

## Kingdom *Plantae* Concept Questions

1. What characteristics are shared by all plants?
2. What similarities and differences exist between plants and protists?
3. What similarities and differences exist between plants and fungi?
4. What three important features are used by botanists to divide plants into four groups?
5. State one difference and one similarity between mosses and ferns.
6. State one difference and one similarity between ferns and seed plants.
7. Certain vascular plants, such as water lilies, live in water. Does this mean they are older than ferns? Explain.
8. Seaweeds can attain large size without the presence of support or vascular tissue while mosses cannot. Explain.
9. Root hairs are small structures on roots that increase the surface area of the root. Why is it important for root hairs to develop soon after germination?
10. Explain why xylem and phloem together can be considered a transport system.
11. Cork is a tough, waterproof tissue that replaces the epidermis in some plants. Older roots become covered in cork as they mature. Explain. Would you expect both young and old roots to have vascular tissue? Explain.
12. How does the cooperation of transpiration-cohesion-tension theory and root pressure result in water moving throughout the entire plant?
13. If you were able to inject some air bubbles into the xylem vessels of a tree, what would happen?
14. Explain the pressure flow hypothesis.
15. During photosynthesis, the leaf serves as a source of \_\_\_\_\_ that is loaded into \_\_\_\_\_ (A). This process requires \_\_\_\_\_. As this occurs, the concentration of water in A is \_\_\_\_\_, causing \_\_\_\_\_ to enter A from \_\_\_\_\_. The result is that the \_\_\_\_\_ in A is increased. Then the \_\_\_\_\_ is pushed along with the \_\_\_\_\_ through the \_\_\_\_\_ into the \_\_\_\_\_. The sugar molecules produced in the \_\_\_\_\_ are used to nourish \_\_\_\_\_. Some food is also stored in the \_\_\_\_\_. In spring, it provides \_\_\_\_\_ for the upper parts of the plant until \_\_\_\_\_ are able to produce food.
16. Why are maple trees tapped in early spring rather than in summer or autumn?
17. List some ways in which leaves are designed to conserve water.
18. Explain the compromise the plant has to make between photosynthesis and water conservation.
19. How does the flat shape of leaves aid in photosynthesis?
20. Explain how the flower and seed have made angiosperms so successful?
21. You are given a variety of flowers and asked to decide which are wind-pollinated and which are animal-pollinated. How would you do it?
22. Grasses often grow in open areas forming large fields. Explain.
23. The seeds of the bishop pine germinate only after being exposed to a forest fire. Explain the value of this adaptation.
24. What are the major functions of fruits?