

Introduction to plants chapter 4**/23****Section: What Is a Plant?**

1. Why couldn't you eat much without plants?

PLANT CHARACTERISTICS

- _____ 2. What is the name of the green pigment that captures energy from the sun?
- a. organelles
b. chlorophyll
c. carbon dioxide
d. chloroplasts
- _____ 3. Plants use energy from sunlight to make food from carbon dioxide and water. This process is called
- a. chloroplasts.
b. organelles.
c. photosynthesis.
d. producers.
- _____ 4. What does the cuticle do?
- a. It captures energy from the sun.
b. It creates air.
c. It keeps plants from drying out.
d. It grows into chloroplasts.

Match the correct definition with the correct term. Write the letter in the space provided.

- | | |
|---|------------------|
| _____ 5. rigid structure that surrounds a plant cell | a. vacuole |
| _____ 6. structure that contains chlorophyll | b. cell membrane |
| _____ 7. chamber that stores water | c. cell wall |
| _____ 8. a substance that forms a hard material in cell walls | d. carbohydrates |
| _____ 9. structure that lies beneath the cell wall | e. chloroplast |
10. Plants make spores in the _____ stage.

Directed Reading A *continued*

11. When the spores of some plants grow, the new plants are called _____.

12. The fertilized egg of a gametophyte grows into a(n) _____.

PLANT CLASSIFICATION

Match the correct definition with the correct term. Write the letter in the space provided.

_____ 13. an example of a nonvascular plant

_____ 14. plants without specialized conducting tissues

_____ 15. an example of a seedless vascular plant

_____ 16. plants have tissues to deliver water and nutrients from one part of the plant to another

_____ 17. vascular seed plant that does not flower

_____ 18. flowering plant with seeds inside a fruit

a. nonvascular plants

b. vascular plants

c. gymnosperm

d. angiosperm

e. fern

f. liverwort

THE ORIGIN OF PLANTS

19. Scientists think modern green algae and plants are descended from ancient green algae that lived in the oceans. What are the similarities between modern green algae and plants?

1

2

3

4

5

5pts

Skills Worksheet

Section 2 introduction to plants ch 4 /30

Section: Seedless Plants

1. List the two groups of seedless plants.

2pts

NONVASCULAR PLANTS

- _____ 2. Nonvascular plants get the water they need

- a. from rhizomes.
- b. from the environment or nearby cells.
- c. from the ground through their roots.
- d. from vascular tissues.

- _____ 3. Rhizoids are like roots because

- a. they contain vascular tissue.
- b. they do not contain vascular tissue.
- c. they help hold the plant in place.
- d. they live in large groups.

- _____ 4. Rhizoids help nonvascular plants

- a. become tall and leafy.
- b. develop vascular parts.
- c. obtain water and nutrients.
- d. produce spores.

- _____ 5. Which of the following is true of liverworts?

- a. They usually live in dry places.
- b. They are very large.
- c. They are vascular plants.
- d. Their gametophytes can be mosslike and leafy.

6. List three reasons why nonvascular plants are important.

3pts

SEEDLESS VASCULAR PLANTS

7. Ancient _____ grew to 40 m, but are smaller today.

Directed Reading A *continued*

8. An underground stem from which new leaves and roots grow is called a(n) _____.

9. Describe the fern gametophyte.

2pts

10. Young fronds are called _____ because of how they are coiled.

Match the correct definition with the correct term. Write the letter in the space provided.

- | | |
|--|---------------------------|
| _____ 11. structure where silica is found in horsetails | a. 20 cm |
| _____ 12. substance that has a gritty texture | b. club mosses |
| _____ 13. plants that have life cycles similar to horsetails | c. stem |
| _____ 14. pioneers used them to scrub pans | d. horsetails |
| _____ 15. height of some modern horsetails | e. vascular tissue |
| _____ 16. height of some modern club mosses | f. silica |
| _____ 17. plants that grow in woodlands | g. 8 m |
| _____ 18. tissue found in club mosses but not in mosses | h. ferns |

19. What roles do seedless vascular plants play in the environment?

3pts

Directed Reading A *continued*

20. Name two kinds of seedless vascular plants that are popular houseplants.

2pts

21. Name two kinds of seedless vascular plants that can be eaten by humans.

2pts

22. In what way are fossilized seedless vascular plants that died 3 million years ago important to humans?

Section 3 introduction to plants ch 4 /41

Section: Seed Plants

1. How are gymnosperms and angiosperms different?

CHARACTERISTICS OF SEED PLANTS

Fill in each blank with either "seedless plants" or "seed plants."

