Percentage Composition

Percentage means "out of 100'

If in a test you score 30 / 40, we can convert it to a percentage

$$Percentage = \frac{Score}{possible} \, x \frac{100}{1} = \frac{30}{40} \, x \frac{100}{1} = 75\%$$

The percentage composition of a chemical substance is basically the same, but instead of looking at test scores etc, we look at the **mass percentage**

Example 1

What is the percentage of water in margarine if a 1.30 g mass of margarine contains 0.400 g of water?

%(water) = mass of water / total mass x 100
          = 0.400 g / 1.30 g x 100
          = 30.8 %

In chemistry, we sometimes need to know the percentage of a particular element in a compound

Example 2

What is the percentage of magnesium (Mg) and Chlorine (Cl) in magnesium chloride ($MgCl_2$)?

Hint: Use the molar masses of both Mg and $MgCl_2$

%(Mg)   = m(Mg) / M ($MgCl_2$)

          = 24.0 g mol^{-1} / 95.0 g mol^{-1}

          = **25.3 %** (3sf)

%(Cl)   = m(Cl) / M ($MgCl_2$)

          = 71.0 g mol^{-1} / 95.0 g mol^{-1}

          = **74.7 %** (3sf)