CHAPTER REVIEW

CONTENT REVIEW

Multiple Choice

Choose the letter of the answer that best completes each statement.

1. Flowering plants are in the class
   a. cotyledonae. c. angiospermae.
   b. gymnospermae. d. coniferae.
2. A red flower is most probably pollinated by a (an)
   a. bat. c. insect.
   b. gust of wind. d. bird.
3. Each of the following is an adaptation of plants to a life on land except
   a. tall stems. c. xylem and phloem.
   b. a waxy cuticle. d. seeds.
4. The entire male gametophyte of a seed plant is contained within the
   a. embryo. c. pollen grain.
   b. fruit. d. xylem.
5. The first seed-bearing plants were the
   a. ferns. c. conifers.
   b. mosses. d. seed ferns.
6. You examine a flower and find six petals. This flower is most likely from a
   a. monocot. c. dicot.
   b. conifer. d. fern.
7. Each of the following is a fruit except a
   a. potato. c. squash.
   b. tomato. d. strawberry.
8. Inside a seed coat, an embryo
   a. continues to grow.
   b. is kept warm.
   c. is protected from drying out.
   d. awaits fertilization.

True or False

Determine whether each statement is true or false. If it is true, write "true." If it is false, change the underlined word or words to make the statement true.

1. Codevelopment is the process by which two organisms evolve structures and behaviors complementary to each other.
2. Leaves are the organs in which most plants make food.
3. Stems absorb water and dissolved nutrients from the soil.
4. Phloem carries water up a plant stem.
5. A flower that smells like rotten meat most likely attracts birds for pollination.
6. The process of distributing seeds away from the parent plant is called seed dispersal.
7. A plant whose leaf veins form a branching network is most probably a dicot.
8. Bees gather nectar while flying.

Word Relationships

A. *An analogy is a relationship between two pairs of words or phrases generally written in the following manner: a:b::c:d. The symbol : is read "is to," and the symbol :: is read "as." For example, cat:animal::rose:plant is read "cat is to animal as rose is to plant."*

In the analogies that follow, a word or phrase is missing. Complete each analogy by providing the missing word or phrase.

1. gymnosperm:cones::angiosperm:_____
2. fruit:seeds::cones:_____
3. xylem:water::phloem:_____
4. ferns:spores::conifers:_____

B. *In each of the following sets of terms, three of the terms are related. One term does not belong. Determine the characteristic common to three of the terms and then identify the term that does not belong.*

5. net veins, parallel veins, one cotyledon, nine petals
6. bee, bird, bat, wind
7. strawberry, blueberry, apple, potato

CONCEPT MASTERY

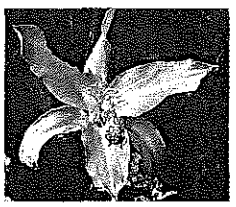
Use your understanding of the concepts developed in the chapter to answer each of the following in a brief paragraph.

1. What is seed dispersal? How does it contribute to the survival of a plant species?
2. What is a cotyledon?
3. How do seed plants help humans survive?
4. Why do botanists consider a tomato and a squash fruits?
5. How do roots and vascular tissues contribute to a redwood tree's great size?
6. How are seed plants better able to survive drier conditions than mosses and ferns?
7. What is a conifer? How does a conifer differ from an angiosperm?
8. What is wind pollination? How does wind pollination differ from vector pollination?
9. Why is it important that seeds provide food for the embryo plant?

CRITICAL AND CREATIVE THINKING

Discuss each of the following in a brief paragraph.

1. **Applying concepts** In nature, flowers have a limited range of colors. In a garden, however, flowers can have many more colors. Apply your knowledge of pollination and artificial selection to explain why.
2. **Making predictions** In the future, a terrible, fatal disease is found to affect all monocots. Predict the effect of this disease on the human population.
3. **Relating cause and effect** Scientists invent a new insecticide that can kill all the insects in the world. What important harmful effect would this have on plants?
4. **Interpreting diagrams** Examine the plant in this photograph. How many cotyledons would the seeds of this plant have? Explain your reasoning.



5. **Applying concepts** A farmer decides not to plant her fields one year. Later in the year heavier than normal rains fall on the field. Now the farmer wishes she had planted her crops. Why do you think she changed her mind?
6. **Applying concepts** Making a cut through the bark of a tree in a complete circle around the trunk often results in the death of the tree. Using your knowledge of vascular tissue, explain why this might happen.
7. **Relating facts** The seeds of a gymnosperm are probably not likely to be dispersed by animals, whereas the seeds of angiosperms are likely to be dispersed by animals. Explain why this is so.
8. **Using the writing process** Suppose all gymnosperms died out tomorrow. Write a story that details ways in which your life would be changed.

