

## Section 2–2 Properties of Water (pages 40–43)



**TEKS FOCUS:** 2B Collect data and make measurements with precision; 2C Organize data

*This section describes the makeup of water molecules. It also explains what acidic solutions and basic solutions are.*

### The Water Molecule (pages 40–41)

1. Is the following sentence true or false? A water molecule is neutral. \_\_\_\_\_
2. What results from the oxygen atom being at one end of a water molecule and the hydrogen atoms being at the other end? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
3. Why is a water molecule polar? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
4. Circle the letter of each sentence that is true about hydrogen bonds.
  - a. A hydrogen bond is stronger than an ionic bond.
  - b. The attraction between the hydrogen atom on one water molecule and the oxygen atom on another water molecule is an example.
  - c. A hydrogen bond is stronger than a covalent bond.
  - d. They are the strongest bonds that form between molecules.
5. Complete the table about forms of attraction.

**FORMS OF ATTRACTION**

Form of Attraction	Definition
Cohesion	
Adhesion	

6. Why is water extremely cohesive? \_\_\_\_\_  
 \_\_\_\_\_
7. The rise of water in a narrow tube against the force of gravity is called \_\_\_\_\_.
8. How does capillary action affect plants? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### Solutions and Suspensions (pages 41–42)

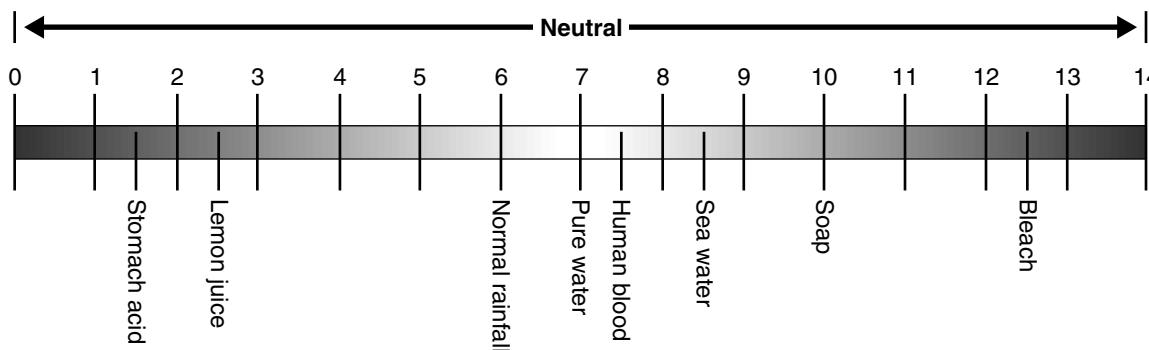
9. What is a mixture? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
10. A mixture of two or more substances in which the molecules of the substances are evenly mixed is called a(an) \_\_\_\_\_.
11. The greatest solvent in the world is \_\_\_\_\_.
12. What is a suspension? \_\_\_\_\_  
 \_\_\_\_\_
13. Complete the table about substances in solutions.

#### SUBSTANCES IN SOLUTIONS

Substance	Definition	Saltwater Solution
Solute		
		Water

### Acids, Bases, and pH (pages 42–43)

14. Two water molecules can react to form \_\_\_\_\_.
15. Why is water neutral despite the production of hydrogen ions and hydroxide ions?  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
16. What does the pH scale indicate? \_\_\_\_\_  
 \_\_\_\_\_
17. On the pH scale below, indicate which direction is increasingly acidic and which is increasingly basic.



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18. How many more  $H^+$  ions does a solution with a pH of 4 have than a solution with a pH of 5? \_\_\_\_\_

19. Circle the letter of each sentence that is true about acids.

- a. Acidic solutions have pH values below 7.
- b. An acid is any compound that forms  $H^+$  ions in solution.
- c. Strong acids have pH values ranging from 11 to 14.
- d. Acidic solutions contain higher concentrations of  $H^+$  ions than pure water.

20. Circle the letter of each sentence that is true about bases.

- a. Alkaline solutions have pH values below 7.
- b. A base is a compound that produces  $OH^-$  ions in solution.
- c. Strong bases have pH values ranging from 11 to 14.
- d. Basic solutions contain lower concentrations of  $H^+$  ions than pure water.

21. What are buffers? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_