World of Chemistry Video Name_____
The Unique Properties of Water Period _____ Date_____

Water is a liquid at room temperature:

1) O_2, N_2, and CO_2 all have low molar masses, so it makes sense that they are all gases at room temperature. Water also has a low molar mass, **but** water is a liquid at room temperature. Answer these questions to determine why.
   a) O_2, N_2, and CO_2 are **all (nonpolar, polar**). Intermolecular bonding?_____
   b) Water **is (nonpolar, polar**). Intermolecular bonding ?_____
   c) Explain why water normally stays as a liquid on earth instead of being a gas like the others.

Density of Ice:

2) Why is it so important that ice floats on water?

3) a) For almost all substances, the solid state is (**more, less)** dense than the liquid state.
   b) However, for water, the solid state is **(more, less)** dense than the liquid state.

4) Why is solid ice less dense than liquid water? (Hint: Describe molecular structure of ice.)

5) What is similar about the molecular structure of ice and snowflakes?

6) Why is a protein from bacteria added to snow making machines?

Solubility of water:

7) Why is water able to dissolve both ionic (ex: NaCl) and polar substances (alcohol)?

8) What type of substance doesn't water mix with?_____
9) Water can dissolve a large variety of substances. (Thus, it is sometimes called the *universal solvent*.)
   a) List some benefits of this.

   b) List some dangers of this.

10) List the three steps used in water treatment plants to clean our drinking water