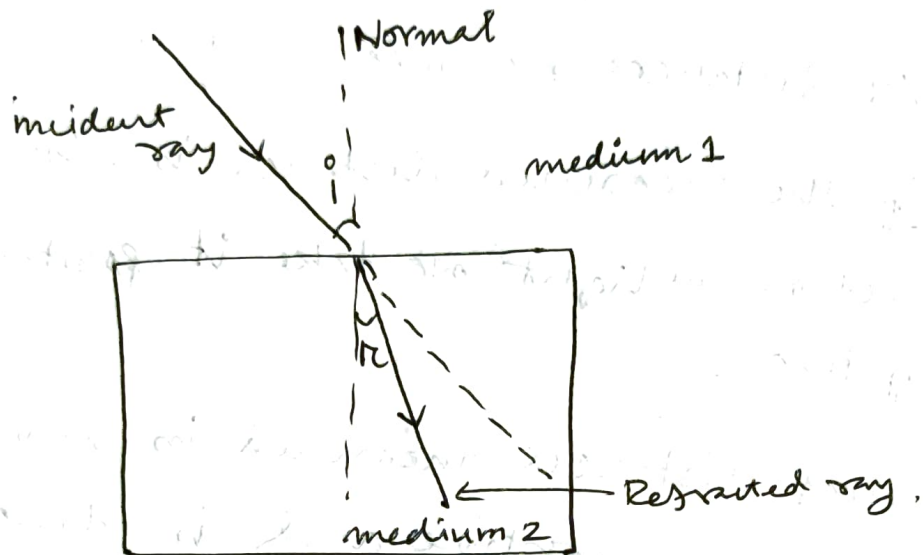


Refraction of light

When light rays travel from one medium to another, the light rays change their direction at the boundary between the two medium.



Laws of Refraction

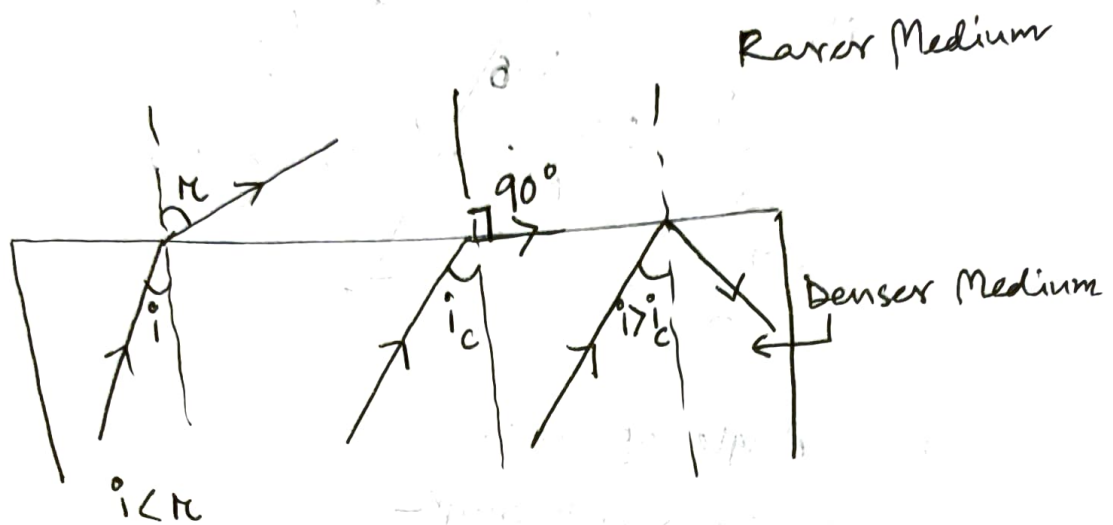
$\angle i = \text{Angle of incidence}$
 $\angle r = \text{Angle of refraction}$

- (1) The incident ray, refracted ray and the normal to the refracting surface at the point of incidence all lie in one plane.
- (2) The ratio between sine of angle of incidence and to the sine of angle of refraction is constant.

The 2nd law is also known as Snell's Law.

Refractive index (μ): - The ratio between the speed of light in vacuum to the speed in a medium is known as Refractive index of the medium. It has no unit.

$\mu = \frac{c}{v}$, $c \rightarrow$ vel^o of light in vacuum or air
 $v \rightarrow$ vel^o in the medium.
Total internal reflection and "Critical angle"



$i_c \rightarrow$ Critical angle.

When light travels from an optically denser medium to optically rarer medium, the refracted light ray bends away from the normal. For a particular incident angle, the refracted angle is 90° and light passes along the surface of the medium. This angle is known as critical angle (i_c).

If the angle of incidence is greater than the critical angle then the light is reflected back to the same medium. This phenomenon is known as Total internal reflection.

Examples of total internal reflections are shining of diamond, Mirage, principles of Optical fibre etc.