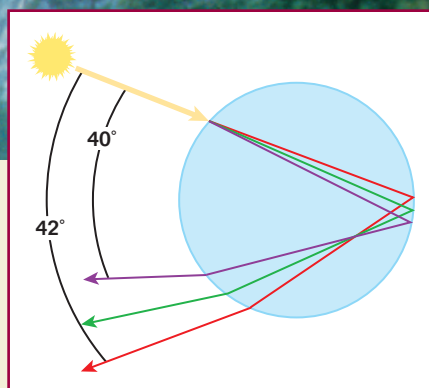


# Refraction



Most of us have seen a rainbow when sunlight hits droplets of water in the air. Sunlight is bent, or *refracted*, as it passes through a raindrop. Longer wavelengths of light (red) are bent the least, and shorter wavelengths of light (violet) are bent the most.

## WHAT TO EXPECT

In this chapter, you will study optical phenomena associated with the refraction of light as it passes from one transparent medium to another. You will learn how to analyze *converging* and *diverging* lenses. You will then better understand how optical devices work.

## Why it Matters

Optical devices, such as cameras, microscopes, and telescopes, use the principles of reflection and refraction to create images that we can then use for many artistic and scientific applications. An understanding of how lenses function is also essential to the practice of optometry.

## CHAPTER PREVIEW

### 1 Refraction

- Refraction of Light
- The Law of Refraction

### 2 Thin Lenses

- Types of Lenses
- Characteristics of Lenses
- The Thin-Lens Equation and Magnification
- Eyeglasses and Contact Lenses
- Combination of Thin Lenses

### 3 Optical Phenomena

- Total Internal Reflection
- Atmospheric Refraction
- Dispersion
- Lens Aberrations