

Name: _____

AP Biology

Chapter 28 Active Reading Guide **Plant Structure and Growth**

In this unit on plants, the challenge for students will be to learn the new vocabulary. As we work through this unit, you will find an emphasis on labeling and explaining plant diagrams and specific directions for which terms you should know.

Section 1

1. This concept is organized into three sections—plant organs, tissues, and cells. Begin by defining a tissue and an organ.
2. The three plant organs are _____, _____, and _____.
3. Define root and then explain the difference between a taproot and lateral roots.
root:

taproot and lateral roots:
4. Figure 28.4 in your text shows the root hairs of a radish. What is the function of root hairs?
5. What is the general function of stems? What are some specialized evolutionary adaptations of stems?
6. The main function of a leaf is _____.
7. What are five additional functions that modified leaves can perform?
 1. _____
 2. _____
 3. _____
 4. _____
 5. _____

8. Plants have three types of tissues. What are their functions?

Tissue Type	Function
Dermal Tissue System	
Vascular Tissue System	
Ground Tissue System	

9. What is the function of the cuticle?

10. Xylem conducts _____.

11. Xylem transport tends to be in one direction, but phloem transport is more complicated. Explain the pattern of sugar flow in phloem tissue.

12. The two major tissues of the ground tissue system are pith and cortex. Where are they found in the plant?

13. Plants have five major types of cells (see Figure 28.9). Give the major function of each cell type.

Cell Type	Function
Parenchyma Cells	
Collenchyma Cells	
Sclerenchyma Cells	
Water-Conducting Cells of the Xylem	
Sugar-Conducting Cells of the Phloem	

14. Compare and contrast the following structures:
tracheids and vessel elements:

sieve tube elements and companion cells:

15. At the end of this first extensive concept, do not lose sight of the big picture.
Complete the following summary information.
The three plant organs are:

The three basic plant tissues are:

The five basic plant cells are:

Section 2

16. What is the difference between indeterminate growth and determinate growth?

17. Although plants generally show indeterminate growth, what are three examples of plant parts that show determinate growth?

18. Plants are capable of indeterminate growth because they have perpetually embryonic tissues called _____.

19. Explain the following relationships.
apical meristems and primary growth:

lateral meristems and secondary growth:

primary growth and secondary growth:

20. Based on the length of their life cycle, plants are categorized into three groups.
Explain what each category means below, and provide an example.
annuals:

biennials:

perennials:

Section 3

21. Explain what events occur in the zone of cell division, zone of elongation, and zone of differentiation.

22. In most roots, the xylem and phloem is a solid cylinder of vascular tissue located in the center of the root and called the stele. Define:
endodermis:

pericycle:

23. Why must new roots formed by the pericycle originate in the center of the root?

24. What structure in Figure 28.16 is responsible for primary growth?

25. How is the arrangement of vascular bundles different in monocot and dicot stems?

Section 4

26. Primary growth arises from apical meristems and results in _____ and _____ of roots, stems, and leaves. Secondary growth arises from _____ and _____ cambium and results in increased _____ of roots and stems.

27. Explain what is produced by these structures.
vascular cambium:

cork cambium:

28. Read the text that accompanies Figure 28.19 in your book and then answer these questions.
- What results in primary growth of the stem?
 - What cells are formed to the inside and the outside of the vascular cambium?
 - What is the difference in the formation of primary xylem and phloem versus secondary xylem and phloem?
29. What vascular tissue forms the bark, and what is the function of the bark?
30. What tissues are included in the bark of a tree?
31. Look back at the stem in Figure 28.19 and find the horizontal slits in the bark, known as lenticels. You may have noticed lenticels on the young twigs of trees or shrubs. What is the function of lenticels?