Optics

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.

Procedure A: Reflection from a plane mirror

Enter the measured values of the angles of incidence and reflection below.

What is the percent difference between the measured values of the angles of incidence and reflection? (Percent differences should not be rounded to one significant figure.)

Procedure B: Focal length of a converging mirror

Complete the table below. Use values other than zero for the incident angle. (Percent differences should not be rounded to one significant figure.)

Data Table 1

	θ_i (degrees)	θ_r (degrees)	% Difference
Ray 1			
Ray 2			
Ray 3			

Based on the values in the table above, can you confirm that the law of reflection for plane mirrors holds true? (Consider your percent differences exactly as you have entered them.)

Ray #	Agreement?
1	
2	
3	

Procedure C: Refraction in an acrylic block

Enter the measured values of the angles of incidence and refraction below.

Calculate the index of refraction using Snell's Law and the measured values of the angles of incidence and refraction.

The accepted value of the index of refraction for acrylic is 1.49. What is the percent error between the accepted value and the experimental value of n?

Procedure D: Focal length of a converging lens

What is the measured focal length of the converging lens?

Procedure E: Focal length of a diverging lens

What is the measured focal length of the diverging lens?