Name: _____

Chemistry PracTest: Empirical Formulas

1. Write the correct answer in the space provided.

a.) _____ What is the percentage of Cl in a sample of calcium chloride?

b.) _____ A compound has an empirical formula of C_5H_7N and a molar mass of 405 g/mol . What is the compounds molecular formula?

c.) _____ How many atoms of oxygen are in 1 unit of $(NH_4)_2SO_4$

d.) _____ A substance contains 0.336 mol C and 0.672 moles of H and 0.112 mole N. What is the empirical formula?

e.) _____ It was found that 0.181 moles of a substance has a mass of 11.2 g. What is the molar mass of this substance?

f.) _____ An evaporating dish with $CaCl_2$ contains 3.0×10^{19} ions of Ca^{+2}. How many ions of Cl^- are contained in the dish?

g.) _____ The percent composition of an empirical formula is (more / less / the same) as the molecular formula.

h.) _____ How many molecules of *vanillin*, $C_8H_8O_3$, are in 1.00 mole of this compound?

i.) _____ The subscripts in a chemical formula represent the number of (moles / mass).

j.) _____ Which has the greatest percentage of N? (NH_3, NH_4Cl, N_2H_4)

k.) _____ 1 mole of Cr atoms has (more / less / the same number of) **atoms** than/as 1 mole of Sn atoms.

l.) _____ 1 mole of Cr atoms has (more / less / the same number of) **mass** than/as 1 mole of Sn atoms.

m.) _____ Calculate the molecular mass of a compound if 0.0116 moles has a mass of 9.833 g.

SHOW ALL WORK FOR THE NEXT PROBLEMS

2. Analysis disclosed that a compound has the following composition; 66.75% copper, 10.84% phosphorous, and 22.41% oxygen. Determine the empirical formula of the compound.

3. When 1.916 g of titanium is heated strongly in a stream of pure oxygen, an oxide weighing 3.196 grams results. Calculate the empirical formula.

4. A compound used in the nuclear industry has the following composition: 67.61% uranium and the rest is fluorine. Determine the empirical formula of the compound.

5. A compound having a molar mass between 165-170 g/mol has the following composition; 42.87% carbon, 3.598% H, 28.55% oxygen, and 25.00% nitrogen. Determine the empirical and molecular formula.

6. A compound of molybdenum and oxygen was produced in a lab by heating the metal in a crucible. The data was collected:

Mass of crucible:	27.33 g
Mass of crucible and molybdenum:	30.07 g
Mass of crucible and molybdenum oxide:	30.98 g

a.) Calculate the percent composition of the compound.

b.) What is the empirical formula of this compound?

c.) Name this compound (Use Roman Numerals) _____