Chapter 3 **Extra Credit** **Name: _____**

1. **Calculate the Molar Mass (in grams per mole) of: then calculate the number of atoms (or molecules) given moles of moles given molecules.**

Formula	Molar Mass	moles	Molecules
O_2	16.0 x 2 = 32.0 g/mole	Given 0.50 mole	.50 x N_A = 3.01 x 10^{23} molecules
$HClO_3$		1.00 mole	
Ag_2SO_4		2.50 moles	
$C_{12}H_{22}O_{11}$			1.51 x 10^{23} molecules
Barium nitrate		0.10 moles	

2. Which of the following contains the fewest atoms? You shouldn't need to do a calculation here.

A) 10.0 g Ne
B) 10.0 g He
C) 10.0 g Ar
D) 10.0 g Kr
E) 10.0 g Mg

3. What is the empirical formula for $Hg_2(NO_3)_2$? Does this compound contain Ionic Bonds, Covalent Bonds or both?

4. How many atoms are present in 0.23 moles of Calcium?

5. How many grams of silver sulfate are in 2.50 moles of the compound?

How many formula units (like molecules, except for ionic cpds) of silver sulfate are in 2.50 moles of the compound?

How many atoms of Oxygen are in 2.5 moles of the compound?

6. Calculate the percent composition of each element in $(NH_4)_2CO_3$.

7. Determine the empirical formula for a compound that is found to contain 10.15 mg P and 34.85 mg Cl.

8. Determine the empirical formula for a compound that contains C, H and O. It contains 51.59% C and 35.30% O by mass.

9. Determine the empirical formula for a compound that is 70.79% carbon, 8.91% hydrogen, 4.59% nitrogen, and 15.72% oxygen.

10. A compound of Mercury has a molar mass of 519 g/mol and is found to contain 77.26% Hg, 9.25% C, 1.15 % H (the rest is Oxygen) by mass. What is the empirical and molecular formula of this compound?

11. How many grams of barium nitrate are needed to prepare 100.0 mL of 0.450 M solution?

12. Calculate the Molarity of the solution prepared by dissolving 35.0 g of $NaNO_3$ in a total volume of 150.0 ml solution.

13. What volume of 0.0955 M $KMnO_4$ (aq) solution can be prepared from 1.256 g of $KMnO_4$?

13. What is the molarity of the solution prepared by diluting 45.5 mL of 5.00 M HNO_3 to 650.0 ml?

14. What volume of 2.50 M H_2O_2(aq) do you need to make 400. mL of 0.100 M H_2O_2(aq)?