

Plants ▪ *Guided Reading and Study*

The Plant Kingdom (pp. 250–255)

This section explains the features that plants share. It also describes what plants need to survive and how they reproduce.

Use Target Reading Skills

The first column in the chart lists Key Terms in this section. In the second column, write what you know about the Key Term. As you read the section, write a definition of the Key Term in your own words in the third column. Some examples are done for you.

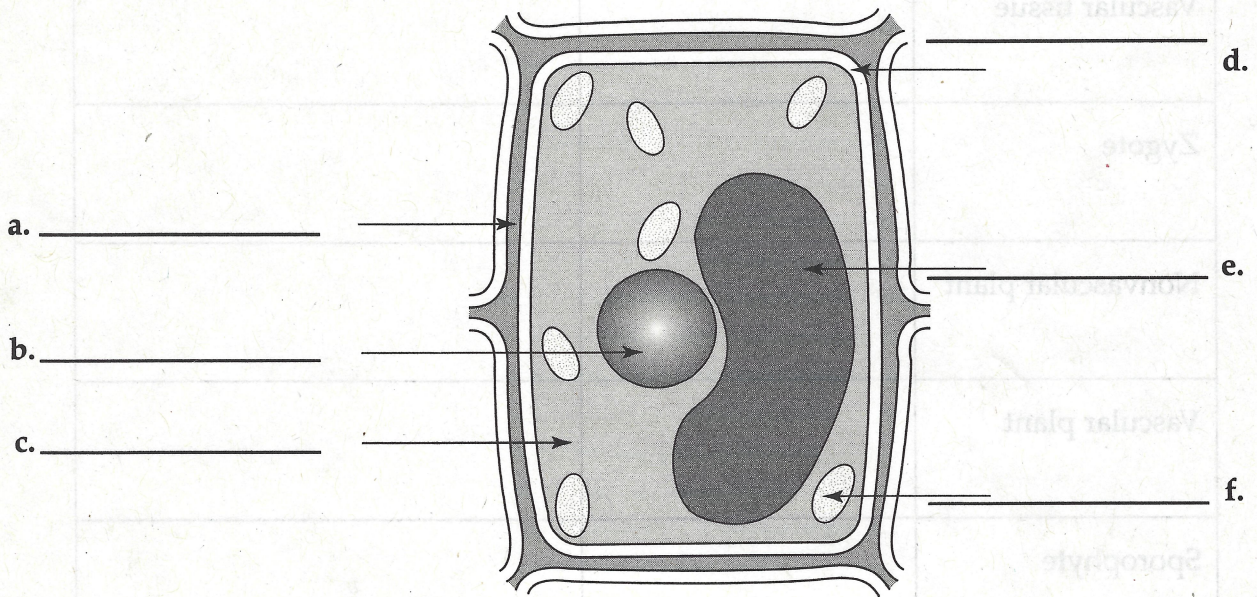
Key Term	What You Know	Definition
Cuticle		
Vascular tissue		
Zygote		
Nonvascular plant		
Vascular plant		
Sporophyte		
Gametophyte		

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The Plant Kingdom (continued)

What Is a Plant? (pp. 250–251)

1. Circle the letter of each characteristic that plants share.
 - a. heterotroph
 - b. autotroph
 - c. prokaryote
 - d. eukaryote
2. Is the following sentence true or false? Plants make their own food in the process of photosynthesis. _____
3. Plant cells are enclosed by a _____.
4. Label the diagram of the plant cell below.



