WLHS / Chem / Monson

Name_____
Date_____Per_____

PROBLEM SET: Empirical and Molecular Formulas

What is the empirical formula for a substance made up of:

1) 4.75 g Cs
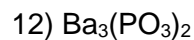   4.51 g I

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2) 9.11 g Ni
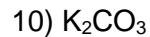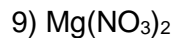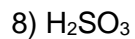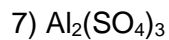   5.89 g F

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3) 0.0134 g Fe
    0.00769 g S
    0.0115 g O

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4) 1.21 g Al
    1.88 g N
    6.44 g O

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5) 28.8% Mg
    14.2% C
    57.0% O

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6) 26.6% K
    35.3% Cr
    38.1% O

What is the percent composition of:

7) $Al_2(SO_4)_3$

8) H_2SO_3

9) $Mg(NO_3)_2$

10) K_2CO_3

11) CoC_2O_4

12) $Ba_3(PO_3)_2$

13) Next to your answer for each problem above, write the chemical name of the compound.

More Empirical / Molecular Formula Problems!

14) Chemical analysis of 2-propanol, also known as isopropanol or rubbing alcohol, indicates that it is 60.0% C, 13.4% H, and 26.6% O. What is its empirical formula?

15) Determine the empirical formula for a compound that contains 5.717 g of O and 4.433 g of P.

16) What would be the empirical formula for a compound that contains 32.38% sodium, 22.65% sulfur, and 44.99% oxygen?

17) The empirical formula of a compound containing phosphorus and oxygen was found to be P_2O_5. Experiments show that the molar mass of the compound is 283.89 g/mol. What is the molecular formula of the compound?

18) Determine the molecular formula of a compound having an empirical formula of CH and a molar mass of 78.11 g/mol.

19) A compound has the following composition: 76.54% C, 12.13% H, 11.33% O. If its molar mass is 282.45 g/mol, what is its molecular formula?

20) Determine the molecular formula for each of the following:

 a) a compound with a molar mass of 86.17 g/mol that contains 83.62% C and 16.38% H.

 b) a compound with a molar mass of 92.01 g/mol that contains 0.608 g N and 1.388 g O.