

Ch 22-24.Plants.Biology.Landis

Nom de plume _____

•Chapter 22 - Plant Diversity

Section 22–1 Introduction to Plants (pages 551–555)

This section explains what a plant is and describes what plants need to survive. It also explains how the first plants evolved.

What Is a Plant? (page 551)

1. Circle the letter of each sentence that is true about plants.
 - a. Plants are multicellular prokaryotes.
 - b. Plants carry out photosynthesis.
 - c. Plants have cell walls made of cellulose.
 - d. Plants develop from multicellular embryos.
2. What pigments do plants use to carry out photosynthesis?
3. What is the trait that all plants have that distinguish them from other organisms?

The Plant Life Cycle (page 552)

4. All plants have a life cycle that is characterized by alternation of .
5. Complete the table about plant generations.

PLANT GENERATIONS

Generation	Description	Haploid or Diploid?
	Gamete-producing plant	
	Spore-producing plant	

6. Seed plants have evolved reproductive cycles that are carried out independently of

What Plants Need to Survive (page 552)

7. What are the four basic needs of plants?

Overview of the Plant Kingdom (page 555)

8. Circle the letter of each of the important features that botanists use to divide the plant kingdom into four groups.
 - a. seeds
 - b. water-conducting tissue
 - c. stems
 - d. flowers
9. What are the four main groups of living plants?

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Section 22–4 Seed Plants (pages 564–568)

This section explains what features allow seed plants to reproduce without standing water. It also describes the four groups of gymnosperms.

Gymnosperms – Cone Bearers (pages 566–568)

10. What is a gymnosperm? What are 2 examples of a gymnosperm?

Section 22–5 Angiosperms—Flowering Plants (pages 569–572)

This section identifies the characteristics of angiosperms. It also explains what monocots and dicots are and describes the three categories of plant life spans.

Introduction (page 569)

11. Angiosperms are members of the phylum

12. Angiosperms have unique reproductive organs known as

Diversity of Angiosperms (pages 570–572)

13. Complete the table about classes of angiosperms.

CLASSES OF ANGIOSPERMS

Class	Common Name	Number of Seed Leaves	Examples
Monocotyledonae			
Dicotyledonae			

14. Circle the letter of each plant feature that is characteristic of dicots.

- Parallel leaf veins
- Floral parts in multiples of 4 or 5
- Roots include a taproot
- Vascular bundles scattered throughout stem

•Chapter 23 - Roots, Stems, and Leaves

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

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

Structure of Seed Plants (pages 579–580)

15. What are the three principle organs of seed plants?

16. Circle the letter of each sentence that is true about a function that roots perform.

- They anchor plants in the ground.
- They compete with other plants for sunlight.
- They absorb water and nutrients from soil.

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d. They hold plants upright.

17. What does the vascular tissue of stems do?

18. What do the adjustable openings of leaves help conserve, and what do they allow to enter and leave a plant?

Tissue Systems (page 580)

19. What are the three tissue systems of plants?

Meristematic Tissue (pages 580-581)

20. What is an apical meristem?

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

Dermal Tissue (page 581)

22. Dermal tissue typically consists of a single layer of

23. The layer of cells that covers a plant and protects it from disease and injury is called the

Vascular Tissue (pages 582-583)

24. Complete the table about vascular tissue.

TYPES OF VASCULAR TISSUE

Type	Function	Cell Types Within Tissue
	Transports water	
	Transports food	

Ground Tissue (page 583)

25. What is ground tissue?

26. 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	

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Section 23–2 Roots (pages 584–588)

