CHM 1010 **Gage**

PROBLEMS INVOLVING MOLES III

1. What is the mass of one molecule of potassium chromate in grams?

2. How many grams of sodium acetate can be formed from 3.4×10^{22} atoms of oxygen?

3. How many moles of sulfur are in 32.0 grams of aluminum sulfate?

Use the following equation to answer questions 4-8.

$C_4H_8O + O_2 \text{ ----------> } CO_2 + H_2O$ (unbalanced)

4. How many moles of CO_2 are formed from 0.762 moles of oxygen?

5. How many grams of oxygen are required to completely react with 2.34 moles of C_4H_8O?

6. What mass of carbon dioxide is produced from the combustion of 36.7 grams of C_4H_8O?

7. a. How many grams of water are formed when 25.0 grams of C_4H_8O react with 25.0 grams of oxygen?
   b. How much of which reactant is in excess and by how much?

8. Starting with 68 grams of oxygen a student produces 20.0 grams of water. What is the student's % yield?

9. A compound a molar mass of 143± 2 g/mol and the following composition: 50.7% C, 7.04% H, 19.7% N, and 22.5% O. What are the simplest and molecular formulas for the compound?

1. 3.23×10^{-22}g
2. 2.3 g
3. 0.280 mol
4. 0.554 mol
5. 412 g
6. 89.7 g
7. a. 10.2 g
   b. 14.8 g
8. 71 %
9. C_3H_5NO, $C_6H_{10}N_2O_2$