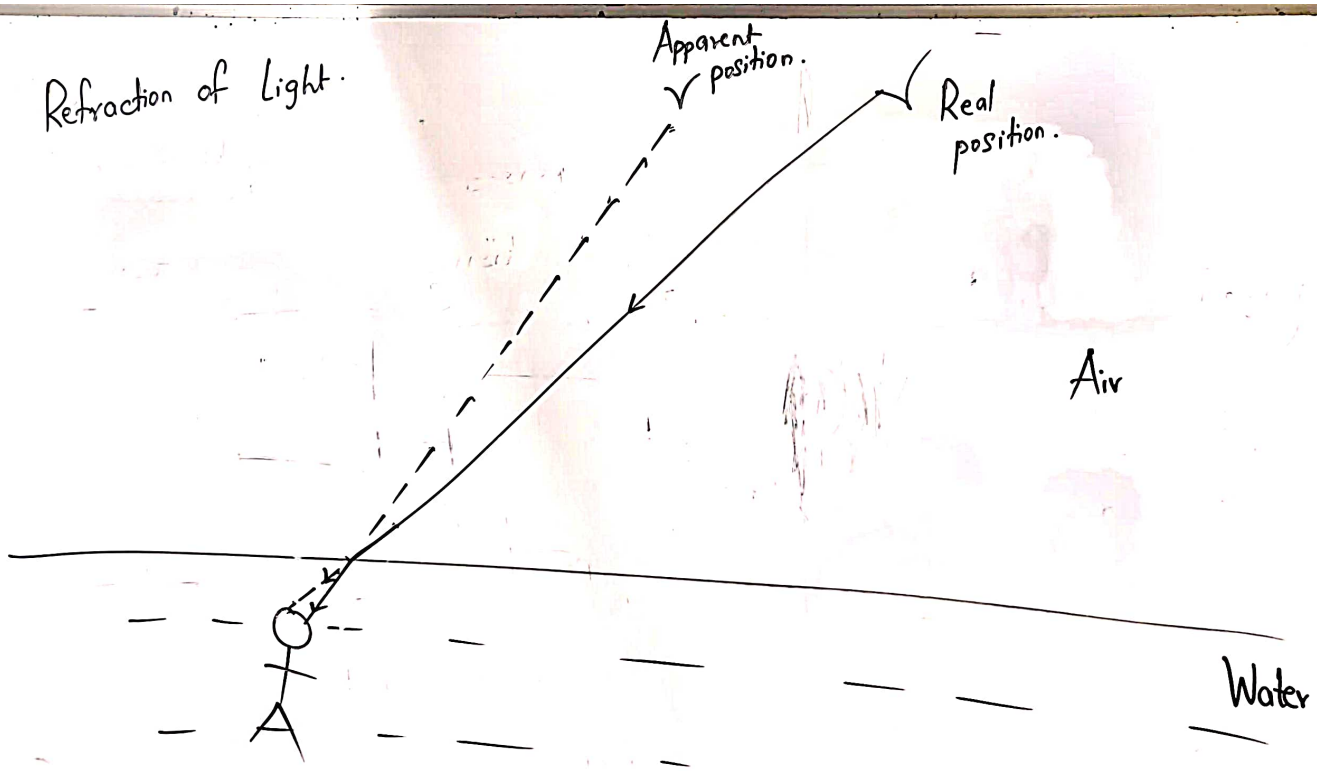
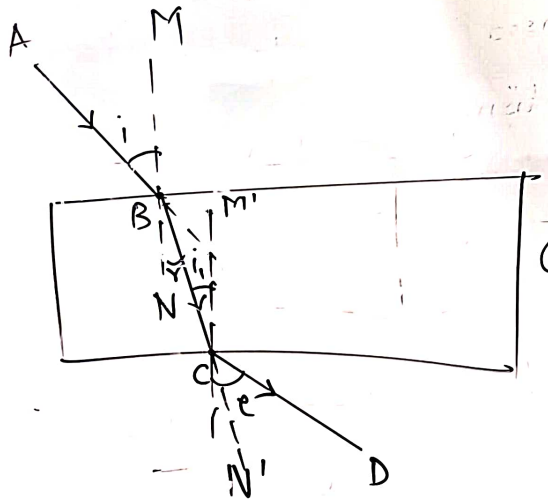
Refraction of Light.



Glass slab experiment.



Air (Rarer)

Glass slab. (Denser)

Air (Rarer)

MN, M'N' = Normal

AB = Incident ray.

BC = Refracted Ray.

i = Angle of incidence

r = Angle of refraction.

