

Reflection Lab

This lab is based on Experiment #2 in PASCO's *Introductory Optics System Manual* and images are borrowed from it.

Purpose

To observe what happens to rays of light as they reflect off a plane mirror.

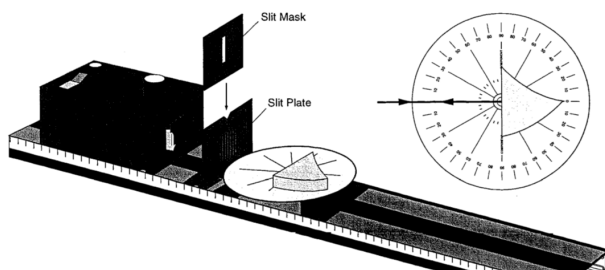


Figure 1: Equipment Setup

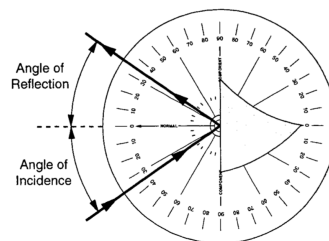


Figure 2: Incident and Reflected Rays

Procedure

1. Set up the experiment as indicated in Figure 1.
2. Adjust the components so that a single ray of light is aligned with the bold arrow labeled “normal” on the Ray Table Degree Scale.
3. Carefully align the flat part of the mirror along the bold arrow labeled “component” on the Ray Table Degree Scale.
4. Rotate the Ray Table so that the Angle of Incidence (see Figure 2) changes. Record the angle of reflection.

Data

Angle of incidence	Angle of reflection (when incidence is <i>above</i> normal line)	Angle of reflection (when incidence is <i>below</i> normal line)
10°		
20°		
30°		
40°		
50°		
60°		
70°		
80°		

Analysis

1. Are the results of the two trials (above normal line and below normal line) the same? If not, to what do you attribute the difference?
2. What relationship seems to hold between the angle of incidence and the angle of reflection
3. Why was it helpful to do both trials (above and below the normal line)? Why was this better than just doing the one above the normal line?

Reading Questions

All information is found in the reading attached to this page.

4. Define each of the following:
 - (a) normal
 - (b) angle of incidence
 - (c) angle of reflection
5. What is the law of reflection?
6. Do all surfaces reflect light, and if so, why can a reflection only be seen in certain objects? (*Hint: try reading about *diffuse reflection**)
7. How is it possible that the satellite dish shown in Figure 28.11 is considered “polished”?