**CW – Empirical and Molecular Formulas**

**Name**

**Period: 1 2 3**

Directions: Solve each problem, SHOW YOUR WORK!

Empirical Formulas – Determine the empirical formulas from the experimental data

1. Rubbing alcohol, or isopropyl alcohol, contains 60.0% carbon, 13.4% hydrogen and the remaining amount is oxygen. Determine the empirical formula for isopropyl alcohol.
2. A sample of indium chloride weighing 0.5000g is found to contain 0.2404g of chloride and the rest indium. What is the empirical formula for indium chloride?
3. Phosphoric acid is found in some soft drinks. A sample of this acid contains 0.3086g of hydrogen, 3.161g of phosphorous, and 6.531g of oxygen. What is the empirical formula for phosphoric acid?
4. A compound consists of 72.2% magnesium and the rest nitrogen by mass. What is the empirical formula for this compound?

Molecular Formulas – Determine the molecular formulas from the information provided.

1. A compound has an empirical formula of NO2 and a molecular mass of 92.02g/mol. Determine the molecular formula.
2. Ibuprofen, a common headache remedy, has an empirical formula of C7H9O and a molecular mass of approximately 215g/mol. Determine its molecular formula.
3. Nicotine is 74.1% carbon, 8.6% hydrogen, and 17.3% nitrogen by mass/ Its molecular mass is about 160 g/mol. Determine its molecular formula.
4. Epinephrine (adrenaline) is a hormone secreted into the bloodstream in times of danger and stress. It is 59.0% carbon, 7.1% hydrogen, 26.2% oxygen, and 7.7% nitrogen by mass. Its molecular mass is about 180 g/mol. Determine its molecular formula.
5. A certain carbohydrate is 40.0% carbon, 6.72% hydrogen, and 53.3% oxygen by mass. The experimentally determine molecular mass is approximately 180 g/mol. What is the molecular formula?
6. The compound, methyl butanoate, smells like apples. Its composition by mass is 58.8% carbon, 9.8% hydrogen, and 31.4% oxygen. If its molecular mass is approximately 102 g/mol, what is its molecular formula?