5. Is the following sentence true or false? Only some plants are multicellular. _____

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Adaptations for Living on Land (pp. 251–252)

6. List five things that plants must do to survive on land.

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

7. Plants living on land get water and nutrients from the _____

8. Why can a plant on land lose water and dry out?

- _____
- _____
- _____

9. Circle the letter of one adaptation that land plants have to keep from drying out.

a. chlorophyll

b. cell wall

c. cuticle

d. zygote

10. Some plants move water, minerals, and food with a system of tubelike structures called _____.

11. Is the following sentence true or false? Some land plants are supported by vascular tissue. _____

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The Plant Kingdom *(continued)*

12. What occurs during fertilization?

13. Circle the letter of the name of a fertilized egg.

- a. sporophyte
- b. gamete
- c. gametophyte
- d. zygote

Classifying Plants (pp. 253–254)

14. Is the following statement true or false? Nonvascular plants can grow very tall. _____

15. How do biologists learn which organisms were the ancestors of today's plants?

16. Why do biologists think that ancient green algae were the ancestors of today's plants?

Complex Life Cycles (pp. 254–255)

17. Plants produce spores during the _____ stage and produce sex cells during the _____ stage.

18. Is the following sentence true or false? The sporophyte of a plant looks the same as the gametophyte. _____

19. What are two kinds of sex cells that a gametophyte produces?

- a. _____
- b. _____

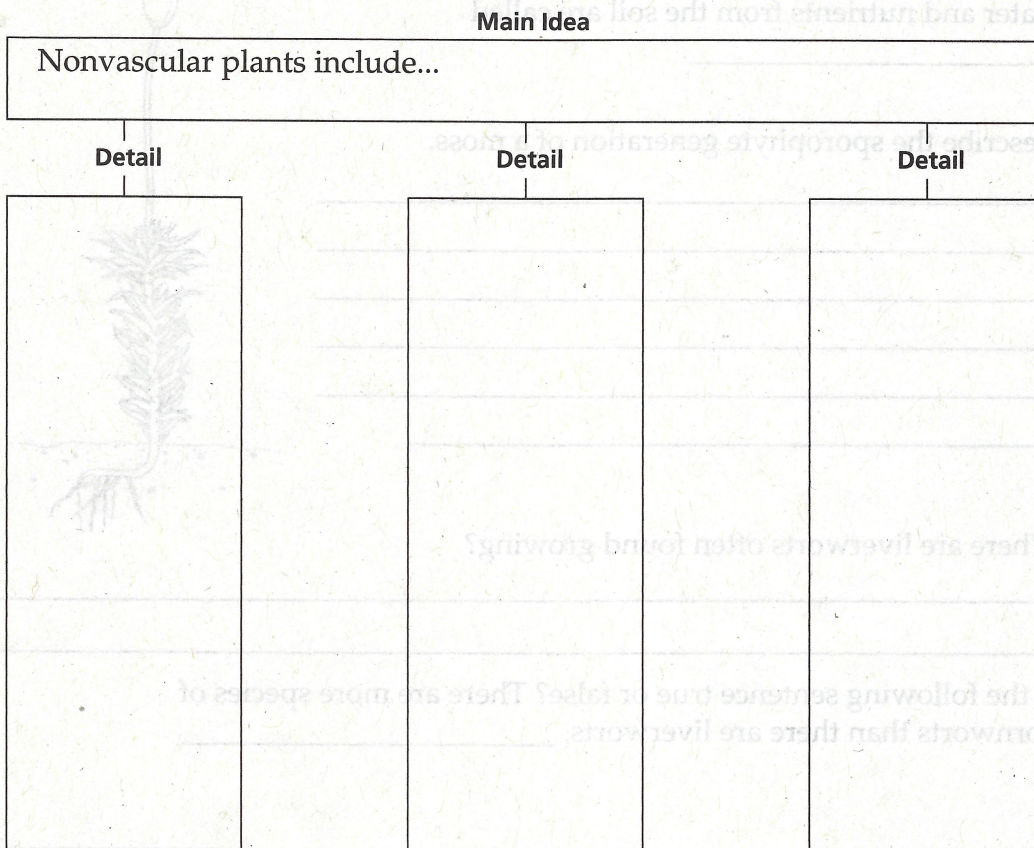
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Plants Without Seeds (pp. 256–260)

This section describes the characteristics of nonvascular plants and seedless vascular plants.

