

Section 22–1 Introduction to Plants (pages 551–555)

Key Concepts

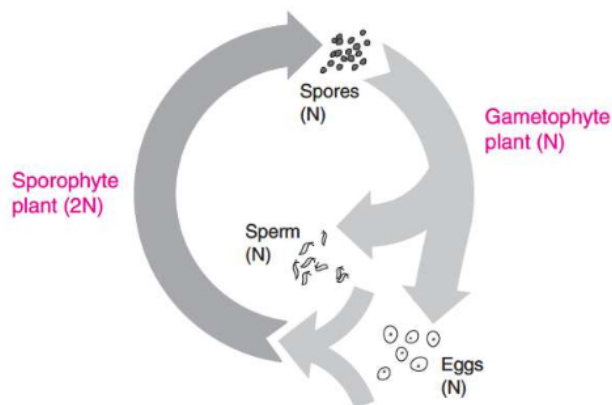
- What is a plant?
- What do plants need to survive?
- How did the first plants evolve?

What Is a Plant? (page 551)

- Circle the letter of each sentence that is true about plants.
 - Plants are multicellular prokaryotes.
 - Plants carry out photosynthesis.
 - Plants have cell walls made of cellulose.
 - Plants develop from multicellular embryos.
- What pigments do plants use to carry out photosynthesis? They use the green pigments chlorophyll a and b.
- Is the following sentence true or false? All plants are autotrophs. false

The Plant Life Cycle (page 552)

- All plants have a life cycle that is characterized by alternation of generations.
- Complete the diagram of the plant life cycle by writing the name of the plant generation in the correct place. For each generation, indicate whether it is haploid or diploid by writing either N or $2N$.



6. Complete the table about plant generations.

PLANT GENERATIONS

Generation	Description	Haploid or Diploid?
Gametophyte	Gamete-producing plant	Haploid
Sporophyte	Spore-producing plant	Diploid

7. Seed plants have evolved reproductive cycles that can be carried out without
water.

What Plants Need to Survive (page 552)

8. What are the four basic needs of plants?

- Sunlight
- Water and minerals
- Gas exchange
- Transport of water and nutrients throughout plant body

9. Why are plant leaves typically broad and flat? Their shape maximizes light absorption.

surface area increases

10. Circle the letter of each sentence that is true about the basic needs of plants.

- Plants require oxygen to support cellular respiration.
- Plants must get rid of water as quickly as possible.
- Water is one of the raw materials of photosynthesis.
- Plants have specialized tissues to carry nutrients upward.

Early Plants (pages 553–554)

11. The history of plants can be understood in terms of the evolution of what kind of structures? It can be understood in terms of the evolution of structures that acquire, transport, and conserve water.

12. What did the first plants evolve from? The first plants evolved from an organism much like the multicellular green algae living today.

13. Circle the letter of each sentence that is true about multicellular green algae.

- They have the same photosynthetic pigments as plants.
- They have the size, color, and appearance of plants.
- They are classified as ~~early plants~~ Protista
- They have reproductive cycles that are similar to those of early plants.

Name _____ Class _____ Date _____

14. How were early plants similar to today's mosses? They were simple in structure and grew close to the damp ground.
15. From the first plants, at least two major groups of plants evolved. What did those groups develop into? One group developed into mosses and their relatives. The other group developed into all other plants, including ferns, cone-bearing plants, and flowering plants.

non-vascular
vascular

Overview of the Plant Kingdom (page 555)

16. Circle the letter of each of the important features that botanists use to divide the plant kingdom into four groups.
- a. seeds
 - b. water-conducting tissue**
 - c. stems
 - d. flowers**
17. What are the four main groups of living plants?
- a. Mosses and their relatives [Bryophytes]
 - b. Ferns and their relatives
 - c. Cone-bearing plants
 - d. Flowering plants
18. The great majority of plants alive today are flowering plants.

Reading Skill Practice

Finding the main ideas of a section can help you organize the important points you need to remember. Skim Section 22-1 to find the main ideas. Write them on the left-hand side of a separate sheet of paper. Then, make a list of supporting details for each main idea on the right-hand side of the sheet.

Students should note a main idea for each of the section's subsections. These should include the section's boldface key concepts. For each main idea, students should list supporting details.