**Dissociation, Ions, and Indicators**

**Dissociation**:

**Examples**

\_\_\_\_\_\_\_\_\_\_\_\_\_ Acids/Bases are acids/bases that **fully** **dissociate** in water.

\_\_\_\_\_\_\_\_\_\_\_\_ Acids/Bases are acids/bases that **dissociate** some, but some particles will remain bonded

**Note**:

Water will dissociate too. The H2O would (or seen as HOH) will separate into an H+ and an OH-. They would quickly combine with other molecules of water temporarily forming an H3O+ before an OH- will take back one hydrogen.

**Ion Production and pH**

As we have seen, acids produce \_\_\_\_\_\_ ions when they dissociate and bases produce \_\_\_\_\_ ions when dissociated.

**Note**:

A substances’ pH is related to their **concentration** of H+ ions.

* The pH is the negative log of the H+ concentration

**Simple Examples:**

We’ve put HCl in a beaker of water so there is a concentration of $1×10^{-3}M $H+ ions.

The pH is\_\_\_\_\_\_\_\_\_.

A HF solution has a H+ concentration of $1×10^{-5}M$.

The pH is \_\_\_\_\_\_\_\_\_\_.

When a base is added to water, it will increase the concentration of OH- ions. This will reduce the H+ concentration.

Some NaOH is put in a solution, the H+ concentration falls to $1×10^{-12}M$.

The pH is \_\_\_\_\_\_\_\_\_\_\_\_.

Neutral is when the concentration of H+ ions and OH- ions are the same. At room temperature this is when H+ has a concentration of $1×10^{-7}M$, hence pH 7.

**How Indicators Work**

Indicators are weak acids or bases that change colour when they chemically gain/lose an ion.

Example: **Litmus**

Litmus is a weak acid. It is a complicated molecule which we will simplify to **HLit**. The "**H**" is the **H+** ion that can be dissociated. The "**Lit**" is the rest of the weak acid molecule.

When in a solution it will want to form equilibrium. Its equilibrium depends on having a specific concentration of H+ ions in the solution.

If in an acid:

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If in a base:

