CHAPTER 16 STUDY GUIDE

PLANT ADAPTATIONS

Section 16.1 From Water to Land

In your textbook, read about the origin of plants.

Answer the following questions.

1. What are three kinds of evidence that support the conclusion that all modern plants are descendants of green algae?

2. How do the differences between a water environment and a land environment affect plant life?

3. How do vascular plants differ from nonvascular plants?

The diagram represents a plant that has adapted to life on land. On the blank next to each adaptive structure, write the letter of the indicated life process.

PLANT LIFE PROCESSES

a. Absorbs water and nutrients

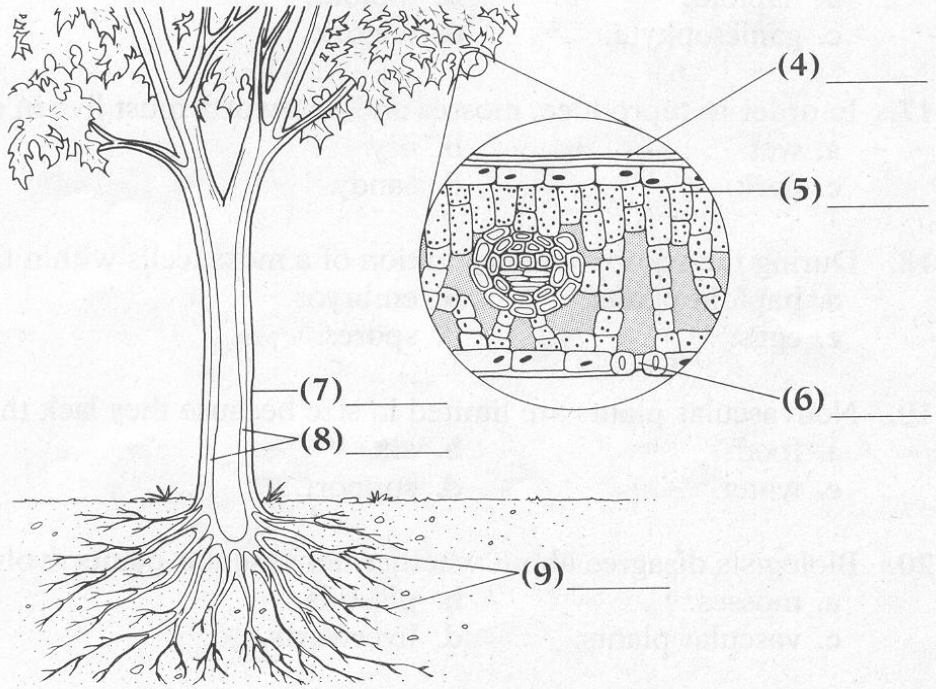
b. Transports water

c. Provides support

d. Produces food

e. Prevents water loss

f. Allows for exchange of gases



PLANT ADAPTATIONS

Section 16.1 From Water to Land continued

In your textbook, read about nonvascular plants.

Determine if the statement is true. If it is not, rewrite the italicized part to make it true.

10. Most nonvascular plants are classified into *two divisions* and two classes. _____

11. The two classes of nonvascular plants are *mosses and liverworts.* _____

12. Most species of mosses and liverworts inhabit shady, *dry areas.* _____

13. *Decayed organic matter* is responsible for the green color of mosses and liverworts.

_____

14. Rootlike structures called *thalluses* serve as anchors for mosses and liverworts and take in water and nutrients. _____

15. Because they are so small, nonvascular plants can grow only very close to or *directly on* their sources of nutrients. _____

In your textbook, read about the plant life cycle and the origin of nonvascular plants.

Circle the letter of the choice that best completes the statement.

16. The life cycles of all nonvascular plants is divided into two alternating generations, the sporophyte and the
    a. haploid. **b.** diploid.
    c. gametophyte. **d.** meiotic.

