

Unit 7: Moles and Stoichiometry

Learning Targets

1. Convert between grams, moles, and the number of atoms or molecules of a substance.
 - a) I can find the molar mass of an atom or compound using the periodic table.
 - b) I can use the molar mass to convert between grams and moles.
 - c) I can use Avogadro's number (6.02×10^{23}) to convert between moles and numbers of atoms or molecules.
2. Given percent composition data, find the empirical formula of a compound.
 - a) I can explain how the mole ratio of one atom to another is equal to the subscripts in chemical formulas.
3. Given the empirical formula and molar mass, determine the molecular formula.
 - a) When given molecular formulas, simplify (or reduce) them to the empirical formula
4. Use experimental data to calculate the formula of a hydrate.
 - a) Analyze a hydrate procedure to see what could be improved.
 - b) Describe an experimental procedure that could be used to determine the formula of a hydrate.
5. Given the mass of one reactant or product involved in a reaction, use stoichiometry to calculate the masses of other reactants or products in the reaction.
 - a) When given the mass of a reactant, I can calculate the mass of products formed.
 - b) When given the desired mass of a product, I can calculate the mass of reactant needed.
 - c) I can demonstrate that mass is conserved during a chemical reaction.
6. Given the masses of both reactants, calculate the masses of products formed.
 - a) I can determine the limiting reactant in a reaction and use it to calculate the mass of products formed.
 - b) I can determine the mass leftover of the excess reactant
7. Determine the percent yield in a chemical reaction.
 - a) I can calculate the theoretical yield of a chemical reaction.
 - b) Given the actual yield, I can determine the percent yield.