

Percent Composition of Compounds

What is the percent composition of each of the following?

1. Methane (CH_4)?

molar mass

$$\text{C} - 12.0 \times 1 = 12.0$$

$$\text{H} - 1.0 \times 4 = 4.0$$

$$\underline{16.0 \text{ g/mol}}$$

$$\frac{12.0 \text{ g C}}{16.0 \text{ g CH}_4} \times 100 = 75.0\% \text{ C}$$

$$\frac{4.0 \text{ g H}}{16.0 \text{ g CH}_4} \times 100 = 25.0\% \text{ H}$$

$$\underline{100.0\% \text{ check } \checkmark}$$

2. Sodium Chloride (NaCl)?

$$\text{Na} - 23.0 \times 1 = 23.0$$

$$\text{Cl} - 35.5 \times 1 = 35.5$$

$$\underline{58.5 \text{ g/mol}}$$

$$\frac{23.0 \text{ g Na}}{58.5 \text{ g NaCl}} \times 100 = 39.3\% \text{ Na}$$

$$\frac{35.5 \text{ g Cl}}{58.5 \text{ g NaCl}} \times 100 = 60.7\% \text{ Cl}$$

$$\underline{100.0\% \checkmark}$$

check

3. Aluminum Phosphate? AlPO_4

$$\text{Al} - 27.0 \times 1 = 27.0$$

$$\text{P} - 31.0 \times 1 = 31.0$$

$$\text{O} - 16.0 \times 4 = 64.0$$

$$\underline{122.0 \text{ g/mol}}$$

$$\frac{27.0 \text{ g Al}}{122.0 \text{ g AlPO}_4} \times 100 = 22.1\% \text{ Al}$$

$$\frac{31.0 \text{ g P}}{122.0 \text{ g AlPO}_4} \times 100 = 25.4\% \text{ P}$$

$$\frac{64.0 \text{ g O}}{122.0 \text{ g AlPO}_4} \times 100 = 52.5\% \text{ O}$$

$$\underline{100.0\% \checkmark \text{ (check)}}$$

4. Dinitrogen trioxide? N_2O_3

$$\text{N} - 14.0 \times 2 = 28.0$$

$$\text{O} - 16.0 \times 3 = 48.0$$

$$\underline{76.0 \text{ g/mol}}$$

$$\frac{28.0 \text{ g N}}{76.0 \text{ g N}_2\text{O}_3} \times 100 = 36.8\% \text{ N}$$

$$\frac{48.0 \text{ g O}}{76.0 \text{ g N}_2\text{O}_3} \times 100 = 63.2\% \text{ O}$$

$$\underline{100.0\% \checkmark}$$

check