Use Target Reading Skills

As you read the section, write the main idea—the biggest or most important idea—in the graphic organizer below. Then write three supporting details that give examples of the main idea.



Nonvascular Plants (pp. 256–257)

1. List two characteristics of nonvascular plants.
 - a. _____
 - b. _____
2. Is the following sentence true or false? Nonvascular plants can become very large and tall because of their support system. _____

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Plants Without Seeds (continued)

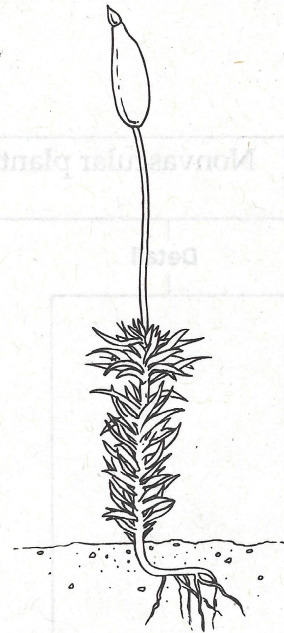
3. How do nonvascular plants get water?

4. Is the following true or false? Nonvascular plants must have water to let the sperm cells swim to the egg cells. _____

5. Label and circle the gametophyte and the sporophyte in the diagram of the moss.

6. Thin, rootlike structures that anchor moss and absorb water and nutrients from the soil are called _____.

7. Describe the sporophyte generation of a moss.



8. Where are liverworts often found growing?

9. Is the following sentence true or false? There are more species of hornworts than there are liverworts. _____

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Seedless Vascular Plants (pp. 258–260)

10. List two characteristics that ferns, club mosses, and horsetails share.
- a. _____
 - b. _____
11. Circle the letter before each sentence that is true about vascular tissue.
- a. Plants can grow tall without vascular tissue.
 - b. Nonvascular plants are better suited to life on land.
 - c. Vascular tissue transports water and food throughout a plant's body.
 - d. Vascular tissue gives a plant strength and stability.
12. Why must ferns, club mosses, and horsetails grow in moist surroundings?
- _____
- _____
- _____
13. Is the following sentence true or false? Ferns are small plants that can only grow low to the ground. _____
14. Fern leaves are called _____.
15. What is the function of the cuticle on the upper surface of fern leaves?
- _____
- _____
16. How are club mosses and horsetails similar to ferns?
- _____
- _____
- _____
17. Circle the letter before each sentence that is true about club mosses and horsetails.
- a. There are thousands of different species of club mosses and horsetails.
 - b. Club mosses usually grow in moist woodlands and near streams.
 - c. Club mosses have jointed stems with long, needlelike branches that grow in a circle around each joint.
 - d. Horsetail stems contain silica, a gritty substance also found in sand.

Plants ▪ *Guided Reading and Study***The Characteristics of Seed Plants** (pp. 262–271)

This section tells about the characteristics of seed plants. It also describes the parts of a seed and the functions of leaves, stems, and roots.

Use Target Reading Skills

As you read, make an outline about seed plants that you can use for review. Use the red headings for the main topics and blue headings for the supporting ideas.

The Characteristics of Seed Plants

- I. What is a Seed Plant?
 - A. Vascular Tissue
 - B.
- II. How Seeds Become New Plants
 - A.
 - B.
 - C.

What Is a Seed Plant? (pp. 262–263)

1. Circle the letter of each sentence that is true about seed plants.
 - a. Seedless plants outnumber seed plants.
 - b. Seed plants do not have vascular tissue.
 - c. Seed plants use seeds to reproduce.
 - d. All seed plants have roots, leaves, and stems.
2. In seed plants, the plants that you see are in the _____ stage of the life cycle. The _____ stage is microscopic.
3. In what two ways does vascular tissue help seed plants to live on land?
 - a. _____
 - b. _____
4. Circle the letter of the vascular tissue through which food moves.
 - a. xylem
 - b. phloem
 - c. roots
 - d. stems

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5. Circle the letter of the vascular tissue through which water moves.
- a. xylem
 - b. phloem
 - c. roots
 - d. stems
6. Food made in the plant's _____ travels to the roots and stems.
7. Water and nutrients absorbed by the plant's _____ travel to the stems and leaves.
8. What is a seed?

