DPP 01

SOLUTION
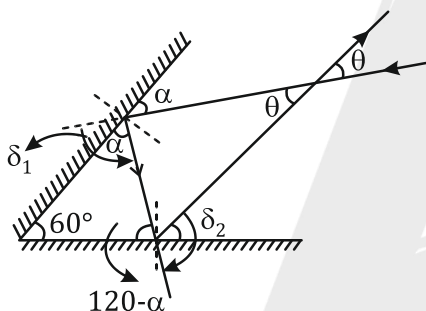
1. Net turned = 30°

2x = 30

x = 15

2. $\delta_{net} = 180 - \theta = \delta_1 + \delta_2$

[ACw → -ive]

[Cw → +ive]

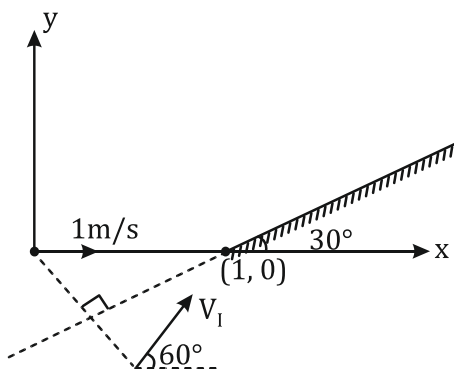$-(180 - \theta) = 2\alpha + 2(120 - \alpha)$
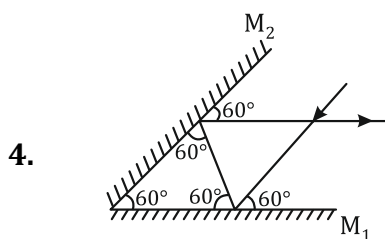
$-(180 - \theta) = 2\alpha + 240 - 2\alpha$

$-(180 - \theta) = 240$

$\theta = +60°$

3. $\vec{v_I} = 1\cos 60\hat{i} + 1\sin 60\hat{j}$

4.

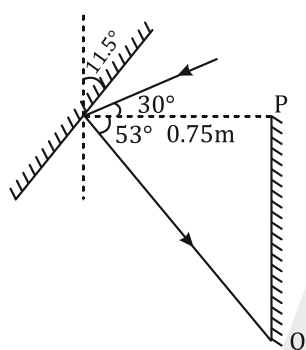**5.** $\tan 53° = \dfrac{PQ}{0.75}$

$\dfrac{4}{3} = \dfrac{PQ \times 4}{3}$

$PQ = 1m$

6.   Image = 11: 59: 60

       <u>04: 25: 37</u>

       07: 34: 23

7.

$v_I = 2v \sin \theta$

8.   <u>Along $\hat{k}$</u>

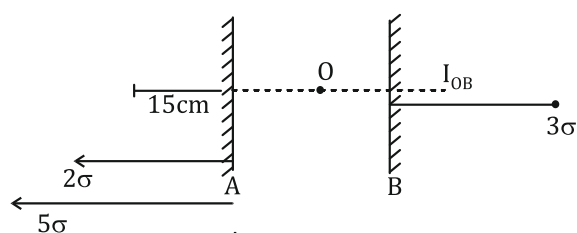$\vec{v}_m = 4\hat{\imath} + 5\hat{\jmath} + 8\hat{k}$

$\vec{v}_0 = 3\hat{\imath} + 4\hat{\jmath} + 5\hat{k}$
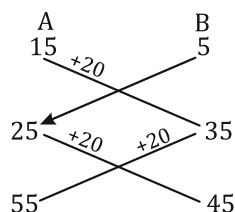
$\vec{v}_I = 2\vec{v}_m - \vec{v}_0$

$\vec{v}_I = 16\hat{k} - 5\hat{k} = 11\hat{k}$

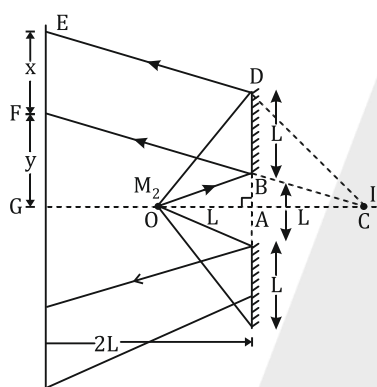$\vec{v}_I = 3\hat{\imath} + 4\hat{\jmath} + 11\hat{k}$

9.

10.　Similar triangle ABC & FGC

$\dfrac{AB}{FG} = \dfrac{AC}{GC} \Rightarrow \dfrac{L}{2 \times \gamma} = \dfrac{L}{3L}$

$\gamma = \dfrac{3L}{2}$

Similar triangle EGC & DAC

$\dfrac{AC}{GC} = \dfrac{AD}{EG} \Rightarrow \dfrac{L}{3L} = \dfrac{3L}{2 \times (x + y)}$

$x + y = \dfrac{9L}{2}$

$x = \dfrac{9L}{2} - \dfrac{3L}{2} = 3L$

$t = \dfrac{6L}{u}$