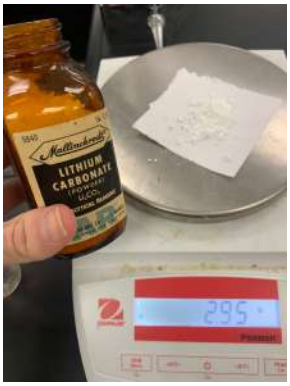
Topic: Moles and Chemical Quantities
Guiding Question: How can we count chemical quantities to make comparisons?
Purpose: To visualize and understand a mole.
Key Vocabulary: Avogadro's number, mole, particles, atoms, conversion, ratio

Part 1: Avogadro's Number
Watch this 5 minute video:
https://ed.ted.com/lessons/daniel-dulek-how-big-is-a-mole-not-the-animal-the-other-one

1.) What is a mole?
2.) How many particles are in a mole?
3.) Why do you think Chemists use the mole?

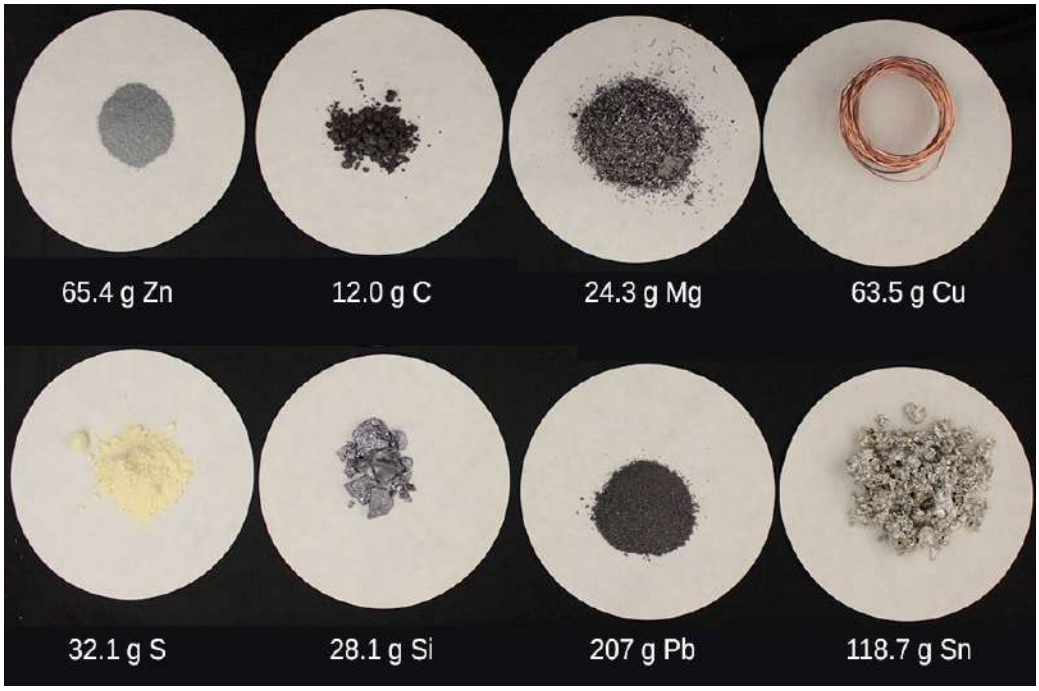
Part 2: Moles, Particles, and Grams
Show your work and convert from grams to moles to particles (molecules or atoms).

	Grams	Moles	Particles
 Manganese Dioxide (MnO_2)			
 Sulfur (S)			

 Tin (Sn)			
 Water (H_2O)			
 Lithium Carbonate (Li_2CO_3)			

 Salt (NaCl)			

2.) What do the samples below have in common? Show your work.



Part 3: In A Reaction

A.)

Iron (Fe) reacts with Oxygen gas (O_2) to form Iron Oxide (Fe_2O_3), known as rust.

1.) Balance the equation to determine the coefficients and mole ratios.
2.) Watch the video: https://www.youtube.com/watch?v=TsnLmgWXw-E
3.) Determine the initial amount of Fe used.
4.) Determine the final amount of Iron Oxide produced.
5.) Based on the coefficients, determine the amount of O_2 used.
6.) Determine the individual atoms and molecules of each reactant and product.

__Fe	__O_2	-->	__Fe_2O_3
Coefficient:	Coefficient:		Coefficient:
Grams:	Grams:		Grams:
Moles:	Moles:		Moles:
Atoms:	Molecules:		Molecules:

B.)

Potassium (K) reacts with Chlorine gas (Cl2) to form Potassium Chloride (KCl)

1.) Balance the equation to determine the coefficients and mole ratios.
2.) Determine the initial amount of Potassium used.
3.) Determine the final amount of KCl produced, assuming an abundant supply of Cl_2.
4.) Based on the coefficients, determine the amount of Cl_2 used.
5.) Determine the individual atoms and molecules of each reactant and product.

 10.00 grams of Potassium			
__K	__Cl_2	-->	__KCl
Coefficient:	Coefficient:		Coefficient:
Grams:	Grams:		Grams:
Moles:	Moles:		Moles:
Atoms:	Molecules:		Molecules:

Reflection:

1.) In 3-5 sentences explain how you can convert from one unit to the next.
2.) Using the tools and methods we have discussed in class convert the following:
    a.) 100 dollars to dimes
    b.) 10 days to seconds
    c.) 25 miles to inches
    d.) Your own example.
3.) Explain how you can use the tools from chemistry to apply to your life.
4.) Make a poster on a piece of notebook paper about the mole
    a.) Include the number of particles in a mole
    b.) A visual representation of a mole
    c.) How to convert from grams to moles
    d.) How to convert from moles to grams
    e.) How to convert from moles to particles
    f.) Be creative!