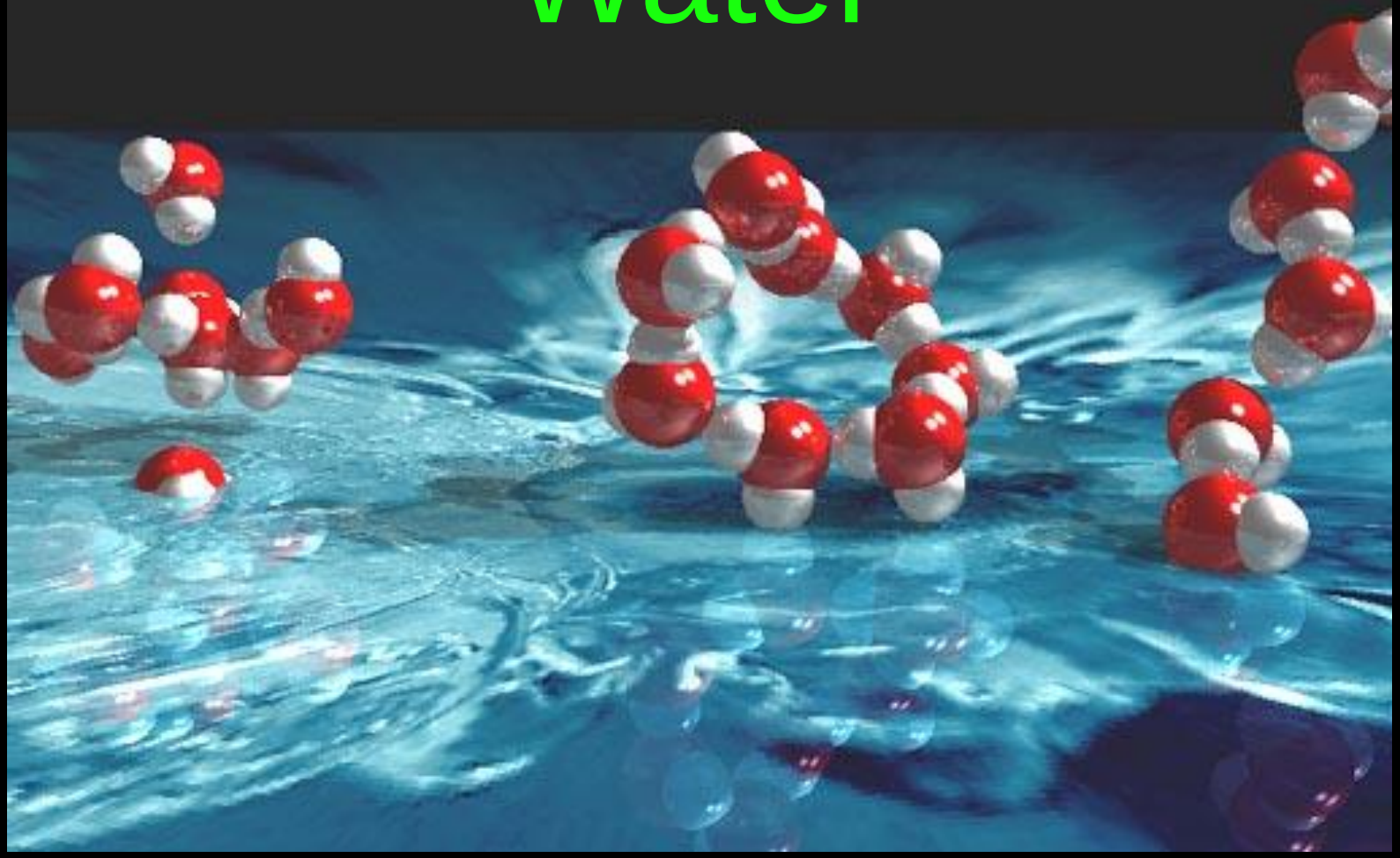
Water



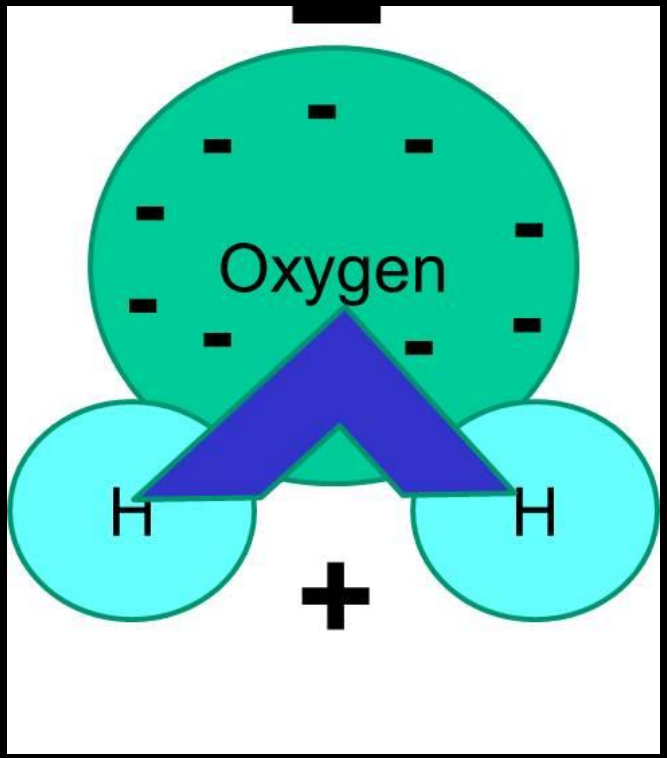
Learning Objectives

- Explain what polar is and why a water molecule is polar.
- Describe the properties of water.

Why is water important?

