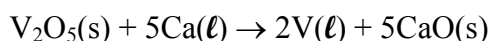


Chemical Reactions Review
(Percent Composition, Empirical Formula, Stoichiometry)

1. Calculate the percent composition of $\text{Ca}(\text{OH})_2$.
2. Determine the empirical formula of a compound containing 63.50 % silver, 8.25 % nitrogen, and the remainder oxygen.
3. Small pieces of copper metal are placed in a crucible and covered with powdered sulfur. The crucible is heated strongly until all evidence of reaction ceases. Assuming that the amount of sulfur used was in excess, what is the empirical formula for the compound formed if the original mass of the copper metal was 2.47 g and the mass of the final compound was 3.72 g?
4. Given the following reaction:

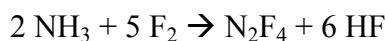


- (a) How many moles of CO_2 are produced if 3.5 moles of C_3H_6 are burned?
 - (b) Determine the mass of oxygen gas required to completely react with 50.0 g of C_3H_6 .
 - (c) If you were to burn 20.0 g of C_3H_6 in excess oxygen, what volume of carbon dioxide gas would be produced at 1 atm and 25°C ?
 - (d) What amount of heat energy, kJ, is released in the combustion of 16.0 g of C_3H_6 ?
5. Vanadium oxide reacts with calcium according to the following reaction:



Determine the limiting reactant for each of the following situations.

- (a) 2.0 mol of V_2O_5 reacts with 6.0 mol of calcium.
 - (b) 120 g of V_2O_5 reacts with 60 g of calcium
6. Ammonia and fluorine react according to the following equation:



How many grams of dinitrogen tetrafluoride, N_2F_4 , can be produced by the reaction of 2.00 g of NH_3 and 8.00 g of F_2 ?