

Empirical and Molecular Formula Worksheet

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Your answers also are recorded on this worksheet.

1. Identify the following as molecular formulas, empirical formulas or both.

- a. Ribose, $C_5H_{10}O_5$, a sugar molecule in RNA. _____
- b. Ethyl butanoate, $C_6H_{12}O_2$, a compd w/ the odor of pineapple. _____
- c. Chlorophyll, $C_{55}H_{72}MgN_4O_5$, part of photosynthesis. _____
- d. DEET, $C_{12}H_{17}ON$, an insect repellent. _____
- e. Oxalic acid $H_2C_2O_4$, found in spinach and tea. _____

2. Calculate the empirical formula of each compound with the following percent composition.

- a. 94.1% O, 5.9% H _____
- b. 79.9% C, 20.1% H _____
- c. 67.6% Hg, 10.8% S, 21.6% O _____
- d. 27.59% C, 1.15% H, 16.09% N, 55.17% O _____
- e. 17.6% Na, 39.7% Cr, 42.7% O _____

3. The compound methyl butanoate smells like apples. Its percent composition is 58.8% C, 9.8% H, and 31.4% O. If its gram molecular mass is 102 g/mole, what is its molecular formula?

4. You find that 7.36 g of a compound has broken down to give 6.93g of oxygen. The rest of the compound is hydrogen. If the molecular mass of the compound is 34.0 g/mole, what is its molecular formula?

5. What is the total mass of a mixture of 3.50×10^{22} molecules of Na_2SO_4 , 0.500 mole of H_2O and 7.23g of $AgCl$?