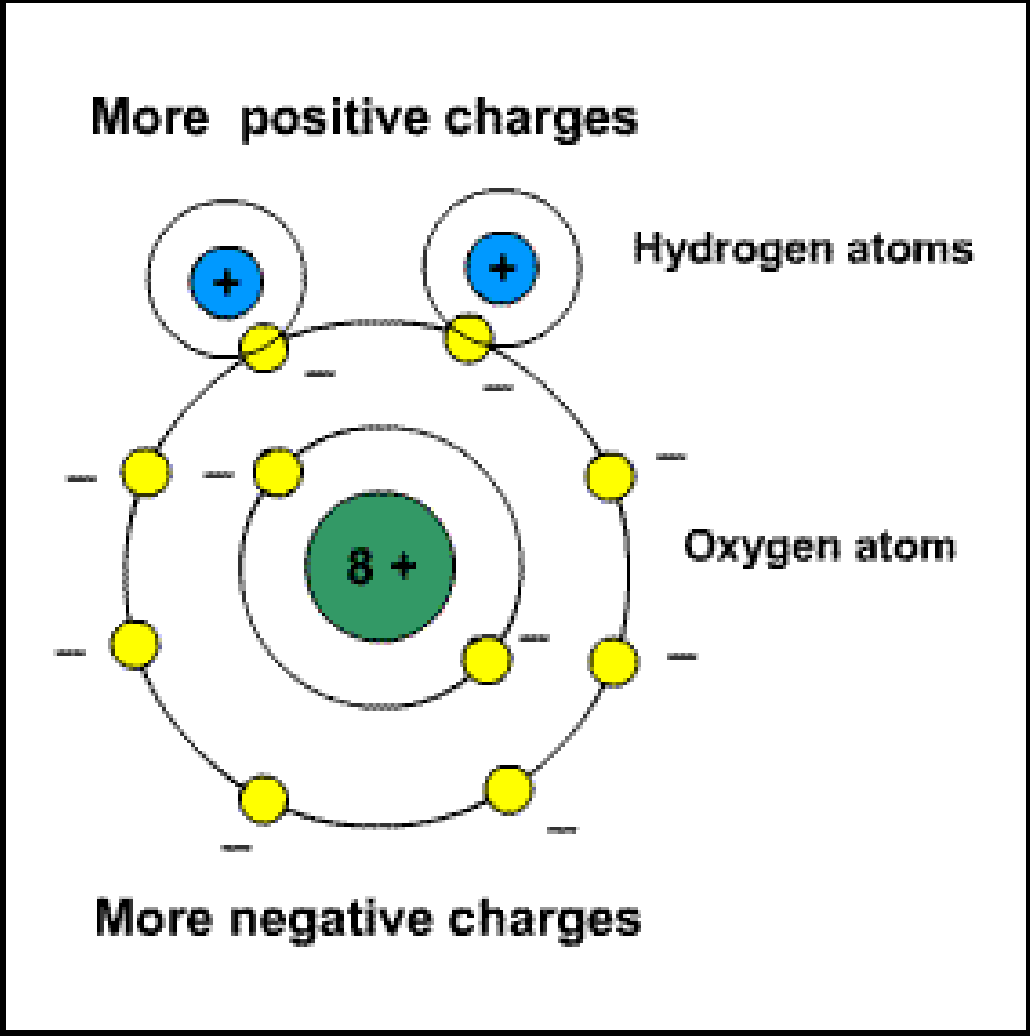
All living things need water

What is a polar molecule?



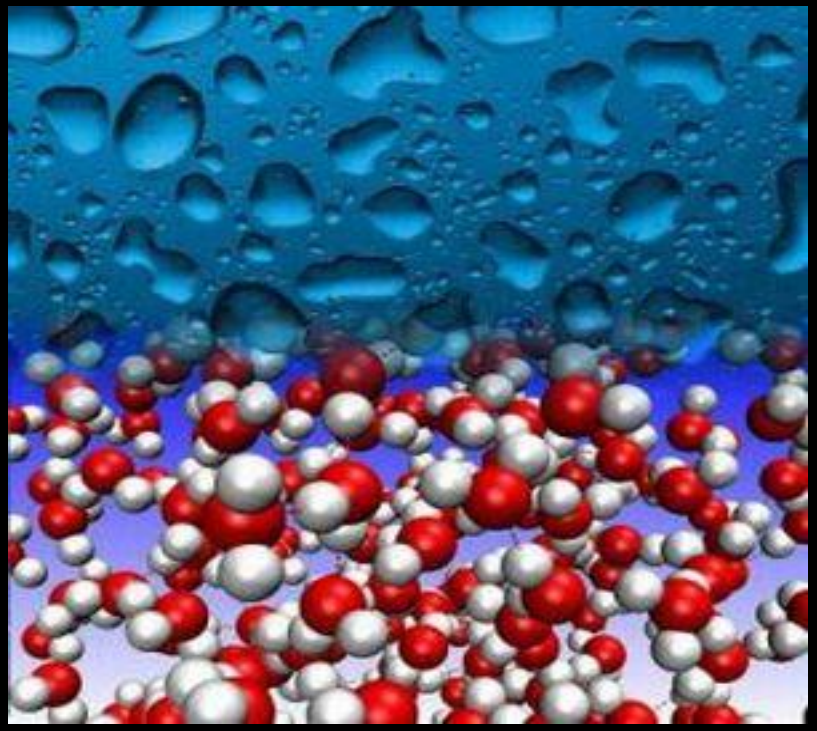
A polar molecule has a slight positive charge on one side and a slight negative charge on the other.

