Question

A car left an intersection and traveled east at 42. Another car left the same intersection at the same time and traveled west at 58. How long will it take for the two cars to be 350 km apart?

Round-off your answer to one decimal place.

Solution

In given problem we deal with the motion problem. We know the velocity of the first car is equal to $42 \frac{km}{hour}$ traveled east after this car left an intersection. The velocity of the second car is equal to $58 \frac{km}{hour}$ and this car is traveled west at the same time from the same intersection.

After t hours the distances D_1 and D_2, in kilometers, traveled by the first and the second cars will be equal to

$D_1 = 42t$ and $D_2 = 58t$ respectively.

The distance D between two cars after t hours is given by

$$D = D_1 + D_2 = 42t + 58t = 100t$$

In this case we also know the distance will be equal to 350 km.

We equate $D = 100t$ and D = 350 kilometers, that is,

$$100t = 350$$

From this formula we can find the time by solving the equation for t.

We divide both sides by 100:

$$t = \frac{350}{100} = 3.5 \text{ hours}$$

The time, required for the distance between the cars to reach 350 kilometers, is equal to 3.5 hours.

Answer: 3.5 hours.