Chapter 1 Review

Make Your Own Summary

Summarize the key concepts of this chapter using a graphic organizer. The Chapter Summary on the previous page will help you identify the key concepts. Refer to Study Toolkit 4 on pages 566–567 to help you decide which graphic organizer to use.

Reviewing Key Terms

1. The regions of Earth where living organisms exist is called the _____. (1.1)

2. _____ is a process in which nutrient levels in aquatic ecosystems increase, leading to an increase in the populations of primary producers. (1.1)

3. An _____ includes all the interacting parts of a biological community and its environment. (1.1)

4. The chemical reaction that changes solar energy into chemical energy is _____. (1.2)

5. A category of living things that is defined by how they gain energy is called a _____. (1.2)

6. _____ is a process that derives energy from organic molecules in the presence of oxygen (1.3)

7. The warming of Earth caused by greenhouse gases trapping some of the energy that would otherwise leave Earth is called the _____. (1.3)

Knowledge and Understanding K/U

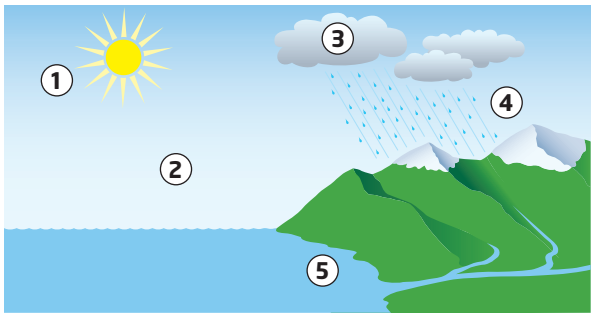
8. Explain the meaning of the word "ecosystem."

9. Sustainable ecosystems "endure and support." Clarify what this means.

10. Explain why keeping aquatic ecosystems sustainable is important to organisms that live in terrestrial ecosystems.

11. What organisms are considered primary producers? What important function do they perform in the biosphere?

12. Copy the following diagram into your notebook. Use arrows to indicate the direction of the movement of water in the diagram. Then identify and explain the process that occurs at each numbered step.



13. What is one possible cause of the increase in carbon dioxide in the atmosphere since the mid-19th century?

14. Explain the connection between fossil fuels and photosynthesis.

15. Identify the key difference between cellular respiration and fermentation.

16. Greenhouse gases are in Earth's atmosphere.

a. List three examples of greenhouse gases.

b. How have greenhouse gases affected the biosphere?

17. Countries around the world are monitoring carbon dioxide emissions.

a. What is the Kyoto Protocol?

b. How can countries reduce the amount of carbon dioxide that they are releasing into the atmosphere?

Thinking and Investigation T/I

18. Research information about a local landfill site. Find the answers to the following questions:

a. Is methane extracted at this landfill site?

b. Is this landfill site working on a plan to conform with the Ontario legislation to collect methane gas?

c. Does this landfill site have a plan to use the collected methane?

d. Although the methane can be simply burned off, the Ontario legislation requires landfills to collect methane. Why?

19. Make a list of the ways in which you use fossils fuels (directly or indirectly) in a typical day. Consider which two events or activities would be easiest for you to change to reduce your consumption of fossil fuels.

20. Canada has made progress in reducing its emissions of sulfur dioxide and nitrogen oxides, the two substances that acidify precipitation. What are some contributions that individuals can make to reduce these emissions?

Communication C

21. BIG IDEAS Ecosystems are dynamic and have the ability to respond to change, within limits, while maintaining their ecological balance. Draw a diagram to show what happens to excess nitrogen in an ecosystem. Label the pathway of nitrogen from its gas form in the atmosphere, to the lithosphere, and back to the atmosphere again. Identify clearly on your diagram some human factors that could alter the balance in this pathway. Show and explain, why, within limits, excess nitrogen does not upset the balance of that ecosystem.

22. BIG IDEAS People have the responsibility to regulate their impact on the sustainability of ecosystems in order to preserve them for future generations. Write an e-mail to a friend, explaining why it is important for governments to protect areas of existing forest.

23. Suppose that you are a science teacher. Your class of Grade 5 students is studying trophic levels. Prepare an explanation that will help the students identify the trophic level of each organism in the following food chain in an aquatic ecosystem:

Zooplankton are microscopic animals that eat phytoplankton. Zooplankton are eaten by crabs. Sea otters eat crabs.

24. Draw a diagram that represents the position and interaction of Earth's four spheres (lithosphere, hydrosphere, atmosphere, and biosphere).

25. Copy the following table into your notebook. Complete the table to compare photosynthesis and cellular respiration.

Reaction	Photosynthesis	Cellular respiration
Organism in Which Reaction Occurs		
Reactants		
Products		
Is Energy Absorbed or Released?		

26. In the past, one response to concerns about industrial pollution was to build taller smokestacks, so that pollution from the burning fossil fuels was released higher into the atmosphere. Write two or three sentences that make an argument against building taller smokestacks at industrial sites as a long-term solution to pollution.

27. Write a short paragraph that explains the difference between the greenhouse effect and the enhanced greenhouse effect.

Application A

28. Describe a sample scenario to explain how an animal living hundreds of kilometres from an area sprayed with DDT might get DDT in its body.

29. DDT is stored in the body fat of organisms and remains toxic for many years. Explain why these two characteristics are undesirable in a pesticide. What characteristics would you want in a pesticide to make it less harmful to non-pest organisms?

30. If you eat a plate of rice with vegetables for lunch, at what trophic level are you? If you eat a hamburger for lunch, at what trophic level are you? Explain.