

Plant Organs: Roots, Stems, and Leaves

Name _____

Write true if the statement is true or false if the statement is false.

- F 1. Stems absorb water and minerals and transport them to the roots. *(Arrows point from stems to roots)*
- T 2. Roots contain dermal, ground, and vascular tissues.
- T 3. Many plants with taproots use the root as a place to store food.
- F 4. Fibrous roots anchor the plant less securely to the ground than taproots. *(more securely)*
- F 5. Lateral buds grow up while terminal buds grow out. *opposite*
- F 6. The only function of stems is to bear leaves and flowers. *transport*
- T 7. The width of a tree ring represents a single year's growth in the width of the tree's stem.
- T 8. The mesophyll layers are where the majority of photosynthesis occurs in a leaf.
- T 9. Deciduous leaves change color in the fall when their chlorophyll breaks down.
- F 10. An organ is a structure made of only one type of tissue. *(many tissues, working together)*

Match the definitions with the proper term from below. Terms may be used once, more than once or not at all.

Definitions

- Annuals 1. must be planted from seed every growing season
- Root hair 2. increases the surface area for absorbing water in the root
- Evergreen Plant 3. a plant that keeps its leaves for more than one year
- Fibrous Root 4. has multiple, spreading roots without a primary root
- Stomata 5. a leaf pore flanked by two guard cells
- Deciduous Plant 6. a plant that loses its leaves yearly and grows new ones
- Root Cap 7. the tip of a root
- Bark 8. the outermost woody covering of a stem
- Petiole 9. the leaf part that supports and displays the leaf blade
- Petiole 10. The part that attaches the leaf to the stem

Terms

bark ✓	deciduous plant ✓	evergreen plant ✓	fibrous root ✓	mesophyll ✓
epidermis	petiole ✓✓	root cap ✓	root hair ✓	transpiration ✓
stomata ✓✓	taproot ✓	blade ✓	annuals ✓	perennials

Fill in the blank with the appropriate term from above. Terms may be used once, more than once or not at all.

1. The leaf blade, which is connected to the leaf petiole, is a very important photosynthetic part of a plant.
2. Another term for "pull from above" which describes the movement of water is transpiration.
3. The stomata can close to reduce water loss from the leaf.
4. mesophyll consists of photosynthetic cells located in between the upper and lower epidermis of a leaf.
5. Plants with a tap root system are less securely anchored to the ground.

Circle the letter of the correct choice.

1. Roots grown downward because
 - (a) they have vascular bundles.
 - (b) they grow opposite to the force of gravity.
 - (c) they grow away from water sources.
 - ☒ (d) there are gravity-sensing cells in the root cap.
2. The xylem of the vascular tissue in the root
 - (a) carries sugars from the leaves to the roots for storage.
 - ☒ (b) carries water and minerals from the root up to the stem.
 - (c) detects gravity and causes the root to grow downward.
 - (d) none of the above
3. The main difference between a taproot system and a fibrous root system is that
 - ☒ (a) taproots can store a lot of food, while fibrous roots do not.
 - (b) taproots absorb water, while fibrous roots do not.
 - (c) fibrous roots can access water sources deep under the ground, while taproots cannot.
 - (d) fibrous roots have an epidermal cell layer, while taproots do not.
4. In stems, the _____ meristem is responsible for growth in length, and the _____ meristem is mainly responsible for growth in width.
 - (a) secondary, primary
 - ☒ (b) primary, secondary
 - (c) node, epidermal
 - (d) epidermal, node
5. The phloem of the vascular tissue in the stem
 - ☒ (a) carries sugars from the leaves to the roots for storage.
 - (b) carries water and minerals from the root up to the stem.
 - (c) detects gravity and causes the root to grow downward.
 - (d) none of the above
6. The air spaces in the leaf interior
 - (a) block gas exchange between the mesophyll cells and the environment.
 - (b) make the leaf weigh more than a leaf packed tightly with cells.
 - ☒ (c) make the leaf weigh less than a leaf packed tightly with cells.
 - (d) carry out most of the photosynthesis in the leaf.
7. The organ responsible for absorption of water and minerals in a plant is the
 - ☒ (a) root.
 - (b) stem.
 - (c) leaf.
 - (d) all of the above.