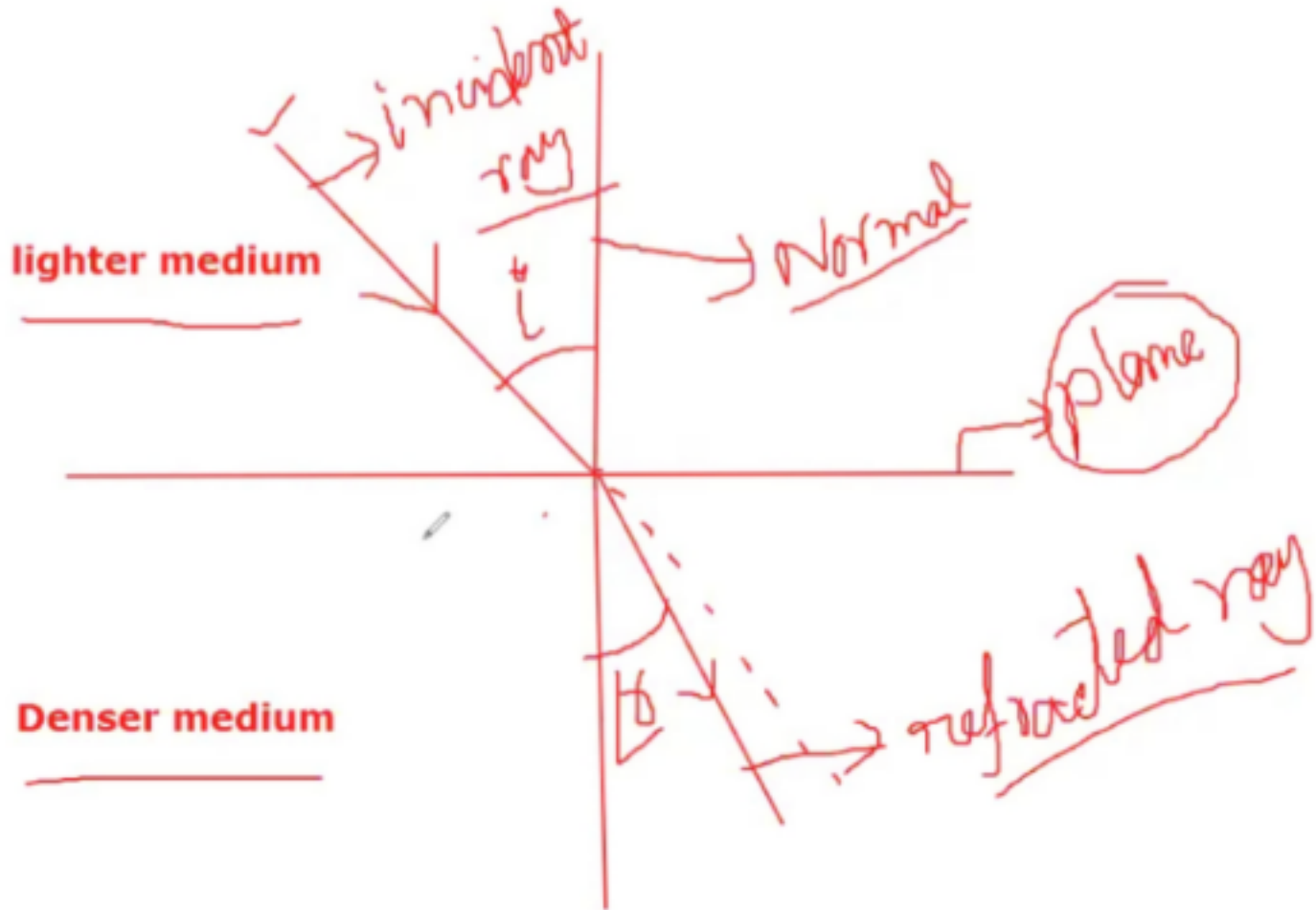


$$\frac{\sin i}{\sin r} = \mu$$

$\mu = \text{refractive index}$



ll
↓
Absolute refractive index
↓
relative refractive index

lighter medium

Denser medium

incident ray

i

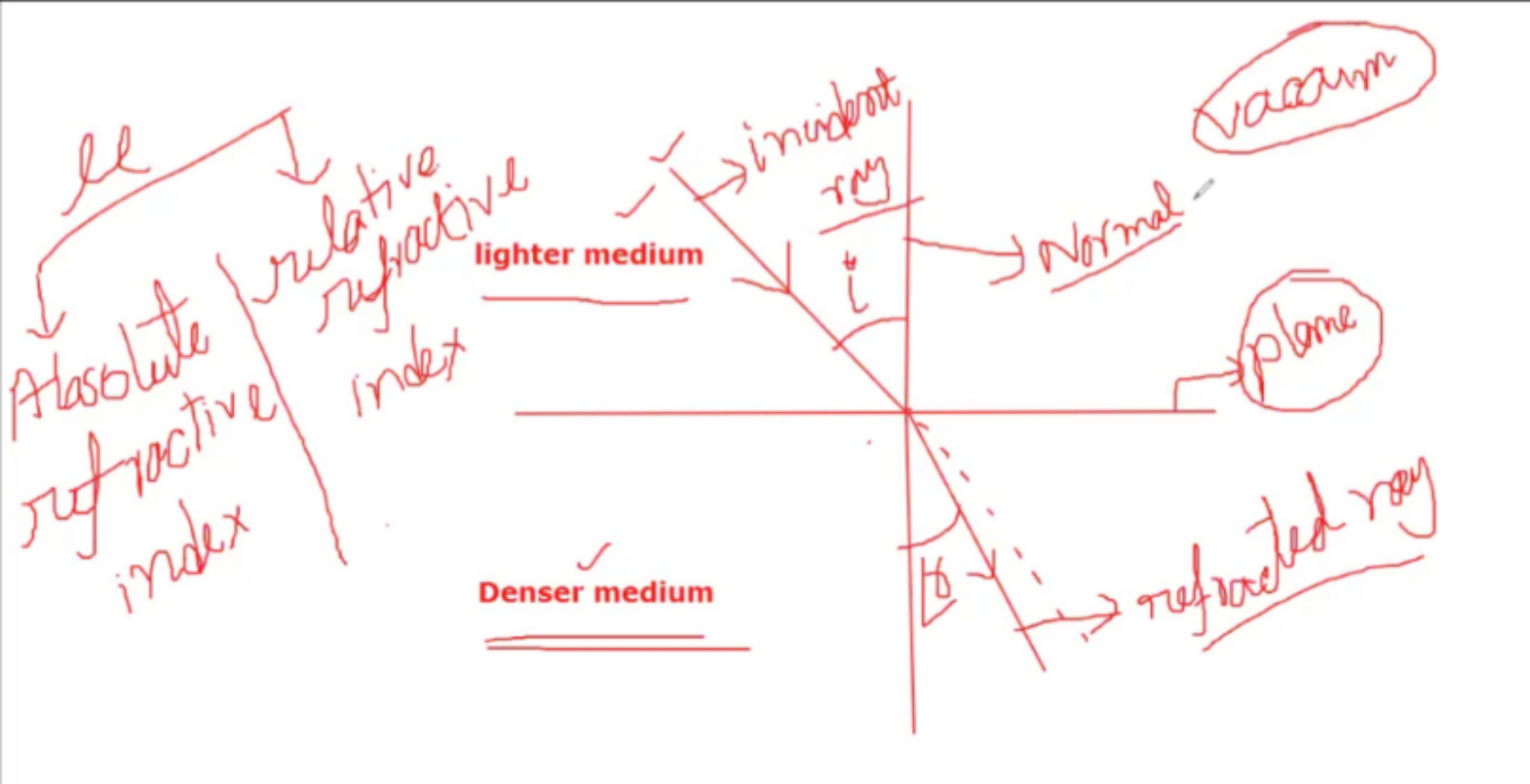
Normal

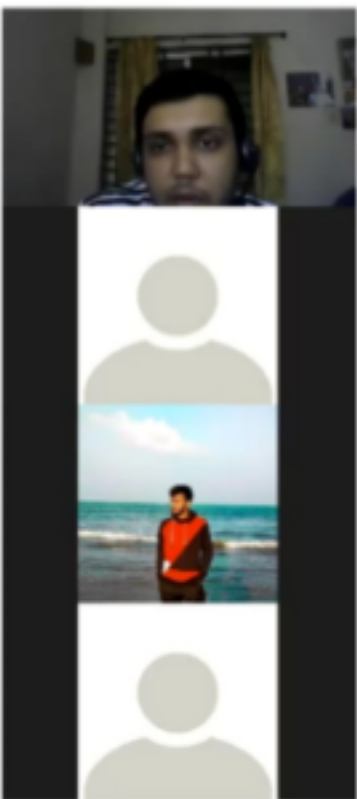
vacuum

plane

refracted ray

r



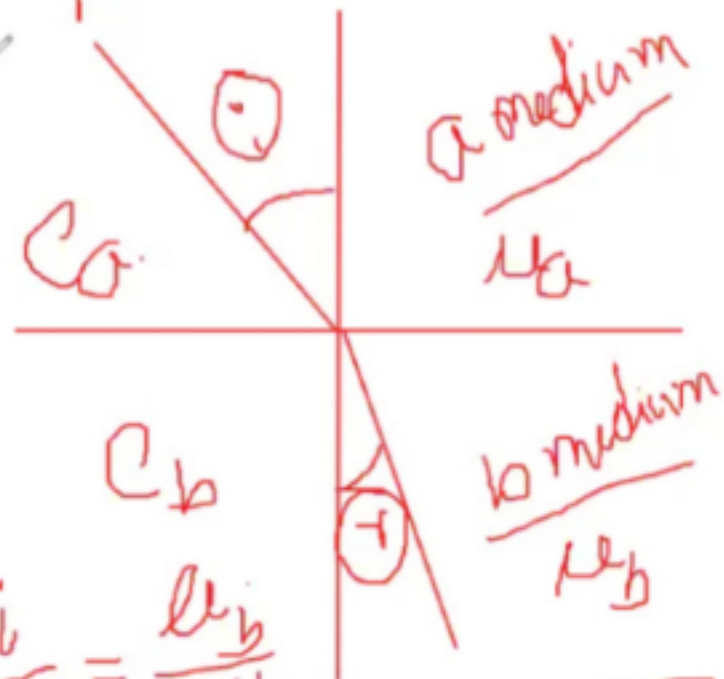


① $\frac{\sin i}{\sin r} = \frac{a_b}{a_a}$

② $a_b = \frac{\mu_b}{\mu_a}$

③ $\mu_b = \frac{c_a}{c_b}$

