Molecule of Life- Water

* H2O is a \_\_\_\_\_\_\_\_\_\_\_\_ molecule.
	+ The \_\_\_\_\_\_\_\_\_\_\_ does \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ the electrons \_\_\_\_\_\_\_\_\_\_\_ with H and creates an area of charge
	+ The area of charge (poles) creates a force called a Hydrogen bond.
	+ +H attracted to –O
	+ creates a \_\_\_\_\_\_\_\_\_\_ molecule
* Special properties of water

1. cohesion & adhesion

2. good solvent-

3. lower density as a solid

4. high specific heat

5.high heat of vaporization

1-Cohesion and Adhesion

* Cohesion
	+ Hydrogen bonding \_\_\_\_\_\_\_\_\_\_\_ H2O molecules
	+ water is “sticky”
		- \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_
		- drinking straw
* Adhesion
	+ H bonding between H2O & \_\_\_\_\_\_\_\_\_ substances
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ action
		- meniscus
		- water climbs up
		paper towel or cloth

 Transpiration-

2-Water is the \_\_\_\_\_\_\_\_\_\_\_\_ of life

* Polarity makes H2O a good \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ polar H2O molecules surround \_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_ ions
	+ solvents \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ solutes creating solutions



What is the solute?

How is the water turned?

What dissolves in water?

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ substances have attraction to H2O

polar or non-polar?

* Hydrophobic
	+ substances that \_\_\_\_\_\_\_\_\_\_ have an attraction to H2O

polar or non-polar?

3- Ice

* Most (all?) substances are \_\_\_\_\_\_\_\_\_\_\_\_ dense when they are solid, but not water…
* Ice \_\_\_\_\_\_\_\_\_\_\_\_! H bonds form a crystal. How is this a benefit?



4- Specific Heat

* H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ changes in temperature
	+ high specific heat
	+ takes a lot to heat it up
	+ takes a lot to cool it down
* H2O moderates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on Earth

5- High Heat of Vaporization- heat is absorbed as the substance evaporates.

 Evaporation \_\_\_\_\_\_\_\_\_\_ body heat and \_\_\_\_\_\_\_ the organism.

 How do we cool off?

Water and the pH scale

* Water \_\_\_\_\_\_\_\_\_\_\_\_\_
	+ H+ splits off from H2O, leaving OH–
		- if [H+] = [-OH], water is\_\_\_\_\_\_\_\_\_\_\_\_\_
		- if [H+] > [-OH], water is \_\_\_\_\_\_\_\_\_\_\_\_\_
		- if [H+] < [-OH], water is \_\_\_\_\_\_\_\_\_\_\_\_\_
* pH scale- measures the H+ in solution
	+ how acid or basic a solution is
	+ Sometimes when substances are dissolved in water they \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ extra H+ or OH-
* pH of cells must be kept ~\_\_\_\_\_\_\_\_
	+ pH affects \_\_\_\_\_\_\_\_\_\_\_\_\_ of molecules
	+ shape of molecules \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_
	+ pH affects \_\_\_\_\_\_\_\_\_\_\_\_ function