Reflection and Refraction

As you work through the steps in the lab procedure, record your experimental values and the results on this worksheet. Use the exact values you record for your data to make later calculations.

Law of Reflection

Measure the angles of incidence (θ_a) and reflection (θ_r) with respect to the normal to the mirror surface.

Which of the following statements best represent your data? *(Note: The order of these options may be different in the WebAssign question.)*

- θ_a is much greater than θ_r
- θ_a is much less than θ_r
- θ_a is equal to θ_r

Image Formed By a Plane Mirror

Record the object distance (d_1) and image distance (d_2).

Which of the following statements best represent your data?

- d_1 much greater than d_2
- d_1 is much less than d_2
- d_1 is equal to d_2

Measuring n

Measure the angles θ_a and θ_b, the angles of the incident and refracted rays.

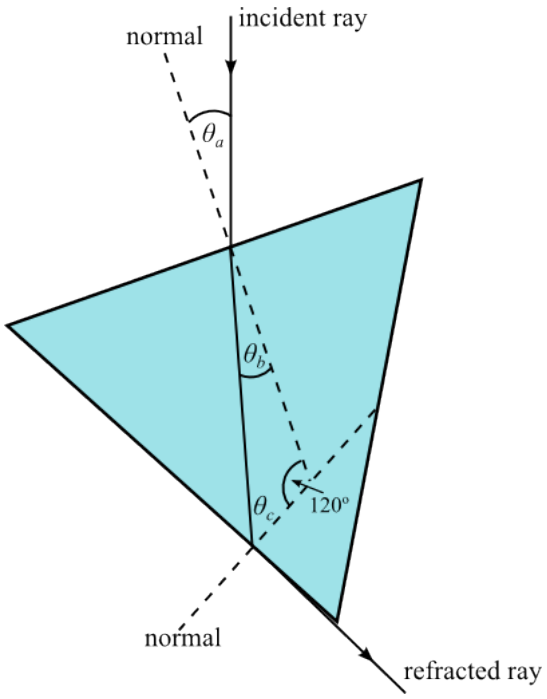
Calculate the refractive index of the material of the square plate and record your result.

Critical Angle and Total Internal Reflection

Measure the angle of incidence (θ_a) and the angle of refraction (θ_b) for the ray as it enters the prism.

Calculate the refractive index of the material of the prism plate.

Use your measured value of the refractive index for the prism to calculate the critical angle (θ_c) for a ray traveling in the prism and incident on an interface with air.



The figure above shows that $\theta_b + \theta_c = 60.0°$. Record the value of θ_c given by this equation and your measured value of θ_b.