



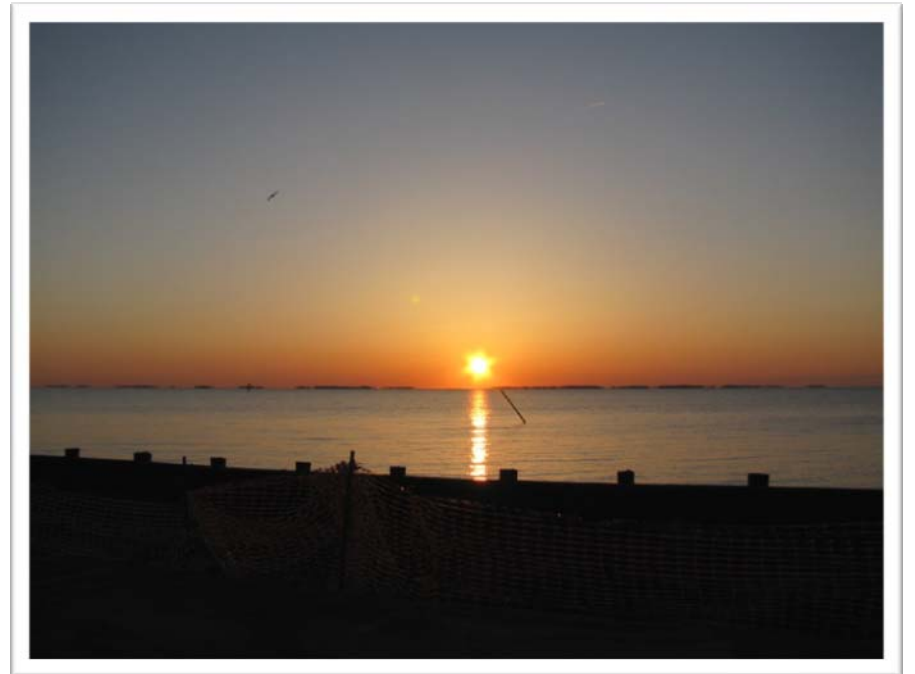
Water and Its Importance

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Name the most important
compound in living organisms

WATER





What percentage does this most important compound make up in most organisms?

- 70 – 95 percent



How does this affect you?

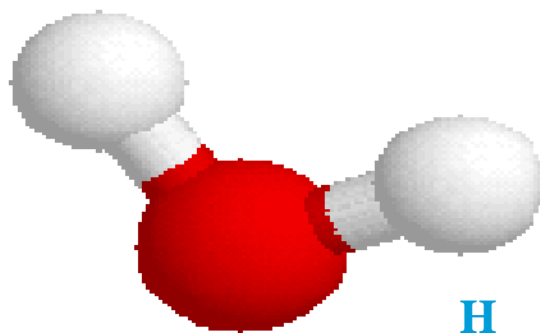
- Allows molecules and ions to collide
- Helps transport materials such as blood.



Write the chemical formula for
a water molecule.



H



H

O



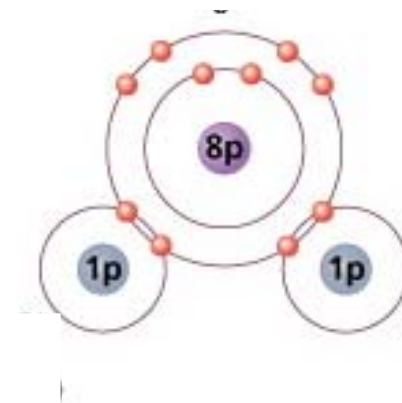
Name the type of bond found in a water molecule.

Covalent Bonds



Describe how the electrons are shared between H and O atoms in a water molecule.

In a covalent bond between hydrogen and oxygen, the electrons spend more time near the negative oxygen nucleus than the positive hydrogen nucleus.





