

NEET/JEE | 2024

concept of plane mirror

Ray optics (3-4 marks)

① Law of reflection



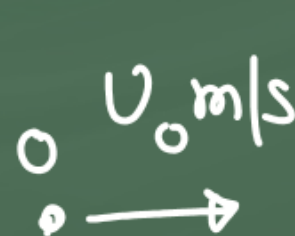
$$\angle i = \angle r$$



② deviation

$$\begin{aligned}\delta &= 180^\circ - 2i \\ &= 180 - 2 \times 60 \\ &= 180 - 120 \\ &= 60^\circ \text{ (Anti)}\end{aligned}$$

③



Ⓐ  $v_i = v_0$

Ⓑ  $v_i = -v_0$

Ⓒ  $v_i = -2v_0$

Ⓓ  $v_i = +2v_0$

concept of plane mirror Ray optics (3-4 marks) (6)

(4)  $\uparrow v_o$   
o

$v_o$   
I = ?

(a)  $v_o$  (c)  $+2v_o$   
(b)  $-v_o$  (d)  $-2v_o$

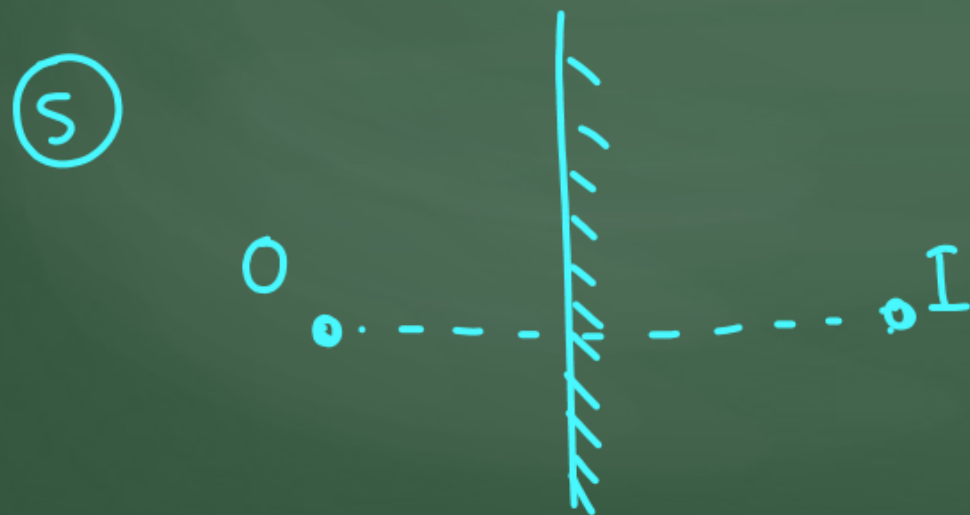


Image must be perpendicular to object always.

(7) field of view

(a) True  
(b) false

comment on this

(a) yes ✓  
(b) no

⑧ component of velocity  
at 1



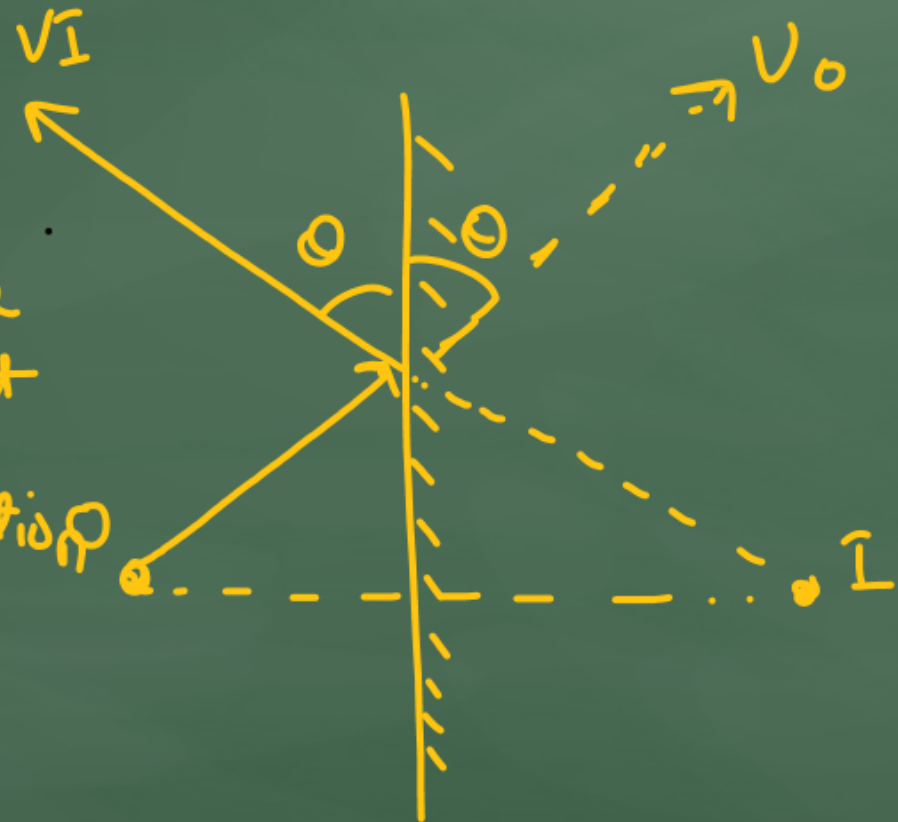
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⑧ component of velocity of image.