2. In _____, the gametophytes do not live independently of the sporophytes.
3. The gametophytes of _____ form within the reproductive structures of the sporophyte.
4. The sperm of _____ need water to swim to the eggs of female gametophytes.
5. The sperm of _____ can reach the eggs without the help of water.
6. The sperm of _____ form inside of pollen, which is carried by wind or by animals
7. The most common plants on Earth are _____.

Directed Reading A *continued*

THE STRUCTURE OF SEEDS

Match the correct definition with the correct term. Write the letter in the space provided.

- | | |
|--|-------------------------|
| _____ 8. the young plant within a seed | a. cotyledons |
| _____ 9. structure that surrounds and protects the young plant | b. fertilization |
| _____ 10. seed leaves of a young plant | c. food storage |
| _____ 11. joining of sperm and egg | d. seed coat |
| _____ 12. often the purpose of the cotyledons | e. sporophyte |
| 13. Name two advantages of seeds over spores. | |

2pts

GYMNOSPERMS

- _____ 14. Seed plants that do not have flowers or fruit are called
- | | |
|------------------------|-------------------------|
| a. sporophytes. | c. gametophytes. |
| b. angiosperms. | d. gymnosperms. |
- _____ 15. Gymnosperm seeds are usually protected by
- | | |
|-------------------|-------------------|
| a. leaves. | c. fruits. |
| b. cones. | d. humans. |
- _____ 16. The most economically important gymnosperms are the
- | | |
|---------------------|------------------------|
| a. conifers. | c. cycads. |
| b. ginkgoes. | d. gnetophytes. |
- _____ 17. Three things that conifers are used for are
- | |
|--|
| a. building materials, cancer drugs, and gardens and parks. |
| b. paper products, resin, and syrup. |
| c. allergy drugs, leather, and resin. |
| d. building materials, fresh fruit, and gardens and parks. |

Directed Reading A *continued*

Match the correct definition with the correct term. Write the letter in the space provided.

- | | |
|---|-----------------------|
| _____ 18. most are evergreens | a. ginkgoes |
| _____ 19. group of gymnosperms that are shrubs that grow in dry areas | b. cycads |
| _____ 20. group of gymnosperms with only one living species | c. conifers |
| _____ 21. gymnosperms that grow in the Tropics | d. gnetophytes |
22. During the pine life cycle, sex cells are produced in the _____.
23. The male _____ of gymnosperms are found in pollen.
24. Pollen is carried from the male cone to the female cone by _____.
25. Some pine cones release seeds only during _____.
26. The transfer of pollen from the male reproductive structures to the female reproductive structures of seed plants is called _____.

ANGIOSPERMS

- _____ 27. About how many species of angiosperms can be found today?
- a.** over 1,000
 - b.** at least 235,000
 - c.** just a few
 - d.** over one million
28. How are angiosperm fruits and seeds transported to new areas?
- _____
- _____
- _____

Directed Reading A *continued*

Each of the following phrases describes, or is an example of, either a monocot or a dicot. In the space provided, write M for a monocot and D for a dicot.

- _____ **29.** plant that has one cotyledon (seed leaf)
- _____ **30.** vascular tissue in bundles that are scattered
- _____ **31.** plant that has leaves with branching veins
- _____ **32.** flower parts in threes
- _____ **33.** vascular tissue in a ring
- _____ **34.** flower parts in fours or fives

35. Explain the difference between the way that a field mouse and the way that an owl benefit from flowering plants.

2pts

36. List three ways that people use flowering plants.

3pts

Section 4 introduction to plants ch 4 /55

Section: Structures of Seed Plants

- _____ 1. Vascular tissue that transports water and minerals through a plant is called
- a. shoots.
 - b. xylem.
 - c. phloem.
 - d. leaves.
- _____ 2. Vascular tissue that transports food molecules to all parts of a plant is called
- a. shoots.
 - b. xylem.
 - c. phloem.
 - d. leaves.

ROOTS

3. Most root systems are located _____.
4. What are the three main functions of roots?

3pts

Match the correct definition with the correct term. Write the letter in the space provided.

