I. Review: Chemical Equations
   a. Chemical Symbols
      i. Balanced chemical \((molecular)\) equation
      ii. Interpretation of a Chemical Equation

II. Stoichiometry
   a. Mole ratio
      b. Examples:
         i. How many moles of carbon dioxide will be produced by the complete reaction of 2.00 mol of glucose?
         ii. Predict and balance the reaction of solid aluminum with hydrochloric acid. What mass of hydrogen can be produced if you start with 6.000 mol of aluminum?
         iii. How many moles of water can be produced by burning 325 g of octane \((C_8H_{18})\)?
         iv. What mass of carbon dioxide is produced by the complete combustion of 100.0 g of pentane \((C_5H_{12})\)?
         v. How many grams of HNO\(_3\) are required to produce 8.75 g of dinitrogen monoxide according to the following equation?
            \[Zn(s) + 4\ HNO_3(aq) \rightarrow Zn(NO_3)_2(aq) + 2\ N_2O(g) + 2\ H_2O(l)\]
III. Limiting Reagents
   a. Limiting reactant
   b. Excess reactant
   c. Steps:
      i.
      ii.
      iii.
   d. Examples:
      i. How many grams of silver bromide can be formed when solutions containing 50.0 g of magnesium bromide and 100.0 g of silver nitrate are mixed together? What is the limiting reactant? What is in excess?

      ii. How many grams of hydrogen chloride can be produced from 1.00 g of hydrogen and 55.0 g of chlorine? What is the limiting reactant? What is in excess?

      iii. How many grams of barium sulfate will be formed from 200.0 g of barium nitrate and 150.0 g of sodium sulfate? What is the limiting reactant? What is in excess?
IV. Reaction Yield
   a. Theoretical yield
   b. Actual yield
   c. Percent yield
      i. Equation:
   d. Steps:
      i.
      ii.
      iii.
      iv.
   e. Examples:
      i. Determine the theoretical yield of silver chromate if 0.500 g of silver nitrate is used to react with potassium chromate. If 0.455 g of silver chromate is obtained from an experiment, calculate the percent yield.

      ii. Carbon tetrachloride was prepared by reacting 100.0 g of carbon disulfide with 100.0 grams of chlorine gas. Calculate the theoretical and percent yield if 65.0 g of carbon tetrachloride was obtained. Use the equation: \( CS_2 + Cl_2 \rightarrow CCl_4 + S_2Cl_2 \)

      iii. Silver bromide was prepared by reacting 200.0 g of magnesium bromide and 100.0 g of silver nitrate. Calculate the theoretical and percent yield if 100.0 g of silver bromide was obtained from the reaction.