Answer on Question #52004-Physics-Optics

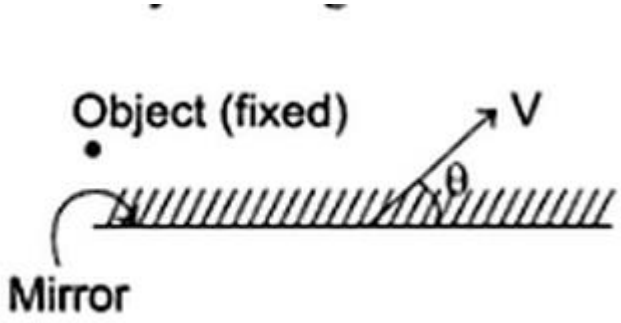
An object and a plane mirror are shown. Mirror is moved with velocity V at angle θ. The velocity of the image.

(1)2V sin θ

(2)2V

(3)2V cos θ

Solution



The velocity of the image is independent from the parallel component of velocity of the mirror (parallel to the surface of the mirror). Thus, we can apply result for mirror moving to the object:

$$v_o = 2V_{parallel}.$$

But in our case

$$V_{parallel} = V \sin\theta.$$

So,

$$v_o = 2\,\mathrm{V} \sin\theta.$$

Answer: (1)2V sin θ.