

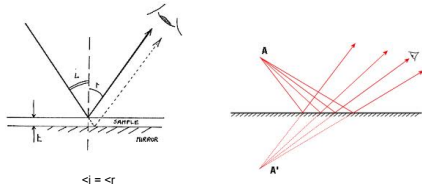
Chapter 29 Reflection and Refraction

Reflection:

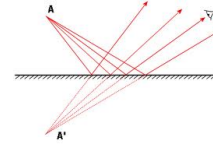
When a wave reaches a boundary between two media, some or all of it bounces back into the first medium. That is called reflection.

Law of Reflection:

Angle of incidence = angle of reflection



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The object is located at A. Several light rays leave A and strike the mirror and are reflected to the eye on the right.

The eye/brain combination sees the "image" where the reflected rays meet (at A').

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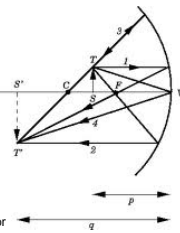
Concave Mirror Image Formation

Object is ST

1. A ray parallel to the axis is reflected through the focus.
2. A ray through the focus is reflected parallel to the axis.
3. A ray through the center of curve is reflected back on itself.

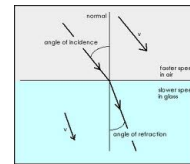
The image is located at the intersection of the reflected rays (S'T')

Do = object distance is measured along the axis from object to mirror
 Di = image distance is measured along the axis from image to mirror



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Refraction



When a wave enters a new medium obliquely and changes speed it will also change direction. That is called refraction.

If the wave slows down it bends toward the normal.
 If the wave speeds up it bends away from the normal.

index of refraction of a substance

$$n = (\text{speed of light in a vacuum}) / (\text{speed of light in the substance})$$

Snell's Law

When light moves from one substance to another, the angles of incidence and refraction are related as follows:

$$(n_1) \cdot (\sin \theta_1) = (n_2) \cdot (\sin \theta_2)$$

and

$$(n_1) \cdot (v_1) = (n_2) \cdot (v_2)$$

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