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| **Marine Science****UNIT: properties of water** | **Essential Question:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **Name:** |
| **Class:** |
| **Period:** |
| **Date:**  |
| **Questions** | **Notes** |
| Water Cycle | Diagram: |
| Earth’s water budget | * Ocean - \_\_\_\_ % of all water on Earth
* Determines
* Has changed in

  |
|  | * Molecule –
* Water molecule –
 |
| Bonding | Covalent bond between oxygen and hydrogen*

Sketch:The polar (dipolar) molecule*

Sketch:Hydrogen bonds connecting water molecules*

Sketch:Hydrogen bonds are weak, easily broken.   |
| What is the difference between temperature and heat? | Temperature – How fast are the particles moving? The \_\_\_\_\_\_\_\_ they are moving, the \_\_\_\_\_\_\_\_\_\_\_\_ the temperature. Heat – Measured in \_\_\_\_\_\_\_\_\_\_\_\_\_ - The amount of heat necessary to raise the temperature of one gram of water 1 degree Celsius.Heat is transferred from a substance of \_\_\_\_\_\_\_\_\_\_\_ temperature to a substance of \_\_\_\_\_\_\_\_\_\_\_\_ temperature. |
| Three states of water | Water is the only substance that naturally occurs in all three states on Earth. It resists changes in temperature because of the hydrogen bonds.Freezing - Evaporation –  |
| Water’s Density  | * + Above \_\_\_\_\_ºC-Density increases w/ decreasing Temperature
	+ \_\_\_ºC & below- reverses
	+ At \_\_ºC molecules form a crystal structure-
 |
| More about the three states of water | * + Water is extremely unusual in being \_\_\_\_\_\_\_\_\_\_\_\_ as a solid than as a liquid.
	+ A floating layer of ice \_\_\_\_\_\_\_\_\_ the water below it so that it doesn’t freeze.
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_ can live in the liquid water below the layer of ice.
 |
| Specific heat | * + Ice melts at a much \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than similar substances because of its hydrogen bonds.
	+ Ice also absorbs a lot of heat when it melts because of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Water has a high specific heat.
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the amount of energy required to raise a mass of substance one degree Celsius.
 |
| Heat capacity | * + The amount of heat needed to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ Water has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ Water’s heat capacity \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
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| Cohesion  | * + Cohesion is the sticking together of particles of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ Because water contains a large number of hydrogen bonds, water has \_\_\_\_\_\_\_\_\_\_\_\_cohesion than other liquids.
 |
| Adhesion  | * + the property of water molecules being attracted to **\_\_\_\_\_\_\_\_** types of molecules.
	+ Causes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ The ability of water to crawl up a very skinny tube.
	+ This is because the water molecules are being attracted to the \_\_\_\_\_\_\_\_\_\_\_ of the glass tube.
 |
| Surface tension  | * + \_\_\_\_\_\_\_\_\_– water’s resistance to objects attempting to penetrate its surface. It is a strong, flexible \_\_\_\_\_\_\_\_ over water surface caused \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
 |
| Water as a solvent | * + Water also acts as a \_\_\_\_\_\_\_\_\_\_, which means that substances can \_\_\_\_\_\_\_\_ in water. Water is known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ Water is good at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which are made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (electrically charged particles).
	+ The ions in salt pull apart, or \_\_\_\_\_\_\_\_\_\_\_\_, when the salt dissolves in water.
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| Summary:  |