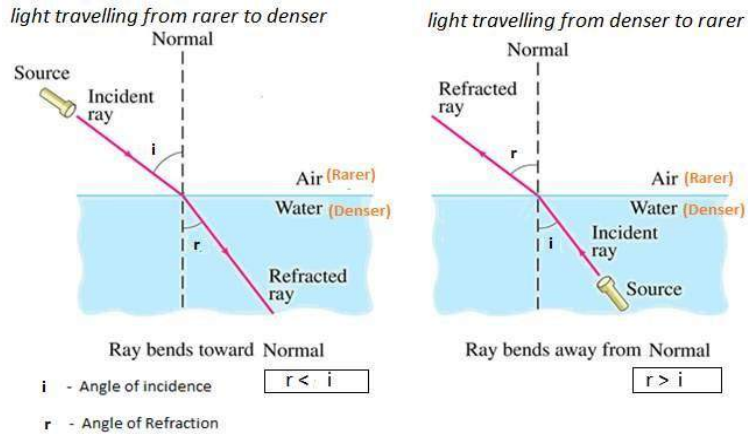
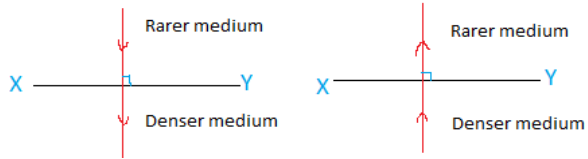


Concept of Refraction :



When $i = 0, r = 0$ i.e., no refraction



Refraction of Light

Terms :

1. Incident Ray : ray which falls on boundary of separation to enter into the other medium
2. Refracted ray: ray in the second medium after deviation
3. Normal: a perpendicular passing through the point at the boundary of separation where the incident ray falls
4. Angle of incidence: angle between incident ray and normal
5. Angle of refraction: angle between refracted ray and normal.

Effects of Refraction :

1. When a stick dipped partially in water , it appears to be bent and short

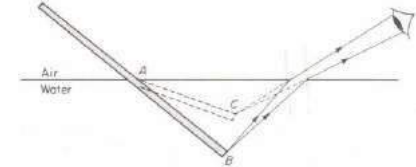
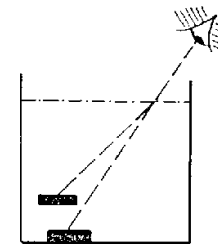
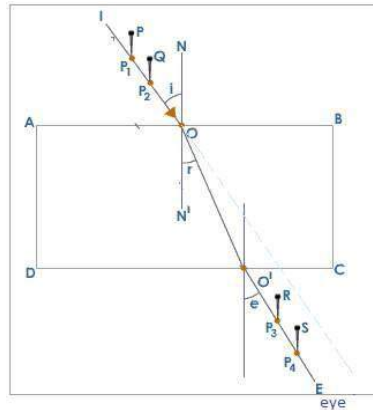


Fig 23.6. A stick appears bent in water

2. A coin kept in a vessel filled with water appears to be raised.

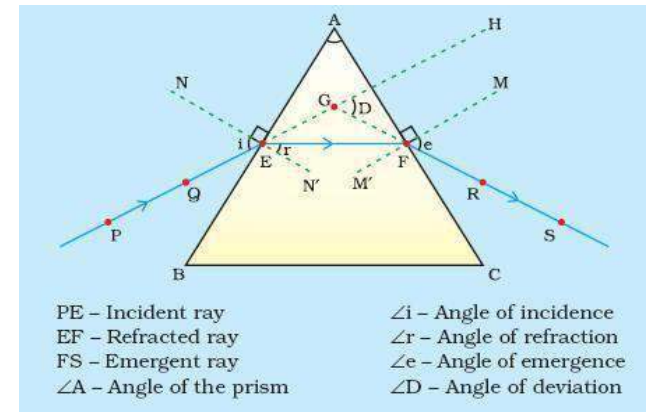


Refraction through glass block :

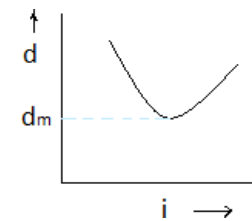


Angle of incidence = Angle of Emergence
Emergent ray is parallel to the incident ray

Refraction through Prism:



PE - Incident ray
EF - Refracted ray
FS - Emergent ray
 $\angle A$ - Angle of the prism
 $\angle i$ - Angle of incidence
 $\angle r$ - Angle of refraction
 $\angle e$ - Angle of emergence
 $\angle D$ - Angle of deviation



Angle of minimum deviation depends upon:

1. Angle of prism
2. Material of prism
3. Angle of incidence
4. Wavelength of light used

The Laws of Refraction

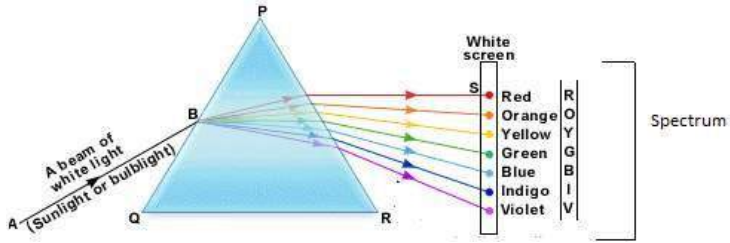
- The incident ray, the normal and the refracted ray, all lie on the same plane
- For a given pair of media, the ratio of the sine angle of incidence to the sine of angle of refraction is a constant

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

μ = refractive Index
 i = angle of incident
 r = angle of refraction

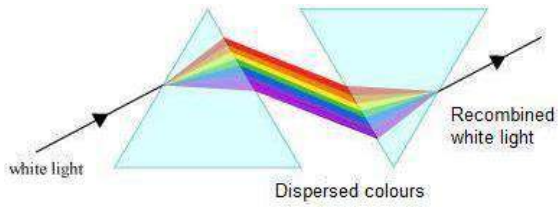
The second law is also known as *Snell's law*

Dispersion of light through a prism :

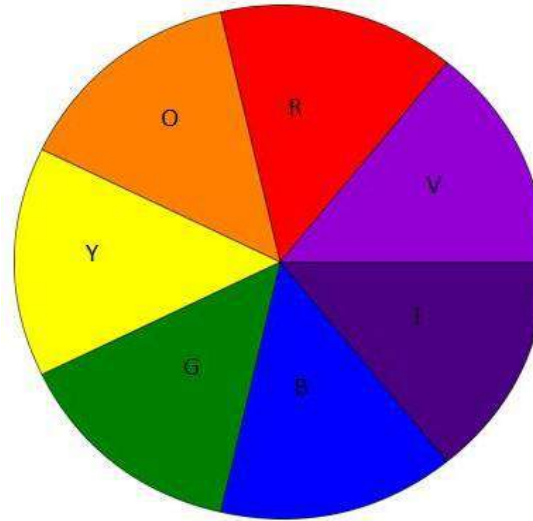


Example of dispersion of white light : Rainbow

Recombination of colours:



Newton's colour disc: - Proof that white light consists of seven colours.



The disc appears white when rotated at a high speed.