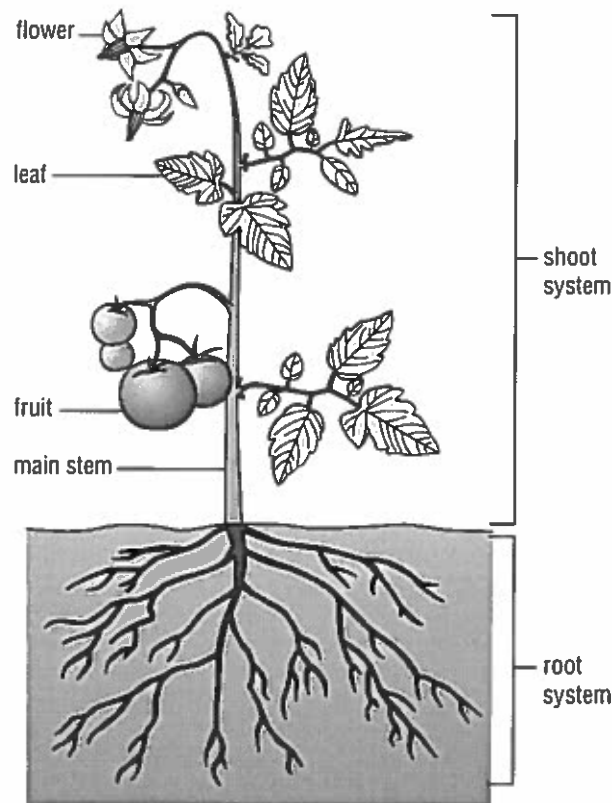


## SUGGESTED ANSWERS

## WHAT DO YOU REMEMBER?

- Two plant systems are the root and shoot body systems.
  - Three tissues found in plants are dermal, vascular, and ground tissues.
  - Four plant parts are roots, stem, leaves, and flower.
  - Two tissues used for transportation are xylem and phloem.
- Student diagrams should include labelled illustrations of roots, a stem, leaves, a flower, and fruit.

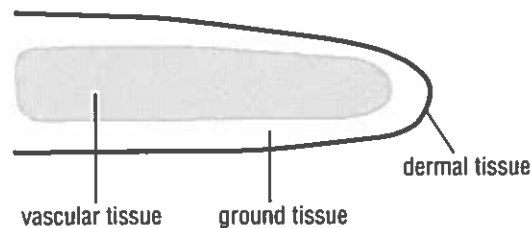


- The main functions of roots are to absorb water and nutrients, store food, and transport water and nutrients to stem. The main functions of the stem are to support the plant, transport materials, and store food. The main functions of the leaves are to carry out photosynthesis and control gas exchange. The main functions of the flower and fruit are to produce seeds and reproduce.
- The leaf has stomata on its bottom surface. Guard cells, located on either side of stomata, open and close the stomata through which gases are exchanged.
- Apical, meristem cells are undifferentiated cells located near the tips of roots and shoots. On stems, lateral meristem cells are located along the entire length of the stem, arranged in a cylindrical tube shape.
- Some functions that both plants and animals must perform are gas exchange, reproduction, growth, and getting rid of wastes.

7. Plant cloning is vegetative growth without sexual reproduction. It can be done with a cutting, a root, or a stem. Plants sometimes put out runners that are clones.
8. Two plant adaptations to prevent water loss are the cuticle and the stomata. A waxy cuticle on plant surfaces prevents evaporation. Stomata can close to prevent evaporation.
9. Plant roots absorb water and nutrients, store food, and transport water and nutrients up to the stem.
10. Inside chloroplasts, structures called thylakoids that are arranged in stacks called grana. These structures collect energy from sunlight.

#### WHAT DO YOU UNDERSTAND?

11. Plants use photosynthesis to create sugars that they use for energy, so they do not need to eat other organisms.
12. Sample answer:



13. In a plant root tip, dermal tissue protects the plant. Vascular tissue transports material, such as sugars, water, minerals, and hormones, throughout the plant. Ground tissue supports the plant and stores food.
14. The spikes are considered modified leaves because they grow out of the stem and are at the same hierarchical level as leaves.
15. Potatoes store starch in the tuber, which is a modified stem. The starch comes from sugars that are made by the plants leaves and converted into starch.
16. Plant growth is limited to meristem areas. In animals, cell division can take place in many tissues. Also, animals tend to grow to a maximum size. Plants, on the other hand, will keep on growing if conditions allow.
17. Vegetative reproduction occurs when a part of the plant forms a separate, genetically identical clone. Sexual reproduction occurs when eggs are fertilized by pollen and a seed grows into a new plant that is genetically different from its parents.
18. Non-woody plants do not have lateral meristems, so they grow wider. Also, they cannot grow very tall because their non-woody stems cannot support much weight.
19. Vascular tissues, especially xylem, provide strength and support to the plant. Ground tissue also provides support to the plant.
20. Water enters the plant through root hairs, which are extensions of epidermal cells on the plant's roots. Water exits via evaporation through stomata, which are opened and closed by guard cells.
21. Plants, like animals, require oxygen and sugars for cellular respiration.
22. Meristems are similar to stem cells because they are undifferentiated and can turn into a variety of different cell types. Meristems are different because they can be used to create clones of the entire plant, whereas stem cells are limited in the type of cells and tissue they can create.

#### SOLVE A PROBLEM

23. (a) Figure 1(a) shows grana in thylakoids.  
(b) Figure 1(b) shows a cross-section of a stem of a woody plant.