Image velocity will make the same angle but in opp. direction



velocity of obj

$$= 2\hat{i} + 3\hat{j} - 3\hat{k}$$

image velocity



(a)  $2\hat{i} + 3\hat{j} - 3\hat{k}$

(b)  $-2\hat{i} - 3\hat{j} + 4\hat{k}$

(c)  $-2\hat{i} - 3\hat{j} - 3\hat{k}$

(d)  $2\hat{i} + 3\hat{j} + 3\hat{k}$

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✓ (a)  $\frac{4\pi r}{\lambda}$

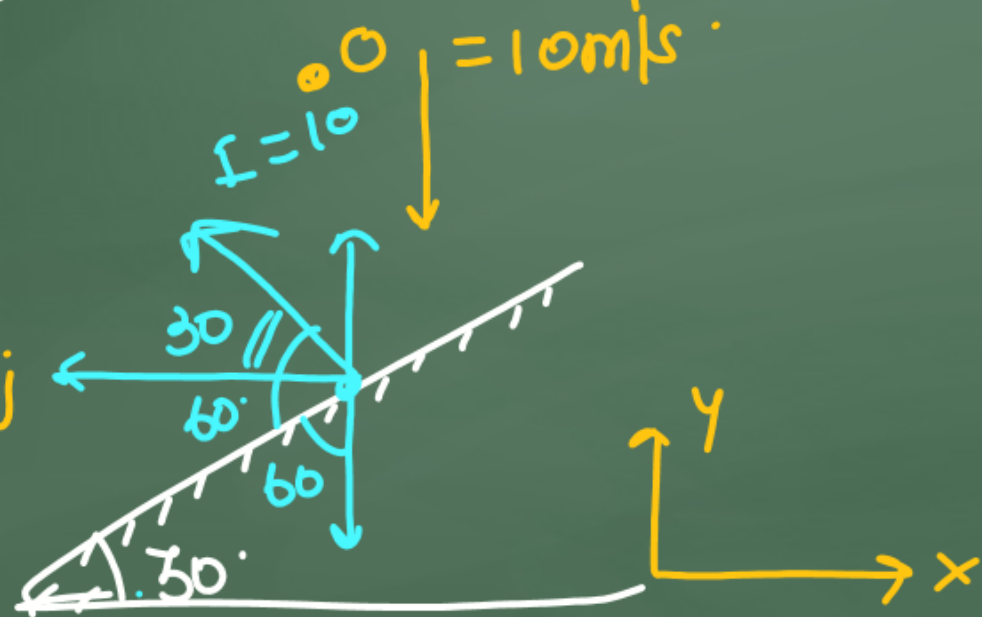
image velocity = ?

(a)  $10 \cos 30^\circ i + 10 \sin 30^\circ j$

(b)  $-10 \cos 30^\circ i - 10 \sin 30^\circ j$

✓ (c)  $-10 \cos 30^\circ i + 10 \sin 30^\circ j$

(d) none



$-10 \cos 30^\circ i + 10 \sin 30^\circ j$

concept of plane mirror

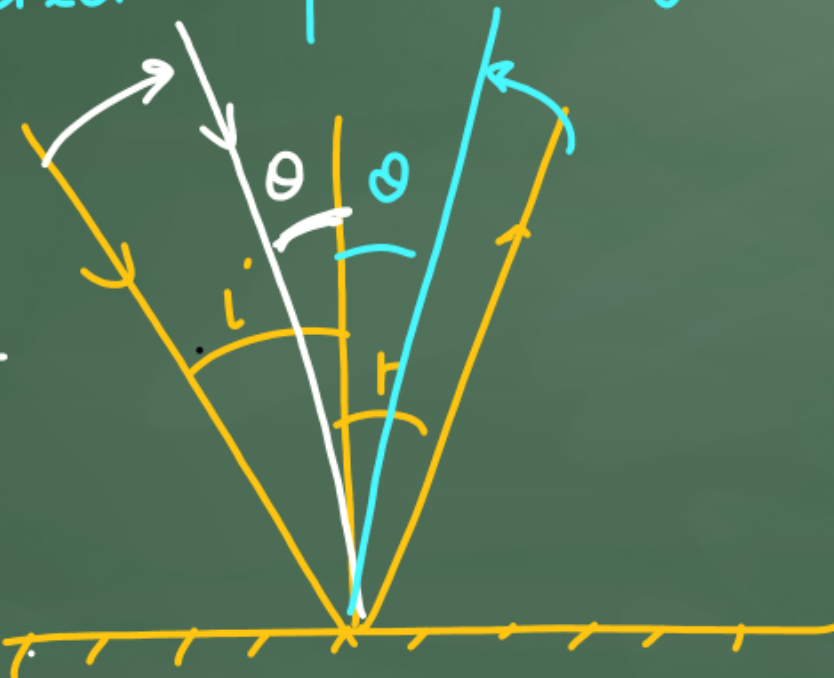
10 Reflected rays shifting

(a)  $\theta$  in same

(b)  $2\theta$  in same

(c)  $\theta$  in opp.