CD = Emergent ray

e = Angle of emergence

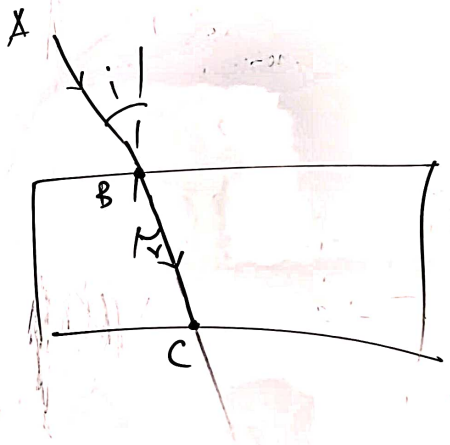
Laws of Refraction:

Law 1:

Law 2 : Snell's Law.

$$\text{Refractive index } (n) = \frac{\sin i}{\sin r}$$

↳ Constant



Refractive Index (n)

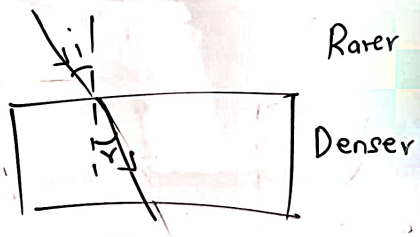
① Refractive Index of first medium w.r.t second medium:

$$_1n_2 = \frac{n_1}{n_2} \qquad _1n_2 = \frac{V_2}{V_1}$$

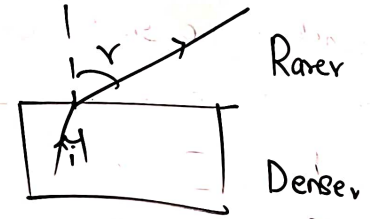
② Refractive index of second medium w.r.t first medium

$$_2n_1 = \frac{n_2}{n_1} \qquad _2n_1 = \frac{V_1}{V_2}$$

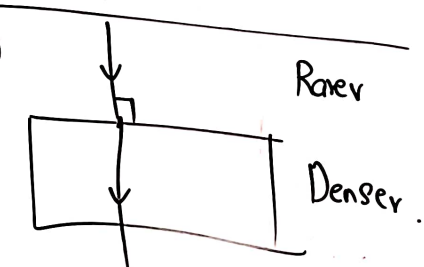
Bending of Light

① 

Towards the normal

② 

Away from normal.

