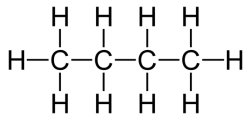
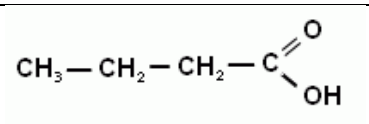
Chemistry 11

Empirical Formula & Percent Composition

Name:
Date:
Block:

1. Complete the following table:

Structural Formula	Molecular Formula	Empirical Formula
		
		

2. A pigment on a suspected forgery is analyzed using X-ray fluorescence and found to contain 0.5068 mol Ba, 0.5075 mol C, and 1.520 mol O. Determine its empirical formula.

3. A sample of caffeine is analyzed and found to contain 1.4844 g C, 0.1545 g H, 0.4947g O and 0.8661 g N. Determine the empirical formula of caffeine.

4. A sample of ascorbic acid, also known as vitamin C, was analyzed and found to contain 1.080 g C, 0.121 g H, and 1.439 g O. Ascorbic acid has a molar mass of 176.1 g/mol. Determine the molecular formula of ascorbic acid.

5. A hydrocarbon is a compound containing only carbon and hydrogen. One particular hydrocarbon is 92.29% carbon by mass. If the compound's molar mass is 39.0g/mol then what is its molecular formula?

6. Find the percent composition by mass of the following compounds:
    a. Carbon dioxide

    b. K_2CO_3

    c. Ammonium phosphate

    d. C_8H_{18}

    e. $C_4H_{10}O$

1. C_4H_{10}, C_2H_5, $C_4H_8O_2$, C_2H_4O 2. $BaCO_3$ 3. $C_4H_5N_2O$ 4. $C_6H_8O_6$ 5. C_3H_3 6a. 27.30% C, 72.71% O b. 56.58% K, 8.690% C, 34.73% O c. 28.19% N, 8.13% H, 20.77% P, 42.92% O d. 84.09% C, 15.91% H e. 64.80% C, 13.62% H, 21.58% O