Physics 220: Unquiz 09

A piece of glass has an index of refraction of n=1.5. Find the critical angle for total internal reflection when the glass is surrounded by oil with an index of refraction of 1.2.

Light is incident on a piece of glass from the air at an angle of 44 degrees. If the glass has an index of refraction of n=1.4, find the angle of refraction.

Light is incident on the interface between glass and air (from the glass) at an angle of 44 degrees. If the glass has an index of refraction of 1.4, find the angle of refraction.

What is the angle of reflection when light is incident on the interface between glass and air (from the glass) at an angle of 44 degrees.

A piece of glass has an index of refraction of n=1.5. Find the critical angle for total internal reflection when the glass is surrounded by oil with an index of refraction of 1.2.

$$n_1\sin(\theta_1)=n_2\sin(\theta_2)$$

at the critical angle, $\sin(\theta_2)=1\Rightarrow\sin(\theta_c)=\dfrac{n_2}{n_1}=\dfrac{1.2}{1.5}=0.8\Rightarrow\theta_c=53^0$

Light is incident on a piece of glass from the air at an angle of 44 degrees. If the glass has an index of refraction of n=1.4, find the angle of refraction.

$$n_1\sin(\theta_1)=n_2\sin(\theta_2)\Rightarrow\sin(\theta_2)=\dfrac{n_1}{n_2}\sin(\theta_1)=\dfrac{1}{1.4}\sin(44)\Rightarrow\theta_2=29.7^0$$

Light is incident on the interface between glass and air (from the glass) at an angle of 44 degrees. If the glass has an index of refraction of 1.4, find the angle of refraction.

$$n_1\sin(\theta_1)=n_2\sin(\theta_2)\Rightarrow\sin(\theta_2)=\dfrac{n_1}{n_2}\sin(\theta_1)=\dfrac{1.4}{1}\sin(44)\Rightarrow\theta_2=29.7^0=76^0$$

What is the angle of reflection when light is incident on the interface between glass and air (from the glass) at an angle of 44 degrees.

$$\theta_i=\theta_r\Rightarrow\theta_r=44^0$$