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Multiple Choice

Choose the letter of the answer that best completes each statement.

1. In order to grow well, roots need
   a. minerals. c. carbon dioxide.
   b. oxygen. d. water.
2. Openings that permit gases to enter and leave the leaf are called
   a. stomata. c. palisade cells.
   b. cuticles. d. chloroplasts.
3. A nutrient that plants use for proper leaf growth and color is
   a. zinc. c. calcium.
   b. potassium. d. nitrogen.
4. The type of plant tissue that divides by mitosis is
   a. meristematic. c. phloem.
   b. xylem. d. surface.
5. The inner part of bark is made of
   a. xylem. c. phloem.
   b. parenchyma. d. cuticle.
6. A meristematic tissue that increases the thickness of plant stems over time is
   a. vascular cambium. c. pericycle.
   b. apical meristem. d. epidermal meristem.
7. Thin-walled cells that store the products of photosynthesis are
   a. tracheids. c. sclerenchyma cells.
   b. companion cells. d. parenchyma cells.
8. A primary root that grows longer and thicker is
   a. a fibrous root. c. easy to remove.
   b. a taproot. d. not found in plants.

True or False

Determine whether each statement is true or false. If it is true, write "true." If it is false, change the underlined word or words to make the statement true.

1. Carbon dioxide enters a plant through the roots.
2. Plants lose water through the leaves by perspiration.
3. Trees grow taller because cells in the apical meristem are able to divide.
4. The waterproof covering on the outside of the leaf is the cambium.
5. Xylem tissue conducts the products of photosynthesis up through a plant's stem.
6. There is a one-way passage of materials into the vascular cylinder in plant roots.
7. The rings of a tree are made up of phloem tissue.
8. Tubers are underground roots.

Word Relationships

An analogy is a relationship between two pairs of words or phrases generally written in the following manner: a:b::c:d. The symbol : is read "is to," and the symbol :: is read "as." For example, cat:animal::rose:plant is read "cat is to animal as rose is to plant."

In the analogies that follow, a word or phrase is missing. Complete each analogy by providing the missing word or phrase.

1. xylem:water::phloem: _____
2. parenchyma:storage::sclerenchyma: _____
3. root hairs:roots::mesophyll: _____
4. water:osmosis::nutrients: _____

CONCEPT MASTERY

Use your understanding of the concepts developed in the chapter to answer each of the following in a brief paragraph.

1. Plants are said to have an open growth pattern. What does this mean?
2. If you were weeding a lawn, would you be more successful at removing weeds with a taproot or weeds with fibrous roots? Explain your answer.
3. What are three adaptations shown by plants that are able to survive in a desert?
4. Leaves are able to trap solar energy. How does their shape enable them to perform this job efficiently?
5. How are root hairs important to plants?
6. What are stomata? How do they work?
7. Why is it important for tissues in the spongy mesophyll of the leaf to remain constantly moist?

CRITICAL AND CREATIVE THINKING

Discuss each of the following in a brief paragraph.

1. **Applying concepts** Certain Native Americans used bark cut from birch trees to make canoes. Removing the bark did not kill the trees. What precautions did they take when they removed the bark?
2. **Relating concepts** The leaves of cactuses have been modified into thorns. What two functions does this modification have?
3. **Drawing conclusions** Suppose you were going away on vacation and you couldn't find anyone to water your houseplants. You knew that plants lose water through the stomata in their leaves, so you decided to cover the leaves with petroleum jelly to prevent water loss. When you returned home, you found your plants had died. What is the most logical explanation for this?
4. **Designing an experiment** Your friend says it's necessary to fertilize plants every time they are watered. His plants grow well. You decide to test his claim. Design an experiment to test your friend's hypothesis.
5. **Relating cause and effect** A corn farmer decides to save money by not fertilizing the fields. The crop grows well the first year but diminishes each succeeding year. How would you explain this situation?
6. **Relating cause and effect** In Japan, the art of growing miniature trees is highly valued. By cutting the roots and tips of the branches, the tree remains small. The trunk of the tree, however, continues to increase in diameter. How do you explain the ever-increasing diameter of the trunk?
7. **Applying concepts** During the nineteenth century, people often raised ferns and other delicate plants that normally require a great deal of water in enclosed glass containers called Wardian cases. Plants in Wardian cases did not have to be watered for years. What is the most logical explanation for this phenomenon?
8. **Applying concepts** In cold northern climates many trees lose their leaves in autumn. How is this an adaptation that helps the trees survive the cold of winter?
9. **Using the writing process** Many people find insectivorous plants interesting. Most of these plants are collected from the wild. Some scientists are concerned that too many of these plants are being collected. Write a letter to your congressional representative proposing a law to protect these plants.