

Chapter 03

MOTION IN A STRAIGHT LINE

Example- 9:

Two trains, each travelling with a speed of 37.5 kmh^{-1} , are approaching each other on the same straight track. A bird that can fly at 60 kmph flies off from one train when they are 90 km apart and heads directly for the other train. On reaching the other train, it flies back to the first and so on. Total distance covered by the bird before trains collide is,

Solution:

Relative speed of trains = $37.5 + 37.5 = 75 \text{ kmh}^{-1}$

Time taken by them to meet $t = \frac{S_r}{u_r} = \frac{90}{75} = \frac{6}{5} \text{ h}$

Distance travelled by the bird,

$$x = V_{\text{bird}} \times t$$

$$= 60 \times \frac{6}{5} = 72 \text{ km}$$

($\because V_{\text{bird}} = 60 \text{ kmh}^{-1}$).