**What are the properties of water?**

-Water is the solvent of Life!

-Solute: substance dissolved in solvent to form a solution

-Solvent: fluid that dissolves solutes

-*Cohesion:* water attracted to other water molecules because of polar properties

-*Adhesion*: water attracted to other materials

-*Surface Tension:* water is pulled together creating the smallest surface area possible

-Capillary Action:

 Because water has both adhesive and cohesive properties, *capillary action* is present.

 *Capillary Action*: water’s adhesive property is the cause of capillary action. Water is attracted to some other material and then through cohesion, other water molecules move too as result of the original adhesion.

 Ex: Think water in a straw

-High Heat Capacity:

 In order to raise the temperature of water, the average molecular speed has to increas.

 It wakes much more energy to raise the temperature of water compared to other solvents because hydrogen bonds hold the water molecules together!

 Water has a *high heat capacity.*

 “The specific heat is the amount of heat per unit mass required to raise the temperature by one degree Celsius.”

-Density:

 Water is less dense as a solid! This is because the hydrogen bonds are stable in ice - each molecule of water is bound to four of its neighbors.

 Solid- water molecules are bonded together - space between fixed

 Liquid- water molecules are constantly bonding and rebonding - space is always changing

-The ocean moderates coastal temperatures:

 Water has high heat capacity, so it can absorb (or release) large quantities of heat without changing temperature

-Salinity:

 Total amount of solid material dissolved in water

 Can be determined by measuring water conductivity

 Average seawater salinity= 35%

 Main constituents of ocean salinity:

 Chloride (Cl-)

 Sodium (Na+)

 Sulfate (SO4^2-)

 Magnesium (Mg^2+)

-Processes affecting seawater salinity:

 Decrease:

 Precipitation

 Runoff

 Icebergs melting

 Sea ice melting

 Increase:

 Sea ice forming

 Evaporation

-Surface salinity variation:

 Pattern of Surface salinity:

 Lowest in high latitudes

 Highest in the tropics

 Dips at the Equator

-Seawater density:

 Factors-

 Temperature (increases), Density (decreases) -Inverse relationship

 Salinity (increases), Density (increases)

 Pressure (increases), Density (increases)

 Temperature has the greatest influence on surface seawater density