

## Reflection and Refraction

### Applications:

The law of reflection, flat and curved mirrors, the law of refraction, indexes of refraction and dispersion.

DataStudio files: **IndexOfRefraction.ds**

### Equipment List

#### INCLUDED

1	Ray Optics Kit	OS-8516
1	Basic Optics Light Source	OS-8470

#### NOT INCLUDED, BUT NEEDED

1	Protractor	
1	Ruler	
	DataStudio Lite	

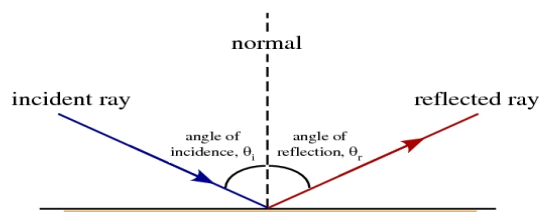
### Introduction

The purpose of this activity is to experimentally confirm the Law of Reflection, for flat, concave, and convex mirrors. The activities will also use the Law of Refraction (Snell's Law) to determine the index of refraction of a piece of acrylic. The Basic Optics Light Source is used to produce a single beam of light. The Ray Optics Kit includes all mirrors and acrylic pieces that will be used.

### Theory

#### The Law of Reflection

When a ray of light strikes a plane mirror, the light ray reflects off the mirror and changes its direction of travel. By convention, the direction of a light ray is expressed as the angle the light ray makes with a line normal (perpendicular) to the surface, as illustrated.



The angle of incidence is the angle between the normal and the incident ray; the angle of reflection is the angle between the normal and the reflected ray. The law of reflection states that the angle of incidence equals the angle of reflection:

$$\theta_i = \theta_r$$

[Eq. 1 The Law of Reflection]