- A person reaches his office 1 hour late travelling at 40 kmph. If he travels at 50 kmph, he is late by 40 minutes. What is the distance he has to travel to reach his office?

  (A) $56\frac{1}{3}$ km (B) $66\frac{2}{3}$ km (C) 59 km (D) 63 km

- While covering a certain distance if a person increases his speed from 50 kmph to 60 kmph he saves 5 minutes. What is the distance covered by him?

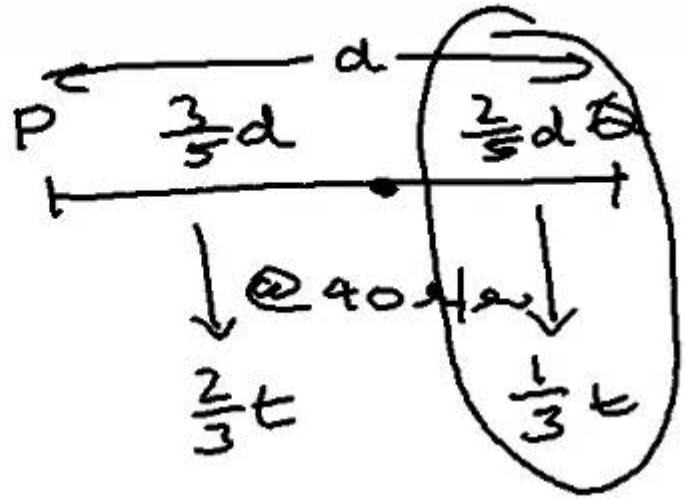
  (A) 30 km (B) 25 km (C) 35 km (D) 20 km

- A person reaches his office 1 hour late travelling at 40 kmph. If he travels at 50 kmph, he is late by 40 minutes. What is the distance he has to travel to reach his office?
  (A) $56\frac{1}{3}$ km (B) $66\frac{2}{3}$ km (C) 59 km (D) 63 km

- While covering a certain distance if a person increases his speed from 50 kmph to 60 kmph he saves 5 minutes. What is the distance covered by him?
  (A) 30 km (B) 25 km (C) 35 km (D) 20 km

- A person covered the distance from P to Q at a speed of 40 kmph. He covered three-fifth of the distance in two-third of the total time. At what speed should he travel to complete the remaining part of the journey in the remaining time?
  (A) 36 kmph (B) 44 kmph
  (C) 40 kmph (D) 48 kmph

- A person travelled from A to B at 40 kmph and returned back at 60 kmph. What is his average speed for the entire journey?
  (A) 48 kmph (B) 54 kmph
  (C) 42 kmph (D) 50 kmph



