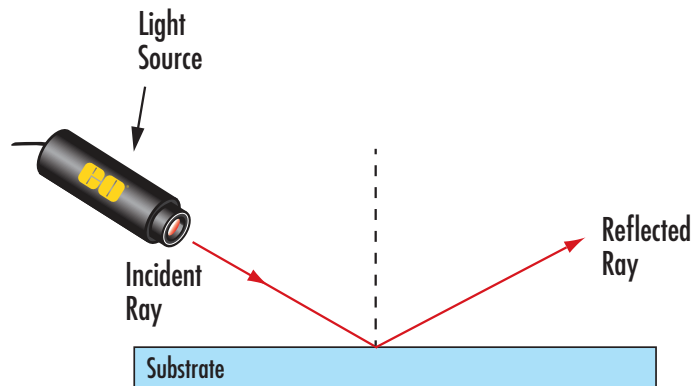


## Reflection of Light

### Introduction

Reflection occurs when a ray of light moves in one direction, hits a surface, and then moves in another direction. Reflection allows us to see ourselves in a mirror or any other shiny object. In fact, reflection is what allows us to see all objects that do not produce their own light.

The ray of light that comes directly from the source is called the incident ray. The ray of light that is reflected is called the reflected ray. The “invisible” line that is perpendicular to the surface is called the normal.



### Purpose

To determine the relationship between incident rays and reflected rays.

### Question/State the Problem

- What principle can be made to describe how light reflects off of a mirror?
- What is the relationship between the incident ray and reflected ray?

### Hypothesis

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### Materials

- Mirror with a flat edge
- Textbook
- Paper with a straight line
- Ray box or flashlight
- Protractor

**Procedure**

1. Take the computer paper with the line on it. Place the line exactly perpendicular to the mirror. This will act as the normal.
2. Place the protractor against the mirror, making sure that the normal is at  $90^\circ$ .
3. Turn on the ray box or flashlight and shine it toward the mirror so that the incident angle is  $25^\circ$ . Record the reflected angle.
4. Repeat Step 3 using a  $50^\circ$  angle.
5. Determine three other angles of choice between  $1^\circ$  and  $99^\circ$ . Repeat Step 3 using the angles you have chosen.

**Data**

Incident Angle	Reflected Angle
$25^\circ$	
$50^\circ$	

**Analysis**

1. What principle can be made to describe how light bounces off a mirror?
2. What is the relationship between the incident ray and the reflected ray?
3. What could have caused errors in this lab? What could you have done differently to reduce the likelihood of errors?

**Conclusion**


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## For Teachers Only

### Prior to the Lab

1. If you are using a flashlight instead of a ray box, place electrical tape on either side of the flashlight, creating a small sliver for light to come through. The face of the flashlight should look like this:



2. Tape [mirror](#) to the side of a textbook so that it stands upright. Make sure that the mirror is facing outward.