

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



TEKS FOCUS: 12C Variations, adaptations, and tolerances in plants; 13B Methods of reproduction, growth, and development; **TEKS SUPPORT:** 7A Evidence of change in species; 8A Classify organisms

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

Introduction (page 564)

1. Complete the table about seed plants.

SEED PLANTS

Type	Description	Examples
	Seed plants that bear seeds directly on the surfaces of cones	
	Seed plants that bear their seeds within a layer of protective tissue	

Reproduction Free From Water (pages 564–565)

2. What are three features that allow seed plants to reproduce without water?

- a. _____
- b. _____
- c. _____

3. What are cones and flowers? _____

4. Why don't the gametophytes or the gametes of seed plants need standing water to function? _____

5. What is pollination? _____

Match the structure with its description.

Structure	Description
_____ 6. pollen grain	a. An embryo encased in a protective covering
_____ 7. seed	b. Structure that surrounds and protects the plant embryo
_____ 8. endosperm	c. Early developmental stage of an organism
_____ 9. embryo	d. Male gametophyte of seed plants
_____ 10. seed coat	e. Seed's food supply

11. What tissues or structures do seeds have that aid in their dispersal to other habitats?

12. What is the strategy that allows seeds to survive long periods of bitter cold, extreme heat, or drought? _____

Evolution of Seed Plants (page 566)

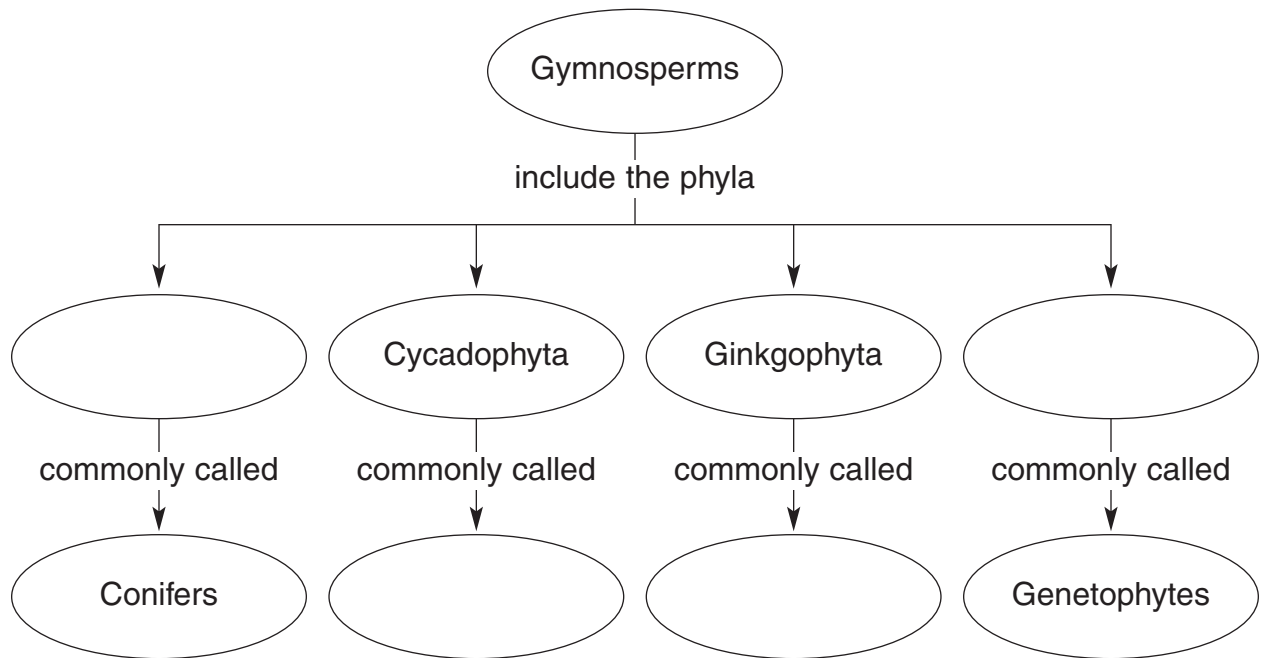
13. How did conditions on Earth change during the Carboniferous and Devonian periods, and how did those changes affect plants? _____

14. What link do seed ferns represent in the fossil record? _____

15. What adaptations did seed plants have that allowed them to replace spore-bearing plants as continents became drier? _____

Gymnosperms—Cone Bearers (pages 566–568)

16. Complete the concept map about gymnosperms.



17. Where are the reproductive scales of gnetophytes found? _____

18. What do cycads look like? _____

19. In what kind of habitats can cycads be found growing naturally today?

20. Why is the ginkgo tree sometimes called a living fossil? _____

21. What kinds of plants do conifers include? _____

22. Why are the leaves of most conifers long and thin, such as pine needles?

23. In addition to the shape of the leaves, what are two other adaptations that help conifers conserve water?

a. _____

b. _____

24. Circle the letter of the reason conifers never become bare.

a. They never lose their needles.

b. The gametophyte supplies needles to the sporophyte.

c. Older needles are gradually replaced by newer needles.

d. The needles conserve water throughout the year.

25. How are larches and bald cypresses different from most other conifers?

