The student is expected to:

TEKS 4B investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules and 9A compare the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids

2.2 Properties of Water

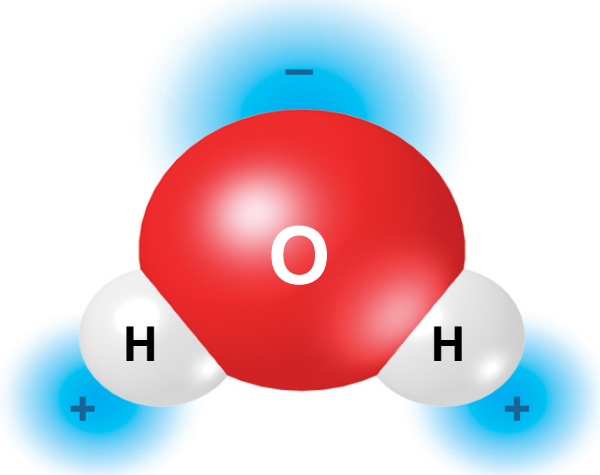
TEKS 4B, 9A

KEY CONCEPT

Water's unique properties allow life to exist on Earth.

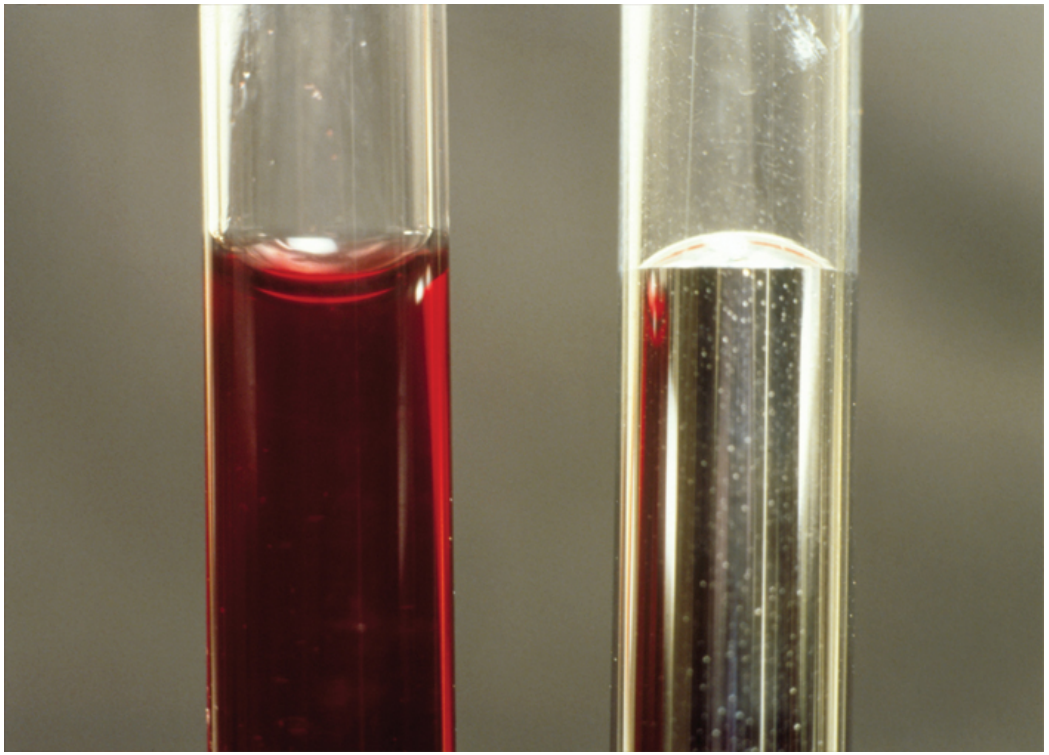
Life depends on hydrogen bonds in

- **Water is a polar molecule.**
  - Polar molecules have slightly charged regions.