(d)  $2\theta$  in opp.



Ray optics

(3-4 marks)

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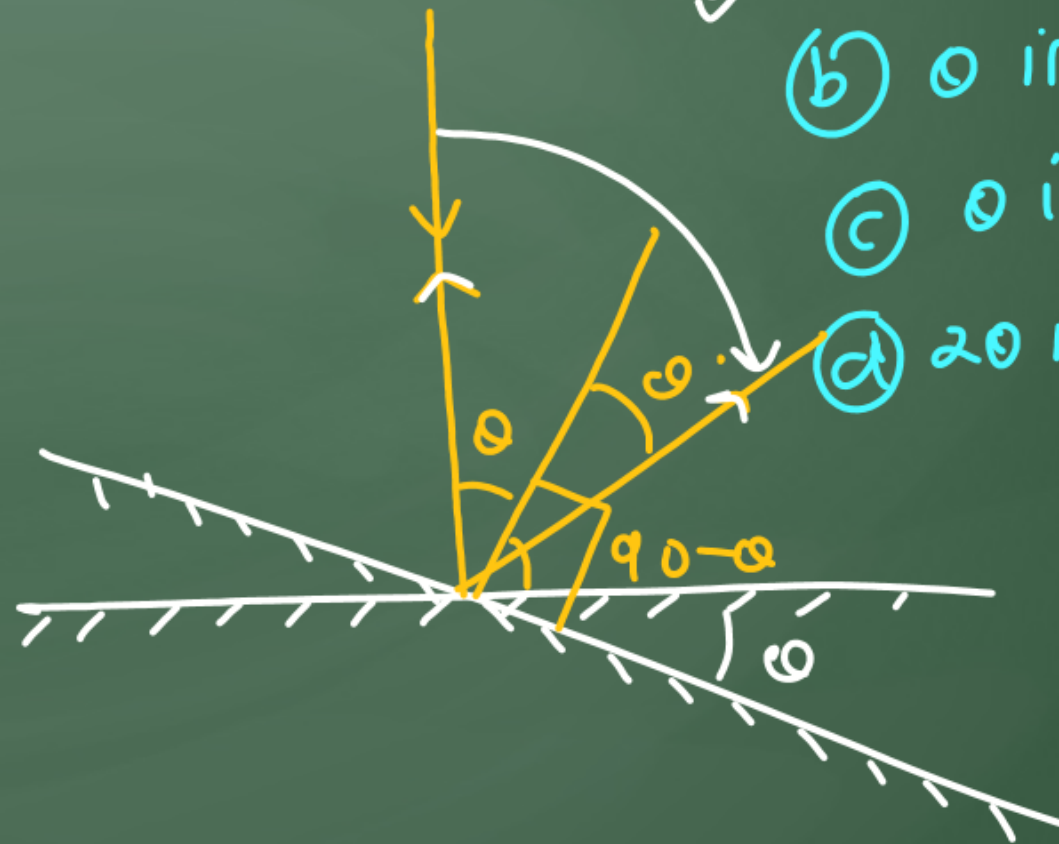
Reflected rays shifting

(a)  $2\theta$  in same

(b)  $\theta$  in same

(c)  $\theta$  in opp.

(d)  $2\theta$  in opp.

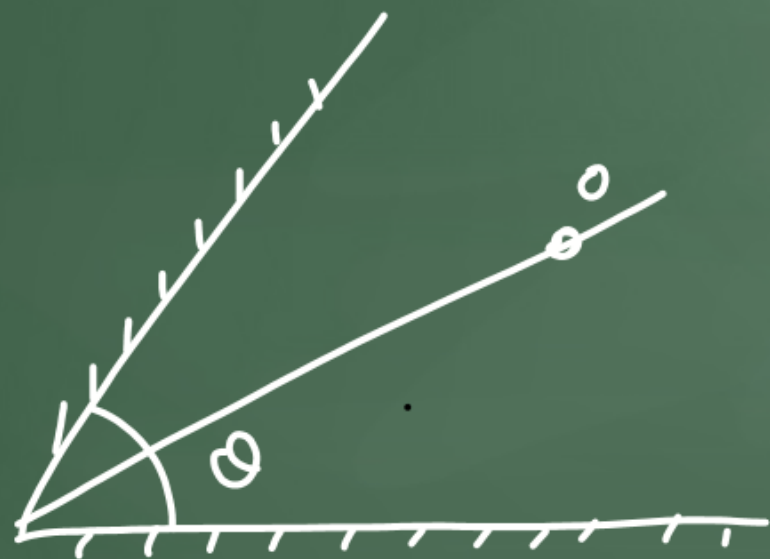




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num of image = ?

(a)  $\frac{360}{\theta} = m = \text{even}$

num of im =  $m - 1$

(b)  $\frac{360}{\theta} = m = \text{odd}$

bisector

$n = \text{img} = (m - 1)$

not on bisector

$n = m$

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