

Introduction to Molarity worked examples

The easiest way to get to grips with molarity is to look at some worked example.

As discussed in the "Introduction to Molarity" lecture molarity is a measure of concentration. That is all it is, it is the number of moles of something per litre of solution.

A 1 Molar (1 M) solution can be described as:

1 mole of a compound made up to a 1 litre solution

And as one mole is the molecular weight of a compound then it can be also stated that a 1 Molar (1 M) solution as:

The molecular weight of a compound made up to 1 litre

Some examples:

If you have a compound with a molecular weight of 10 g/mol then 10 g of the compound, which is 1 mole, made up in a 1 litre solution would give a 1 Molar (1 M) solution.

If you took 5 g of the same compound and made up to 1 litre you would have 0.5 M solution (5 g is half a mole of a compound with a molecular weight of 10 g/mol, and that 0.5 mole is in 1 litre).

If you had 10 g of the compound made up to 2 litre you would have 10 g per 2 litres, which is 5 g per litre. As the molecular weight is 10 g/mol then 5 g is 0.5 moles, and as that 0.5 moles are in 1 litre then the concentration is 0.5 Molar (0.5 M).

So, expressed as an equation this means that:

$$M = m / v$$

Where:

M = molarity (M)

m = moles

v = volume (litre)