17. In order to reproduce, mosses and liverworts must live in an environment that is
    a. wet. **b.** dry.
    c. dark. **d.** sandy.

18. During the sporophyte generation of a moss, cells within the tips of the stalks form
    a. haploid plants. **b.** embryos.
    c. eggs. **d.** spores.

19. Nonvascular plants are limited in size because they lack thick-walled cells that provide
    a. food. **b.** air.
    c. water. **d.** support.

20. Biologists disagree about whether nonvascular plants evolved from green algae or from
    a. mosses. **b.** plastids.
    c. vascular plants. **d.** liverworts.

Name Date Class

PLANT ADAPTATIONS

Section 16.2 Vascular Plants

In your textbook, read about simple vascular plants and ferns.

Complete the table by writing the name of one or more kinds of plants for each. Use these choices:

club mosses horsetails ferns

	Characteristic	Plant Type
1.	The sporophyte generation has roots, stems, and leaves.	
2.	Pore size is controlled by specialized cells.	
3.	Sporangia-bearing leaves cluster to form a clublike shape.	
4.	Small, triangular-shaped, thin leaves and a hollow stem are typical of these.	
5.	Although appearing at about the same time in the fossil record, these plants evolved into more species.	
6.	Generally are adapted to damp soil	
7.	Evolved leaves that are adapted for reproduction by spores.	
8.	The tissues of some of these contain silica.	
9.	Early forms of these grew as tall as modern trees.	
10.	Some modern species of these are still the size of trees.	

Complete each statement.

11. The underground stem of the fern, called a(n) _____ , stores food in the form of starch.

12. The lacy leaves of the fern are called _____ .

13. Scouring rushes are _____ which contain silica, an abrasive substance.

14. _____ are the reproductive structures in which spores are found.

15. The stems and fronds of ferns are covered with a(n) _____ that prevents loss of water.

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PLANT ADAPTATIONS

Section 16.2 Vascular Plants continued

In your textbook, read about the seed-bearing plants and angiosperms.

Circle the letter of the correct choice.

16. The function of a seed is protection of the
- **a.** petals.
- **b.** plant.
- **c.** sperm.
- **d.** embryo.

17. Gymnosperms are plants with seeds not contained in a(n)
- **a.** fruit.
- **b.** embryo.
- **c.** cycad.
- **d.** rhizome.

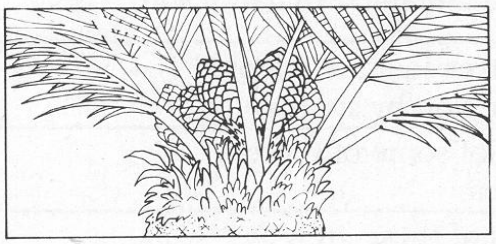
18. Trees such as the juniper, pine, and spruce are examples of
- **a.** ferns.
- **b.** nonvascular plants.
- **c.** conifers.
- **d.** angiosperms.

Several seed-bearing plants are shown below. Identify each by writing the word gymnosperm or angiosperm.

19.

_____

20.



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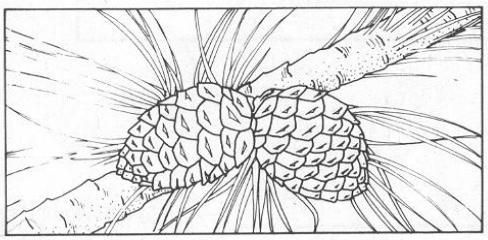

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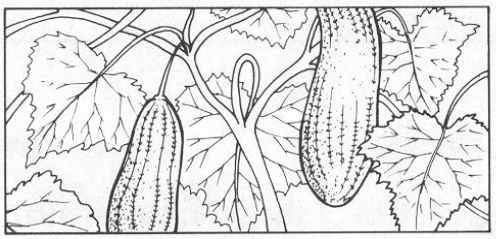

