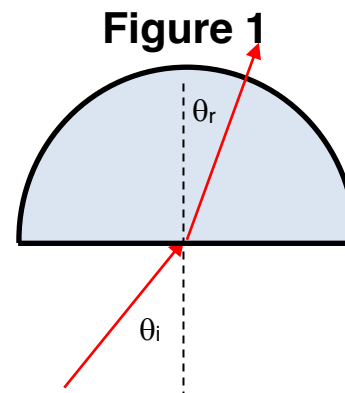


## Snell's Law

A physics class was attempting to determine the relationship between the angle of incidence ( $\theta_i$ ) and the angle of refraction ( $\theta_r$ ) for light traveling from one material to another.

### Experiment 1

The experiment involved shining laser light from air into a dish of water at a known angle of incidence and measuring the angle of refraction in the water. **Figure 1** represents the experimental set-up. Each lab group was assigned a set of angles of incidence; their goal was to measure the corresponding angles of refraction. Results from each lab group were collected to provide measurements at 1-degree intervals for angles of incidence between  $0^\circ$  and  $90^\circ$ .



### Experiment 2

Once the class completed their measurements using a water-filled dish, they repeated the investigation using a D-shaped, solid disk of Lucite glass. They made similar measurements of  $\theta_i$  and  $\theta_r$  and gathered results from the entire class.

The class data was plotted and two types of plots were created for both experiments. The plot shown in **Figure 2** included the angles of refraction and incidence along the axes. The plot shown in **Figure 3** included the sines of these angles along the two axes. The slope ( $m$ ) of the best-fit line through each set of data points was determined; these are displayed below each graph for the two experiments.

