



## Note-taking Worksheet

# Plants

## Section 1 An Overview of Plants

### A. Plant cells

1. Unlike animal cells, plant cells have \_\_\_\_\_, which provide structure and protection.
2. Most plant cells contain the green pigment \_\_\_\_\_.
  - a. \_\_\_\_\_—process where plants use chlorophyll to make food
  - b. Chlorophyll is found in a cell structure called a \_\_\_\_\_.
3. Many plant cells contain \_\_\_\_\_—red, yellow, or orange pigments that are also used for photosynthesis

### B. Scientists think plants probably evolved from \_\_\_\_\_ in the sea because:

1. Plants and green algae have the same types of \_\_\_\_\_ and \_\_\_\_\_.
2. Fossils of early plants are similar to the \_\_\_\_\_.

### C. When plants moved to land, they had to \_\_\_\_\_ to new conditions.

1. More sunlight and \_\_\_\_\_ were available.
2. To reduce water loss, plants developed \_\_\_\_\_—a waxy, protective layer secreted onto the surface of the plant which holds water in.
3. To increase support, cell walls developed \_\_\_\_\_, a chemical compound that provides structure and support.
4. To reproduce, plants developed water-resistant \_\_\_\_\_ and \_\_\_\_\_.

### D. Plant classification

1. **Vascular plants** use \_\_\_\_\_ to carry water and nutrients throughout the plant.
2. \_\_\_\_\_ **plants** use other ways to move water and nutrients.

## Section 2 Seedless Plants

### A. Nonvascular plants—very small plants that have **rhizoids** rather than \_\_\_\_\_

1. Water is absorbed and distributed directly through \_\_\_\_\_.
2. Grow in \_\_\_\_\_ environments
3. Reproduce by \_\_\_\_\_ rather than seeds
4. Examples of nonvascular plants:
  - a. \_\_\_\_\_—green, leaflike growths arranged around a central stalk
  - b. \_\_\_\_\_—flattened, leaflike bodies
  - c. \_\_\_\_\_—have only one chloroplast in each of their cells

## Note-taking Worksheet (continued)

5. Frequently pioneer species—organisms that are the first to grow in new or disturbed areas and which change \_\_\_\_\_ conditions
- B. Seedless vascular plants**—reproduce by spores, but have \_\_\_\_\_ tissue that carries water and nutrients throughout the plant
1. Can grow \_\_\_\_\_ and \_\_\_\_\_ than nonvascular plants
  2. \_\_\_\_\_—largest group of seedless vascular plants
    - a. Have stems, leaves, and \_\_\_\_\_
    - b. \_\_\_\_\_ are called fronds
    - c. Reproduce by \_\_\_\_\_ found on the back of their fronds
  3. Club mosses—needlelike leaves
  4. Horsetails—jointed stem with a \_\_\_\_\_ center
- C. Importance of seedless plants**
1. Fuel—decaying seedless plants are compressed into peat and eventually \_\_\_\_\_
  2. Soil conditioners
  3. \_\_\_\_\_ can be used for weaving material and basketry

### Section 3 Seed Plants

- A. Characteristics of seed plants**
1. Have leaves, stems, roots, and \_\_\_\_\_
  2. Reproduce by \_\_\_\_\_, which contain an embryo and stored food
- B. Leaves trap \_\_\_\_\_ and make food through photosynthesis.**
1. \_\_\_\_\_—a thin layer of cells on the upper and lower surfaces of a leaf
    - a. May have a waxy \_\_\_\_\_ coating the epidermis
    - b. \_\_\_\_\_—small openings in the epidermis that allow carbon dioxide, water, and oxygen to enter and exit a leaf
    - c. Each stoma is surrounded by two \_\_\_\_\_ that open and close it.
  2. Palisade layer—contains \_\_\_\_\_, where most food is made
  3. \_\_\_\_\_ layer—loosely arranged cells and air
- C. Stems allow the movement of materials between \_\_\_\_\_ and \_\_\_\_\_.**
1. Usually \_\_\_\_\_ ground
  2. \_\_\_\_\_ the branches, leaves, and flowers
  3. May store \_\_\_\_\_

**Note-taking Worksheet (continued)**

4. Two kinds:
- \_\_\_\_\_ stems—soft and green
  - \_\_\_\_\_ stems—hard, rigid, and woody
- D. Roots collect \_\_\_\_\_ and nutrients from the ground.
- Roots \_\_\_\_\_ plants so they don't blow away.
  - May store food or \_\_\_\_\_.
- E. Vascular tissue
- Xylem** tissue—transports \_\_\_\_\_ from the roots throughout the plant
  - Phloem** tissue—moves \_\_\_\_\_ from where it is made to other parts of the plant
  - Cambium** tissue—produces new \_\_\_\_\_ and \_\_\_\_\_ cells
- F. \_\_\_\_\_—vascular plants that produce seeds that are not protected by fruit
- \_\_\_\_\_ trees alive
  - Gymnosperms have no \_\_\_\_\_.
  - Leaves are \_\_\_\_\_ or scalelike, evergreens
  - Four divisions: \_\_\_\_\_, cycads, ginkgoes, and gnetophytes
  - Conifers reproduce by male and female \_\_\_\_\_.
- G. \_\_\_\_\_—vascular plants that flower and have fruit that contains seeds
- Fruit develops from \_\_\_\_\_.
  - Most fruit contains \_\_\_\_\_.
  - Two groups:
    - \_\_\_\_\_—have one cotyledon used for food storage inside their seeds
    - \_\_\_\_\_—have two cotyledon inside their seeds
  - Different angiosperms have different life cycles:
    - Annual—the plant's life cycle is completed in \_\_\_\_\_
    - Biennial—the plant's life cycle is completed in \_\_\_\_\_
    - \_\_\_\_\_—takes more than two years to grow to maturity
- H. Human life depends on \_\_\_\_\_.
- Wood for construction and paper products comes from \_\_\_\_\_.
  - Angiosperms form the basis of \_\_\_\_\_ for most animals, including humans.