Date
Page

1. What are two conditions required for total internal reflection?

There are two conditions for total internal reflection of light to take place:

(1) Light has to travel from denser to rarer medium.

(2) Critical angle of the medium $\theta_c = \sin^{-1}\left(\frac{n_{rarer}}{n_{denser}}\right)$

where n is the refractive index. Angle of incidence θ must be greater than the critical angle of medium θ_c.

2. A fish in the pond of water appears at a depth of 6 cm. What is the actual depth of the fish if the refractive index of air with respect to time water is 3/4?

Apparent depth = 3/4

Refractive index = 6cm

actual depth = $6 \times 3/4 = 9/2$

$= 4.5$ m

A rectangular glass slab of thickness 8 cm is placed on a figure. The eye is kept exactly above this slab. If the refractive index of glass is 1.6, then by what distance the figure will appear to raised?

$$\text{Apparent depth} = \frac{\text{real depth}}{\text{refractive index}} = \frac{8}{1.6}$$

$$= 5 \text{ cm}$$

Normal shift = Real depth − apparent depth = 8 − 5 = 3 cm.