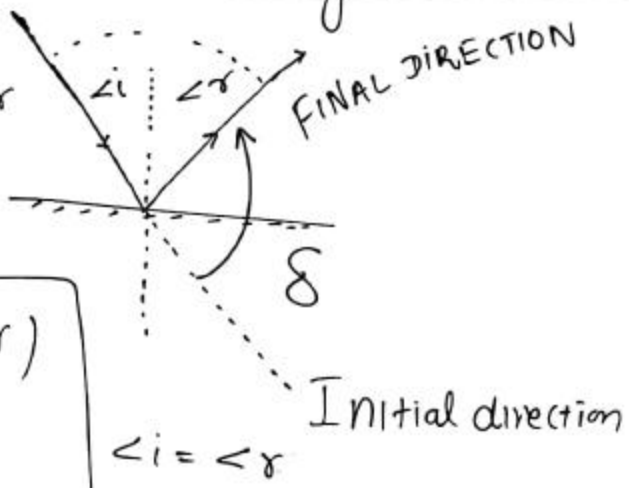
→ Deviation produced by plane mirror →



→ $\delta = 180 - (i + r)$

or $\delta = 180 - 2i$ $\quad \angle i = \angle r$

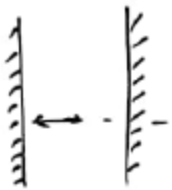
or $\delta = 180 - 2r$

→ # NO. OF IMAGES BETWEEN 2 MIRRORS

Number of Images $= \frac{360}{\theta}$

θ = Angle between the planes of mirrors

(a)



$\frac{360}{72} = 5$

$N \cdot O \cdot I = \frac{360}{\theta}$

$N \cdot O \cdot I = \frac{360}{0} = \text{Infinite}$

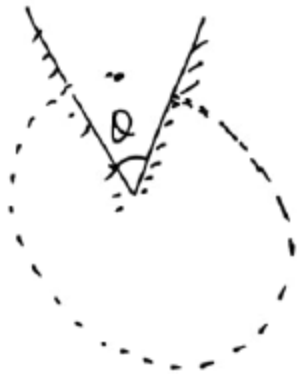
(i) If $\frac{360}{\theta}$ is even

$N \cdot O \cdot I = \frac{360}{\theta} - 1$

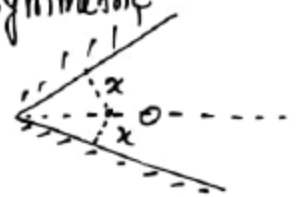
(ii) If $\frac{360}{\theta}$ is odd and Symmetric

(iii) $N \cdot O \cdot I = \frac{360}{\theta} - 1$

(b)