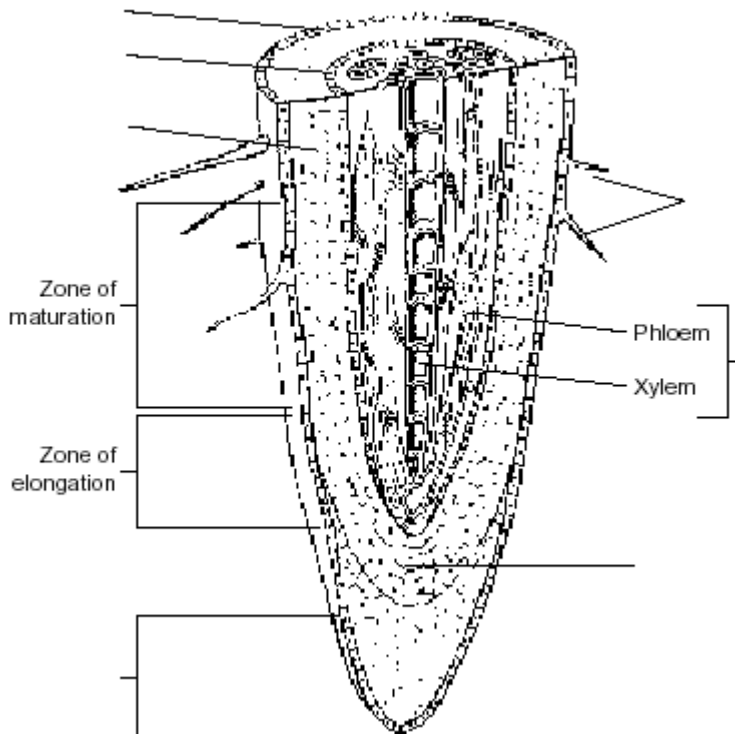
This section describes the two main types of roots and the main tissues in a mature root. It also explains the different functions of roots

27. Complete the table about types of roots.

TYPES OF ROOTS

Type of Root	Description	Mainly in Dicots or Monocots?	Examples
	Long and thick primary roots that grow deep into the soil		
	Roots that are usually shallow and consist of many thin roots		

28. Label the parts of a root on the illustration.



Root Functions (pages 586–588)

29. What are two functions of a plant's roots?

Section 23–3 Stems (pages 589–594)

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)

30. What are the two important functions of stems?

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Monocot and Dicot Stems (page 590)

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

Primary Growth of Stems (page 590)

32. What is primary growth of stems?

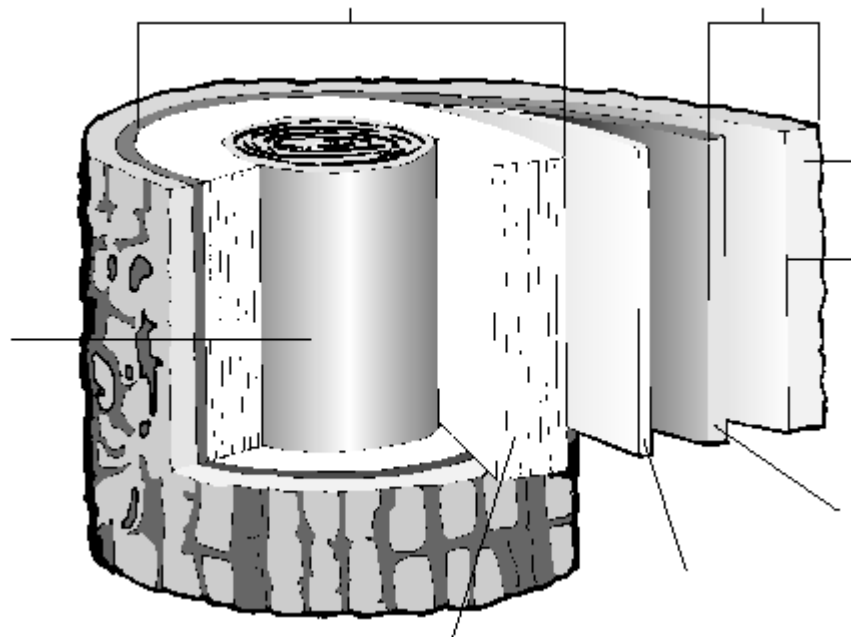
33. Primary growth of stems is produced by cell division in the

Secondary Growth of Stems (pages 591-594)

34. What is secondary growth of stems?

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

36. Label the parts of the illustration of wood.



Section 23–4 Leaves (pages 595–598)

This section explains how the structure of a leaf enables it to carry out photosynthesis. It also describes how gas exchange takes place in a leaf.