Define polar molecule

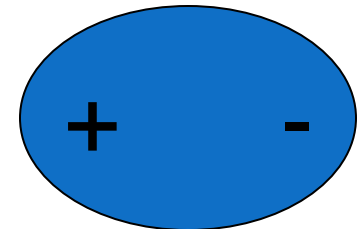
- Is a molecule that has an **unequal distribution** of charge; that is, each molecule has a **positive end** and a **negative end**.



What does that really mean?



- Has unequal sharing of electrons which forms shape.
- “V” shape allows water to attract to **other polar molecules** and **water molecules**.
- That’s why water is known as a “**UNIVERSAL SOLVENT**”
 - Dissolves a **whole** range of substances.





Name the weak bond that can form between polar molecules and molecules themselves.

Hydrogen Bonds



Define **nonpolar molecules**. Hint: Think about the definition for polar molecules.

- A molecule with **equal** distribution of charges.



💡 **Linear shape**

- Therefore it is only attracted to other nonpolar molecules.



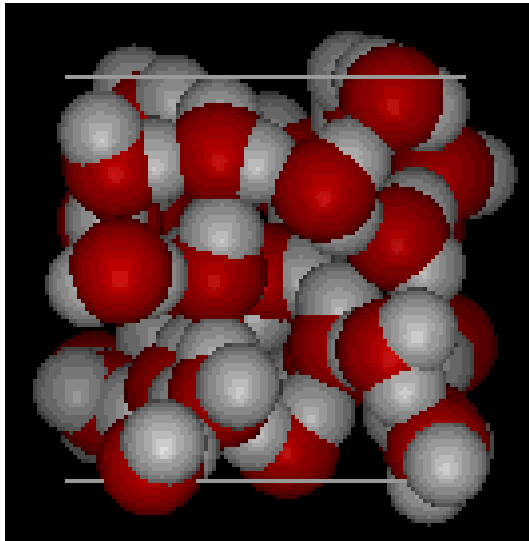
Define density.

- Mass per unit volume.
 - $D = M/V$

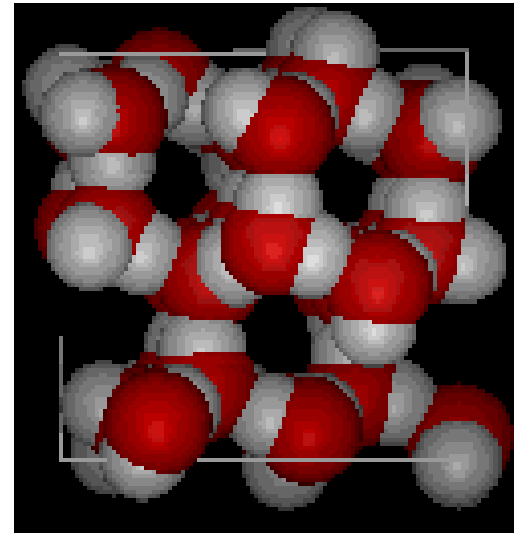


Who has the greater density, Ice or Liquid Water?

