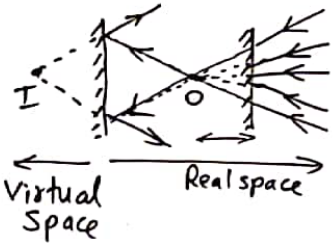
Session-4- Optics- Plane Mirror

→ Recap → Angle of deviation (1) → Motion of obj & Image (2) → Extended obj (3) → Gen. Characteristics of obj. & image. → Pair of Mirrors (5) ←

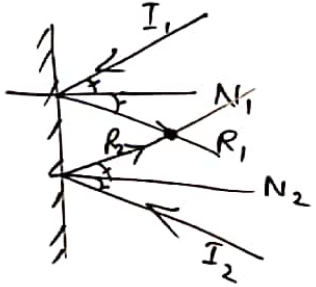
Recap → Ex 1 Comment on nature of obj & image.

↳ Virtual obj & real image.



What happens if mirror shifted by 1 cm to left?

↳ Real obj & Virtual image.



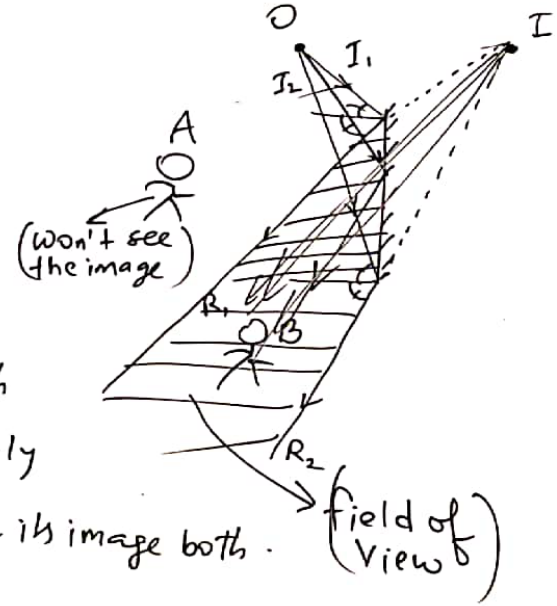
Ex 2. Obj placed beyond mirror.

(A) A will see O only

(B) A will see O & its image both

(C) B will see O only

(D) B will see O & its image both.

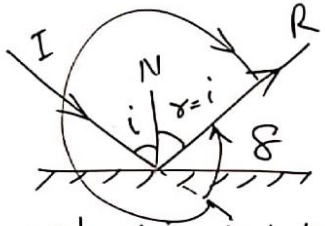


Session-4- Optics- Plane Mirror

→ Recap → Angle of deviation (1) & → Motion of obj & Image (2) → Extended obj. (3) → Pair of Mirrors (5) ← → Gen. Characteristics of obj. & image.

Angle of Deviation

Q.1.

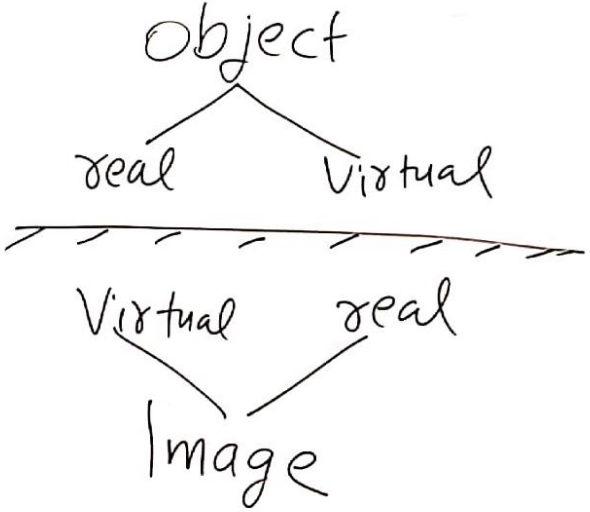


What is deviation mirror has caused in I.

