Name _____ **Period** _____

Chapter 30: Plant Diversity II: The Evolution of Seed Plants

In this second chapter on the evolution of plants, it is important to know enough terminology to understand the major evolutionary trends. As you work through this chapter, keep looking for the big picture and try not to get lost in a forest of new terms. The questions we ask focus primarily on the essential knowledge a student should have regarding seed plants and their evolution, and so we have omitted details about gymnosperm and angiosperm life cycles. Your teacher may choose to go into greater detail.

Concept 30.1 Seeds and pollen grains are key adaptations for life on land

1. What are the three components of a seed?

2. List five characteristics common to all seed plants.

3. A trend in the evolution of plants is reduction of the gametophyte, and this continues in seed plants. Study Figure 30.2 to review these relationships in different plant groups. List four advantages the plant gains by the miniaturization of the gametophyte.

4. What is the male gametophyte in seed plants?

5. Pollen and seeds are important adaptations for life on land. What are two advantages of pollen over free-swimming sperm?

6. What are three advantages of seeds over spores?

Concept 30.2 Gymnosperms bear "naked" seeds, typically on cones

7. Figure 30.7 in your text shows the four phyla of gymnosperms. The phylum Coniferophyta will likely be most familiar to you. What are five examples of the Coniferophyta?

Study Tip

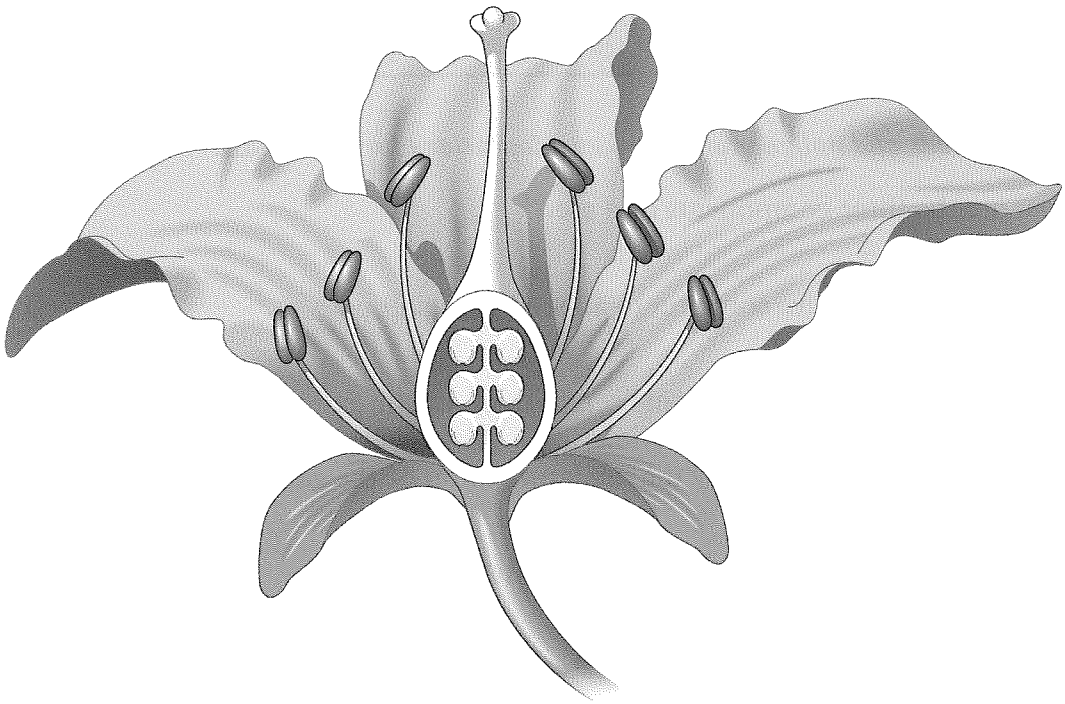
Continue to look for the big picture. Microspores will eventually produce pollen that will contain sperm nuclei. Megaspores will eventually produce archegonia that will contain eggs. The sperm and egg will unite to form a diploid embryo. The basics are the same as with any sexually reproducing organism.

Concept 30.3 *The reproductive adaptations of angiosperms include flowers and fruits*

8. Explain why gymnosperm seeds are said to be "naked." What "covers" angiosperm seeds?

9. What is the specialized function of the *flower*?

10. Label the 10 structures on the flower diagram. Briefly give the function of each labeled part.



11. What is the botanical definition of a fruit? List the two functions of fruits.

12. What is the difference between cross-pollination and self-pollination? What is the evolutionary advantage of cross-pollination?

13. What two events occur during *double fertilization*?

14. Let's check for three key things concerning double fertilization:

    a. What does the ovule become?

    b. What does the zygote form?

    c. What tissue nourishes the embryo?

15. The two largest groups of angiosperms are *monocots* and *eudicots*. Flowering plants can often be placed in one of these two categories by easy-to-observe characteristics. Use Figure 30.16 from your text to help note key differences between the two groups as you fill in the following chart.

	Examples	Embryos	Leaf Venation	Flowers
Monocots				
Dicots				

***Concept 30.4** Human welfare depends on seed plants*

16. Explain why destroying the remaining tropical forests might harm humans.

Test Your Understanding Answers

Now you should be ready to test your knowledge. Place your answers here:

2. _____ 4. _____

6. Use the letters a–d to label where on the phylogenetic tree each of the following derived characters appears.

a. flowers b. embryos c. seeds d. vascular tissue