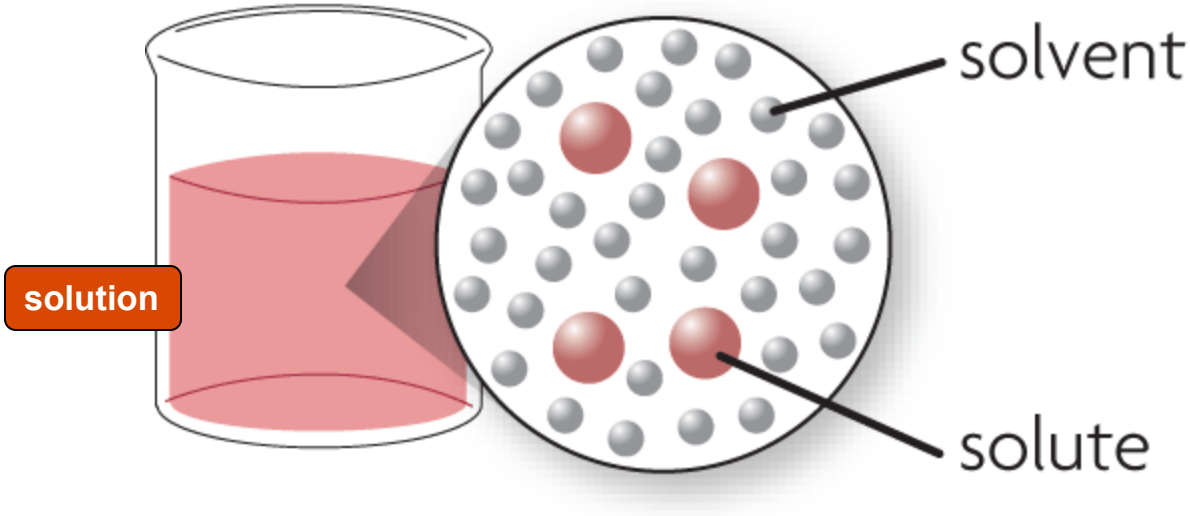


  - Nonpolar molecules do not have charged regions.
  - Hydrogen bonds form between slightly positive hydrogen atoms and slightly negative atoms.

- **Hydrogen bonds are responsible for three important properties of water.**
  - high specific heat
  - cohesion
  - adhesion

