Properties of Water

**Water and Life**

* 1. **Solvent:** Water is a polar molecule which allows it to attract other polar water molecules allowing for its properties as a **solvent**.
	2. **Temperature:** Water molecules held together through weak attractive forces allow it to absorb energy in the form of heat slowly and lose this same energy slowly. **Helping maintain homeostasis**.
		1. **Temperature** = measurement of energy of molecules in motion.
	3. **Cohesion:** molecules resist separation from one another.
1. **Water as a Solvent (Hydrogen Bonds):**
	1. Oxygen combines with hydrogen to form two covalent bonds.
	2. The arrangement of the electrons as a result give hydrogen a partially positive charge and oxygen a partially negative charge.
	3. Polar Molecule: water is a polar molecule because it has two partially positive hydrogen ends and one partially positive oxygen end.
	4. Hydrogen bonds: a slight attraction between partially positive hydrogen and partially negative oxygen molecules.
	5. Hydrophilic “water loving”: molecules such as sugars form hydrogen bonds with water and thus can be dissolved and water acts as a **solvent**.
	6. Hydrophobic “water dreading”: water does not form hydrogen bonds with non-polar molecules.
2. **Temperature:**
	1. Evaporation – as water molecules gain energy in the form of heat they break hydrogen bonds. This in-turn releases energy into the environment and decreases the temperature of surface water.
	2. Water absorbs energy in the form of heat slowly and releases energy slowly helping to maintain **homeostasis**.
3. **Cohesion:**
	1. Plants use cohesion to draw columns of water up from roots to leaves.
	2. **Adhesion** – when molecules adhere to different molecules.
	3. **Surface tension** – hydrogen bonds between water molecules prevent the surface of water from stretching and breaking.

