CHM 1010 **Gage**

Problem Set for Moles I

1. What is the % composition of ammonium carbonate?

2. How many molecules of copper (II) nitrate can be formed from 2.2 grams of oxygen?

3. How many grams of aluminum acetate can be formed by the reaction of 30.0 g of acetic acid and 30.0 grams of aluminum hydroxide? How much of which reactant is left?

   Acetic acid + aluminum hydroxide -----> aluminum acetate + water

4. A compound is analyzed and found to contain 1.594 grams of potassium, 0.978 grams of carbon, 0.122 grams of hydrogen, and 1.305 grams of oxygen. Its molar mass is about 97 g/mol. What are the simplest and molecular formulas for the compound?

5. How many grams of iron (III) sulfate are in 0.0550 moles of the compound?

6. How many moles of nitrogen are in 22 grams of calcium nitrite?

7. In the combustion of 10.0 grams of glycerin, $C_3H_80_3$, a student collects 6.5 grams of water. What is the student's % yield?

1. 29.2% N, 8.3% H, 12.5% C, 50.0% O
2. 1.4×10^{22}
3. 34.0 g, 17.0 g
4. $KC_2H_3O_2$, same
5. 22.0 g
6. 0.33 mol
7. 83%