

Answer on Question#38631, Physics, Optics

Question #38631

The refractive index of glass with respect to water is $3/2$ and the refractive index of water with respect to air is $4/3$. Then what will be the refractive index of water with respect to glass?

Answer

The refractive index of glass with respect to water determined as

$$n_{\text{glass to water}} = \frac{v_{\text{water}}}{v_{\text{glass}}}$$

Where

v_{water} is the speed of light in water

v_{glass} is the speed of light in glass

The refractive index of water with respect to glass determined as

$$n_{\text{water to glass}} = \frac{v_{\text{glass}}}{v_{\text{water}}}$$

According to this

$$n_{\text{water to glass}} = \frac{1}{n_{\text{glass to water}}} = \frac{1}{3/2} = \frac{2}{3}$$

Answer: 2/3.