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**Example #1**

A sample of a compound that is known to contain only carbon, hydrogen, and oxygen is combusted, and the CO2 and H2O produced are trapped and weighed. The original sample weighed 8.38 g and yielded 16.0 g CO2 and 9.8 g H2O. What is the empirical formula?

**Example #2**

Lysine is an amino acid which has the following elemental composition: C, H, O, N. In one experiment, 2.175 g of lysine was combusted to produce 3.94 g of CO2 and 1.89 g H2O. In a separate experiment, 1.873 g of lysine was burned to produce 0.436 g of NH2. The molar mass of lysine is approximately 150 g/mol. Determine the empirical and molecular formula of lysine.

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