

Name \_\_\_\_\_

Date \_\_\_\_\_ BLK \_\_\_\_\_

### Unit 5.2 - Empirical Formulas & Molecular Formulas Worksheet

#### **Empirical Formula Notes:**

An empirical formula is the formula of a compound that has the smallest whole number ratio of atoms.

Example:  $\text{H}_2\text{O}$  there are 2 atoms of Hydrogen for every one atom of Oxygen, so the ratio is 2 moles of Hydrogen to one mole of Oxygen.

Steps involved in finding empirical formula of a compound.

1. Find the amount (mass in grams) of each element in the compound.
2. Find the number of moles of each element in the given mass. (Remember: molar mass = mass of 1 mole)
3. Put the number of moles of each element in a ratio and find the smallest whole-number mole ratio. (divide each by the smallest number of moles.)
4. The numbers forming the smallest whole-number ratio are the same as the subscripts in the empirical formula.

#### **Empirical Formula Problems:**

Find the empirical formula of each of the following compounds. The given masses are for each element in a sample of the compound. Show your work; use labels. Be sure to include the correct number of significant figures in your answer.

1. 3.611 g Calcium and 6.389 g Chlorine

2. 0.150 g Sulfur and 0.150 g Oxygen

3. 0.461 g Carbon and 0.039 g Hydrogen