ACIDS, BASES, & BUFFERS

B3: Describe the role of acids, bases, and buffers in biological systems in the human body

ACIDS

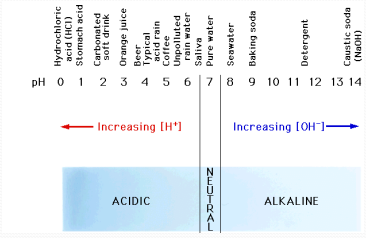
- Molecules that dissociate (break apart) in water to release H^+ ions
- Example: HCl → $H^+ + Cl^-$
- Acids have a pH of less than 7
- The higher the concentration of H^+ ions the stronger the acid
- Stronger acids have a lower the pH

BASES

- A base is a molecule that dissociates (breaks apart) in water to release OH^- ions
- Example: NaOH →$Na^+ + OH^-$
- Bases have a pH of greater than 7
- The strength of a base depends on the concentration of OH^- ions → the higher the concentration of OH^- the stronger the base.
- Stronger bases have higher pH values

pH

- pH is a scale that measures the concentration of H^+ ions in a solution



BUFFERS

- Slight changes in pH can be harmful to living things
- Buffers minimize changes in the concentrations of H^+ and/or OH^-
- Buffers are compounds that take up excess H^+ or OH^- or donate H^+ or OH^-
- Example: hemoglobin in blood picks up and transports excess H^+ ions to help maintain a consistent pH in our blood