

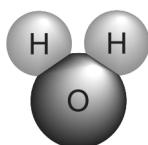
## RQ Properties of Water

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. A leaf gently floats on a pond. Which of the following statements *best* explains why the leaf stays on top of the water?
- A. The leaf has nonpolar covalent bonds between its atoms.
  - B. The density of the leaf is greater than the density of the water.
  - C. Surface tension on top of the water prevented the leaf from sinking.
  - D. The atoms in the leaf were attracted to the water molecules.

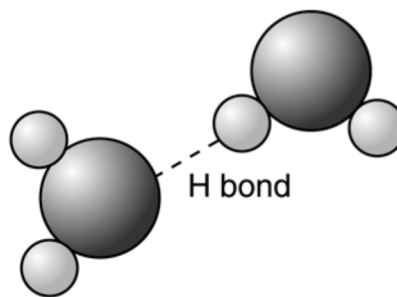
2. The diagram below shows the chemical structure of water.



What type of bonds hold the water molecule together?

- A. Ionic bonds.
- B. Covalent bonds.
- C. Metallic bonds.
- D. Hydrogen bonds.

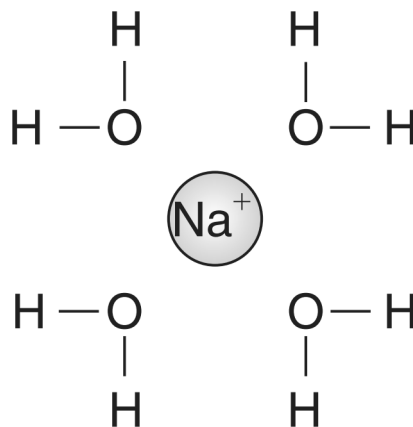
3.



### Water Molecules

The model illustrates hydrogen bonding found in water. This attraction between water molecules is the result of water's—

- A. ionic bonding.
  - B. polar covalent bonding.
  - C. positively charged atoms.
  - D. negatively charged atoms.
4. The diagram below represents a sodium ion surrounded by several water molecules.

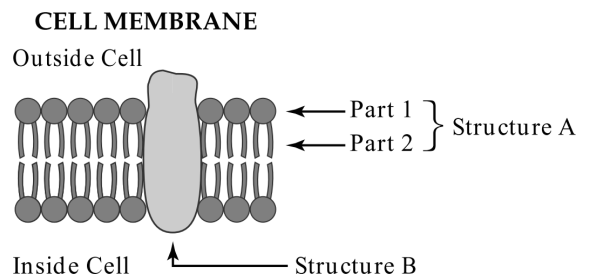


This diagram can be used to represent which of the following?

- A. how sodium ions dissolve in water
- B. how sodium is neutralized by water
- C. how sodium metal makes bubbles in water
- D. how sodium ions precipitate out as a solid in aqueous solution

5. Water dissolves many substances. This occurs because water has
- A. surface tension      B. polarity  
C. specific heat      D. cohesion
6. Which of the following is an example of capillary action in organisms?
- A. Adhesion and cohesion of water in the xylem cells of plant stems  
B. Release of sweat to reduce body heat  
C. Movement of ions to maintain homeostasis  
D. Pumping of blood through the circulatory system
7. Which of the following best illustrates water's cohesive properties?
- A. A cup of water sitting on a table  
B. A puddle of water lying on the ground  
C. A drop of water hanging from a blade of grass  
D. A soaking wet piece of paper towel
8. Which statement *best* describes an effect of the low density of frozen water in a lake?
- A. When water freezes, it contracts, decreasing the water level in a lake.  
B. Water in a lake freezes from the bottom up, killing most aquatic organisms.  
C. When water in a lake freezes, it floats, providing insulation for organisms below.  
D. Water removes thermal energy from the land around a lake, causing the lake to freeze.

9. Why does the water at the beach stay cool, while the sand gets really hot?
- A. Water has a low heat capacity, so heat doesn't affect it as much as the sand.  
B. Water is wet, so it stays cooler than the sand.  
C. Water has a high heat capacity, so it can absorb a lot of heat before increasing in temperature.  
D. Water has polar bonds, so it stays cool because polar water is always cool.
10. Use the figure of a cell membrane below to answer the following question(s).



Structure A represents a phospholipid, while Part 1 represents the phosphate head and Part 2 represents the lipid tails.

Why do the the phosphate heads turn toward the water environment inside and outside the head, while the lipid tails turn away from the water environments.

- A. The phosphate heads are hydrophobic, while the lipid tails are hydrophilic.  
B. The phosphate heads are hydrophilic, while the lipid tails are hydrophobic.  
C. The phosphates heads are bipolar, while the lipid tails are emotionally stable.  
D. The phosphate heads form hydrogen bonds to each other, while the lipids tails do not.