Symmetric



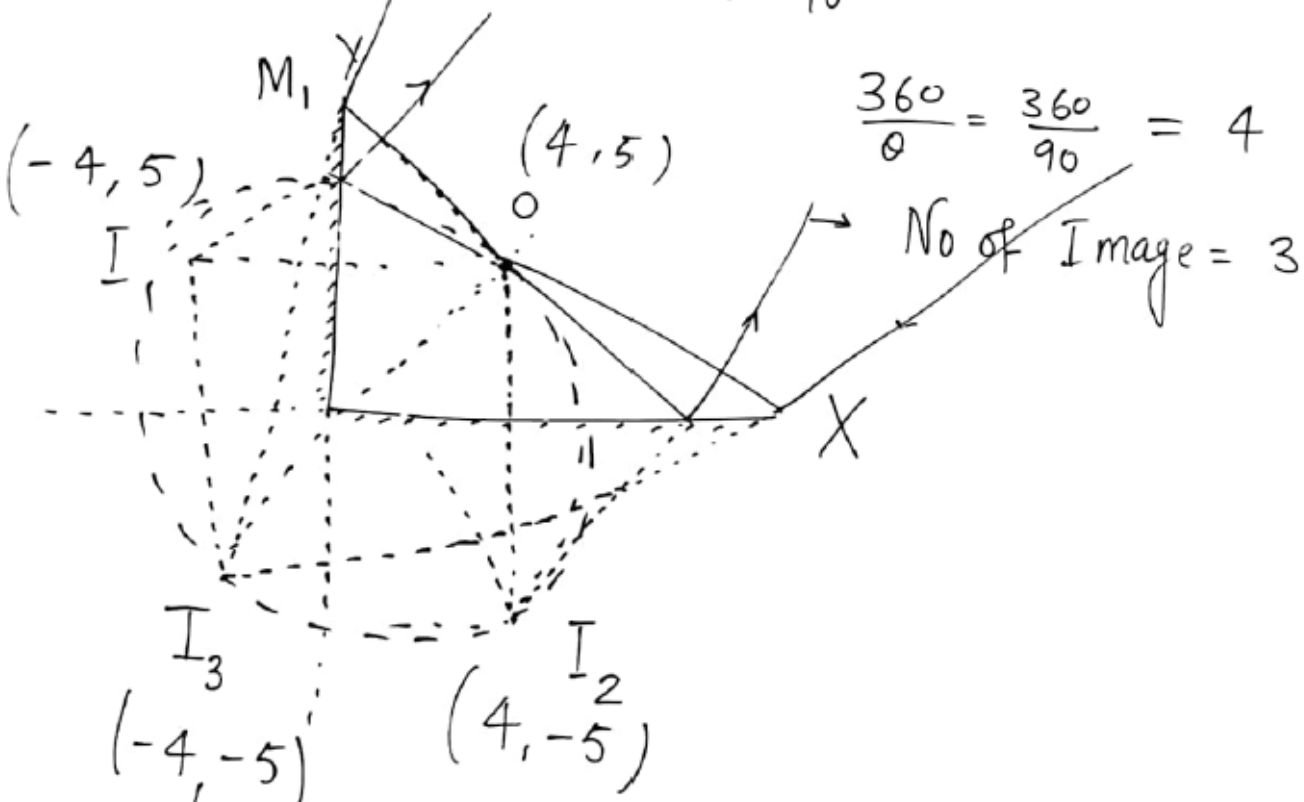
$\frac{360}{\theta}$ = odd (asymmetric)

$N \cdot O \cdot I = \frac{360}{\theta}$

→ # NO. OF IMAGES BETWEEN 2 MIRRORS

Practice → Q. 1

Let $\theta = 90°$



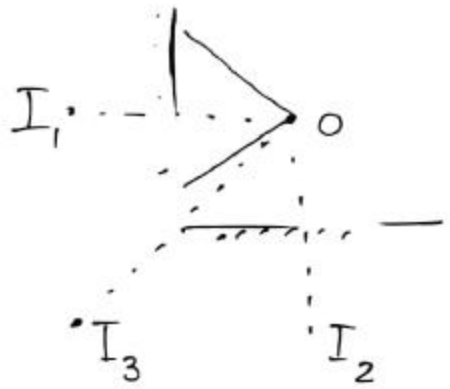
$$\frac{360}{\theta} = \frac{360}{90} = 4$$

No of Image = 3

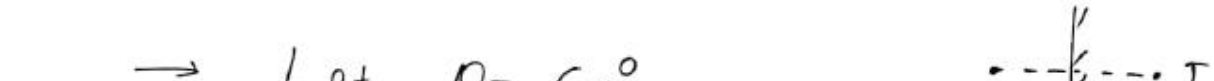
Q.2

→ If two consecutive walls and roof are plane mirror of a room the n.o.I of a man sitting / standing in room

