

# Module 8 – Refraction – Instructions

## **CAUTION:**

Before you start this experiment, understand that you are expected to follow directions **EXPLICITLY!** Take your time and read the directions for each step and for each part of the experiment. You will be required to enter data in a particular format in each table of the Worksheet. You will also be required to enter data in WebAssign in a particular format.

## INTRODUCTION

**Refraction** is the change in direction of a wave. This occurs because of a change in its speed.

- It is observed when a wave passes from one medium to another.
- Look at some of the figures in your text regarding reflection, refraction, and dispersion.

## LEARNING OUTCOMES (FROM SYLLABUS)

- Define and analyze concepts such as the following: velocity, acceleration, force, inertia, mass, work, energy (kinetic, potential, etc.), momentum (linear and angular), gravity, tides, power, pressure, density, temperature, thermal expansion, heat, specific heat capacity, waves, sound, electric charge, current, magnetism, electromagnetic waves (including light), photons, and radioactivity.
- Interpret the results of simple experiments and demonstrations of physical principles.

## EXPERIMENT VIDEO

Watch the Experiment Video in your course LMS, following along with the instructions in steps 1–2 below.

## WORKSHEET

Please print the worksheet for this experiment. You will need this sheet to record your data.

## PROCEDURE

### *Step 1*

- Follow the settings in Table 1 on the worksheet for the Top (**yellow** medium), Bottom (**blue** medium), and angle of incidence (**black** angle).
- Record the values of the **reflected angle** and **refracted angle** in Table 1.

- c Change the values of the angle of **incidence** as indicated in Table 1. Record the corresponding angles for reflection and refraction on the worksheet.

**NOTE:**

After you change the angle of incidence, you must hit return on your keyboard for the change to take place.

***Step 2***

- a Follow the settings in Table 2 on the worksheet for the Top (**blue** medium), Bottom (**yellow** medium), and angle of incidence (**black** angle).
- b Record the values of the **reflected angle** and **refracted angle** in Table 2.
- c Change the values of the angle of incidence as indicated in Table 2. Record the corresponding angles for reflection and refraction on the worksheet.

## QUESTIONS

- 1 For light traveling from water and then into air, what is the minimum angle for total internal reflection?
- 2 For light traveling from flint glass and then into water, what is the minimum angle for total internal reflection?