

How does light behave when it is reflected?

Use with textbook pages 230–245.



Create Flashcards

Write a question that might be on a test on one side of a flashcard. Write the answer on the other side. Complete at least five cards. Then exchange cards with a partner and quiz yourself until you get all the answers correct.



Reading Check

According to the laws of reflection, where are the reflected ray and the incident ray located with respect to the normal?



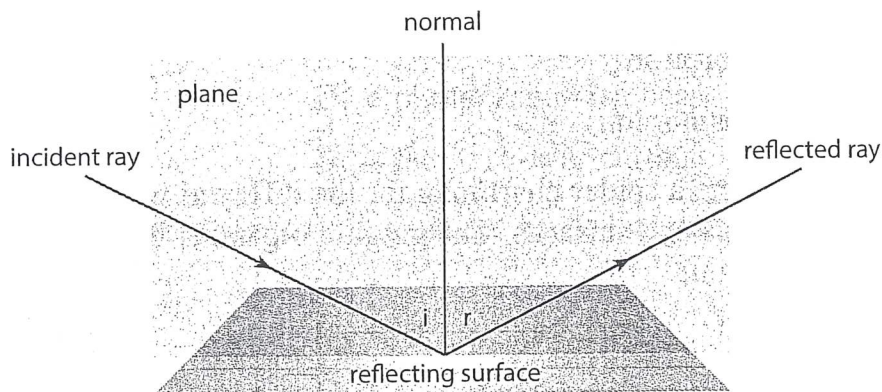
Reading Check

Which mirrors form misshapen images?

The Laws of Reflection

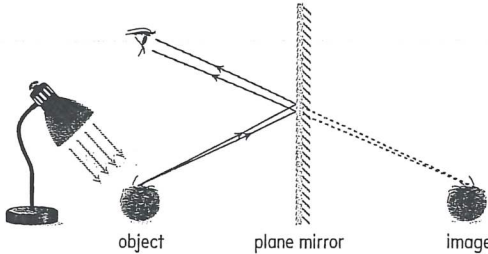
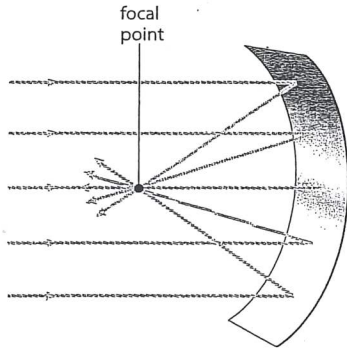
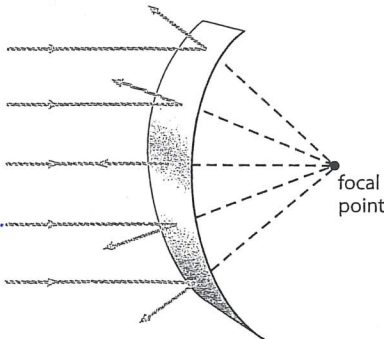
Light rays always follow a predictable path when they reflect from a surface. The **laws of reflection** determine this path.

Law	Key Words
<ul style="list-style-type: none"> The angle of reflection (r) is equal to the angle of incidence (i). 	<p>reflected ray: the light ray that has bounced off a reflecting surface</p>
<ul style="list-style-type: none"> The reflected ray and the incident ray are on opposite sides of the normal. 	<p>incident ray: the light ray that travels toward the reflecting surface</p>
<ul style="list-style-type: none"> The incident ray, the normal, and the reflected ray lie on the same plane. 	<p>angle of incidence: the angle between the incident ray and the normal</p> <p>angle of reflection: the angle between the reflected ray and the normal</p> <p>normal: a line perpendicular to a surface such as a mirror</p> <p>plane: flat surface</p>



Reflections in Mirrors

Light produces different images when it reflects off mirrors of different shapes. Images can be real or virtual. **Real images** form when reflected rays meet. These images are visible in front of the mirror. **Virtual images** form when reflected rays do not actually meet; only the extended rays do. These images appear to be behind the mirror.

Shape of Mirror	Behaviour of Light	Characteristics of Image
<p>plane mirror an extremely smooth, flat reflective surface</p>	<ul style="list-style-type: none"> • Light rays reflecting off an object follow the laws of reflection and reflect backwards off the mirror. • Rays that reach a viewer's eyes carry the same pattern of light that was reflected off the object. • The brain assumes light travels in a straight line and thinks the image is behind the mirror. 	<ul style="list-style-type: none"> • same size as the object • same distance from the mirror as the object • upright • virtual • reversed compared to the object
<p>concave mirror a mirror with a reflecting surface that curves inward</p>	<ul style="list-style-type: none"> • Light rays follow the laws of reflection. They come together or converge at a single point, called a focal point, after they reflect off the mirror. 	<p>Depending on where the object is located, the image:</p> <ul style="list-style-type: none"> • may be smaller or larger than the object • may be real or virtual • may be upright or inverted • may appear closer to or farther from the mirror than the object <p>The image is always misshapen.</p>
<p>convex mirror a mirror with a reflecting surface that curves outward</p>	<ul style="list-style-type: none"> • Light rays follow the laws of reflection. They spread apart or diverge after they reflect off the mirror. 	<ul style="list-style-type: none"> • smaller than the object • closer to the mirror than the object • upright • virtual <p>The image is always misshapen.</p>