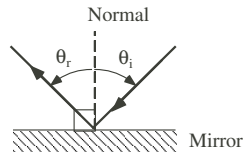


Advance Reading Questions: Speed of Light Lab

1. The law of reflection states that the angle of reflection (θ_r) of a ray of light from a mirror is equal to the angle of incidence (θ_i), where both angles are measured from the line normal (perpendicular) to the mirror, as shown in the diagram below.



- (a) What is the total angle between the incident and reflected rays if $\theta_i = 30^\circ$?
 - (b) What is the total angle between the incident and reflected rays if θ_i is doubled to 60° ?
 - (c) What is the change in θ_i between (a) and (b), and what is the corresponding change in the total angle?
2. The flash of laser light from R travels to Mirror 1, and then on to Mirror 2, and then back along the same path to R , covering a distance of approximately 84 meters (over 250 feet) in all. How long does it take the light to travel this distance?
 3. If the mirror R rotates at an actual frequency of $f_{actual} = 600$ Hz, through what angle does it rotate in $1 \mu\text{s}$? Give your answer in both radians and degrees (recall that 1 degree = $(\pi/180)$ radians).