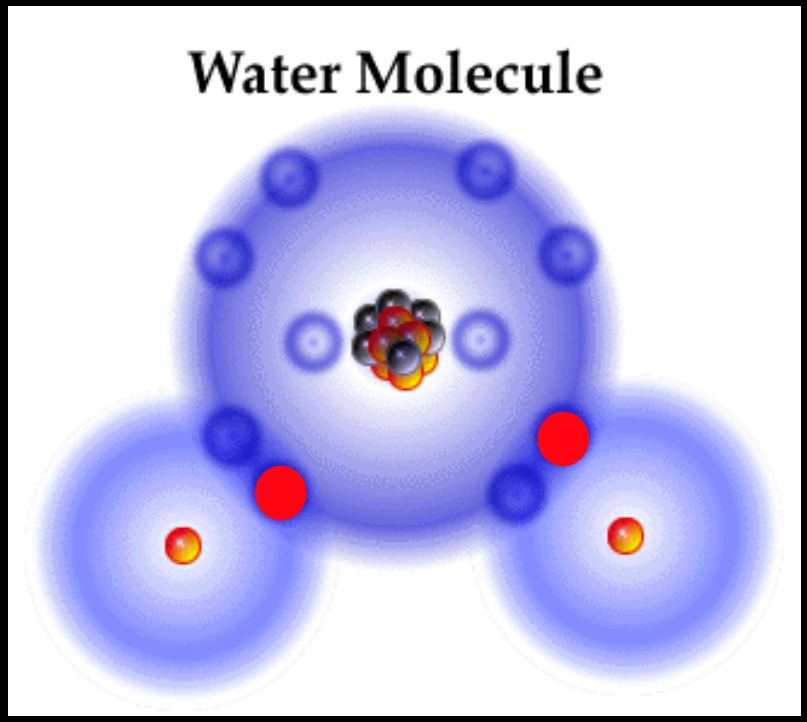
Water is a Polar Molecule



Water has positive charges on one side and negative charges on the other side

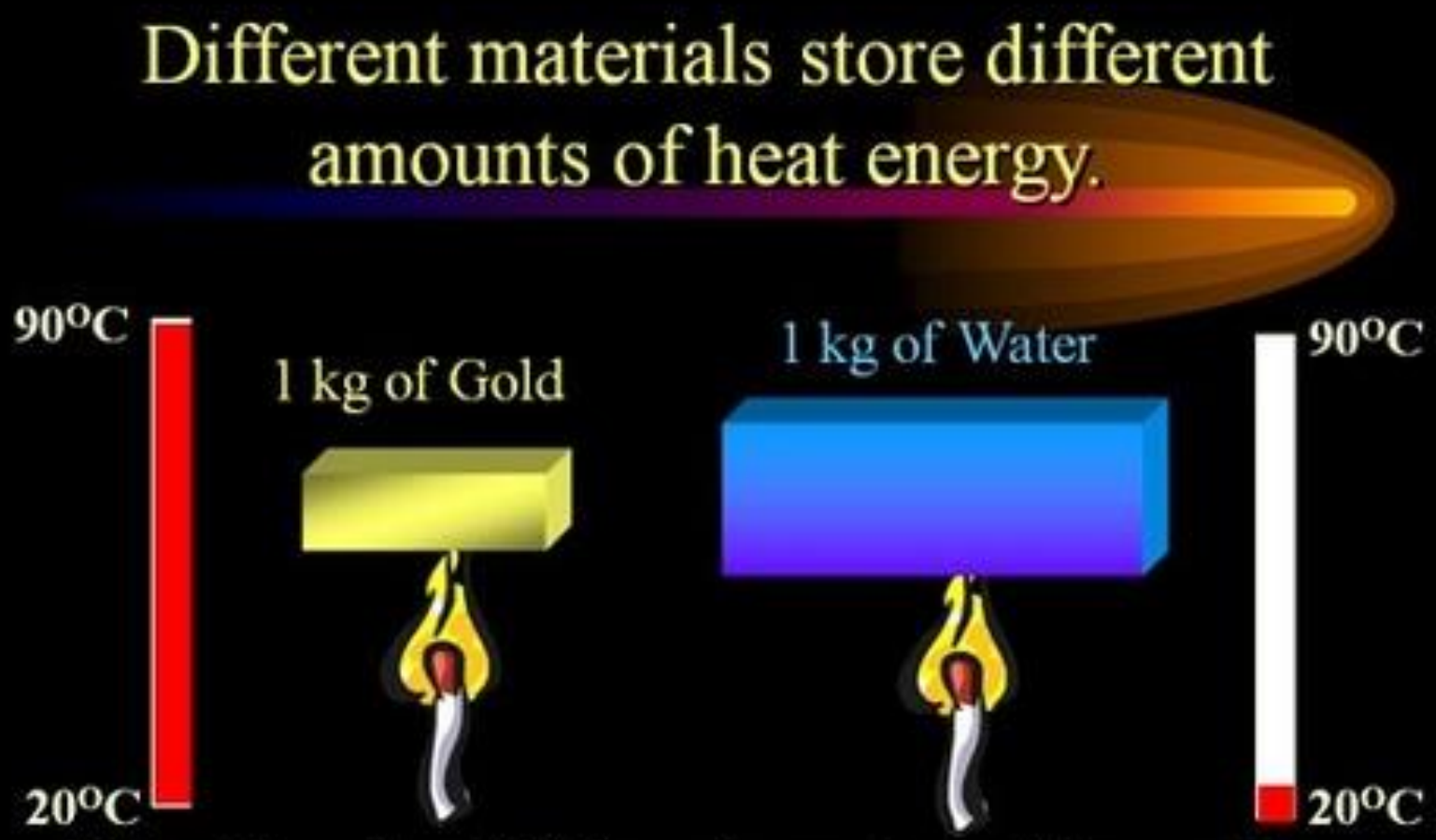
