(12) A theif is spotted by a policeman from a distance of 100 m. When the policeman starts the chase, the theif also starts running. If the speed of the theif be 8 km/hr and that of the policeman 10 km/hr how far the theif will have run before he is overtaken?

Soln:-

Relative speed of the policeman = (10−8) km/hr
= 2 km/hr

Time taken by policeman to cover 100m = $\left(\frac{100}{1000} \times \frac{1}{2}\right)$ hr
= $\frac{1}{20}$ hr.

In $\frac{1}{20}$ hrs, the theif covers a distance of $\left(8 \times \frac{1}{20}\right)$ km $\Big\}$ = $\frac{2}{5}$ km
= 400 m.

(13) I walk a certain distance and ride back taking a total time of 37 minutes. I could walk both ways in 55 minutes. How long would it like me to ride both ways?

Soln:- Let the distance be x km. Then

(Time taken to walk x km) +
(Time taken to ride x km) = 37 min

$\Rightarrow$ (Time taken to walk 2x km) +
(Time taken to ride 2x km) = 74 min

But, time taken to walk 2x km = 55 min

∴ Time taken to ride 2x km = (74 − 55) min
= 19 min.