

Q- A man travels 50 miles. He spends half his time on horseback and half his time walking. When he rides horseback he travels 9 miles/hour, on foot 3.5 miles/hour. How long will it take him to complete his journey? How many miles does he travel by horse? How many miles does he travel on foot?

(In these types of questions always take the sum of time intervals)

Let the time taken for the whole distance of 50 miles be  $t$ , then for each part of the journey the time taken will be  $t/2$ .

Speed on horse back is 9 miles/hour hence the distance covered on horse back will be given by

Distance covered = speed x time

$$s_1 = 9 * \left(\frac{t}{2}\right) \text{ miles}$$

Similarly speed of walking is 3.5 miles/hour, hence the distance covered by walking will be given by

$$s_2 = 3.5 * \left(\frac{t}{2}\right) \text{ miles}$$

hence total distance is covered will be

$$s = s_1 + s_2$$

or 
$$s = \left(\frac{9t}{2}\right) + \left(\frac{7t}{4}\right)$$

or 
$$50 = \left(\frac{25 * t}{4}\right)$$

gives  $t = 8$  hours

This is the total time hence time taken in each part of journey will be 4 hours each

Hence distance covered on horseback =  $9 * 4 = 36$  miles.

And distance covered on foot =  $3.5 * 4 = 14$  miles.