

Chapter 19 Optics

Section 19.1 Mirrors**(pages 570–573)**

This section describes the law of reflection and explains how images are formed by plane, concave, and convex mirrors. It also describes uses of mirrors.

Reading Strategy (page 570)

Comparing and Contrasting After reading this section, compare mirror types by completing the table. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

Mirror Types		
Mirror	Shape of Surface	Image (virtual, real, or both)
Plane	Flat	Virtual
Concave	Inside curved surface	Both
Convex	Outside curved surface	Virtual

The Law of Reflection (pages 570–571)

- A ray diagram shows how rays change direction when they strike mirrors and pass through lenses.
- Circle the letter of the sentence that best answers the following question. What does a ray diagram and the law of reflection show?
 - The angle of incidence is greater than the angle of reflection.
 - The angle of reflection is greater than the angle of incidence.
 - The angle of incidence is equal to the angle of reflection.

Plane Mirrors (page 571)

- A mirror with a flat surface is known as a(n) plane mirror.
- Circle the letter of each sentence that is true about plane mirrors.
 - Plane mirrors always produce virtual images.
 - Plane mirrors produce right-left reversed images of objects.
 - Light rays reflect from a mirror at an angle that is twice as large as the angle of incidence.

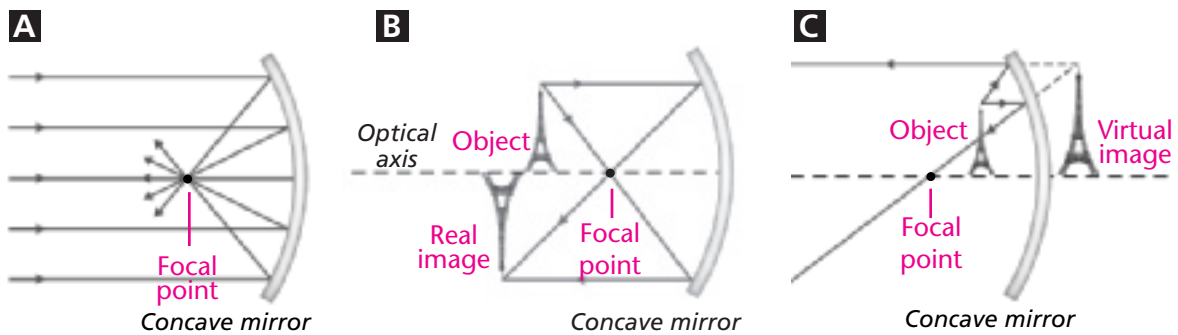
Chapter 19 Optics

5. Circle the letter of the correct answer. What type of image is a copy of an object formed at the location from which the light rays appear to come?
- reversed image
 - virtual image**
 - real image

Concave and Convex Mirrors (pages 572–573)

6. What is the focal point? The focal point is where light rays come together.
-
7. Is the following sentence true or false? A real image is a copy of an object formed at the point where light rays actually meet.
true

For questions 8 through 10, refer to the diagrams below.



8. Label the focal point on each diagram.
9. In B and C, label the object and image locations and identify the image as real or virtual. (*Hint: The object is always right-side up and in front of the reflecting surface of the mirror.*)
10. Circle the letter of the correct answer. What determines whether a concave mirror produces a real image or a virtual image?
- the size of the object
 - the shape of the object
 - the position of the object relative to the focal point**
11. A curved mirror whose outside surface is the reflecting surface is called a(n) convex mirror.
12. Is the following sentence true or false? The image formed by a convex lens is always upright and smaller than the object. true