

Section 18.4 Neutralization

In your textbook, read about neutralization and titration.

For each item in Column A, write the letter of the matching item in Column B.

Column A

- _____ 1. A chemical dye that changes color based on the pH of a solution
- _____ 2. A method for using a neutralization reaction to determine the concentration of a solution
- _____ 3. A reaction in which an acid and a base react to produce a salt and water
- _____ 4. A solution of known concentration
- _____ 5. An ionic product of an acid-base reaction
- _____ 6. The point in a titration in which an indicator changes color
- _____ 7. The stoichiometric point of a titration

Column B

- a. acid-base indicator
- b. end point
- c. equivalence point
- d. neutralization
- e. salt
- f. standard solution
- g. titration

Complete the following table, indicating the formula and name of the salt formed by a neutralization reaction between the listed acid and base.

Acid	Base	Salt formula	Salt name
8. HCl	KOH	KCl	potassium chloride
9. H ₂ SO ₄	Mg(OH) ₂		
10. H ₃ PO ₄	NaOH		
11. HNO ₃	Fe(OH) ₃		
12. H ₃ PO ₄	Ca(OH) ₂		

In the space at the left, write 1 through 4 to show the correct sequence of the steps in performing a titration using a pH meter. Then, write 5 through 8 to sequence the steps used to calculate the concentration of the unknown solution.

Sequence of Steps

- _____ 13. Continue adding the standard solution to the solution of unknown concentration until the equivalence point is reached.
- _____ 14. Fill a buret with the standard solution.
- _____ 15. Start adding the standard solution slowly, with mixing, to the solution of unknown concentration, reading the pH at regular intervals.

Section 18.4 *continued*

_____ **16.** Use a pH meter to check the pH of a solution of known volume but unknown concentration.

Calculation

_____ **17.** Calculate the number of moles of acid or base in the volume of standard solution added.

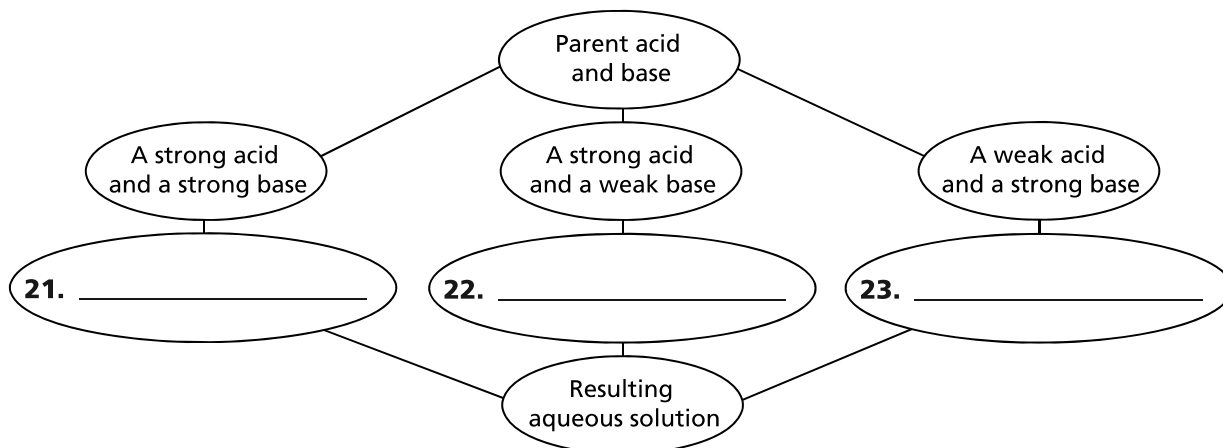
_____ **18.** Use the mole ratio from the balanced equation to calculate the number of moles of reactant in the unknown solution.

_____ **19.** Use the number of moles and volume of the unknown solution to calculate molarity.

_____ **20.** Write the balanced chemical equation for the neutralization reaction.

In your textbook, read about salt hydrolysis.

Complete the following concept map, using the terms *acidic, basic, and neutral*.



In your textbook, read about buffer solutions.

For each statement below, write *true* or *false*.

_____ **24.** Buffers resist change in pH.

_____ **25.** A buffer can be a mixture of a weak acid and its conjugate base.

_____ **26.** An example of a buffer solution is a mixture of acetic acid and sodium acetate.

_____ **27.** A buffer solution changes pH only a small amount even if large amounts of acid or base are added.

_____ **28.** A buffer system should contain considerably more acid than base.

_____ **29.** Specific buffer systems should be chosen based on the pH that must be maintained.