MILLIMOLE CALCULATIONS

- When working with solutions, we often express the **volume in milliliters** (mL) rather than in liters.

- Likewise, we may express the amount of **solute in millimoles** (mmol) rather than in moles.

- Because mL is 1/1000 of a Liter and mmol is 1/1000 of a mole, molarity can also be expressed in mmol of solute in mL of solution:

$$\text{molarity} = \frac{\text{mol solute}}{\text{L of solution}} = \frac{\text{mmol of solute}}{\text{mL of solution}}$$

- For problems that involve volume and concentration, solving in terms of millimoles and milliliters often involves more convenient numbers that using moles and Liters.

- It should also be noted that the reactions coefficients in a balanced chemical equation are exactly the same whether we express the amounts in moles or millimoles.

- When solving solution problems, the millimoles of solute can be easily obtained from given data as shown in the examples below.

Examples:
1. How many mmoles of solute are present in 125 mL of 0.100 M HCl solution?

$$125 \text{ mL x } \frac{0.100 \text{ mmol}}{1 \text{ mL}} = 12.5 \text{ mmol HCl}$$

2. If 100. mL of 1.00 M HCl is added to 100. mL of 0.80 M NaOH, what are the molarities of the solutes in the solution after all reaction has completed?

	HCl	+	NaOH	→	NaCl	+	H$_2$O
Start							------
Change (Δ)							-------
End							-------