

Properties of Water Lab

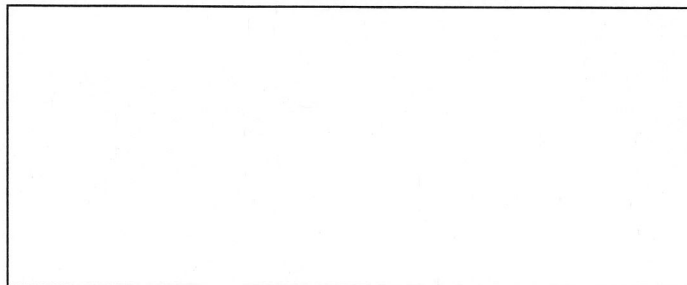
SECTION 1 – Water is a polar molecule and has a very unique structure.

Answer the following questions from the reading provided.

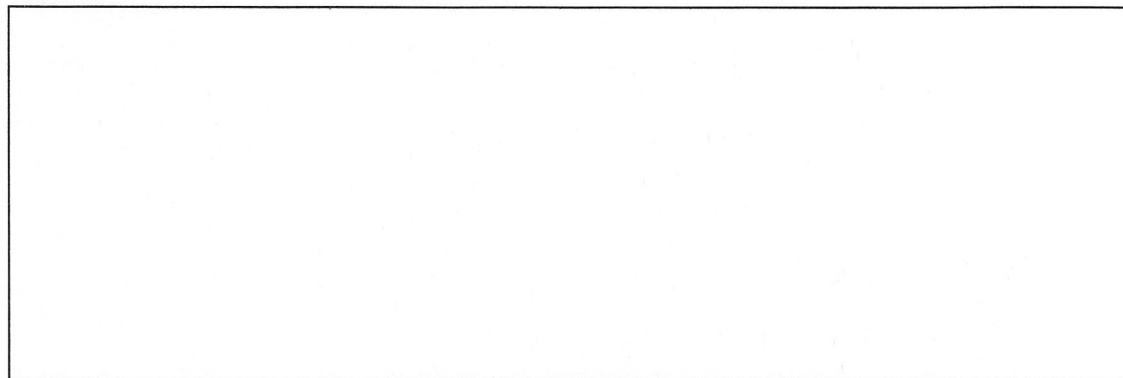
1. What makes a molecule polar?
2. Name the elements that make up water.
3. What charge does the hydrogen atoms have in a molecule of water?
4. What charge does the oxygen atom have in a molecule of water?
5. The _____ atom of one water molecule will bond with _____ atoms of other water molecules.
6. What are the bonds called between the hydrogen & oxygen atoms?

Answer the following questions after completing the activity.

1. Using the model provided, draw one molecule of water and **label** the hydrogen and oxygen atom. **Label** the positive (+) region of the molecule and the negative (-) region of the molecule.



2. Refer to figure 2, and draw 5 molecules of water bonded together with hydrogen bonds. **Label** one hydrogen bond, oxygen atom, and hydrogen atom.



STATION 2 – Water is the universal solvent.

Answer the following questions from the reading provided.

1. Define mixture.
2. What are the two types of mixtures?
3. What is a solution?
4. Define solute.
5. Define solvent.
6. Why is water considered the greatest solvent on Earth?

Answer the following questions after completing the activity.

1. Describe the appearance of the test tube with oil and salt. (Use complete sentences and be detailed)
2. Describe the appearance of the test tube with water and salt. (Use complete sentences and be detailed)

STATION 3 – Water has the properties of adhesion and cohesion.



Answer the following questions from the reading provided.

1. How many hydrogen bonds can a single water molecule have?
2. Define cohesion.
3. Define adhesion.

Answer the following questions after completing the activity.

	Plain Water	Soapy Water
Number of Drops that Fit on a Penny		

What does the solution look like on the penny?

Water	Soapy Water
	

1. What property of water allows the water to stick to the penny?
2. What property of water allows the water to form a dome-like structure on top of the penny?
3. Explain why the penny could hold more drops of plain water than soapy water.

STATION 4 – Water is less dense as a solid than a liquid.

Answer the following questions from the reading provided.

1. What does it mean that ice is less dense than liquid water?
2. What causes the ice to float on water?
3. When a lake freezes, how does the density of water prevent all of the living organisms in the lake from freezing as well?

Answer the following questions after completing the activity.

- Using figure 1 as a reference to draw the structure of the molecules of water in liquid form and in solid form in the table below.

Liquid Water	Solid Water

STATION 5 – Water has a strong surface tension.

Answer the following questions from the reading provided.

- What property of water gives it a high surface tension?
- How does water hold up materials that is heavier than itself?

Answer the following questions after completing the activity.

	Plain Water	Soapy Water
Number of Paperclips that floated		

- What property of water allows the paper clips to be attracted to the plain water?
- How did the soap affect the paper clip's ability to float?

STATION 6 – Water has a high heat of vaporization

Answer the following questions from the reading provided.

- Define heat of vaporization.
- What causes water to have a high heat of vaporization?
- What happens to the surface when water evaporates?
- Complete the data table to the right.

	Time (seconds)
Water	
Rubbing Alcohol	