Brainbox learn easy

Chapter 01

REFLECTION OF LIGHT AT CURVED SURFACES

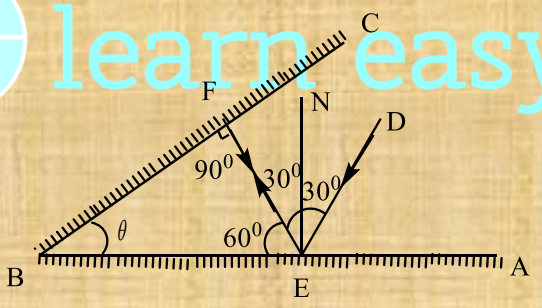
Example- 6:

Two plane mirrors are inclined to each other at some angle. A ray of light is incident on one of them at an angle 30^0. The light after reflection falls on the second mirror and finally gets reversed. Find the angle between the mirrors.

Solution:

Let the mirrors AB and BC be inclined at angle θ in adjoining figure. Let DE be the incident ray which after reflection from mirror AB goes along EF. Draw NE normal on mirror AB. Then according to laws of reflection,

$\angle DEN = \angle NEF = 30^0$



As the ray EF gets reversed, so it must be falling normally on the second mirror BC. As NE is normal to AB,

$\angle NEB = 90^0$

In ΔFBE, $\angle EFB = 90^0$

$\therefore \angle FEB = 90^0 - 30^0 = 60^0$

As the sum of the three angles of a triangle is two right angles or 180^0, so $90^0 + 60^0 + \angle\theta = 180^0 \Rightarrow \angle\theta = 30^0$

So, the two mirrors are inclined to each other at an angle of 30^0.