Leaf Structures (page 595)

37. The structure of a leaf is optimized for what purposes?

38. Circle the letter of the type of tissue that covers a leaf.

- a. vascular b. dermal c. ground d. petiole

39. The vascular tissues of leaves are connected directly to the

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vascular tissues of

40. Match the leaf structure with its description.

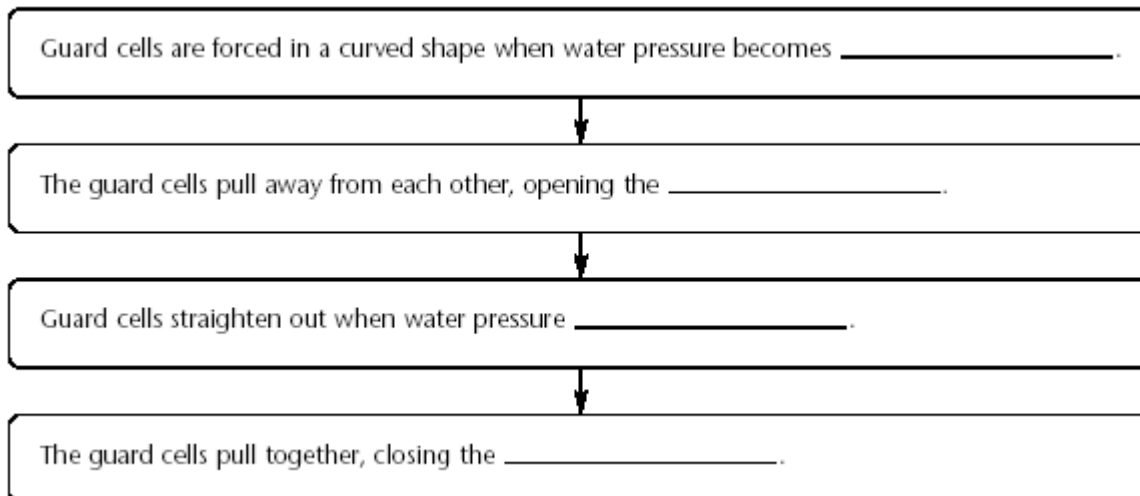
Structure	Description
Palisade mesophyll	a. A bundle of xylem and phloem tissues
Spongy mesophyll	b. Specialized cells that control the opening and closing of stomata
Vein	c. A layer of mesophyll cells that absorb much of the light that enters the leaf
Stomata	d. Openings in the underside of the leaf
Guard cells	e. A loose tissue with many air spaces between its cells

41. What is transpiration?

42. Why must a plant have its stomata open at least part of the time?

43. What would probably happen to a plant that kept its stomata open all the time?

44. Complete the flowchart about guard cells.



Water Transport (pages 599-601)

45. What combination of factors provides enough force to move water through the xylem tissue of even the largest plant?

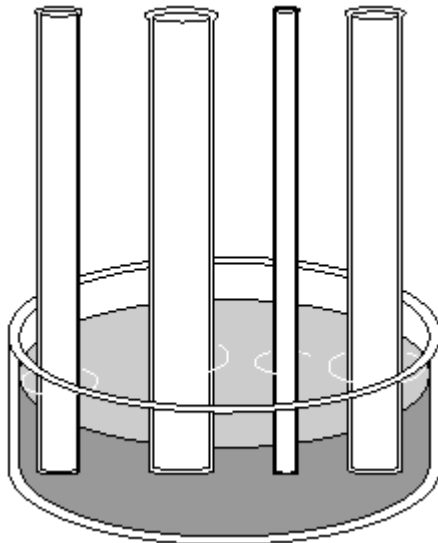
46. Complete the table about attraction between molecules.