Water has covalent bonds





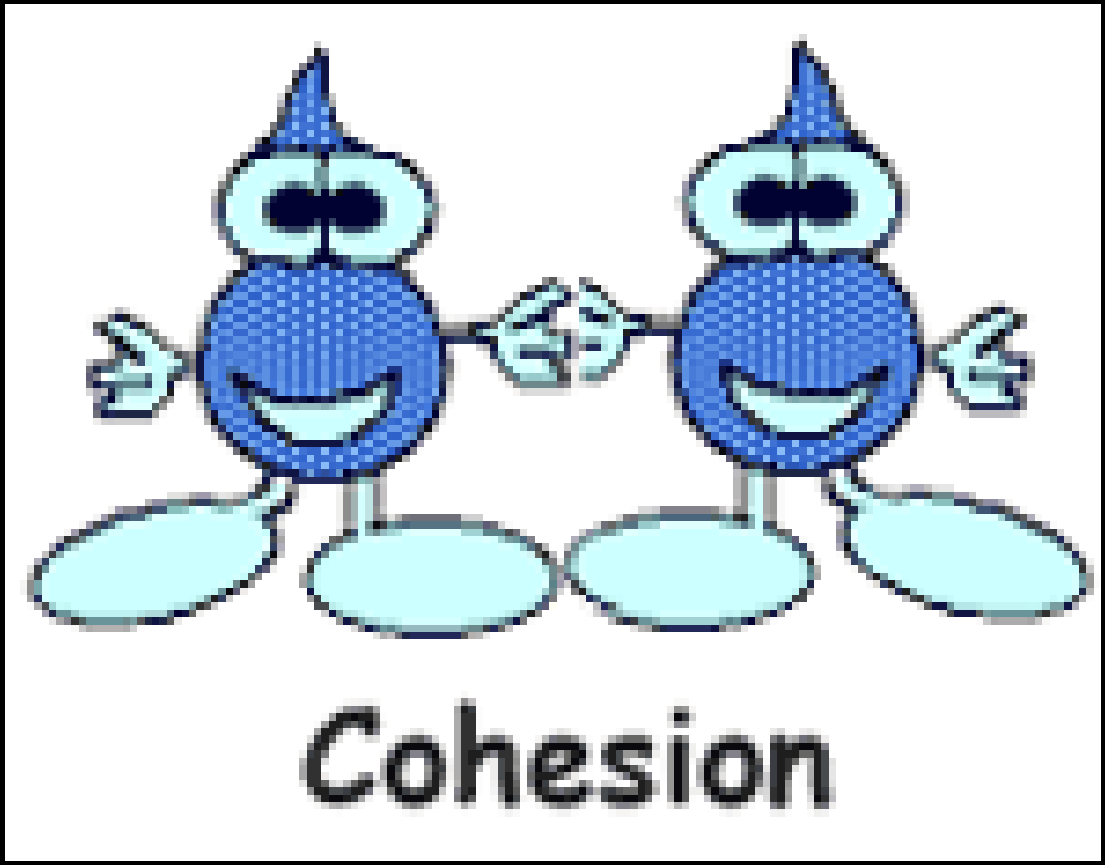
In a water molecule, each hydrogen atom forms a covalent bond with the oxygen atom.