9. Is the following sentence true or false? Pollen delivers sperm cells directly near the eggs. _____

How Seeds Become New Plants (pp. 264–266)

Match the part of the seed with its function.

Seed Part	Function
____ 10. embryo	a. Keeps the seed from drying out
____ 11. cotyledon	b. Young plant that develops from the fertilized egg
____ 12. seed coat	c. A seed leaf that sometimes stores food

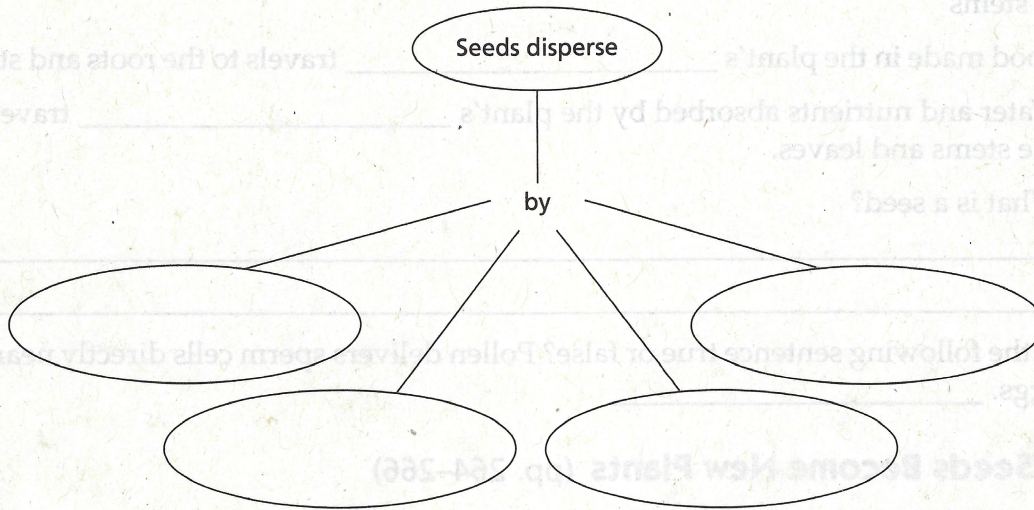
13. What do seeds need to develop into a new plant?

14. Is the following sentence true or false? Seeds can begin to grow in any place they land. _____

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The Characteristics of Seed Plants (continued)

15. Complete the concept map to show ways that seeds are dispersed.



16. What is germination?

17. Circle the letter before each sentence that is true about germination.

- a. All seeds germinate immediately after they are dispersed.
- b. The embryo uses its stored food to begin to grow.
- c. First, the embryo's leaves and stem grow upward.
- d. Seeds that are dispersed far away from the parent have a better chance of survival.

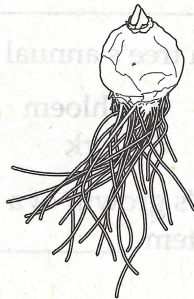
Roots (pp. 266–267)

18. List three functions of roots.

- a. _____
- b. _____
- c. _____

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19. Look at the two types of root systems illustrated below. Label the roots as taproot or fibrous roots.



a. _____



b. _____

Match the root structure with its function.

