Chapter Review

USING KEY TERMS

In each of the following sentences, replace the incorrect term with the correct term from the word bank.

nearsightedness	hologram
concave mirror	laser
plane mirror	convex lens
convex mirror	farsightedness

1. A convex mirror is a mirror shaped like the inside of a spoon.
2. Eye surgeons use a hologram to reshape the cornea of an eye.
3. A person who has nearsightedness has trouble reading a book.
4. A concave lens refracts light and focuses it inward to a focal point.
5. If you move a lens around, you can see its three-dimensional image from different angles.

UNDERSTANDING KEY IDEAS

Multiple Choice

6. Which of the following parts of the eye refracts light?
   - a. pupil
   - b. iris
   - c. lens
   - d. retina
7. A vision problem that happens when light is focused in front of the retina is
   - a. farsightedness.
   - b. nearsightedness.
   - c. color deficiency.
   - d. None of the above
8. What kind of mirror provides images of large areas and is used for security?
   - a. a plane mirror
   - b. a concave mirror
   - c. a convex mirror
   - d. All of the above
9. A simple refracting telescope has
   - a. a convex lens and a concave lens.
   - b. a concave mirror and a convex lens.
   - c. two convex lenses.
   - d. two concave lenses.
10. Light waves in a laser beam interact and act as one wave. This light is called
    - a. coherent light.
    - b. emitted light.
    - c. polarized light.
    - d. reflected light.
11. When you look at yourself in a plane mirror, you see a
    - a. real image behind the mirror.
    - b. real image on the surface of the mirror.
    - c. virtual image that appears to be behind the mirror.
    - d. virtual image that appears to be in front of the mirror.

Short Answer

12. What kind of eyeglass lens should be prescribed for a person who cannot focus on nearby objects? Explain.
13. How is a hologram different from a photograph?
14. Why might a scientist who is working at the North Pole need polarizing sunglasses?

Math Skills

15. Ms. Welch's class conducted a poll about vision problems. Of the 150 students asked, 21 reported that they are nearsighted. Six of the nearsighted students wear contact lenses to correct their vision, and the rest wear glasses.
    - a. What percentage of the students asked is nearsighted?
    - b. What percentage of the students asked wears glasses?

CRITICAL THINKING

16. **Concept Mapping** Use the following terms to create a concept map: *lens, telescope, camera, real image, virtual image,* and *optical instrument.*
17. **Analyzing Ideas** Stoplights are usually mounted so that the red light is on the top and the green light is on the bottom. Why is it important for a person who has red-green color deficiency to know this arrangement?
18. **Applying Concepts** How could you find out if a device that produces red light is a laser or if it is just a red flashlight?
19. **Making Inferences** Imagine that you have a GPS receiver. When you use your receiver in the park and are surrounded by tall trees, the receiver easily finds your location. But when you use your receiver downtown and are surrounded by tall buildings, the receiver cannot determine your location. Why do you think there is a difference in reception? Describe a situation in which poor GPS reception around tall buildings could cause problems.

INTERPRETING GRAPHICS

20. Look at the ray diagrams below. For each diagram, identify the type of mirror that is being used and the kind of image that is being formed.