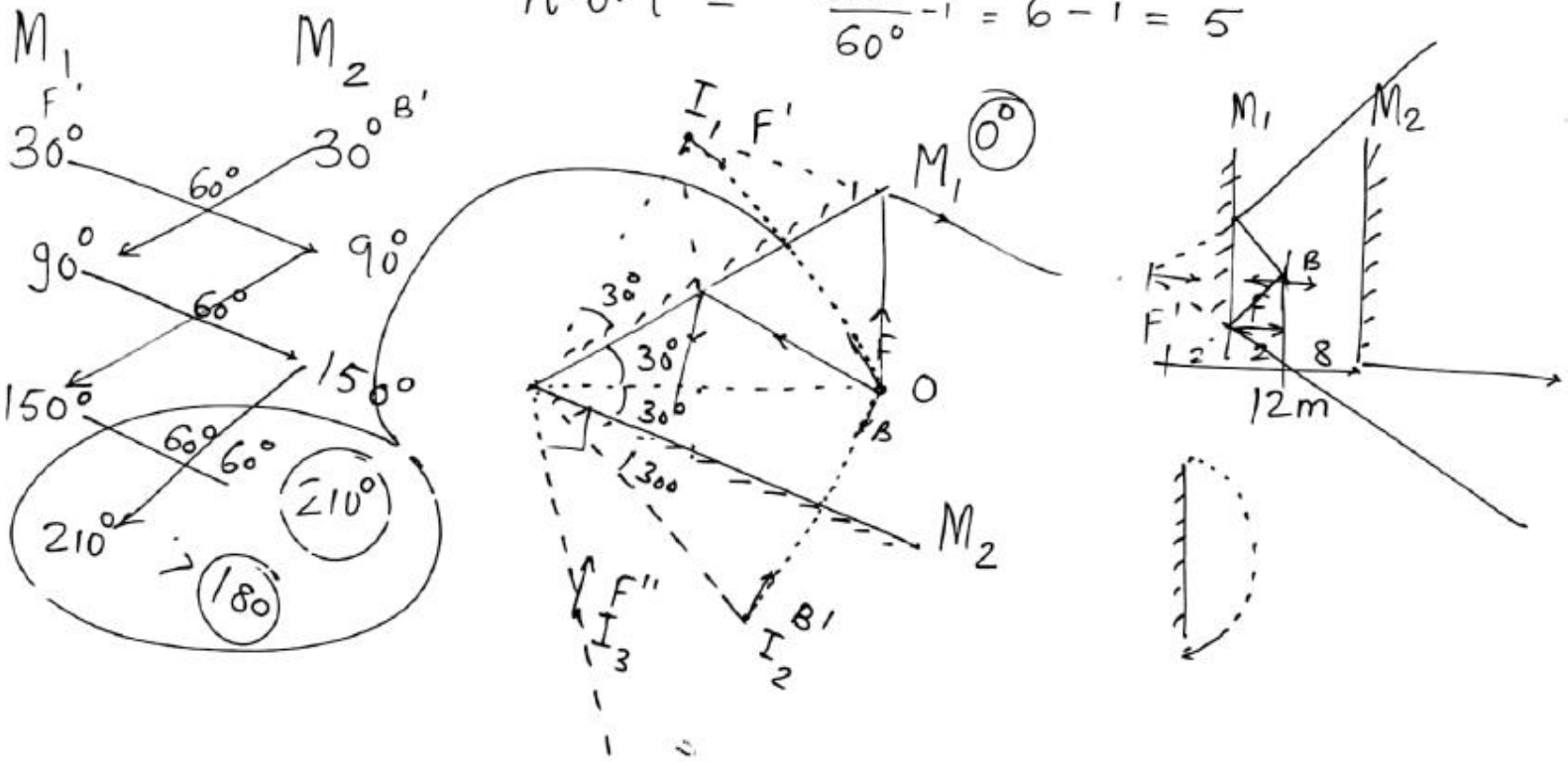
Ans = 7



→ Let $\theta = 60^\circ$



$$n \cdot o \cdot i = \frac{360^\circ}{60^\circ} - 1 = 6 - 1 = 5$$



→ No of Images

$\frac{360}{30} = 12$ (even)

→ N.O.I = 11