Root Structure	Function
_____ 20. root cap	a. Moves food to the roots and other parts of plant
_____ 21. root hairs	b. Protects the root from injury during growth
_____ 22. phloem	c. Moves water and minerals to the stems and leaves
_____ 23. xylem	d. Increase the amount of water and minerals absorbed by the root

24. Circle the letter of the cell layer that produces new phloem and xylem.

- a. heartwood
- b. sapwood
- c. bark
- d. cambium

Stems (pp. 268–269)

25. List three functions of stems.

- a. _____
- b. _____
- c. _____

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The Characteristics of Seed Plants *(continued)*

26. Is the following sentence true or false? Herbaceous stems are hard and rigid and have an outer layer called bark. _____
27. What is heartwood?

28. Circle the letter before the tissue that makes up a tree's annual rings.
- | | |
|------------|-----------|
| a. xylem | b. phloem |
| c. cambium | d. bark |
29. Is the following sentence true or false? One year's growth of a tree is represented by one pair of light and dark rings in the tree's stem. _____

Leaves (pp. 270–271)

30. What role do leaves play in a plant?

Match the leaf part with its function.

Leaf Part	Function
_____ 31. cuticle	a. Widely spaced cells allow carbon dioxide and oxygen to pass in and out of the leaf.
_____ 32. xylem	b. Carries water from the roots to the leaves
_____ 33. phloem	c. Waxy, waterproof coating that covers a leaf's surface
_____ 34. stomata	d. Contain the most chloroplasts
_____ 35. lower leaf cells	e. Carries food made in the leaves to the rest of the plant
_____ 36. upper leaf cells	f. Tiny pores that open and close to let carbon dioxide in and water vapor and oxygen out

37. Is the following sentence true or false? The upper leaf cells are tightly packed to trap the energy in sunlight. _____
38. The process by which water evaporates from a plant's leaves is called _____.
39. Is the following sentence true or false? Stomata close to keep the plant from losing water. _____

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Gymnosperms and Angiosperms (pp. 272–281)

This section gives examples of the group of seed plants known as gymnosperms and angiosperms and describes their features and how they reproduce.

Use Target Reading Skills

Using a word in a sentence helps you think about how best to explain the word. After you read the section, reread the paragraphs that contain definitions of Key Terms. Use all the information you have learned to write a meaningful sentence using each Key Term.

Gymnosperms (pp. 272–273)

1. What is a gymnosperm?

2. Is the following sentence true or false? Gymnosperms have seeds that are not enclosed by a fruit. _____

3. Is the following sentence true or false? Gymnosperms are the oldest type of seed plant. _____

Match the gymnosperms with their features. Some gymnosperms may be used more than once.

Features	Gymnosperms
___ 4. Only one species exists today.	a. cycads
___ 5. They are the largest group of gymnosperms.	b. ginkgoes
___ 6. These plants live in hot deserts and in tropical rain forests.	c. gnetophytes
___ 7. They grow in tropical and subtropical areas.	d. conifers
___ 8. Most keep their needles year round.	
___ 9. These plants look like palm trees with giant cones.	
___ 10. Often planted along city streets because they tolerate air pollution.	

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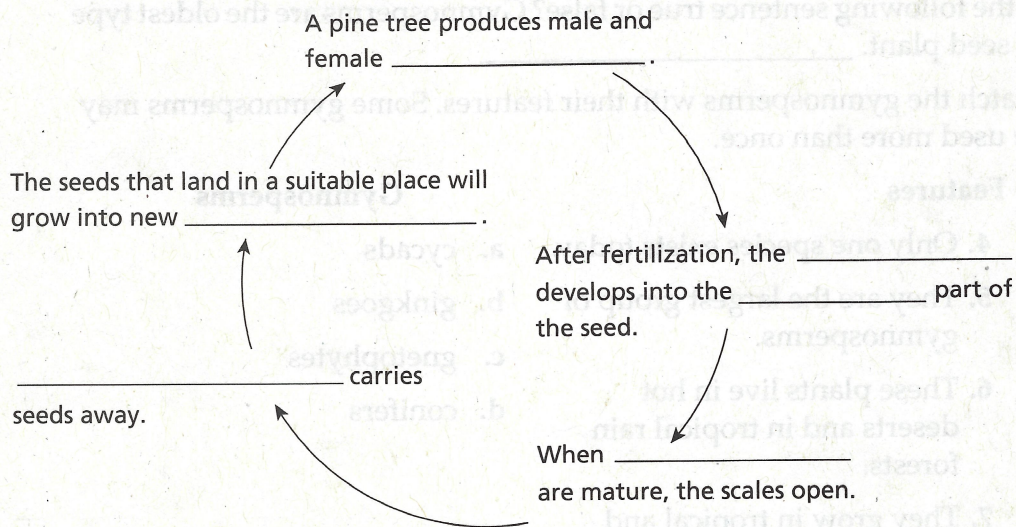
Gymnosperms and Angiosperms (continued)

