

Worksheet: More Practice with % Composition and Empirical Formulas

Name KEY

Part 1: % Composition

Calculate the percent composition of the following compounds.

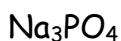


$$40.1 \text{ g} + 2(16.0 \text{ g}) + 2(1.0 \text{ g}) = 74.1 \text{ g}$$

$$\text{Ca} \quad (40.1 / 74.1) \times 100 \% = 54.1 \% \text{ Ca}$$

$$\text{O} \quad (32.0 / 74.1) \times 100 \% = 43.2 \% \text{ O}$$

$$\text{H} \quad (1.0 / 74.1) \times 100 \% = 1.3 \% \text{ H}$$



$$3(23.0 \text{ g}) + 31.0 \text{ g} + 4(16.0) = 164.0 \text{ g}$$

$$\text{Na} \quad (69.0 / 164.0) \times 100 \% = 42.1 \% \text{ Na}$$

$$\text{P} \quad (31.0 / 164.0) \times 100 \% = 18.9 \% \text{ P}$$

$$\text{O} \quad (64.0 / 164.0) \times 100 \% = 39.0 \% \text{ O}$$

Part 2: Empirical Formulas

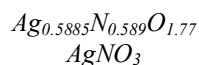
Work each of the following problems. SHOW ALL WORK.

1. Determine the empirical formula of a compound containing 63.50 % silver, 8.25 % nitrogen, and the remainder oxygen.

$$? \text{ mol Ag} = 63.50 \text{ g Ag} \times \frac{1 \text{ mol Ag}}{107.9 \text{ g Ag}} = 0.5885 \text{ mol Ag}$$

$$? \text{ mol N} = 8.25 \text{ g N} \times \frac{1 \text{ mol N}}{14.0 \text{ g N}} = 0.589 \text{ mol N}$$

$$? \text{ mol O} = 28.25 \text{ g O} \times \frac{1 \text{ mol O}}{16.0 \text{ g O}} = 1.77 \text{ mol O}$$



2. A compound is found to contain 63 % manganese, Mn, and 37 % oxygen. What is the compound's empirical formula?

$$? \text{ mol Mn} = 63 \text{ g Mn} \times \frac{1 \text{ mol Mn}}{54.9 \text{ g Mn}} = 1.1 \text{ mol Mn}$$

$$? \text{ mol O} = 37 \text{ g O} \times \frac{1 \text{ mol O}}{16.0 \text{ g O}} = 2.3 \text{ mol O}$$

