Section 8.4 Strength of Acids and Bases

(pages 246–249)

This section explains how to describe acids and bases in terms of both concentration and strength.

Reading Strategy (page 246)

Comparing and Contrasting As you read, complete the diagram by comparing and contrasting acids and bases. For more information on this reading strategy, see the Reading and Study Skills in the Skills and Reference Handbook at the end of your textbook.

The pH Scale (page 247)

1. What is the name of the number scale chemists use to describe the concentration of hydronium ions in a solution?

2. The pH scale ranges from _________ to _________.

3. Circle the letter that indicates the pH of a neutral solution.
   a. 0
   b. 3
   c. 7
   d. 12

4. Water is neutral because it contains small but equal concentrations of _________ and _________.

5. Is the following sentence true or false? The higher the pH value of a solution, the greater the H$_3$O$^+$ ion concentration is.

6. If you add acid to pure water, the concentration of H$_3$O$^+$ _______ and the concentration of OH _______.

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Chapter 8   Solutions, Acids, and Bases

**Strong Acids and Bases** (pages 247–248)

7. What happens when strong acids and bases dissolve in water? ________________

8. Is the following sentence true or false? A strong acid always has a lower pH than a weak acid. ________________

9. Circle the letters that identify a strong acid.
   a. HCl   b. Ca(OH)₂   c. H₂O   d. HNO₃

10. When dissolved in water, sodium hydroxide almost completely dissociates into ________________and ________________ ions.

11. Circle the sentences that are true.
   a. Strong bases have a higher concentration of hydronium ions than pure water.
   b. Strong bases dissociate almost completely in water.
   c. Strong bases have a pH below 7.
   d. Examples of strong bases include sodium hydroxide and calcium hydroxide.

**Weak Acids and Bases** (page 248)

12. What happens when weak acids and bases dissolve in water? ________________

13. Is the following sentence true or false? A weak acid has a higher pH than a strong acid of the same concentration. ________________

14. Describe the difference between concentration and strength. ________________

15. Describe a buffer. ________________

**Electrolytes** (page 249)

16. An electrolyte is ________________

17. Is the following sentence true or false? Strong acids and bases are weak electrolytes because they dissociate or ionize almost completely in water. ________________

18. Is acetic acid an example of a weak electrolyte? Explain. ________________