Reproduction in Gymnosperms (pp. 274–275)

11. Most gymnosperms have reproductive structures called _____.
12. Is the following sentence true or false? Male cones contain ovules at the base of each scale. _____
13. A structure that contains an egg cell is a(n) _____.
14. What happens during pollination?

15. Is the following sentence true or false? In gymnosperms, wind often carries the pollen from the male cones to the female cones.

16. Complete the cycle diagram showing the steps in the reproduction of gymnosperms.



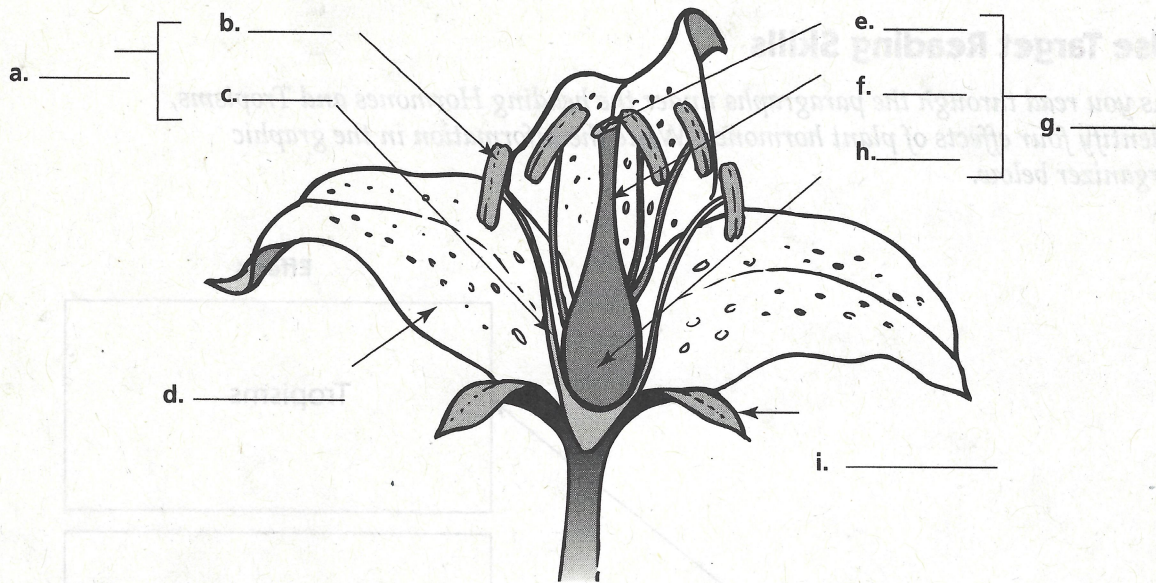
Angiosperms (p. 276)

17. A plant that produces seeds that are enclosed in a fruit is called a(n) _____.
18. List two characteristics of angiosperms.
 - a. _____
 - b. _____

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The Structure of Flowers (pp. 276–277)

19. Label the parts of the flower in this diagram.



Reproduction in Angiosperms (pp. 278–279)

20. When a flower is pollinated, a grain of pollen falls on a(n) _____.
21. In what part of the flower do the sperm cell and the egg cell join together?