Water resists temperature changes



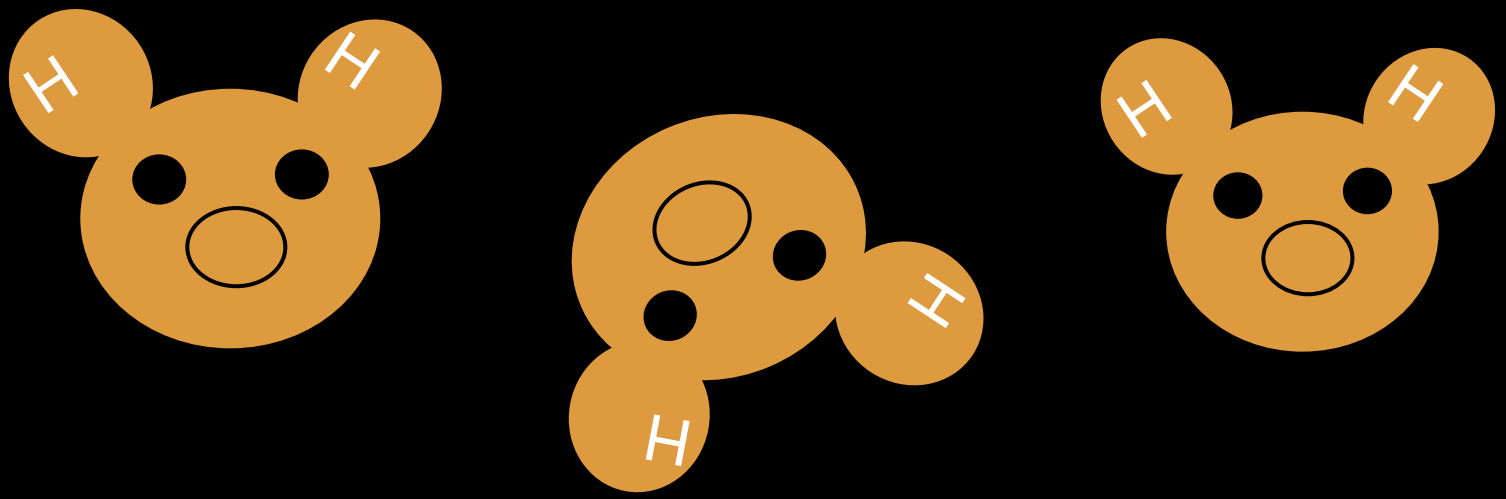
Water expands when it freezes

Water is cohesive



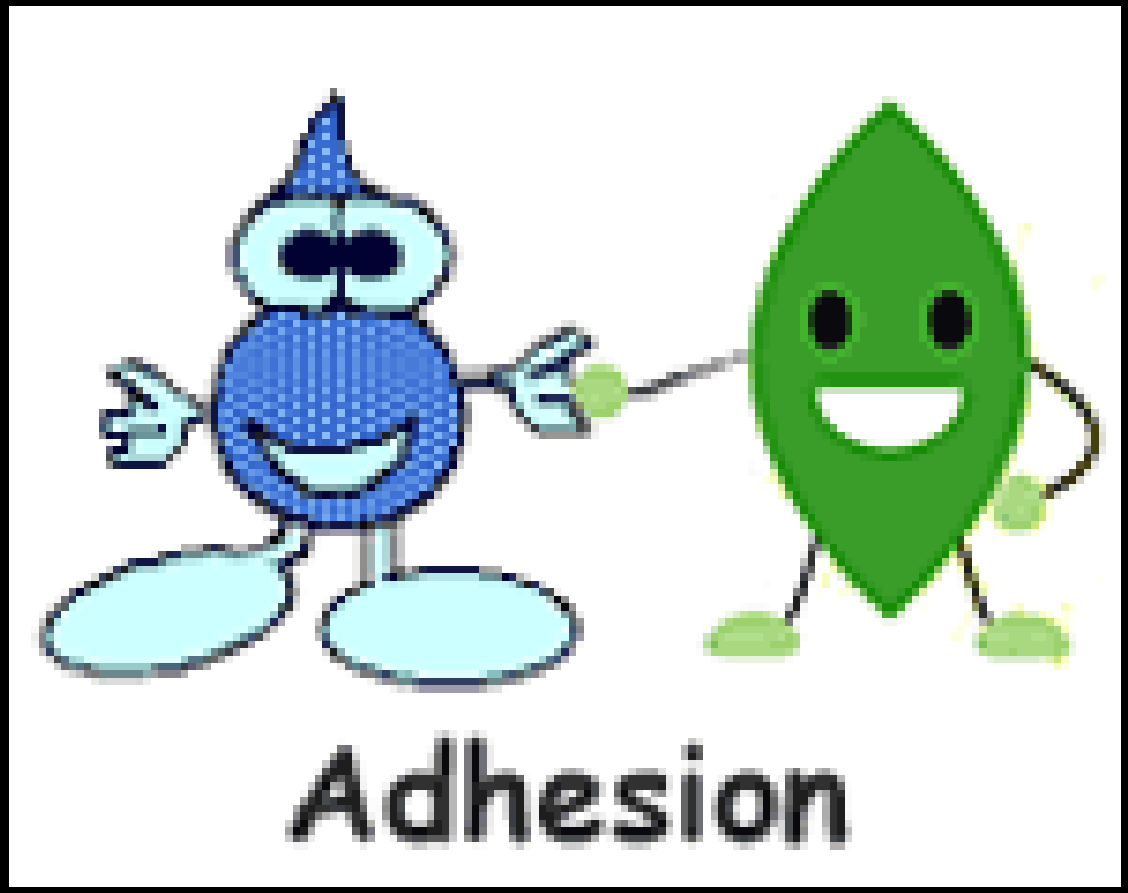
Cohesion – like molecules stick together. Water sticks well to itself.

Draw three water molecules. Draw dotted lines showing where the hydrogen bonding occurs.



Label the positive and negative charges on the water molecules.

