Name: _____
Hour: ____ Date: _____

Chemistry: *Percentage Composition and Empirical & Molecular Formula*

Solve the following problems. Show your work, and always include units where needed.

1. A compound is found to contain 36.5% Na, 25.4% S, and 38.1% O. Find its empirical formula.

2. Find the empirical formula of a compound that is 53.7% iron and 46.3% sulfur.

3. Analysis of a sample of a compound indicates that is has 1.04 g K, 0.70 g Cr, and 0.86 g O. What is its empirical formula?

4. If 4.04 g of nitrogen combine with 11.46 g of oxygen to produce a compound with a molar mass of 108.0g, what is the molecular formula of this compound?

5. The molar mass of a compound is 92 g. Analysis of the sample indicates that it contains 0.606 g N and 1.390 g O. Find the compound's molecular formula.

6. An acid commonly used in the automotive industry is shown to be 31.6% phosphorous, 3.1% hydrogen, and 63.5% oxygen. Determine the empirical formula of this acid.

7. A solvent is found to be 50.0% oxygen, 37.5% carbon, and 12.5% hydrogen. What is the empirical formula of this solvent.

8. A particular sugar is determined to have the following composition: 40.0% carbon, 6.7% hydrogen, and 53.3% oxygen. Determine the empirical formula of this sugar molecule.

9. If the molar mass of the sugar in question #8 is 180.0 g, find the molecular formula of the sugar.

10. Ethene, a gas used extensively in preparing plastics and other polymers, has a composition of 85.7% carbon and 14.3% hydrogen. Its molar mass is 28 g. Find the molecular formula for ethane.

Answers:

1. Na_2SO_3
2. Fe_2S_3
3. K_2CrO_4
4. N_2O_5
5. N_2O_4
6. H_3PO_4
7. CH_4O (actually, CH_3OH, which is methanol)
8. CH_2O
9. $C_6H_{12}O_6$
10. C_2H_4