22. Is the following sentence true or false? All angiosperms rely on wind for pollination. _____
23. Describe how animals help to pollinate flowers.

Seed Plants in Everyday Life (p. 281)

24. Circle the letter of each product that conifers provide.
 - a. fruit _____
 - b. paper _____
 - c. turpentine _____
 - d. cotton fibers _____
25. Is the following sentence true or false? Angiosperms are an important source of food for other organisms. _____

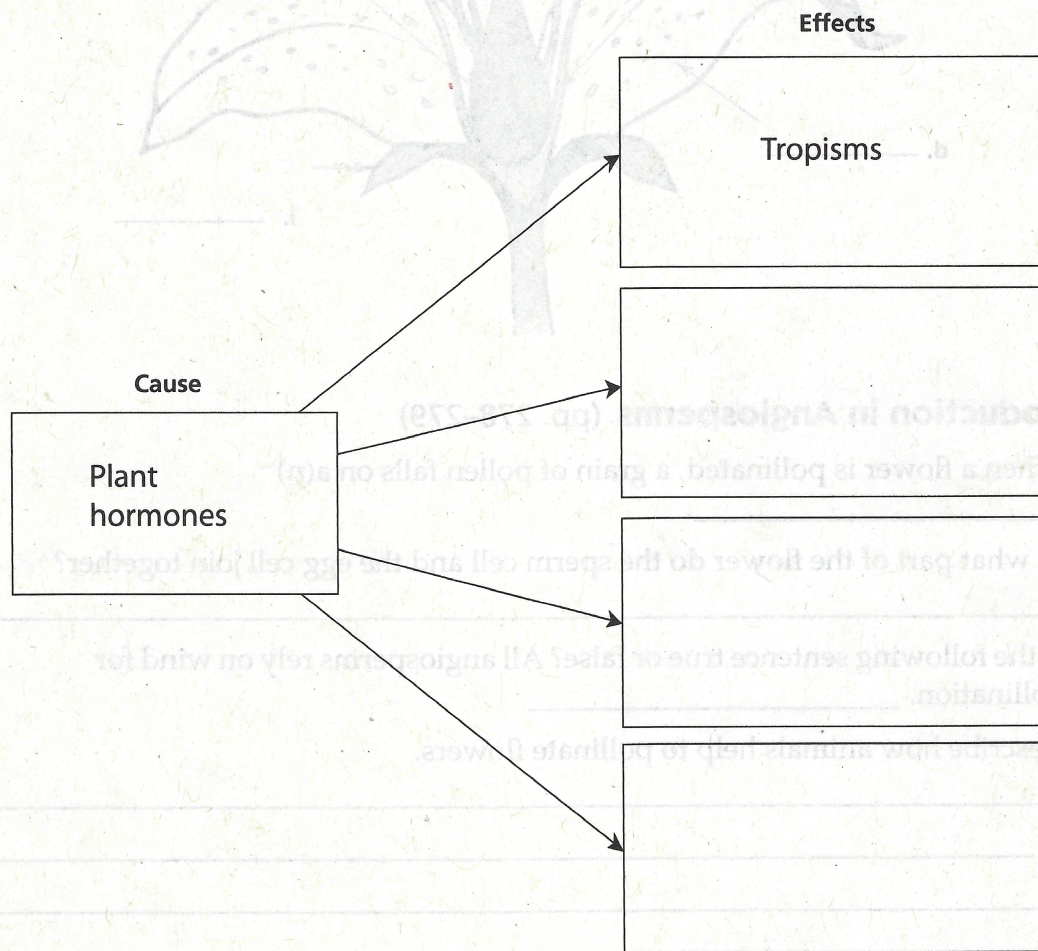
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Plant Responses and Growth (pp. 284–287)

This section explains how plants respond to stimuli in their environment. It also describes the role of plant hormones and the life spans of flowering seed plants.

