Internet Assignment: Properties of Water

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_\_\_\_

Go to the website below answer the questions as you go.

<http://www.sumanasinc.com/webcontent/animations/content/propertiesofwater/water.html>

1. What is the main reason we say life is based on water
2. Sketch the models of water
   1. Molecular
   2. Structural
   3. Ball & stick
   4. space filling
3. Why is water a good solvent for many organic solutes?
4. What do the lines in the ball & stick model represent?
5. Sketch 3 water molecules showing covalent bonds as solid lines and hydrogen bonds as dashed lines
6. Sketch 6 water molecules showing the hydration shells that would form as sodium chloride dissolves in water. (label all atoms and again use solid lines for covalent bonds and dashed lines as hydrogen bonds)
7. What property allows ice to float on water (a), and (b) what is responsible for this property?
   1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. Each water molecule forms how many hydrogen bonds with adjacent water molecules?\_\_\_\_\_\_\_
9. What bonds are broken as:
   1. ice melts 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Water evaporates 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. What is specific heat capacity?
11. Why does water have such a high specific heat capacity?
12. What is entropy?
13. List the following from most entropy to least entropy: liquid water, water vapor, ice
14. Sketch the completed entropy graph in the middle of the screen
15. How does temperature affect entropy?