- | | |
|--|-----------------|
| _____ 5. cells of the epidermis that extend from the root | a. fibrous root |
| _____ 6. group of cells that produces a slimy substance | b. root tip |
| _____ 7. root system with one main root | c. epidermis |
| _____ 8. layer of cells that cover root surfaces | d. surface area |
| _____ 9. plants that usually have fibrous roots | e. taproot |
| _____ 10. structure protected by the root cap | f. root hairs |
| _____ 11. what root hairs increase | g. monocots |
| _____ 12. root system in which roots are usually the same size | h. root cap |

Directed Reading A *continued*

STEMS

- _____ **13.** Which of the following is NOT true about stems?
- a.** Stems are always located above the ground.
 - b.** Stems connect the roots to the leaves and flowers.
 - c.** Stems display flowers to pollinators.
 - d.** Stems can store water.
- _____ **14.** What does xylem do?
- a.** It carries food to plant parts.
 - b.** It dissolves minerals and food.
 - c.** It carries water and minerals from the roots to the leaves.
 - d.** It grows longer roots.
- _____ **15.** What does phloem do?
- a.** It carries food to plant parts.
 - b.** It participates in photosynthesis.
 - c.** It takes water and minerals to stems.
 - d.** It dissolves minerals.
- _____ **16.** Stems that are soft, thin, and flexible are
- a.** xylem.
 - b.** herbaceous.
 - c.** phloem.
 - d.** woody.
- 17.** Name two examples of plants with herbaceous stems.

2pts

- 18.** What is a growth ring?

Directed Reading A *continued*

LEAVES

- _____ **19.** What is the main function of leaves?
- a.** They create water for the plant.
 - b.** They keep insects away from the plant.
 - c.** They make food for the plant.
 - d.** They absorb oxygen for the plant.

- 20.** From top to bottom, list the four layers in a leaf.

4pts

- 21.** Most photosynthesis takes place in the _____ in the middle of the leaf.

Match the correct definition with the correct term. Write the letter in the space provided.

- | | |
|---|--------------------------|
| _____ 22. cells that open and close the stomata | a. stoma |
| _____ 23. layer of cells that contains many chloroplasts | b. guard cells |
| _____ 24. a single layer of cells beneath the cuticle | c. spongy layer |
| _____ 25. a tiny opening that allows carbon dioxide to enter the leaf | d. epidermis |
| _____ 26. layer where carbon dioxide moves freely and xylem and phloem are found | e. palisade layer |
| _____ 27. structure that prevents water loss from the leaf | f. cuticle |
- 28.** Cactus spines are _____ that protect cactuses from animals.
- 29.** The leaves of the sundew plant catch _____, which are digested to provide nitrogen to the plant.

Directed Reading A *continued*

FLOWERS

30. Why do some plants have flowers?

31. In a flower, modified leaves called _____ protect the bud.

32. The broad, flat, thin leaflike parts of a flower, called _____, attract insects and other animals.

33. The male reproductive structure of flowers is a(n) _____.

34. In flowers, a(n) _____ is the female reproductive structure.

2pts

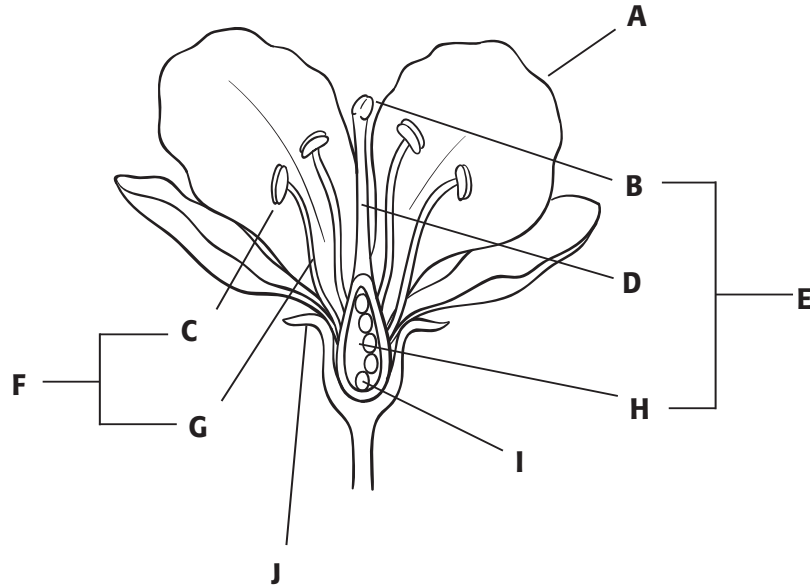
35. If the egg is fertilized, the _____ develops into a fruit and the _____ develops into a seed.

36. List three ways that humans use flowers.

3pts

Directed Reading A *continued*

Match the labels to the illustration. Write the letters in the space provided.



10pts

- _____ **37.** sepal
- _____ **38.** petal
- _____ **39.** ovary
- _____ **40.** ovule
- _____ **41.** anther
- _____ **42.** pistil
- _____ **43.** filament
- _____ **44.** stigma
- _____ **45.** style
- _____ **46.** stamen

Reinforcement

/17

Classifying Plants

Complete this worksheet after you finish reading the section "Seed Plants."

