



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:

- a. _____ stems—soft and green
- b. _____ stems—hard, rigid, and woody

D. Roots collect _____ and nutrients from the ground.

- 1. Roots _____ plants so they don't blow away.
- 2. May store food or _____.

E. Vascular tissue

- 1. **Xylem** tissue—transports _____ from the roots throughout the plant
- 2. **Phloem** tissue—moves _____ from where it is made to other parts of the plant
- 3. **Cambium** tissue—produces new _____ and _____ cells

F. _____—vascular plants that produce seeds that are not protected by fruit

- 1. _____ trees alive
- 2. Gymnosperms have no _____.
- 3. Leaves are _____ or scalelike, evergreens
- 4. Four divisions: _____, cycads, ginkgoes, and gnetophytes
- 5. Conifers reproduce by male and female _____.

G. _____—vascular plants that flower and have fruit that contains seeds

- 1. Fruit develops from _____.
- 2. Most fruit contains _____.
- 3. Two groups:
 - a. _____—have one cotyledon used for food storage inside their seeds
 - b. _____—have two cotyledon inside their seeds
- 4. Different angiosperms have different life cycles:
 - a. Annual—the plant's life cycle is completed in _____
 - b. Biennial—the plant's life cycle is completed in _____
 - c. _____—takes more than two years to grow to maturity

H. Human life depends on _____.

- 1. Wood for construction and paper products comes from _____.
- 2. Angiosperms form the basis of _____ for most animals, including humans.