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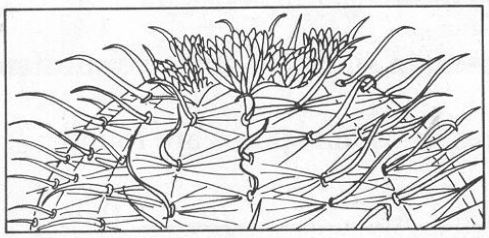

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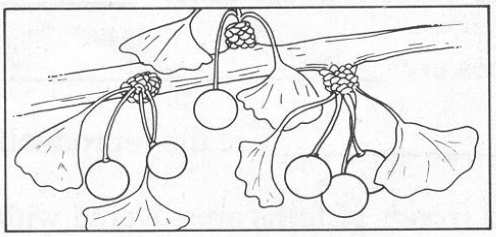

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PLANT ADAPTATIONS

Section 16.2 Vascular Plants continued

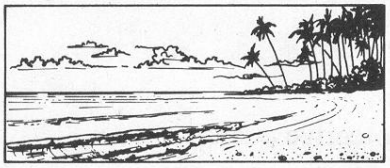
For each item in Column A, write the letter of the matching item in Column B.

Column A	Column B
____ **25.** Male reproductive organ of a flower	**a.** Pistil, made up of an ovary, a style, and a stigma
____ **26.** Has reproductive organs in flowers, instead of in cones	**b.** Petals that form a row of leaflike structures in flowers
____ **27.** Outer row of leaves that make up flowers	**c.** Gymnosperm, a plant whose seeds have no protective covering
____ **28.** Earliest of the seed-bearing plants to evolve	**d.** Stamen, made up of an anther and a filament
____ **29.** Part of the flower that may be brightly colored and give off a fragrance	**e.** Sepals that enclose and protect flowers
____ **30.** Female reproductive organ of a flower	**f.** Angiosperm, or flowering plant

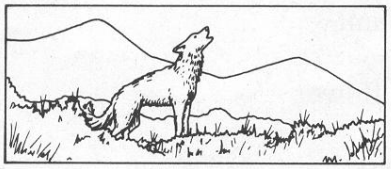
The column on the right shows a variety of seeds. Write the letter for each seed next to that seed's possible means of dispersal. (Different seeds may have the same means of dispersal.)

Means of Dispersal **Seed**

____ **31.**



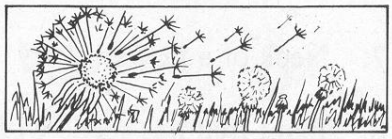
____ **32.**



____ **33.**

____ **34.**

a.



b.

c.

d.

e.

Name Date Class

PLANT ADAPTATIONS

Chapter 16 Vocabulary

Review the new words in Chapter 16 of your textbook.

From the list below, select the term that fits each description. You will not use all the terms.

alternation of generations	ovary	sporangium
angiosperm	petal	sporophyte generation
anther	pistil	stamen
conifer	pollen	stigma
cuticle	rhizome	style
fruit	seed	thallus
gametophyte generation	sepal	vascular tissue
gymnosperm		

_____ **1.** Flat body of a liverwort

_____ **2.** Part of a flower in which female gametes are produced

_____ **3.** Underground stem of a fern

_____ **4.** Reproductive structure that produces spores

_____ **5.** Waxy layer on stems and leaves that helps a plant conserve water

_____ **6.** Plant embryo enclosed in protective coat

_____ **7.** Neck of a flower ovary

_____ **8.** Plant that has seeds with no protective coat

_____ **9.** Contains seeds of a flowering plant

_____ **10.** Female reproductive organ in a flower

_____ **11.** Type of plant with seeds in cones

_____ **12.** Flowering plant

_____ **13.** Sticky surface at the tip of the style

_____ **14.** Contains the sperm of a seed plant

_____ **15.** Outer row of leafy structures of a flower

_____ **16.** Part of the flower where male gametes and pollen are produced