Each of the boxes below represents one of the main groups of living plants. Write the descriptions given at the bottom of the page in the appropriate box. Some descriptions may be used more than once.

Nonvascular plants	Seedless vascular plants
Vascular seed plants without flowers	Vascular seed plants with flowers

Notes

- | | | |
|---|---|--|
| <p>1 ancestors grew very tall</p> <p>2 conifers are an example</p> <p>3 provide many land animals with the food they need to survive</p> <p>4 have rhizoids, a rootlike structure</p> <p>5 angiosperms</p> | <p>6 seeds are surrounded by a fruit</p> <p>7 are the most abundant group of plants today</p> <p>8 mosses and liverworts usually the first plants to live in a new environment</p> <p>9 formed coal</p> <p>10 ferns, horsetails, and club mosses</p> | <p>11 gymnosperms must obtain water from the environment or nearby cell</p> <p>12 contain xylem and phloem to transport water and food</p> <p>13 seeds develop in a cone or in fleshy structures attached to branches</p> |
|---|---|--|

Reinforcement

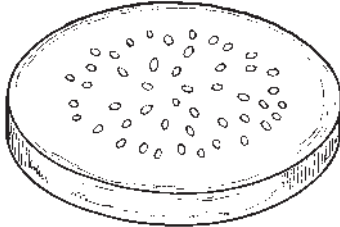
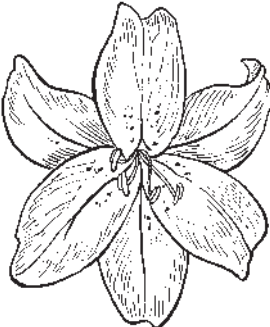
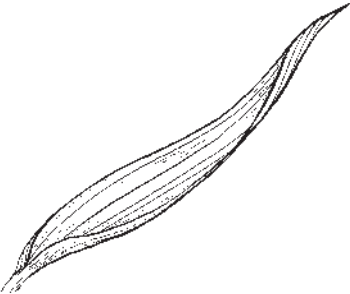
/3

Drawing Dicots

Complete this worksheet after you finish reading the section “Seed Plants”.

There are two classes of angiosperms—monocots and dicots. The main difference between the two classes is that monocots have one seed leaf and dicots have two seed leaves. However, there are other differences between them.

Below are illustrations of some of the features that distinguish monocots from dicots. Use the description of how a dicot differs from a monocot to draw the same features for a dicot.

Monocot	How is a dicot different from a monocot?	Dicot
<p>Arrangement of vascular tissue</p> 	<p>A monocot has bundles of vascular tissue scattered throughout the stem, while a dicot has bundles of vascular tissue arranged in a ring</p>	<p>Arrangement of vascular tissue</p>
<p>Flower</p> 	<p>A monocot has a flower with parts in three, while a dicot has a flower with parts in fours or fives</p>	<p>Flower</p>
<p>Pattern of leaf vein</p> 	<p>A monocot has leaves with parallel veins, while a dicot has leaves with branching veins</p>	<p>Pattern of leaf vein</p>

3pts

Activity

Vocabulary Activity

/17

Those Puzzling Plants

After you finish reading the chapter, give this puzzle a try! Solve each of the clues below, and write your answer in the spaces provided.

1. a plant with special tissues to deliver water and nutrients from one part of the plant to another

_____ 6 _____ 1

2. male reproductive structure in a flower

_____ 3 _____ 4 _____

3. Tiny granules produced in the anthers of flowers

_____ 2 _____ 8 _____

4. rootlike structures that hold mosses in place

_____ 7 _____ 11 _____ 5 _____

5. tissue that conducts food in vascular plants

_____ 10 _____

6. structures that cover and protect buds of flowers

_____ 20 _____

7. seed plants without fruit or flowers

_____ 9 _____

8. part of a flower that contains the ovules

_____ 12 _____

9. structures that attract pollinators to the flower

_____ 18 _____ 19 _____

10. plants without vascular tissue to transport materials from one part of the plant to another

_____ 13 _____ 14 _____ 25 _____

Vocabulary Activity *continued*

11. seed plants with flowers

21

16

23

12. tissue that transports water and minerals through vascular plants

26

13. underground stem of a fern

22

14. female reproductive structure in a flower

15

17

15. the transfer of pollen from the male reproductive structures to the female structures of seed plants

24

Write the letter that corresponds to each number in the empty boxes to form the beginning of a well-known poem.

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1 2 3 4 5 6 7 8 9 10 11 12 13

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14 15 16 17 18 19 20 21 22 23 24 25 26