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Name _____ Date _____ Class _____

CHAPTER 24 DIRECTED READING

Introduction to Plants

▶ Section 24-1: Adaptations of Plants

Plants Became Established on Land

Complete each statement by writing the correct term or phrase in the space provided.

1. A watertight covering, called a(n) _____ , made it possible for plants to live in drier habitats.

2. Pores called _____ enable plants to exchange oxygen and carbon dioxide.

3. A pair of specialized cells called _____ _____ borders each stoma.

Read each question, and write your answer in the space provided.

4. How did early plants obtain nutrients from Earth's rocky surface?

_____

_____

_____

5. Without water, how do the sperm of plants survive and fertilize eggs?

_____

_____

_____

Vascular Tissue, Seeds, and Flowers Made Plants Successful

Read each question, and write your answer in the space provided.

6. How do nonvascular plants differ from vascular plants?

_____

_____

_____

7. What are four advantages of seeds?

_____

_____

8. How do flowers make plant reproduction more efficient?

_____

_____

_____

A Change Occurred in Plant Life Cycles

In the space provided, write the letter of the description that best matches the term or phrase.

_____ **9.** phloem

_____ **10.** xylem

_____ **11.** shoot

_____ **12.** root

_____ **13.** meristems

a. zones of actively dividing plant cells
b. the part of a plant that grows downward
c. tissue that contains soft-walled conducting cells that transport organic nutrients
d. the part of a plant that grows upward
e. tissue that contains hard-walled conducting cells that transport water and mineral nutrients

▶ Section 24-2: Kinds of Plants

Nonvascular Plants Lack a Vascular System

Mark each statement below T ***if it is true or*** F ***if it is false.***

_____ **1.** All nonvascular plants are small and relatively simple.

_____ **2.** The sporophytes of nonvascular plants are larger than the gametophytes.

_____ **3.** Nonvascular plants do not have true roots; rhizoids anchor the gametophytes to the surfaces on which they grow.

_____ **4.** Eggs and sperm of nonvascular plants form in separate structures, which are often on separate plants.

_____ **5.** Sporophytes of nonvascular plants grow on the gametophytes and depend on them for nutrients.

Seedless Vascular Plants Do Not Make Seeds

Complete each statement by underlining the correct term or phrase in the brackets.

6. Seedless vascular plants have horizontal underground stems called [roots / rhizomes].

7. Seedless vascular plants have a vascular system with [xylem and phloem / xylem].

8. The much smaller [gametophyte / sporophyte] of seedless vascular plants develops on or below the surface of the soil.

9. Seedless vascular plants without roots and leaves are called [whisk ferns / horsetails].

10. The sporophytes of [ferns / club mosses] have a rhizome that is anchored by roots and leaves called fronds.

11. In some species of [club mosses / ferns], clusters of nongreen spore-bearing leaves form a structure called a cone.

Gymnosperms Are Seed Plants That Produce Cones

In the space provided, write which of the following ***gymnosperms*****—conifers, cycads, ginkgo,** *or* **gnetophytes—***is being described.*

_____ **12.** only one living species; has fan-shaped leaves

_____ **13.** has short stems and palmlike leaves; produces male and female cones on separate plants

_____ **14.** trees and shrubs with needlelike or tiny leaves

_____ **15.** diverse group of trees, shrubs, and vines

Angiosperms Are Seed Plants That Produce Flowers

Mark each statement below **T** *if it is true or* **F** *if it is false.*

_____ **16.** The flowers of some angiosperms are adapted for wind pollination.

_____ **17.** The primary function of a fruit is to nourish a plant embryo.

_____ **18.** The seeds of an angiosperm have a supply of stored food, called endosperm, at some time during their development.

_____ **19.** The purpose of flowers is to prevent self-pollination.

_____ **20.** Wheat, corn, rice, and lawn grasses are dicots.

_____ **21.** Plants that produce leaves with parallel veins are monocots.

▶ Section 24-3: Plants in Our Lives

Plants Provide Food for Animals

In the space provided, explain how the terms in each pair differ in meaning.

1. vegetative part, fruit

2. potatoes, root crop

3. legumes, root crops

Cereals Are the Most Important Source of Food

Read each question, and write your answer in the space provided.

4. What are cereals?

5. What is a grain?

6. What are the three most important cereal grasses?

Plants Have Many Nonfood Uses

Complete each statement by writing the correct term or phrase in the space provided.

7. After food, _____ is the single most valuable resource obtained from plants.

8. Most of the lumber cut in the United States is used in _____ _____ .

9. _____ is a drug used to stabilize irregular heart beats, and it is derived from the leaves of *Digitalis purpurea*.

10. Paper is made from strands of _____ .

5. Mushrooms are in the phylum Basidiomycota. Members of this phylum produce sexual spores in basidia and have dividing walls in their hyphae.
6. c
7. b
8. a
9. ascus
10. yeast
11. budding
12. sexually
13. sexual reproductive
14. asexually
15. poisonous

SECTION 23-3

1. A mycorrhiza is a mutualistic relationship formed between fungi and the roots of plants.
2. The fungi obtain carbohydrates made by the plants.
3. The plants are able to get more mineral nutrients, which the fungi absorb from the soil and transfer to the plants' roots.
4. penetrate
5. basidiomycete
6. A lichen is a symbiosis that consists of a fungus and a photosynthetic partner, such as a green alga or a cyanobacterium.
7. The fungus protects the photosynthetic partner from the environment and provides it with mineral nutrients.
8. The tough construction of the fungus, the photosynthetic ability of the alga or cyanobacterium, and the ability of the lichen to become dormant during drought and freezing help lichens to survive in harsh habitats.

CHAPTER 24

Introduction to Plants

SECTION 24-1

1. cuticle
2. stomata
3. guard cells
4. Fossils show that fungi lived on or within the underground parts of many early plants. These fungi may have helped early plants get nutrients.
5. The sperm of most plants are enclosed in pollen grains, which keep the sperm from drying out and enable the sperm to be transported to structures that contain eggs.
6. Nonvascular plants do not have a vascular system with well-developed vascular tissues. Vascular plants have a vascular system with well-developed vascular tissues.
7. Seeds protect embryos, provide embryos with nutrients, help to disperse plants, and keep embryos in a state of suspended animation until conditions are favorable for growth.
8. Flowers attract animals that carry pollen from plant to plant. This allows plants to produce less pollen than would be needed if the pollen were dispersed by wind.
9. c
10. e
11. d
12. b
13. a

SECTION 24-2

1. T
2. F
3. T
4. T
5. T
6. rhizomes
7. xylem and phloem
8. gametophyte
9. whisk ferns
10. ferns
11. club mosses
12. ginkgo
13. cycads
14. conifers
15. gnetophytes
16. T
17. F
18. T
19. F
20. F
21. T

SECTION 24-3

1. A vegetative part is any nonreproductive part of a plant. A fruit is a reproductive part that contains seeds.
2. Potatoes are underground stems that store starch and are classified as root crops. Root crops are plants that are grown for their edible underground parts, which may or may not be roots.
3. Legumes, such as peas, soybeans, and other members of the pea family, produce protein-rich seeds in a pod. Root crops, such as potatoes, sweet potatoes, and carrots, produce underground parts that are rich in starch.
4. Cereals are grasses that are grown as food for humans and livestock.
5. A grain is the dry fruit of a cereal grass.
6. Wheat, corn, and rice are the three most important cereal grasses.
7. wood
8. building construction
9. Digitalis
10. cellulose