

Chapter 23 Roots, Stems, and Leaves

Section 23–1 Specialized Tissues in Plants (pages 579–583)



TEKS FOCUS: 5A Specialized cells in roots, stems, and leaves; 5B Cell differentiation in plants; 10C Plant systems and subsystems; 13B Methods of growth in various plants

This section describes the principal organs and tissues of vascular plants. It also explains what specialized cells make up vascular tissue.

Seed Plant Structure (pages 579–580)

1. What are the three principal organs of seed plants?
a. _____ b. _____ c. _____
2. Circle the letter of each sentence that is true about a function that roots perform.
 - a. They anchor plants in the ground.
 - b. They compete with other plants for sunlight.
 - c. They absorb water and nutrients from soil.
 - d. They hold plants upright.
3. What does the transport system of stems do? _____

4. The principal organs in which plants carry out photosynthesis are the _____.
5. What do the adjustable pores of leaves help conserve, and what do they allow to enter and leave a plant? _____

Plant Tissue Systems (page 580)

6. What are the three tissue systems of plants?
a. _____ c. _____
b. _____

Dermal Tissue (page 580)

7. Dermal tissue typically consists of a single layer of _____.
8. What is the cuticle, and what is its function? _____

9. What is the function of trichomes? _____
10. What does dermal tissue consist of in roots, and what is its function? _____

Vascular Tissue (pages 580–581)

11. Complete the table about vascular tissue.

TYPES OF VASCULAR TISSUE

Type	Function	Cell Types Within Tissue
	Transports water	
	Transports food	

Match the vascular-tissue cells with their descriptions.

Vascular-tissue Cells	Description
_____ 12. Tracheids	a. The main phloem cells
_____ 13. Vessel elements	b. Long, narrow xylem cells with walls that are impermeable to water
_____ 14. Sieve tube elements	c. Phloem cells that surround sieve tube elements
_____ 15. Companion cells	d. Xylem cells arranged end to end on top of one another

16. How can water move from one tracheid into a neighboring cell? _____

17. How can materials move from one sieve tube element into the next? _____

18. What cells support the phloem cells? _____

Ground Tissue (page 582)

19. The cells that lie between dermal and vascular tissue make up what kind of tissue?

20. Complete the table about ground-tissue cells.

GROUND-TISSUE CELLS

Type of Cell	Structure	Function
	Cells with thin cell walls and large central vacuoles	
	Cells with strong, flexible cell walls	
	Cells with extremely thick, rigid cell walls	

Plant Growth and Meristematic Tissue (pages 582–583)

21. What do plants produce at their tips as long as they live? _____

22. The only plant tissue that produces new cells by mitosis is called _____.

23. What occurs as meristematic cells mature? _____

24. What is an apical meristem? _____

25. Where else on many plants is there meristematic tissue other than at apical meristems?

