

Name: Key
 Blk: _____ Date: _____

Chemistry 11 PERCENT COMPOSITION

It is sometimes useful to know the percentage, by mass, of a particular element within a chemical compound.

Why?

Suppose you wanted to decompose a compound to be used as a source of oxygen. It would be useful to know the percentage of oxygen that a compound contains.

The **FORMULA** for calculating **PERCENT COMPOSITION** is :

$$\frac{\text{mass of element}}{\text{molar mass of compound}} \times 100\%$$

} always give answer to the 1st decimal place!

Example 1. What is the percent composition of EACH ELEMENT in Copper (II) Sulphide? ∴ CuS

$$\begin{array}{l}
 1 \text{ Cu} = 63.5 \\
 1 \text{ S} = \frac{32.1}{95.6 \text{ g}}
 \end{array}
 \quad
 \begin{array}{l}
 \therefore \% \text{ Cu} = \frac{63.5 \text{ g}}{95.6 \text{ g}} \times 100\% = \boxed{66.4\% \text{ Cu}} \\
 \% \text{ S} = \frac{32.1 \text{ g}}{95.6 \text{ g}} \times 100\% = \boxed{33.6\% \text{ S}}
 \end{array}$$

Example 2. What is the percent composition of IRON in Iron (III) chloride? ∴ FeCl3

$$\begin{array}{l}
 1 \text{ Fe} = 55.8 \text{ g} \\
 3 \text{ Cl} = \frac{106.5 \text{ g}}{162.3 \text{ g}}
 \end{array}
 \quad
 \% \text{ Fe} = \frac{55.8 \text{ g}}{162.3 \text{ g}} \times 100\% = \boxed{34.4\% \text{ Fe}}$$

Example 3. What is percent composition of WATER in Copper (II) Sulphate pentahydrate? ∴ CuSO4 \cdot 5H2O

$$\begin{array}{l}
 1 \text{ Cu} = 63.5 \\
 1 \text{ S} = 32.1 \\
 4 \text{ O} = 64.0 \\
 10 \text{ H} = 10.0 \\
 5 \text{ O} = 80.0
 \end{array}
 \quad
 \begin{array}{l}
 > 90.0 \text{ g} \\
 \% \text{ H}_2\text{O} = \frac{90.0 \text{ g}}{249.6 \text{ g}} \times 100\% \\
 = \boxed{36.1\% \text{ H}_2\text{O}}
 \end{array}$$