Use Target Reading Skills

As you read through the paragraphs under the heading *Hormones and Tropisms*, identify four effects of plant hormones. Write the information in the graphic organizer below.



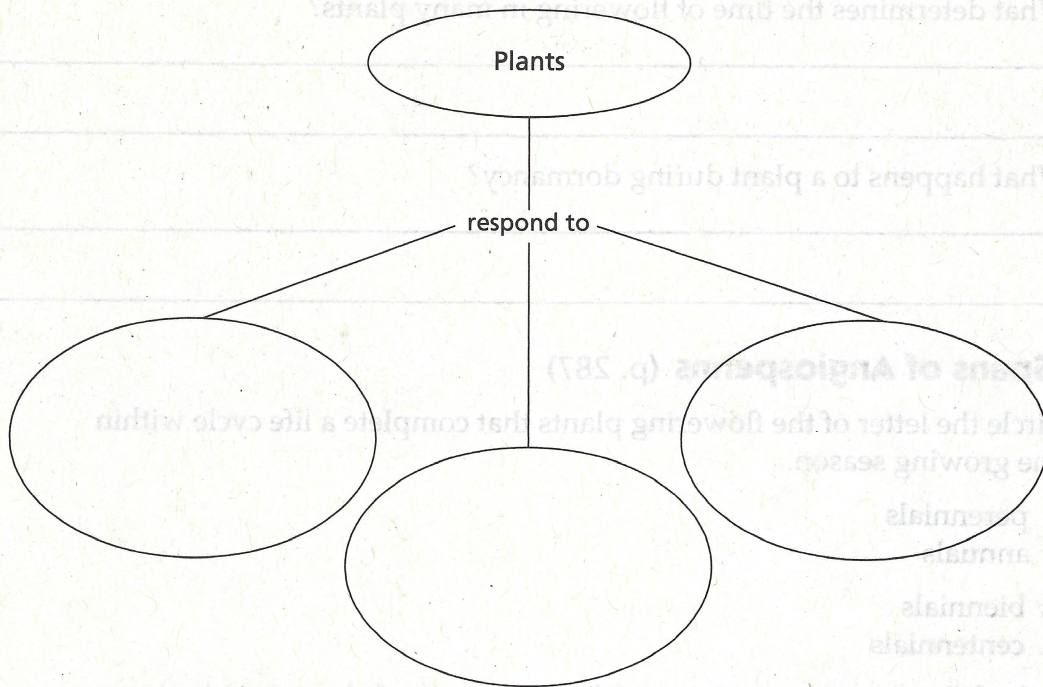
Tropisms (pp. 284–285)

1. What is a tropism?

2. Is the following sentence true or false? If a plant grows toward the stimulus, it shows a negative tropism. _____

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3. Complete the concept map to show three stimuli to which plants respond.



4. A chemical that affects how a plant grows and develops is a(n) _____.

5. What do plant hormones control?

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

6. Auxin is a plant hormone that _____ the rate at which a plant's cells grow.

7. Describe how auxin controls a plant's response to light.

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Plant Responses and Growth *(continued)*

Seasonal Changes (p. 286)

8. What determines the time of flowering in many plants?

9. What happens to a plant during dormancy?

Life Spans of Angiosperms (p. 287)

10. Circle the letter of the flowering plants that complete a life cycle within one growing season.

- a. perennials
- c. annuals
- b. biennials
- d. centennials

11. Is the following sentence true or false? Most annuals have woody stems.

12. Circle the letter of each sentence that is true about biennials.

- a. Biennials complete their life cycle in two years.
- b. In the first year, biennials produce seeds and flowers.
- c. In the second year, biennials germinate and grow roots.
- d. Once the flower produces seeds, the biennial dies.

13. How long is the life cycle of a perennial?

14. Circle the letter of the plant that is a perennial.

- a. parsley
- c. cucumber
- b. peony
- d. petunia
