

General Chemistry I
Topic: Chemical and Nuclear Equations

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The student should be able to:

1. State the Law of Conservation of Matter, and relate it to the necessity of balancing chemical equations.
2. Balance chemical equations by the inspection (trial and error) method.
3. Calculate the mass of product obtained in a chemical reaction given the mass of reactant required and vice versa.
4. Calculate the volume of gaseous product obtained in a chemical reaction given the volume of gaseous reactant required (all at a specified temperature and pressure).
5. Calculate the volume of gaseous product obtained in a chemical reaction at a specified temperature and pressure given the mass of reactant consumed.
6. Calculate quantities of product obtained and/or quantities of reactants consumed in a chemical reaction based on concentration/volume data.
7. Calculate the percentage yield of a chemical reaction based on the appropriate data.
8. Identify the limiting reagent in a chemical reaction given the starting quantities of reactants, and determine the quantity of product(s) obtained and the quantity of excess reagent left unreacted.
9. Classify chemical equations based on the following categories: Combination reactions, Decomposition reactions, Displacement reactions, Metathesis reactions, and Oxidation-Reduction (Redox) reactions
10. Balance nuclear equations by inspection.