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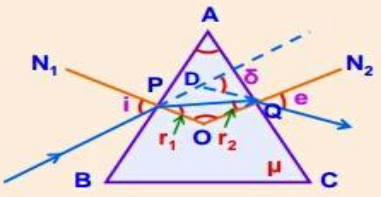
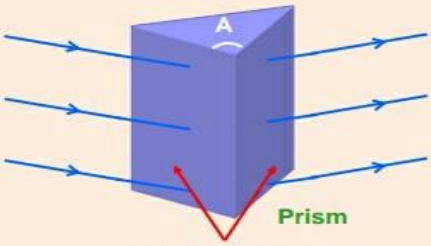
Refraction of Light through Prism:





In quadrilateral APOQ,

$A + O = 180°$ ……(1)

(since N_1 and N_2 are normal)

In triangle OPQ,

$r_1 + r_2 + O = 180°$ ……(2)

In triangle DPQ,

$\delta = (i - r_1) + (e - r_2)$

$\delta = (i + e) - (r_1 + r_2)$ ……(3)

From (1) and (2),

$A = r_1 + r_2$

From (3),

$\delta = (i + e) - (A)$

or $\boxed{i + e = A + \delta}$

Sum of angle of incidence and angle of emergence is equal to the sum of angle of prism and angle of deviation.

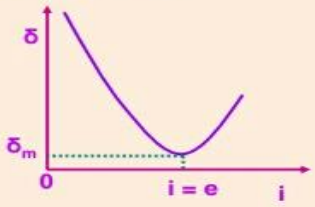
Variation of angle of deviation with angle of incidence:

When angle of incidence increases, the angle of deviation decreases.

At a particular value of angle of incidence the angle of deviation becomes minimum and is called 'angle of minimum deviation'.

At δ_m, $i = e$ and $r_1 = r_2 = r$ (say)

After minimum deviation, angle of deviation increases with angle of incidence.



Refractive Index of Material of Prism:

$A = r_1 + r_2$

$A = 2r$

$\boxed{r = A / 2}$

$i + e = A + \delta$

$2i = A + \delta_m$

$\boxed{i = (A + \delta_m) / 2}$

According to Snell's law,

$$\mu = \frac{\sin i}{\sin r_1} = \frac{\sin i}{\sin r}$$

$$\therefore \quad \boxed{\mu = \frac{\sin \frac{(A + \delta_m)}{2}}{\sin \frac{A}{2}}}$$