

MP/409

critical angle for diamond?

$$n_i = 2.42$$

$$\theta_i = ?$$

$$n_R = 1.00$$

$$\theta_R = 90^\circ \text{ (exactly)}$$

diamond \rightarrow air

$$n_i \sin \theta_i = n_R \sin \theta_R$$

$$(2.42) \sin \theta_i = (1.00) (\sin 90^\circ)$$

$$\sin \theta_i = \frac{1.00}{2.42}$$

$$\theta_i = \sin^{-1} \left(\frac{1.00}{2.42} \right)$$

After you reach

an angle of incidence

of 24.4° , the light will be totally reflected

$$\theta_i = 24.4^\circ$$