**Properties of Water Worksheet Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per \_\_\_\_**

**HPS 2020**
Objective 3: Outline the properties of water which make it unique and important to life on Earth. (Ch 25.4 in Geoscience textbook)

Word Bank: Covalent solvent deposition dissolve cohesion surface cooler universal
 tension polar viscosity condensation negatively adhesion positively sublimation

1. The hydrogen and oxygen atoms are held together by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonds.

2. The electrons are not shared equally creating a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecule.

3. The polarity of water allows it to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_most substances. Because of this

it is referred to as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. Water molecules stick to other water molecules. This property is called\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. Hydrogen bonds form between adjacent water molecules because the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

charged hydrogen end of one water molecule attracts the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charged

oxygen end of another water molecule.

6. Water molecules stick to other materials due to its polar nature. This property is called

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ creates the skin-like surface

formed due to the polar nature of water.

8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the tendency for fluids to resist flow.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ water is more viscous than warmer water, allowing floating

organisms to use less energy to keep from sinking.

9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is when water changes from a gas to a liquid.

10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is when water changes from a solid directly to a gas.

11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is when water changes from a gas directly to a solid.

12. Why does ice float?

13. List the properties that ocean water has due to the fact that it contains salt.

Life as we know it could not exist without water. All the chemical reactions of life occur in aqueous solution. Water molecules are polar and are capable of forming hydrogen bonds with other polar or charged molecules. As a result, water has the following properties:

A. H20 molecules are cohesive; they form hydrogen bonds with each other.
B. H2O molecules are adhesive; they form hydrogen bonds with polar surfaces.
C. Water is a liquid at normal physiological (or body) temperatures.
D. Water has a high specific heat.
E. Water has a high heat of vaporization (energy needed to evaporate).
F. Water’s greatest density occurs at 4°C.

Explain how these properties of water are related to the phenomena described below. More than one property may be used to explain a given phenomenon.

14. During the winter, air temperature in the northern United States can remain below 0°C for

months; however, the fish and other animals living in the lakes survive.

15. Many substances – for example, salt (NaCl) and sucrose – dissolve quickly in water.

16. When you pour water into a 25-ml graduated cylinder, a meniscus forms at the top of the

water column.

17. Sweating and the evaporation of sweat from the body surface help reduce a human’s body

temperature.

18. Water drops that fall on a surface tend to form rounded drops or beads.

19. Water drops that fall on your car tend to bead up or round up more after you polish (or

wax) that car than before you polished it.

20. If you touch the edge of a paper towel to a drop of colored water, the water will move up

into (or be absorbed by) the towel.