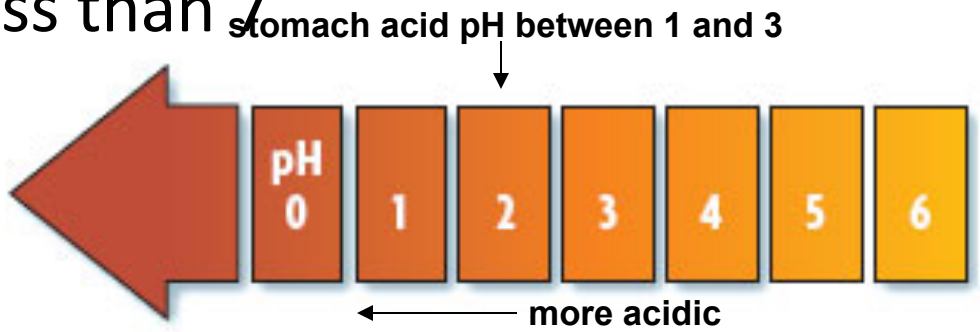


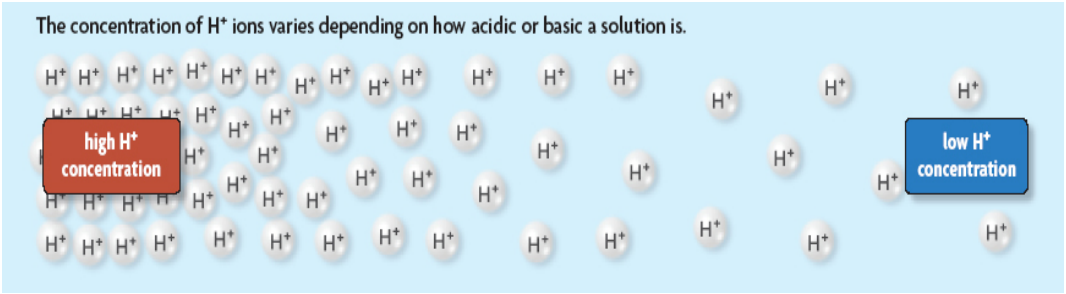
- **A solution is formed when one substance dissolves in another.**
  - A solution is a homogeneous mixture.
  - Solvents dissolve other substances.
  - Solutes dissolve in a solvent.



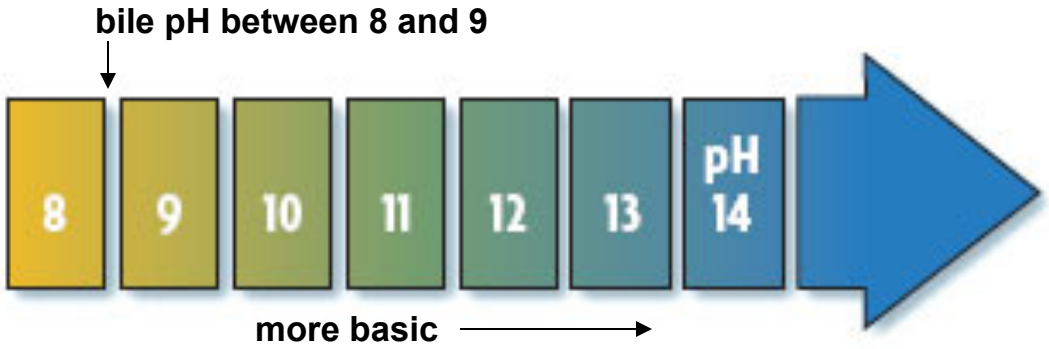
- **"Like dissolves like."**
  - Polar solvents dissolve polar solutes.
  - Nonpolar solvents dissolve nonpolar solutes.
  - Polar substances and nonpolar substances generally remain separate.

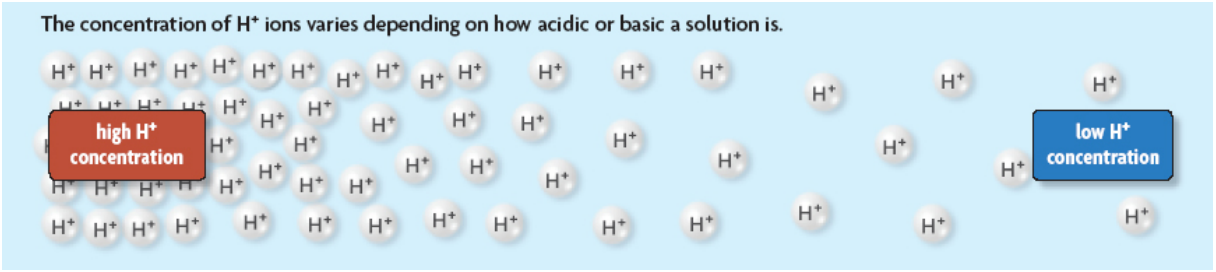
- **An acid releases a hydrogen ion when it dissolves in water.**
  - high H^+ concentration
  - pH less than 7



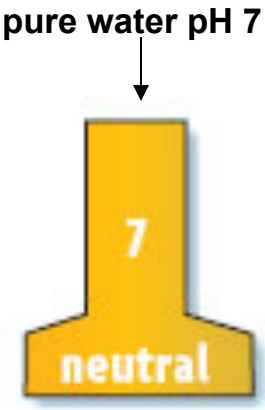


- A base removes hydrogen ions from a solution.
  - low H^+ concentration
  - pH greater than 7





- A neutral solution has a pH of 7.



The concentration of H^+ ions varies depending on how acidic or basic a solution is.