

Chapter 19 Optics

Section 19.4 The Eye and Vision**(pages 588–592)**

This section describes the eye as an optical instrument and defines parts of the eye and their functions. It also describes vision problems and how they can be corrected.

Reading Strategy (page 588)

Outlining As you read, make an outline of the important ideas in this section. Use the green headings as the main topics and the blue headings as subtopics. 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.

Section 19.4 Outline

- I. The Eye and Vision
 - A. Structure of the Eye
 - 1. Cornea
 - 2. Pupil and Iris
 - 3. Lens
 - 4. Retina
 - 5. Rods and Cones
 - B. Correcting Vision Problems
 - 1. Nearsightedness
 - 2. Farsightedness
 - 3. Astigmatism

Structure of the Eye (pages 588–590)

Write the letter of the part of the eye that best matches each description.

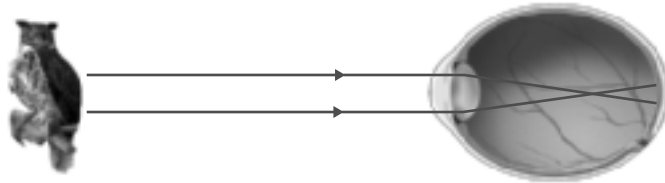
Description	Part of Eye
<u>c</u> 1. Its curved surface helps to focus light entering the eye.	a. pupil
<u>e</u> 2. It focuses light onto sensor cells at the back of the eye.	b. retina
<u>a</u> 3. This opening allows light to pass through the eye.	c. cornea
<u>d</u> 4. This expands and contracts to control the amount of light entering the eye.	d. iris
<u>c</u> 5. This is the transparent outer coating of the eye.	e. lens
<u>b</u> 6. Its surface has rods and cones.	

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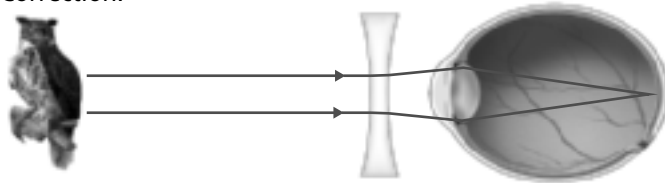
Correcting Vision Problems (pages 590–592)

For questions 7 and 8, refer to the figures below.

Problem: Nearsightedness (Eyeball is too long.)



Correction:



7. Circle the letter of the location where the image forms when nearsightedness occurs.
- a. on the retina
 - b. behind the retina
 - c. before it reaches the retina
8. Nearsightedness can be corrected by placing a(n) _____ lens in front of the eye. Circle the correct answer.
- converging concave diverging concave diverging convex

Match each type of vision problem to its definition.

Vision Problem	Definition
<u> b </u> 9. astigmatism	a. A condition that causes distant objects to appear blurry because the cornea is too curved or the eyeball is too long
<u> c </u> 10. farsightedness	b. A condition that causes objects at any distance to appear blurry because the cornea or lens is misshapen
<u> a </u> 11. nearsightedness	c. A condition that causes nearby objects to appear blurry because the cornea is not curved enough or the eyeball is too short