

CHAPTER 19 STUDY GUIDE FOR CONTENT MASTERY

Acids and Bases

Section 19.1 Acids and Bases: An Introduction

In your textbook, read about the properties of acids and bases.

For each description below, write *acid* if it tells about a property of an acid or *base* if it tells about a property of a base. If the property does not apply to either an acid or a base, write *neither*. If it applies to both an acid and a base, write *both*.

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|---------------|--|
| _____ both | 1. Can turn litmus paper a different color |
| _____ acid | 2. Reacts with certain metals |
| _____ acid | 3. Contains more hydrogen ions than hydroxide ions |
| _____ base | 4. Feels slippery |
| _____ acid | 5. Reacts with carbonates |
| _____ neither | 6. Feels rough |
| _____ neither | 7. Contains equal numbers of hydrogen and hydroxide ions |
| _____ base | 8. Tastes bitter |
| _____ acid | 9. Tastes sour |

In your textbook, read about the different models of acids and bases.

Use the terms below to complete the passage. You may use each term more than once.

Arrhenius conjugate base	Brønsted-Lowry hydrogen	conjugate acid hydroxide
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The (10) Arrhenius model of acids and bases states that an acid contains the element (11) hydrogen and forms ions of this element when it is dissolved in water. A base contains the (12) hydroxide group and dissociates to produce (13) hydroxide ions in aqueous solution.

According to the (14) Brønsted-Lowry model, an acid donates (15) hydrogen ions, and a base accepts (16) hydrogen ions.

According to this model, in an acid-base reaction, each acid has a (17) conjugate base, and each base has a (18) conjugate acid.

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Section 19.2 Strengths of Acids and Bases

In your textbook, read about strengths of acids.

Circle the letter of the choice that best completes the statement or answers the question.

- Acid A and acid B are of equal concentration and are tested with a conductivity apparatus. When the electrodes are placed in acid A, the bulb glows dimly. When they are placed in acid B, the bulb glows more brightly. Which of the following is true?
 - Acid A is stronger than acid B.
 - Acid B is stronger than acid A.
 - Acid A and acid B are of equal strength.
 - No comparison of strength can be made from the results.
- A chemical equation for the ionization of an acid uses a single arrow to the right (\rightarrow) to separate the reactant and product sides of the equation. Which of the following is true?
 - The arrow does not indicate relative strength.
 - The ionizing acid is strong.
 - The ionizing acid is half ionized.
 - Sulfuric acid is a strong acid. What is true about its conjugate base?
 - Its conjugate base is amphoteric.
 - Its conjugate base is strong.
 - Its conjugate base is weak.
 - No conclusion can be made regarding the strength of the conjugate base.
- In solution, a weak acid produces
 - a mixture of molecules and ions.
 - all ions.
 - all molecules.
 - anions, but no hydronium ions.
- Why are K_a values all small numbers?
 - The concentration of water does not affect the ionization.
 - The equilibrium is not stable.
 - The solutions contain a high concentration of ions.
 - The solutions contain a high concentration of un-ionized acid molecules.
- Which of the following dissociates entirely into metal ions and hydroxide ions in solution?
 - a strong acid
 - a strong base
 - a weak acid
 - a weak base
- In general, compounds formed from active metals, and hydroxide ions are
 - strong acids.
 - strong bases.
 - weak acids.
 - weak bases.