

Section 23–3 Stems (pages 589–594)



TEKS FOCUS: 5A Specialized cells in stems; 13A Structural adaptations of plants to environment

This section explains the two main functions of stems and how monocot and dicot stems differ. It also describes primary growth and secondary growth in stems.

Stem Structure and Function (page 589)

1. What are the two important functions of stems?
 - a. _____
 - b. _____
2. What three tissue systems compose a stem? _____

Match the stem structure with its description.

_____	Structure	Description
_____	3. Node	a. A region between nodes
_____	4. Internode	b. Contains undeveloped tissue that can produce new stems and leaves
_____	5. Bud	c. Where leaves are attached

Monocot and Dicot Stems (page 590)

6. How does the arrangement of tissues in a stem differ among seed plants?

7. In a monocot stem, what does each vascular bundle contain? _____

8. What is the arrangement of vascular tissue in a monocot stem? _____

9. What is the arrangement of vascular tissue in a dicot stem? _____

10. The parenchyma cells inside the ring of vascular tissue in a dicot stem are known as _____.
11. What do the parenchyma cells outside the ring of vascular tissue form in a dicot stem?

Primary Growth of Stems (page 590)

12. What is primary growth in a plant? _____

13. Primary growth of stems is produced by cell division in the _____.

14. Is the following sentence true or false? Only dicot plants undergo primary growth.

Secondary Growth of Stems (pages 591–594)

15. The pattern of growth in which stems increase in width is called _____.

16. In conifers and dicots, where does secondary growth take place? _____

17. What type of lateral meristematic tissue produces vascular tissues and increases the thickness of stems over time? _____

18. What does cork cambium produce? _____

19. Circle the letter of each sentence that is true about the formation of vascular cambium.

- a. Vascular cambium forms between the xylem and phloem of individual vascular bundles.
- b. Divisions of vascular cambium give rise to new layers of xylem and phloem.
- c. Once secondary growth begins, vascular cambium appears as a thin layer.
- d. The production of new layers of xylem and phloem causes the stem to shrink when secondary growth begins.

20. Is the following sentence true or false? Most of what we call “wood” is actually layers of phloem. _____

21. What is heartwood? _____

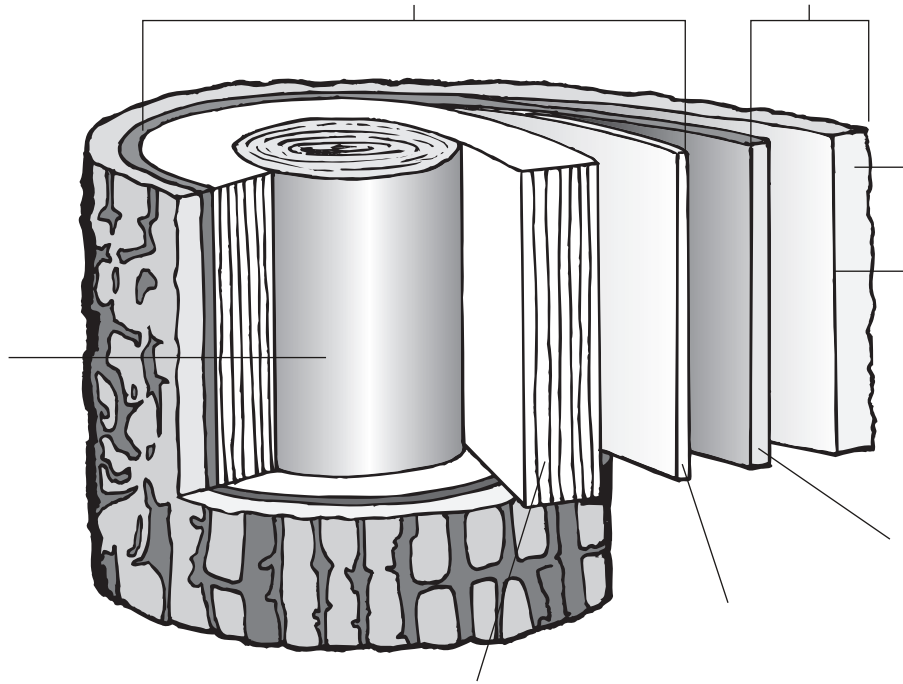
22. The wood that is active in fluid transport and therefore lighter in color is called _____.

23. The alternation of dark and light wood produces what we commonly call _____.

24. How can you estimate the age of a tree? _____

25. On most trees, what does bark include? _____

26. Circle the letter of each sentence that is true about cork.
- a. Cork cells usually contain fats, oils, or waxes.
 - b. Cork cells cause the loss of water from a stem.
 - c. The outermost cork cells are usually dead.
 - d. Cork cambium produces a thick, protective layer of cork.
27. Label the parts of the illustration of wood.



28. What are four kinds of modified stems that store food?
- a. _____
 - b. _____
 - c. _____
 - d. _____