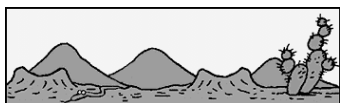


% Composition, Empirical Formulas, & Molecular Formulas



% Composition

- $\% = (\text{part} / \text{whole}) \times 100$
- When calculating the % composition, you are calculating the % of each element in a compound

% Composition

- Calculate the % Composition of MgO

% Composition

- Calculate the % Composition of iron (III) oxide

Empirical & Molecular Formulas

- _____ – the smallest whole number ratio of elements
- _____ – the true number of elements in a compound

Empirical Formula

- What is the empirical formula for H_2O_2 ?
- What is the empirical formula for $\text{C}_6\text{H}_{12}\text{O}_6$?

Steps for Calculating the Empirical Formula

1. List your givens
2. Change % to grams
3. Change grams to moles
4. Divide everything by the smallest number of moles
5. Write your formula

Empirical Formula Problem

- Calculate the empirical formula of a compound containing 40.05 % S and 59.95 % O.

Empirical Formula Problem

- Calculate the empirical formula for a compound containing 48.64 g C, 8.16 g H, and 43.20 g O.

Steps for Calculating Molecular Formula

1. Calculate the empirical formula
2. Get the molecular mass of the empirical formula that you just determined
3. Divide the experimentally determined molecular mass (given) by the molecular mass of the empirical formula
4. You will get a whole number
5. Multiply everything in the empirical formula by this number

Molecular Formula Problem

- Calculate the molecular formula of a compound containing 40.68% C, 5.08% H, and 54.25% O with an experimentally determined molecular weight of 118.1 g/mol

Molecular Formula Problem

- Calculate the molecular formula of a compound containing 57.84 g C, 3.64 g H, and 38.52 g O with an experimentally determined molecular mass of 249.21 g/mol