

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

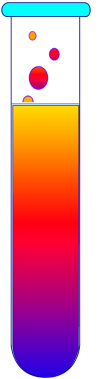
## Reading Guide: Chapter 2.2, Water

([OpenStax Biology 2E](#))

1. What percentage of the human body is water? \_\_\_\_\_
2. The polarity of water results from \_\_\_\_\_ bonds.

### Water's Polarity

3. Within a molecule of water, hydrogen has a slightly [ positive / negative ] charge.  
oxygen has a slightly [ positive / negative ] charge.
4. A polar substance that interacts or dissolves in water is called \_\_\_\_\_.  
Nonpolar molecules are called \_\_\_\_\_.



### Water's States: Gas, Liquid, and Solid

5. Frozen water is [ less / more ] dense than liquid water.
6. Why is it important to life that ice floats? \_\_\_\_\_
7. Why is it dangerous for living tissue to freeze? \_\_\_\_\_

### Water's High Heat Capacity

8. What is the definition of specific heat? \_\_\_\_\_
9. What is this water's specific heat capacity important to life?  
\_\_\_\_\_

### Water's Heat of Vaporization

10. Heat of vaporization refers to the amount of energy needed to change liquid water to a \_\_\_\_\_.
11. When water molecules escape from the surface of water and vaporize, it is called \_\_\_\_\_.
12. Why is this an important property for life? \_\_\_\_\_

### Water's Solvent Properties

13. When atoms break off from molecules and form ions, it is called \_\_\_\_\_
14. What ions are formed when table salt is placed in water? \_\_\_\_\_

## Water's Cohesive and Adhesive Properties

15. Water's surface tension is created by the \_\_\_\_\_ of water molecules.
16. What is adhesion? \_\_\_\_\_.
17. Why are these forces important to life? \_\_\_\_\_

## pH, Buffers, Acids, and Bases

18. What is litmus paper used for? \_\_\_\_\_
19. One mole is equal to \_\_\_\_\_ particles of a substance.
20. An acid is a substance that increases [ hydrogen / hydroxide ] ions.
21. What is an example of a strong acid? \_\_\_\_\_ A weak one ? \_\_\_\_\_
22. What is the pH of stomach acid? \_\_\_\_\_
23. What substances absorb excess  $H^+$  and  $OH^-$  ? \_\_\_\_\_
24. Why are these substances important? \_\_\_\_\_
25. Answer True or False to the following statements
- \_\_\_\_\_ Acids and bases cannot mix together.
  - \_\_\_\_\_ Acids can change the pH of a solution.
  - \_\_\_\_\_ Acids and bases will neutralize each other.
  - \_\_\_\_\_ Most household cleaners are acidic.
  - \_\_\_\_\_ Acids donate hydroxide ions.
  - \_\_\_\_\_ A pH of 7 is neutral.
  - \_\_\_\_\_ The pH of blood is slightly alkaline.