→ $\boxed{\delta = \pi - 2i}$

$\delta = 2\pi - (\pi - 2i)$

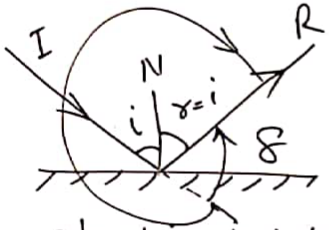
$\boxed{\delta = \pi + 2i}$



Session-4- Optics- Plane Mirror

→ Recap → Angle of deviation (1) & → Motion of obj & Image (2) → Extended obj (3) → Pair of Mirrors (5) ← → Gen. Characteristics of obj. & image.

Angle of Deviation



what is deviation mirror has caused in I.

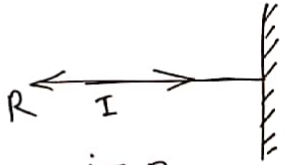
→ $\delta = \pi - 2i$

$\delta = 2\pi - (\pi - 2i)$

$\delta = \pi + 2i$

Q.1. Find δ_{max}.

Normal Incidence.



$i = 0$

$\delta = \pi - 2i$

$\delta = \pi$

$\delta_{max} = \pi$

Q.2. Find δ_{min}

Grazing incidence

$i = 90° = \pi/2$

$\delta = \pi - 2i$

$\delta = 0$

$\delta_{min} = 0$

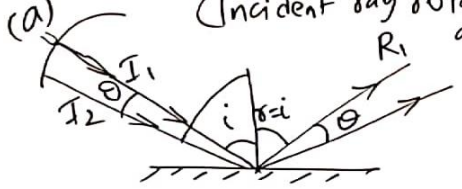
$0 \le \delta \le \pi$

Session-4- Optics- Plane Mirror

→ Recap → Angle of deviation (1) & → Motion of obj & Image (2) → Extended obj (3) → Gen. characteristics of obj. & image. ← Pair of Mirrors (5)

(2) Motion of obj. & Image → Rot^n & translation

(a) (Incident ray rotates by an angle θ)



$i' = i + \theta$

$\gamma' = i'$

$= i + \theta$

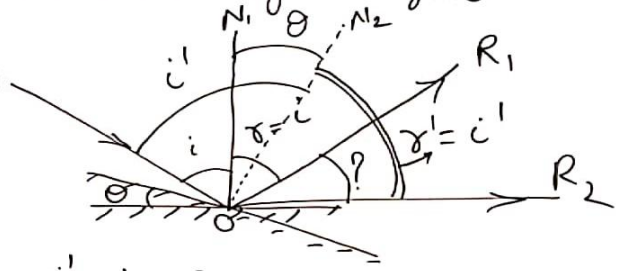
$\Rightarrow (\gamma' - \gamma) =$ rot^n of reflected ray

$= (i + \theta) - i$

$= \theta$

→ Reflected ray rotates by same angle but in opposite sense.

(b). Mirror rotates by an angle θ.



$\angle R_1OR_2 = \gamma' - (\gamma - \theta)$

$= i + \theta - (i - \theta)$

$= i + \theta - i + \theta$

$= \boxed{2\theta}$

$i' = i + \theta$

$\gamma = i$

$\gamma' = i'$

$= i + \theta$

Angle of rot^n of $R_1 = R_1OR_2$

$= \gamma' - \angle N_2OR_1$

$= \gamma' - (\angle N_1OR_1 - \angle N_1ON_2)$

Session-4- Optics- Plane Mirror

→ Recap → Angle of deviation (1) → Motion of obj & Image (2) → Extended obj (3) → Pair of Mirrors (5) ← → Gen. characteristics of obj. & image.

(2) Motion of obj. & Image → Rot^n & translation

Ex! Find

(a) ϕ, b/w initial & final lines joining obj. & image.

(b) h, dist of I' from OI.