

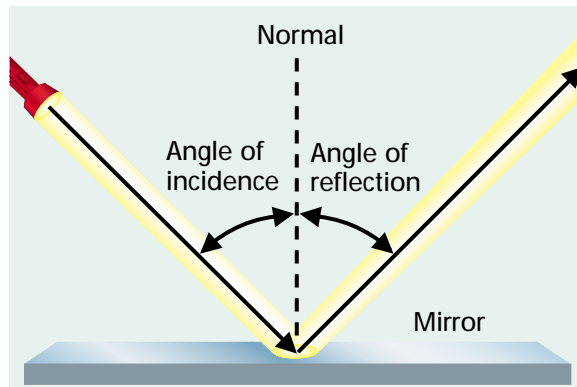
**TECHNOLOGY NOTE****● Light on Lenses**

Can you see in pitch darkness? No, of course not! You need light to see. But there is something else you need in order to see. You need a lens. A **lens** is a curved transparent object that *refracts*, or bends, light.

Lenses are necessary to focus light in all kinds of applications, including in telescopes, microscopes, binoculars, cameras, contact lenses, eyeglasses, and magnifying lenses.

**Light Bounces**

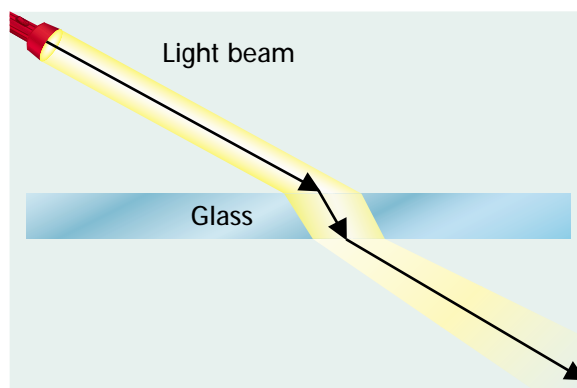
To learn how lenses work, you must first know something about how light travels. A ray of light travels in a straight path from its source until it strikes an object. When light strikes an object, much of the light bounces off, or is reflected. The light is reflected by the object at the same angle that it struck the object in the first place.



*The angle formed by the incoming light (angle of incidence) always equals the angle of the reflected light (angle of reflection).*

**Lenses Bend Light**

A lens allows light to travel through it. However, as the light passes through the lens, it is refracted. **Refraction** is the bending of a light ray as it passes from one transparent material into another, such as when light traveling through air passes through a glass lens.



*Light changes speed and direction when it passes from one material into another.*

## TECHNOLOGY NOTE

### ● Light on Lenses *continued*

The type of lens determines how much and in which direction the light is bent. A lens that is thicker in the middle than at its edges is called a **convex lens**. This type of lens bends light toward its center. Convex lenses are used in magnifying glasses, microscopes, and telescopes. The lenses in your eyes are convex lenses.

A lens that is thinner in the middle than at its edges is called a **concave lens**. This type of lens bends light away from its center. Both convex lenses and concave lenses are often used to help correct vision. Convex lenses are also used in combination with concave lenses in cameras to focus light on the film.

### Light Your Way

Do some additional research to find out what a photorefractive keratectomy (PRK) is and how it works to correct a person's vision.