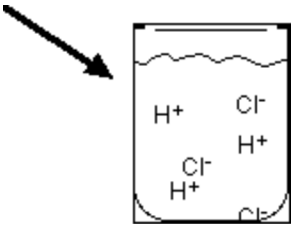
Acids Bases and pH Scale

I. Acids

*Acids are ionic compounds (a compound with a positive or negative charge) that break apart in water to form a hydrogen ion (H^+).

*The strength of an acid is based on the concentration of H^+ ions in the solution. **The more H^+ the stronger the acid.**
Example: HCl (Hydrochloric acid) in water



Characteristics of Acids:
**Acids taste sour
**Acids react strongly with metals (Zn + HCl)
**Strong Acids are dangerous and can burn your skin

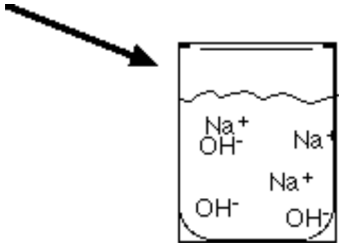
Examples of Acids:
1. Vinegar 3. Citrus Fruits
2. Stomach Acid (HCl)

II. Bases

*Bases are ionic compounds that break apart to form a negatively charged hydroxide ion (OH^-) in water.

*The strength of a base is determined by the concentration of Hydroxide ions (OH^-). **The greater the concentration of OH^- ions the stronger the base.**

Example: NaOH (Sodium Hydroxide-a strong base) in water



Solutions containig bases are often called ***alkaline*.

Characteristics of Bases:
**Bases taste bitter
**Bases feel slippery
**Strong bases are very dangerous and can burn your skin
Examples:
1. lye (Sodium Hydroxide)
2. Ammonia

III. Neutralization Reactions

** When acids and bases are added to each other they react to neutralize each other if an equal number of hydrogen and hydroxide ions are present.
When this reaction occurs -salt and water are formed.

$$\mathbf{HCl + NaOH \rightarrow NaCl + H_2O}$$

(Acid) (Base)---(Salt) (Water)

What are some useful applications of this reaction?

IV. pH Scale and Indicators

**The strength of an acid or base in a solution is measured on a scale called a pH scale.
**The pH scale is a measure of the hydrogen ion concentration. It spans from 0 to 14 with the middle point (pH 7) being neutral (neither acidic or basic).
Any pH number **greater than 7** is considered a **base** and any **pH number less than 7** is considered an **acid**. 0 is the strongest acid and 14 is the strongest base.

Indicators-- An indicator is a special type of compound that changes color as the pH of a solution changes, thus telling us the pH of the solution.

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