Chemistry 11 Review

I) Mass to Moles
If you have 16.7 g of NaOH, convert it to moles NaOH.
Molar Mass of NaOH =

\[
\frac{16.7 \text{ g NaOH}}{40.0 \text{ g NaOH}} = 0.418 \text{ mol NaOH}
\]

How do you convert mass to moles?

II) Moles to Mass
If you have 0.756 moles of HCN, what mass of HCN is present?
Molar Mass of HCN =

\[
\text{mass} = 0.756 \text{ mol HCN} \times 27.0 \text{ g HCN/mol HCN} = 20.45 \text{ g HCN}
\]

How do you convert moles to mass?

III) Stoichiometry:
\[2\text{Li}_\text{(s)} + \text{CuSO}_\text{4(aq)} \rightarrow \text{Li}_2\text{SO}_\text{4(aq)} + \text{Cu}_\text{(s)}\]

What mass of Cu metal is produced if 14.5 g of Li metal reacts?
When should you do first? Convert to moles.
When can you transfer from one substance to the other?
When can you transfer from one substance to the other?

Draw the mole map for stoichiometry:

Practice 1: Stoichiometry Exercises
1. \( \text{Na}_2\text{SO}_4(\text{aq}) + \text{BaCl}_2(\text{aq}) \rightarrow 2\text{NaCl}(\text{aq}) + \text{BaSO}_4(\text{s}) \)
   a) How many grams of NaCl would be produced from 80.0g of \( \text{BaCl}_2 \)?
   b) How many grams of \( \text{BaCl}_2 \) would be required to produce 65.5g of \( \text{NaCl} \)?
2. When iron reacts with copper II chloride, solid copper and iron III chloride are formed. What mass of copper is produced if 0.594 moles of Fe react?

IV) Molarity
Molarity (M) = \( \frac{\text{moles of solute}}{\text{litres of solution}} = \frac{\text{mol}}{\text{L}} \)

Practice 2: Molarity Exercises
1. What is the molarity of a solution made by dissolving 2.45mol of potassium nitrate in 1.50L of solution?
nitrate in 1.50L of solution?
2. How many moles of NaCl must be dissolved in 400.0mL of solution in order to make a 0.25M solution?
3. What is the volume if 0.555mol of MgS makes a 2.00M solution?
4. Find [NaOH] when 0.32mol NaOH is dissolved in 5.00 x 10² mL of solution?