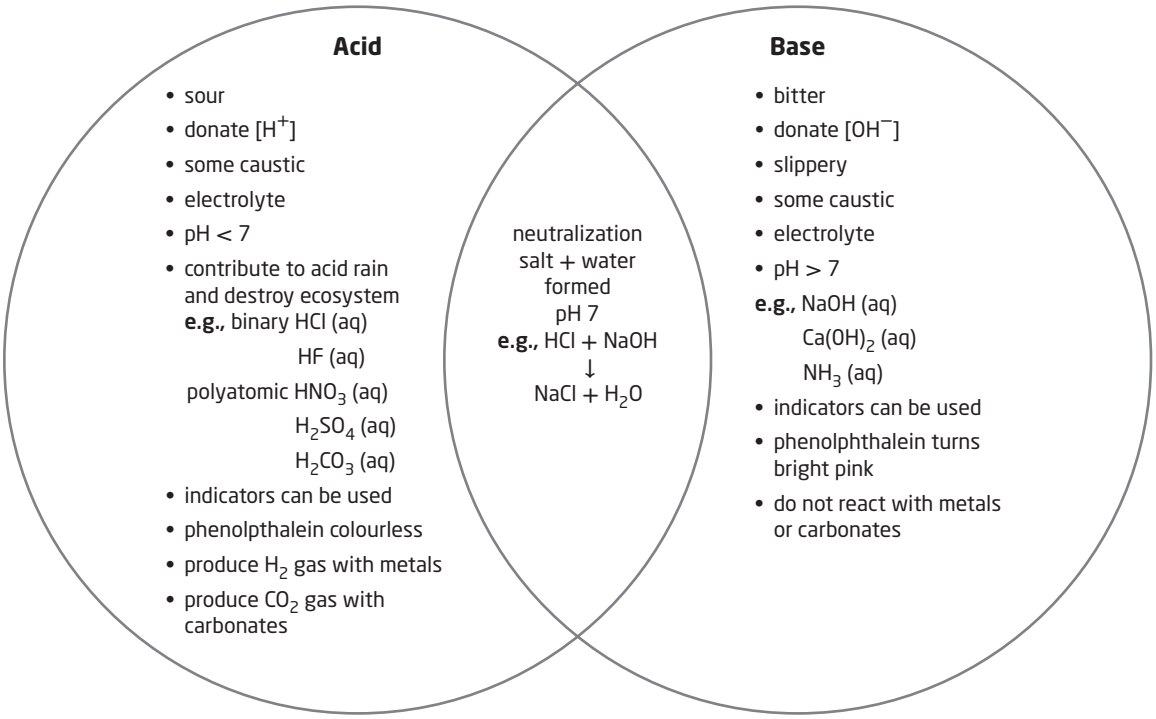
Chapter Review Answers (Student textbook pages 252 to 253)

Please also see **BLM 6-12 Chapter 6 Review (Alternative Format).**

Make Your Own Summary



Reviewing Key Terms

1. d

2. c

3. a

4. g

5. e

6. b

7. f

Knowledge and Understanding

8. a. acid, hydrochloric acid

b. base, magnesium hydroxide

c. acid, phosphoric acid

d. base, lithium hydroxide

9. a. HNO_3

b. HBr

c. H_2SO_3

10. Acidity decreases as the pH of a solution rises (it becomes less acidic and closer to neutral).

11. They change colour based in reaction to pH.

12. Litmus is a single indication that reacts to either an acid or a base, whereas universal indicator is a combination of indicators that changes specific colours in response to several ranges of pH.

13. If the pH of pool water gets too low, the acidity could damage the walls of the pool and irritate swimmers. If the pH gets too high, the chlorinating agents become less effective at killing bacteria.

14. a. Acid precipitation would increase because more nitrogen oxides would enter the air.

b. Acid precipitation would decrease because sulfur would not be released (not produce sulfur dioxide) when the coal was burned.

15. They can burn.

16. a. $2HBr(aq) + Ca(OH)_2(aq) \rightarrow CaBr_2(aq) + 2H_2O$

b. $2LiOH(aq) + H_2SO_3(aq) \rightarrow Li_2SO_3(aq) + 2H_2O$

c. $3Mg(OH)_2(aq) + 2H_3PO_4(aq) \rightarrow Mg_3(PO_4)_2(aq) + 6H_2O$

Thinking and Investigating

17. Example: The term *anhydride* means "without water." Non-metal oxides react with water to make an acid, so calling them "an acid without the water" is a correct description of these compounds.

18. 4.4–6.0

19. A, neutral; B, basic; C, acidic; D, basic

20. a. The solution is basic because its pH is greater than 7.

b. Red litmus would turn blue, and blue litmus would stay blue.

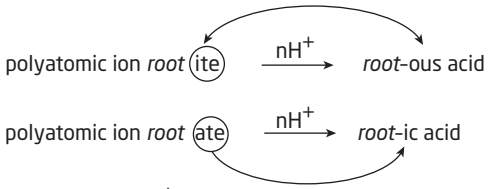
c. The acid HCl(aq) should be added to neutralize this basic solution.

21. The lack of reaction from the blue litmus paper tells us only that the solution is not acidic, leaving the possibility that it is either neutral or basic. A positive test from red litmus paper (or other basic indicator) would confirm the solution is basic.

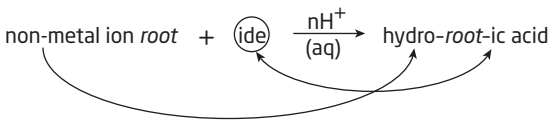
22. Any two of: carbon dioxide (forms carbonic acid), nitrogen dioxide (forms nitric acid), and sulfur dioxide (forms sulfuric acid).

Communication

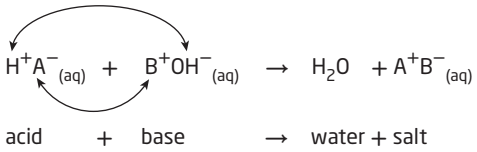
23. **Polyatomic/Oxy Acids** – H^+ + polyatomic ion



Binary Acids – H^+ + non-metal root



24. Example:



25. Example: Acid leaching helps recover metals from ores or from contaminated soil but this and naturally-occurring leaching also results in contaminated run-off, which contaminates other soil and waterways. Recovered metals are useful in manufacturing, and the decontaminated environments are beneficial. Contaminated areas may cause toxic reactions and generally be inhospitable to life.

Application

26. None of these products would turn blue litmus paper red, because they are all basic and blue litmus paper only changes colour in the presence of an acid.

27. Any ten products or processes that use sulfuric acid such as: petroleum refining, explosives, dyes, paints, fertilizers, synthetic fibres, storage batteries, pulp and paper manufacturing, metal processing and refining, soaps and detergents, plastics, and medicines.

28. a. yogurt

b. 100 times

29. Example: The Government of Ontario lists the following priorities for the Great Lakes: reduce harmful pollutants, conserve biodiversity, understand and adapt to the impacts of climate change, protect Ontario's primary drinking water source, promote sustainable water use and conservation, and promote more environmentally sustainable lifestyles.

The Canada-Ontario Agreement of 2007 was designed to help coordinate resources of the two governments and to work with organizations and citizens around the lakes to reduce pollutants and clean up trouble spots. The Clean Water Act of 2006 was written to protect drinking water in the Great Lakes Basin.

I can help by reducing how much I use the car, electricity, and water, and ensure light bulbs, batteries, and motor oil are properly disposed of.