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ATTRACTION BETWEEN MOLECULES

Types of Attraction	Definition
Cohesion	
Adhesion	

47. The tendency of water to rise in a thin tube is called
48. How does the thinness of a tube affect how high water will rise because of capillary action? Show your answer by drawing how high water would rise in each of the tubes on the illustration.



49. The tubelike structures of what two kinds of cells use capillary action to raise water above the level of ground?

Nutrient Transport (pages 601-602)

50. The movement of sugars out of leaves and through stems to fruits takes place in what kind of vascular tissue?
51. Complete the flowchart about the pressure-flow hypothesis

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Photosynthesis produces a high concentration of sugars in a cell, called the _____ cell.



Sugars move from the cell to phloem, and water also moves into the phloem by the process of _____.



Water moving into the phloem causes an increase in _____.



The pressure causes fluid to move through the phloem toward a cell where sugars are lower in concentration, called the _____ cell.

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•Chapter 24 - Reproduction of Seed Plants

Section 24–1 Reproduction With Cones and Flowers (pages 609–616)

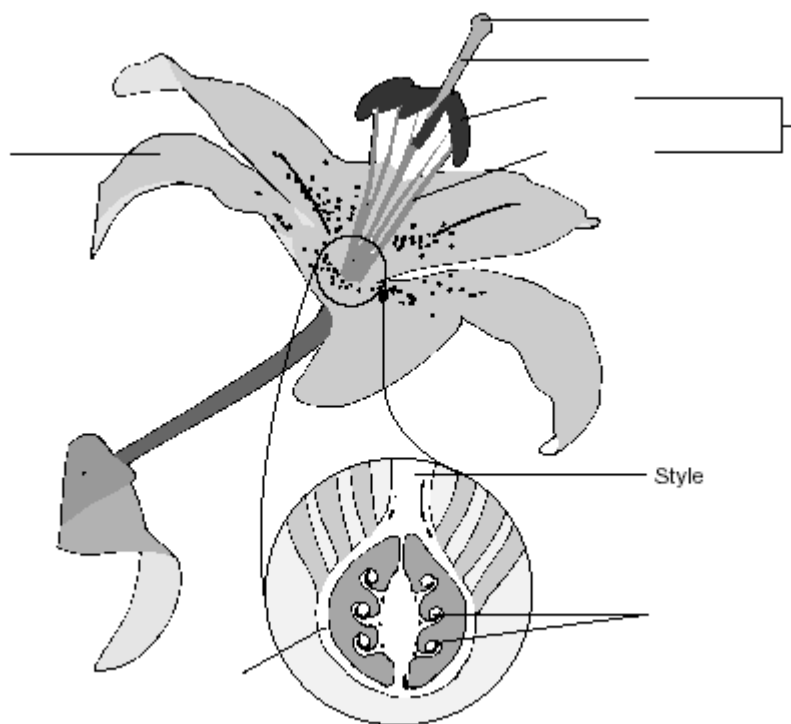
This section describes the reproductive structures of gymnosperms and angiosperms. It also explains how pollination and fertilization differ between angiosperms and gymnosperms.

Structure of Flowers (pages 612–613)

52. Match the floral part with its description.

Floral Part	Description
Sepals	a. Stalk with the stigma at the top
Petals	b. Structures where male gametophytes are produced
Stamen	c. Flower part that contains one or more ovules
Filament	d. Outermost, green floral parts
Anthers	e. Long, thin structure that supports an anther
Carpels	f. Innermost floral parts that produce female gametophytes
Ovary	g. Sticky, top portion of style
Style	h. Male structure made up of an anther and a filament
Stigma	i. Brightly colored parts just inside the sepals

53. Label the parts of the flower on the illustration.



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