

Answer on Question #46988-Physics-Optics

The speed of light in glass is approximately ----- that in air

100 times faster than

100 times slower than

50 per cent faster than

33 percent slower than

Answer

The speed of light in glass is

$$v = \frac{c}{n_{glass}},$$

where c is a speed of light in air, $n_{glass} = 1.5$ is the refractive index of glass.

Then

$$v = \frac{c}{1.5} = \frac{2}{3}c \approx 0.67c \rightarrow \frac{c - v}{c} = \frac{c - 0.67c}{c} = 0.33 = 33\%.$$

That's why the speed of light in glass is approximately 33 percent slower than that in air.