

Percent Composition and Empirical Formulas Problems

If the empirical formula is given, solve for the percent composition. If the percent composition is given, solve for the empirical formula. Make sure to show your work to receive full credit.

1. H_2O_2
2. CaCO_3
3. NaOH
4. 25% Mg, 75% Cl
5. 45% F, 55% Na
6. 83% K, 17% O

Solve the following problems based upon the information given.

7. After working in the kitchen I noticed some peculiar white powder in my kitchen sink, and sent it off to a lab to be analyzed. The results of the test showed the sample to contain 27.3% sodium, 1.2% hydrogen, 14.3% carbon, and 57.2% oxygen. What is the empirical formula?
8. Given a 50g sample of ferric oxide (Fe_2O_3), what is the percent iron and how many grams of iron are available?
9. At the "Generic Supermarket" everything is so generic that all of the packaging consists of only plain white paper. I purchased a product that I believed to be baking soda. After some lengthy lab analysis, I determined that the compound was 40% carbon, 6.7% hydrogen, and 53.3% oxygen. What is the empirical formula? If the molecular formula had a mass of 180g, what is the molecular formula? Is the product baking soda? If no, what is the formula for baking soda?
10. Analysis of exhaust gas from an automobile showed a compound containing 27% carbon and 73% oxygen. What is the empirical formula of the gas? What is the name of the gas? Name two other gases that might be found in the exhaust.
11. A car battery contains sulfuric acid (H_2SO_4). What is the percentage of each of the constituents of this compound? What is the danger encountered with charging a car battery?
12. When calcium carbide (CaC_2) is mixed with water, it produces acetylene (C_2H_2) and calcium hydroxide. Analyze all four of these compounds separately and determine their percent compositions. What is a use of calcium carbide?