Water

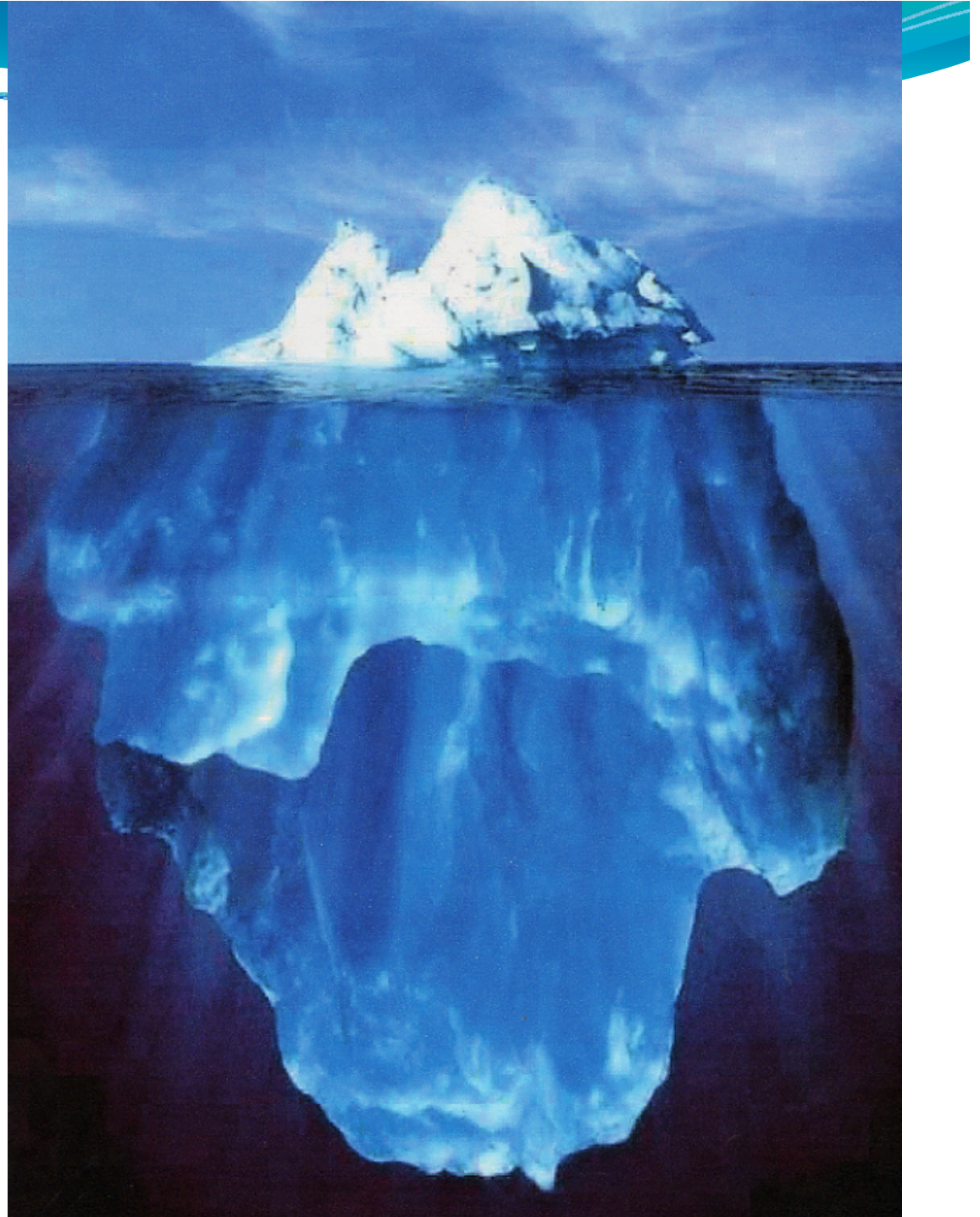


Ice



- 💡 Water expands as it freezes vs Liquid Water
 - Mole molecules; heavier the mass.

**If density of
object is equal
to or less than
water it will
float**





What does it mean by the phrase,
“water can resist changes in temperature?”

- Water resists changes in the environment.
- Requires more heat to increase its temperature and it loses a lot of heat when it cools.



Specific Heat

- Amount of heat that must be absorbed or lost by 1 gram of substance to change its temperature 1°C because of hydrogen bonds



When you go the beach in mid July or August, which is hotter, sand or the ocean?

Sand

- Water has a **higher** specific heat than sand. Takes more energy to raise temperature.



Who has milder temperatures; coastal cities (e.g. Ocean City) or cities not located near large bodies of water (Salisbury)?

Ocean City

- Once again large bodies of water need lots and lots of energy to raise temperatures.