Water is adhesive

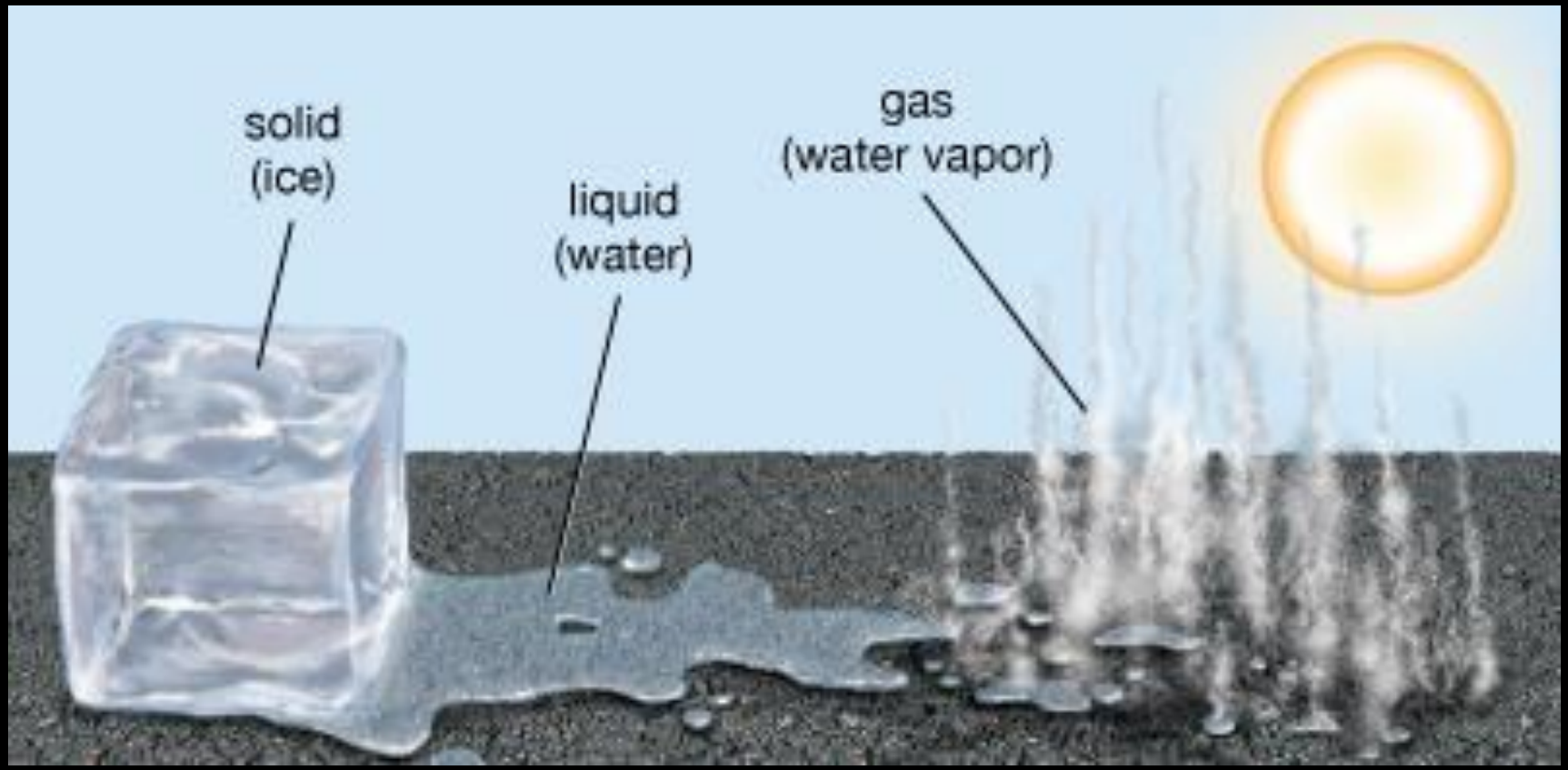


Adhesion – different molecules stick together. Water sticks well to other things.

Water has surface tension

Surface tension is the cohesive force between liquid molecules.

Three States of Water



Water is the only substance on earth that exists as a solid, liquid and gas.

Properties of Water

- Water is polar
- Water resists temperature changes
- Water expands when it freezes
- Water sticks well to itself (cohesion)
- Water sticks well to other things (adhesion)
- Water has a high level of surface tension

YouTube Video

Properties of Water
Amoeba Sisters

YouTube Video

Surface Tension of Water

Stop Here

Sinkin' Lincoln Lab

Objectives:

- Measure the surface tension of different liquids.
- Identify independent and dependent variables.
- Plot a graph with the data collected.
- Learn about polar molecules and surface tension.

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