1. In an experiment a 1.115 g sample of cobalt was heated with sulfur to give 2.025 g of cobalt sulfide. What is the empirical formula of the cobalt sulfide?

2. Calculate the empirical formulas for the following compounds given their percent composition:

   A) Copper chloride: 64.1% Cu and 35.9% Cl

   B) Manganese fluoride: 59.1% Mn and 40.9% Fluoride

3. Dimethyl sufloxide (DMSO) is a liniment for horses and has been used in the treatment of arthritis for humans. Calculate the empirical formula if the percent composition is 30.7% C, 7.74% H, 20.5% O and 41.0 % S.

4. Quinine is used to treat malaria and has a molar mass of 325 g/mol. If the empirical formula for Quinine is $C_{10}H_{12}NO$, what is its molecular formula?

5. Nicotine is found in tobacco and has a molar mass of 160 g/mol. If the percent composition of 74.0% C, 8.70% H and 17.3% N, what is the molecular formula of nicotine?

6. Galactose is referred to as brain sugar and has a molar mass of 180 g/mol. If the percent composition is 40.0% C, 6.72% H, and 53.3% O, what is the molecular formula of galactose?