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



$\frac{\sin i}{\sin r} = \frac{\mu_b}{\mu_a}$

$\Rightarrow \mu_a \sin i = \mu_b \sin r$

$a \rightarrow b$

$b \rightarrow a$

$$a^{ll}b = \frac{ll_b}{ll_a}$$

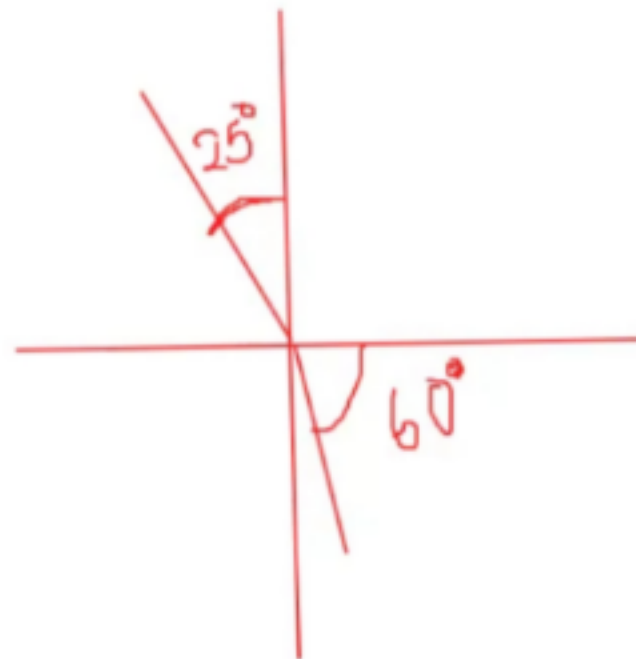
$$b^{ll}a = \frac{ll_a}{ll_b}$$

$$a^{ll}b = \frac{1}{b^{ll}a}$$

(*) $\Rightarrow b^{ll}a = \frac{1}{a^{ll}b} = \frac{1}{\frac{ll_b}{ll_a}} = \frac{ll_a}{ll_b}$



$$\mu = ?$$



The refractive index of glass is 1.5. Find the speed of light in glass?

$$\mu_g = \frac{c_a}{c_g}$$

$$\frac{\mu_g}{\mu_a} = \frac{1.5}{1.0}$$

$$\Rightarrow 1.5 = \frac{3.0 \times 10^8}{c_g}$$

$$\Rightarrow c_g = \frac{3.0 \times 10^8}{1.5} \\ = 2.0 \times 10^8$$

✓ Immersed coin in a vessel
of water

✓ Atmospheric refraction

$$\theta_c = 48.2^\circ$$

$$\sin \theta_c = \mu$$

$$\Rightarrow \mu = \frac{1}{\sin \theta_c}$$

$$\Rightarrow \sin \theta_c = \frac{1}{\mu}$$

$$\Rightarrow \theta_c = \sin^{-1}\left(\frac{1}{\mu}\right)$$

