**Steps for Determining an Empirical Formula**

1. Start with the number of grams of each element, given in the problem.
   * If percentages are given, assume that the total mass is 100 grams so that   
     **the mass of each element = the percent given**.
2. Convert the mass of each element to moles using the molar mass from the [periodic table](http://www.chem.tamu.edu/class/majors/tutorialnotefiles/periodictable.htm).
3. Divide each mole value by the smallest number of moles calculated.
4. Round to the nearest whole number. This is the mole ratio of the elements and is   
   represented by subscripts in the empirical formula.
   * If the number is too far to round (x.1 ~ x.9), then multiply each solution by the same   
     factor to get the lowest whole number multiple.
     + e.g. If one solution is 1.5, then multiply each solution in the problem by 2 to get 3.
     + e.g. If one solution is 1.25, then multiply each solution in the problem by 4 to get 5.

Problem 1

NutraSweet is 57.14% **C**, 6.16% **H**, 9.52% **N**, and 27.18% **O**. Calculate the empirical formula of NutraSweet and find the molecular formula. (The molar mass of NutraSweet is 294.30 g/mol)

Problem 2

A Hydrocarbon with the empirical formula of C5H14O3 has a molecular mass 366g/mol. What is the molecular formula of the compound?

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