1. Illustrate the difference in heating a mass of water to boiling compared to a different substance with a lower heat of vaporization.

2. Illustrate the change in density of a mass of water as it freezes.

3. What is the specific heat of water? How much energy would be required to increase the temperature of 2 g of water by 1 °C?

4. Illustrate the interaction between water molecules inside of a water drop.

5. Ethanol has a higher vapor pressure than water. In a solution of water and ethanol, compare the partial pressures of the vapors of the two substances. Which is higher and why?

What Makes Water Special

1. Water has a high heat of vaporization and ____________________
   • ____________________ is the amount of heat that must be absorbed for a quantity of water to vaporize at a constant temperature.
   • Therefore, it takes a great amount of ________ for water to make this phase change, relative to other substances.

2. The density of water _______________ as it solidifies
   • We know that solids are supposed to be ________ dense than liquids, but unlike most other substances on earth, water actually ________ as it freezes (meaning that while mass stays the same, the volume ________).
   • Therefore, the density of water actually ________ as it freezes.

3. Water has a very high ____________________
   • Specific Heat - The amount of ________ required to increase the temperature of ________ of a substance by ________

4. Water has ________ surface tension
   • Surface tension is the ________ force at the surface of a liquid that serves to reduce surface area. Because water has unusually high surface tension, this force is even stronger than it is in other substances.

5. Water has a very ________ vapor pressure
   • The pressure exerted by a ________ (gas) that is in contact with its liquid (or solid) form and is ________ between the two phases is referred to as the ____________________.