1. Why are symptoms alone frequently inadequate for diagnosing plant problems? Completely different factors may cause similar symptoms (p. 334).

2. What are the first steps in identifying the cause of a plant’s problem?
   - Identify the plant (p. 335).
   - Compare it to a healthy plant of the same cultivar (pp. 335–336).
   - Use signs and symptoms to distinguish between living and nonliving damaging factors (pp. 336–339).

3. Distinguish between symptoms and signs.
   - Symptoms are changes in a plant’s growth or appearance in response to a damaging factor (p. 336).
   - Signs are direct evidence of the damaging factor (p. 336).

4. How can the distinction between uniform and random patterns of damage help you determine the cause of damage?
   - Uniform patterns of damage usually are associated with nonliving factors such as weather (p. 338).
   - Random damage more often is associated with living organisms such as insects or pathogens (pp. 337–338).

5. What are some of the signs and symptoms of a fungal disease?
   - The best clue to a fungal disease is the presence of fungal mycelia and fruiting bodies (pp. 339–340).
   - Leaf spots with concentric rings (p. 340)

6. What are some of the signs and symptoms of a bacterial disease?
   - Wet or dried slime at the edge of leaf spots or cankers (p. 341)
   - Spots that often are restricted by large veins (p. 341)
   - A foul odor (p. 341)
   - A water-soaked appearance (p. 340)
   - Galls (p. 340)
7. Viruses are submicroscopic obligate parasites. What does this mean? Microscopic means that viruses cannot be seen by an ordinary microscope. An obligate parasite can replicate only within a host’s cell (p. 341).

8. What are some of the symptoms of viral infections?
   • The most typical symptom of a viral infection is a change from normal coloration. Examples include vein clearing, vein banding, mottled green and yellow spots, mosaic patterns, rings, and uniform yellow in normally green organs (p. 341).
   • Stunting (p. 342)
   • Distortion (p. 342)
   • Discrete necrotic areas (p. 342)

9. What symptoms and signs would give clues about which insect is the cause of plant damage?
   • The location and type of feeding damage are the most important clues in identifying an insect pest (pp. 307–309, 342–343).
   • Possible signs include webbing or frass (p. 342).

10. What information might help you distinguish among nonliving causes of plant damage?
    • History of mechanical activity in the area (pp. 344–345)
    • History of chemical use in the area (pp. 346–347)
    • Weather records (pp. 345–346)
    • Patterns of damage (p. 338)