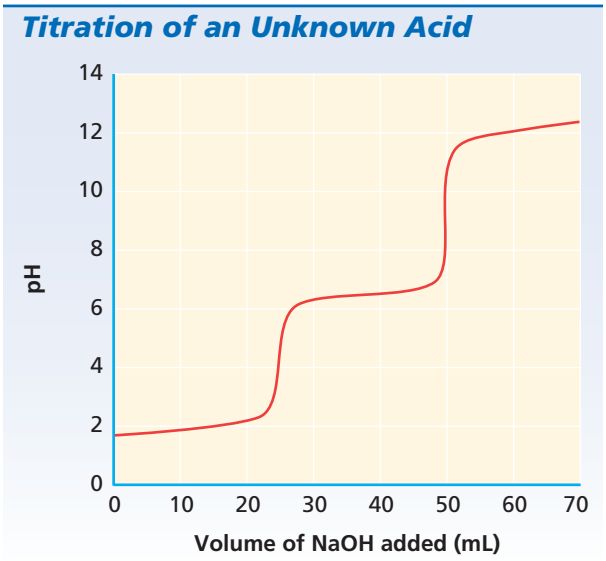
CRITICAL THINKING

38. Interpreting Graphics The following titration curve resulted from the titration of an unknown acid with 0.10 M NaOH. Analyze the curve. Make inferences related to the type of acidic solution titrated.



USING THE HANDBOOK

39. The normal pH of blood is about 7.4. When the pH shifts above or below that level, the results are acidosis or alkalosis. Review the section on blood pH in Group 14 of the *Elements Handbook,* and answer the following.

a. What chemical species keep H_3O^+ in blood at the appropriate pH?

b. What condition results when there is an excess of CO_2 in the blood?

c. What is hyperventilation and how does it affect blood pH?

RESEARCH & WRITING

40. Examine the labels of at least five brands of shampoo. Note what is written there, if anything, regarding the pH of the shampoo. Do library research to find out why such pH ranges are chosen and why other ranges might be harmful to hair or eyes.

41. Acid rain is an environmental issue that crosses state and national boundaries. Conduct library research on this topic and write a brief report. Include a description of the areas in the United States affected by acid rain, and the geographical source of the sulfur and nitrogen oxides that are responsible for acid rain in each region.

ALTERNATIVE ASSESSMENT

42. Performance Use pH paper to determine the approximate pH of various brands of orange juice, which contains citric acid.

43. Performance Design and conduct an experiment to extract possible acid-base indicators from sources such as red cabbage, berries, and flower petals. Use known acidic, basic, and neutral solutions to test the action of each indicator that you are able to isolate.

extension

Graphing Calculator

Acid-Base Titration

Go to **go.hrw.com** for a graphing calculator exercise that asks you to graph acid-base titration curves.

Keyword: HC6ABTX