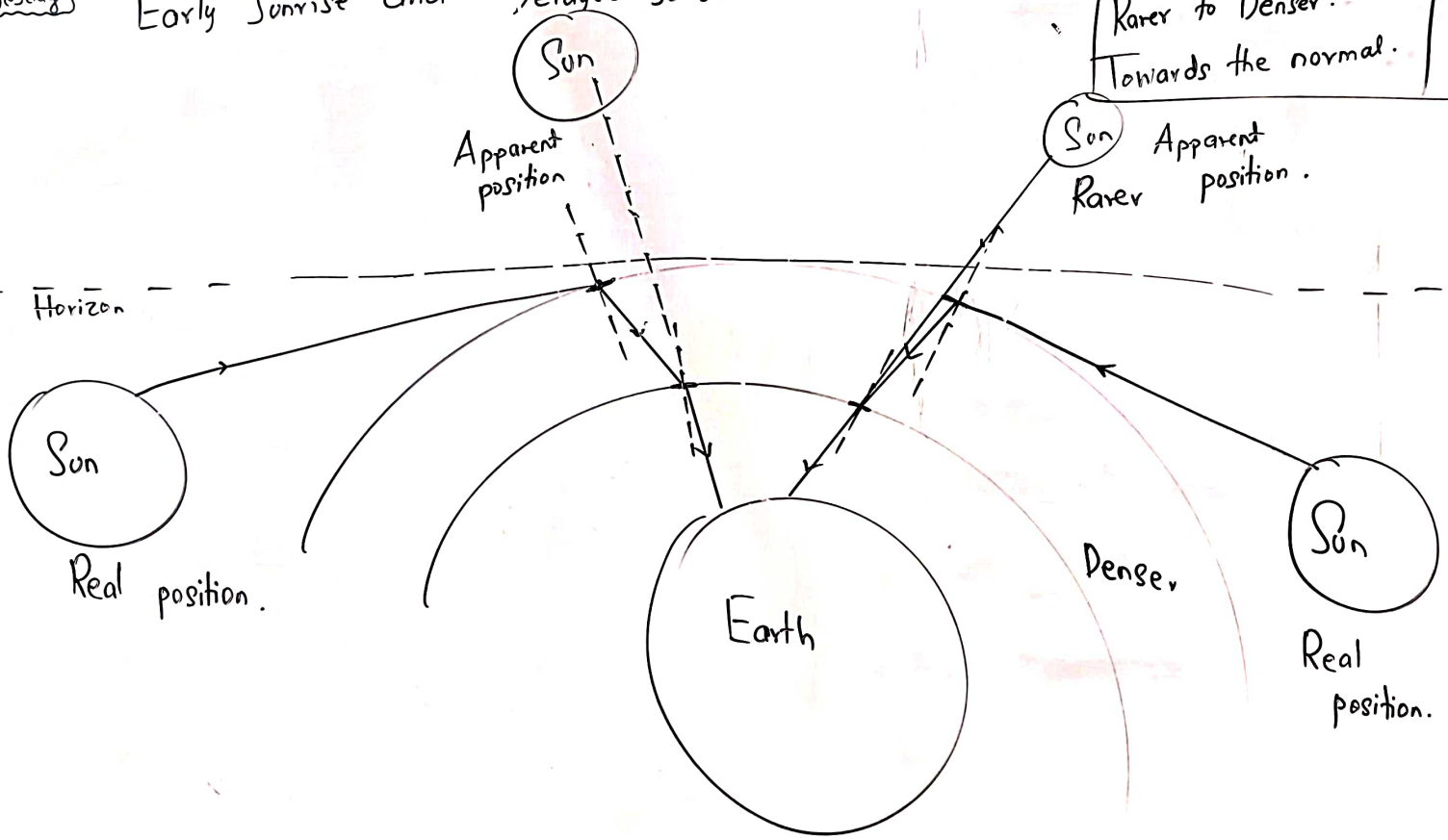
③ 

No bending.

16/7/24
Tuesday

Early Sunrise and Delayed Sunset.

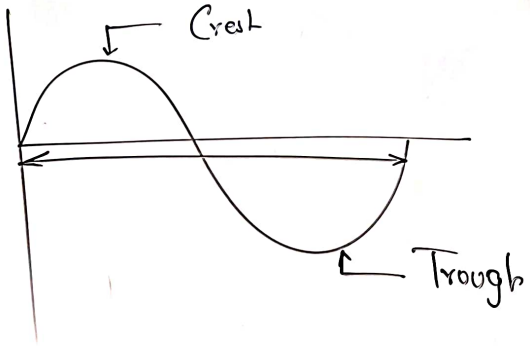
Rarer to Denser:
Towards the normal.



16/7/24
Tuesday

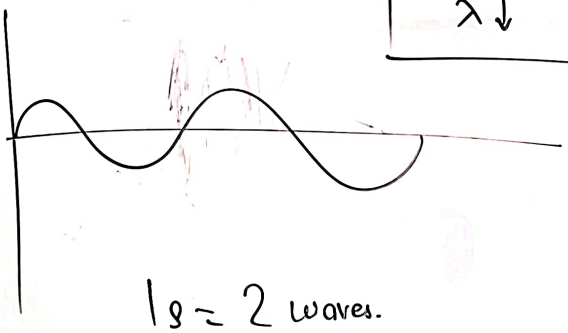
Dispersion of Light (Sir Isaac Newton)

Wavelength (λ)



Frequency (f)

$t = 1s$



$1s = 2$ waves.

Frequency $= 2$ Hertz.

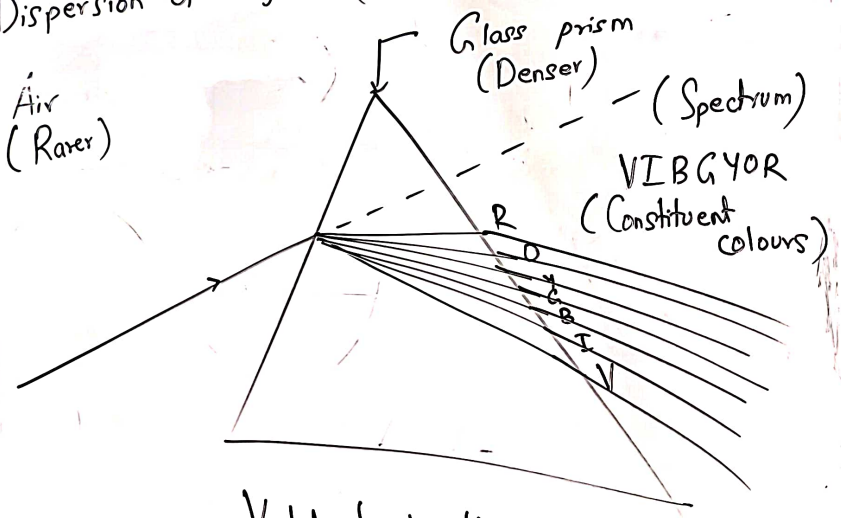
$\lambda \propto \frac{1}{f}$

$\lambda \uparrow \quad f \downarrow$

$\lambda \downarrow \quad f \uparrow$

16/7/24
Tuesday

Dispersion of Light (Sir Isaac Newton)



Violet bends the most

Red bends the least.

$\lambda \propto \frac{1}{f}$.

Wavelength of Visible Light

Violet (400 nm) — Low Wavelength, High Frequency (Bending ↑)

Red. (700 nm) — High Wavelength, Low frequency. (Bending ↓)

16/7/24
Tuesday

Formation of Rainbow.