Lesson 2: Unit Conversions
• In CJ, copy down info from board. Keep CJ open to today’s date at the top corner of your desk.
• Take our your HW for me to check. Also take out Lesson 1 from yesterday.

• On your Do Now page, copy (word for word) and answer the questions below.
1. Which piece of equipment is best to use to put out a fire on a person?
2. The safety shower is used if a _____ spill of a _____ chemical occurs.
3. A testable prediction is called a(n) ________________.
Turn your Do Now sheet: Pass to RIGHT

Also, any questions from Lesson 1?

The lesson is posted online.
Lesson 2: Unit Conversions
The metric system

Define **metric system**: the decimal measuring system based on the meter, liter, and gram as units of length, capacity, and weight or mass

<table>
<thead>
<tr>
<th>Name</th>
<th>Kilo</th>
<th>Hecto</th>
<th>Deka</th>
<th>BASE UNIT</th>
<th>deci</th>
<th>centi</th>
<th>milli</th>
<th>micro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviation</td>
<td>k</td>
<td>H or h</td>
<td>da or D</td>
<td>g</td>
<td>d</td>
<td>c</td>
<td>m</td>
<td>μ</td>
</tr>
<tr>
<td>Value relative to</td>
<td></td>
<td></td>
<td></td>
<td>m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
From 1901 to 1964, the liter was defined as the volume of one kilogram of pure water at maximum density and standard pressure.

The meter is the length of the path travelled by light in vacuum during a time interval of 1/299 792 458 of a second.

kilogram = SI unit of mass; equivalent to the international standard kept at Sèvres near Paris (approximately 2.205 lb).

Article on Finding a “More Perfect” Kilogram
Practice: Converting to or from the BASE UNIT

1. 1 kilogram = _____________ grams
2. 1 µL = ____________ liters
3. 1000 mL = ___________ liters
4. 1 liter = ____________ DL
5. 1 gram = _____________ kilogram
6. 1 liter = ______________ microliters
7. 100 HL = _____________ liters
8. 1 liter = _____________ dL

Converting from any prefix to the base? You should have this memorized.
Each object has a certain size and it needs appropriate units to express the measurement.

Which unit (use prefixes + base units) ...?

1. The length of a highway
   ____________________

2. A drop of water
   ____________________

3. The length of a fruit fly
   ____________________

4. A large bottle of soda
   ____________________

5. The volume of a swimming pool
   ____________________
Using dimensional analysis, we can convert measurements in one unit to another unit.

We will use a series of fractions that equal **ONE**.

Examples:
312 mL = ? L

Which goes on the bottom? = the OLD unit.
Always have whole numbers in your unit multiplier.

# of OLD UNITS = # of NEW UNITS

\[
\frac{312 \text{ mL}}{1} \times \frac{1 \text{ L}}{1000 \text{ mL}} = 0.312 \text{ L}
\]

Old units cancel out
0.0225 L = ? mL
Single Conversions: Show work with all units.

1. 0.047 dam = _________________ m

2. 91.0 L = _________________ dL

3. 884 HL = _________________ L

4. 0.0045 g = _________________ mg
Single Conversions: Show work with all units.

5. 1,200 cg = _____________________ g

6. 67.01 kg = _____________________ g

7. 1.002 g = ______________________ mg

8. 2.02 \times 10^3 \text{dm} = _____________________ m
Double Conversions: Show work with all units.

1. 0.022 dam = ________________ cm
2. 500.2 HL = ________________ dL
3. 12.5 kg = ________________ mg
4. 0.0079 cg = ________________ Hg
Double Conversions: Show work with all units.

5. $1,200 \text{ cg} = \underline{\hspace{2cm}} \text{ dag}$

6. $67.55 \text{ dg} = \underline{\hspace{2cm}} \text{ Hg}$

7. $1.102 \text{ mg} = \underline{\hspace{2cm}} \text{ dag}$

8. $1.002 \times 10^{-2} \text{ kg} = \underline{\hspace{2cm}} \text{ dg}$
Working with micro

1. $1.002 \times 10^6 \text{ ug} = \underline{\underline{\underline{}}} \text{ mg}$

2. $4.780 \times 10^{-6} \text{ L} = \underline{\underline{\underline{}}} \text{ L}$
Unit Conversion Activity