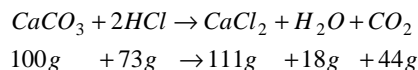


Chemistry Revision Notes – Calculations

- The **atomic mass** of an element is the number of protons + the number of neutrons.
- The weight of **1mol** of an element (in grams) is equal to the atomic mass.
- $\text{Number of moles} = \frac{\text{mass in grams}}{\text{mass of one mole in grams}}$
- In an equation, the mass of the **reactants** is equal to the mass of the **products**.

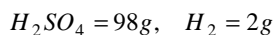
EXAMPLE ONE

$$\therefore 100\text{g CaCO}_3 \rightarrow 111\text{g CaCl}_2$$

$$\therefore 1\text{g CaCO}_3 \rightarrow \frac{111}{100}\text{g CaCl}_2$$

$$\therefore 10\text{g CaCO}_3 \rightarrow \frac{111}{100} \times 10\text{g CaCl}_2 = 11.1\text{g CaCl}_2$$

- $\text{Percentage Composition} = \frac{\text{mass of element in grams}}{\text{mass of compound in grams}} \times 100\%$

EXAMPLE TWO

$$\therefore \text{Percentage of H} = \frac{2}{98} \times 100\% = 2\%$$

- To calculate an **empirical formula**:
 - Write the percentages (or masses) under the symbols.
 - Divide the percentages (or masses) by the atomic mass.
 - Divide by the smallest number to get a simple ratio.
 - Write the numbers to the bottom-right of each element, to get a formula.

EXAMPLE THREE

<i>Fe</i>	<i>Cl</i>
34.5%	65.5%

$\frac{34.5}{56}$	$\frac{65.5}{35.5}$
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0.616	1.85
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$\frac{0.616}{0.616}$	$\frac{1.85}{0.616}$
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1	3
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$$\therefore 1:3$$

$$\therefore \text{FeCl}_3$$

- One mole of any gas occupies **24dm³** (24l) at room temperature and pressure.
- Formulae** are made up of different **elements**, expressed as symbols.
- The bottom-right hand number in a formula, is the number of atoms of that element.