

Speed time and distance

(5) Speed = $\frac{\text{distance (D)}}{\text{time (T)}}$

1 km = 1000 m.
1 hr = 3600 sec.

unit of speed = km/hr. = $\frac{1000}{3600}$ m/s.

1 km/hr. = $\frac{5}{18}$ m/s.

$S = \frac{D}{T}$

$ST = D$

$T = \frac{D}{S}$

when distance is constant
 $ST = \text{constant}$
 $S_1 T_1 = S_2 T_2$

when time is constant

$\frac{S_1}{S_2} = \frac{T_2}{T_1}$

$\frac{D}{S} = \text{constant}$

$\frac{D_1}{S_1} = \frac{D_2}{S_2}$

$\frac{D_1}{D_2} = \frac{S_1}{S_2}$

ratio of distances = ratio of speeds.

when speed is constant

$\frac{D}{T} = \text{const}$

$\frac{D_1}{T_1} = \frac{D_2}{T_2}$

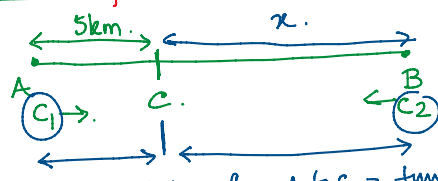
$\frac{D_1}{D_2} = \frac{T_1}{T_2}$

ratio of distances = ratio of time.

ratio of speeds = $\frac{1}{\text{ratio of time}}$

Car 1 starts from a point A and travels towards a point B. Car 2 starts from the point B and travels towards the point A. They meet at a point C which is 5 km from A. If the ratio of the speeds of Car 1 and Car 2 is 1:4 find the distance between A and B.

$\frac{S_1}{S_2} = \frac{1}{4}$



Speed of Car 1 = S_1
Speed of Car 2 = S_2

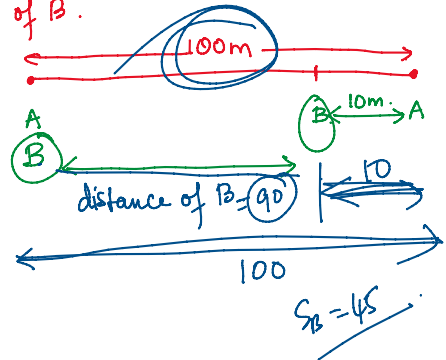
time taken by Car 1 to go from A to C = time taken by Car 2 to go from B to C.

$\frac{\text{distance travelled by Car 1}}{\text{distance " " Car 2}} = \frac{S_1}{S_2}$

$\frac{5}{x} = \frac{1}{4} \quad x = 20$

distance between A and B = 25 km

In a 100 m race A beats B by 10 m. If the speed of A is 50 km/hr. find the speed of B.



distance travelled by A = 100

$\frac{\text{distance of A}}{\text{distance of B}} = \frac{\text{Speed of A}}{\text{Speed of B}}$

$\frac{100}{90} = \frac{50}{S_B}$

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