_\_\_\_

Record the volume of the water in the cup in milliliters. \_\_\_\_\_

Record the starting temperature of the water. \_\_\_\_\_

Record the temperature of the water after adding the ice. \_\_\_\_\_

**Analysis/Results:**

What is the name of the unit of measurement on the metric ruler represented by the lines between the centimeter marks? \_\_\_\_\_

What are the measurements of each leaf in millimeters? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What is your height in centimeters? \_\_\_\_\_

What is your height in millimeters? \_\_\_\_\_

How many grams are in a kilogram? \_\_\_\_\_

What temperature change occurred after you added ice to the water? How many degrees did it change? \_\_\_\_\_

**Conclusion:** (Summary of lab)