X Test-7

1) P and Q are two points. They are 150km apart. Two cars start with different speeds from P and Q at the same time. If they move in the same direction, they meet in 15hrs but if they move in the opposite direction, they meet in 1 hour. find their speed.

Let the speed of the car starting from the point P be x km/hr and that from Q be y km/hr.

Case 1 :- when cars are moving in the same direction.

Distance = Speed × Time

PR = x × 15 = 15x km

QR = y × 15 = 15y km

$\therefore PQ = PR - QR$

$\Rightarrow 150 = 15x - 15y$

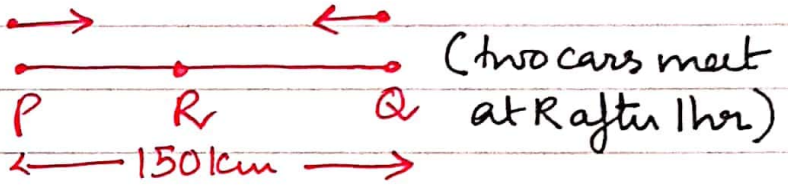
$\Rightarrow x - y = 10 \longrightarrow (1)$

Case 2 :- when cars are moving in the opposite direction

Distance = Speed × Time

PR = x × 1 = 1x km

QR = y × 1 = 1y km



$\therefore PQ = PR + RQ$

$\Rightarrow 150 = 1x + 1y$

$\Rightarrow x + y = 150 \longrightarrow (2)$

Now, eq : (1), $x - y = 10$

eq : (2), $x + y = 150$

(1)+(2), $2x = 160$

$x = \frac{160}{2} = 80$

$y = 70$

Hence the speeds of cars are respectively 80km/hr and 70 km/hr.

2) A man when asked how many hens and buffaloes he has, told that his animals have 120 eyes and 180 legs. How many hens and buffaloes he has?

Let the no. of hens he has be x and no. of buffaloes be y.

ATQ, $2x+2y = 120 \longrightarrow (1)$

$2x+4y = 180 \longrightarrow (2)$

From eq:(1), $x+y = 60 \longrightarrow (3)$

From eq:(2), $x+2y = 90 \longrightarrow (4)$

(3)−(4), $-y = -30$

$y = 30$

$x = 30$

Hence no. of hens = 30 hens //

no. of buffaloes = 30 buffaloes //