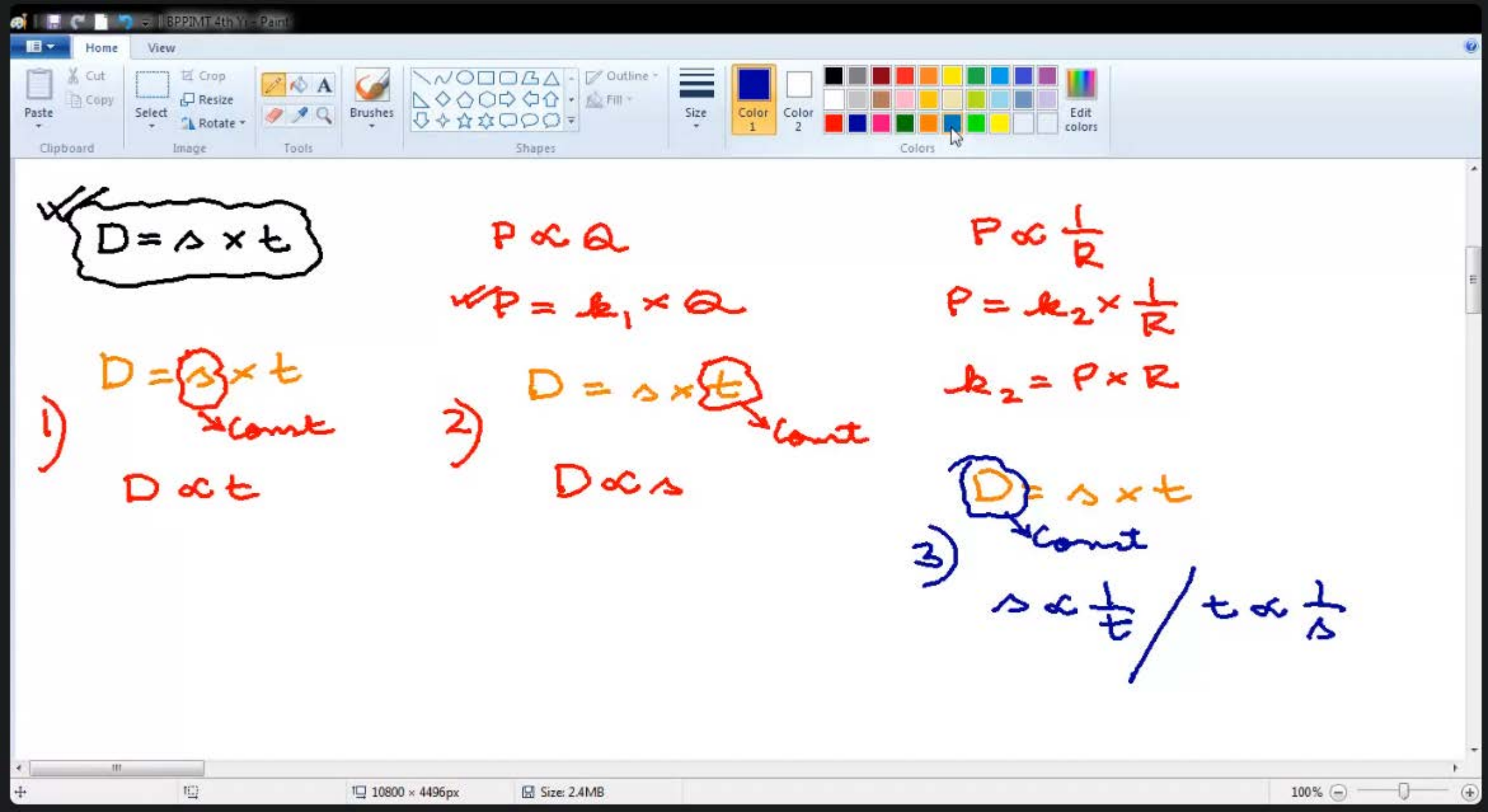
$\frac{d}{40} = t$

or, $\frac{d}{t} = 40$

$T_{Avg} = \frac{\frac{2d}{5}}{\frac{t}{3}} = \frac{2d}{5} \times \frac{3}{t}$

$= \frac{6}{5}\left(\frac{d}{t}\right) = \frac{6}{5} \times 40$

$= 48$ kmph


BPPIMT 4th Yr - Paint
Home
View
Cut
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Resize
Rotate
Select
Clipboard
Image
Tools
Brushes
Outline
Fill
Shapes
Size
Color 1
Color 2
Edit colors
Colors
D = s x t
P ∝ Q
P = k1 x Q
P ∝ 1/R
P = k2 x 1/R
k2 = P x R
1)
D = s x t
Const
D ∝ t
2)
D = s x t
Const
D ∝ s
D = s x t
Const
3)
s ∝ 1/t / t ∝ 1/s
10800 × 4496px
Size: 2.4MB
100%

Every day I drive from home to office following a fixed route at a constant speed. One day I drove 25% faster and hence reached office 20 mins earlier. Find the normal time taken to cover the distance ?

Dis is a const

$t \propto \frac{1}{s}$

$\text{Speed} = \frac{125}{100}^{5}_{4} \text{ of Nor Sp}$

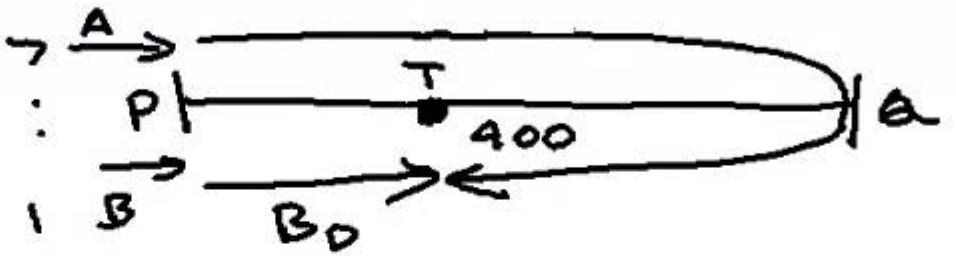
$\text{Time} = \frac{4}{5} \text{ of Nor Time}$

$\frac{1}{5} \text{ of Nor Time} \text{ less} = 20 \text{ min}$

$\text{Nor Time} = 100 \text{ min}$

Every day I drive from home to office following a fixed route at a constant speed. One day I drove 25% faster and hence reached office 20 mins earlier. Find the normal time taken to cover the distance ?

2 persons A and B start simultaneously from a place P to travel to Q 400 km away and return back. If the ratio of their speeds are 7 : 1, find the distance of thir meeting point from P ?



8

$A_S : A_D = 7:1$

t is a constant $\frac{1}{8} \times 8 = 1$

DOTS

$A_S : B_S = 7:1$

$A_D : B_D = 7:1$

$A_D + B_D = 800$

$B_D = \frac{1}{8} \times 800^{100} = 100$ km

(1) $A_S = 60$ km/hr $B_S = 40$ km/hr

Dist is a const

$$A.S. = \frac{d+d}{\frac{d}{60}+\frac{d}{40}} = \frac{2d}{\frac{5d}{120}} = \frac{2d}{\frac{d}{24}}$$

$A_D = B_D = d$

$= 48$ km/hr

$A_t = \frac{d}{60}$ $B_t = \frac{d}{40}$

A.S. = HARMONIC MEAN of the individ speeds

① $A_S = 60$ km/hr $B_S = 40$ km/hr

Dist is a const

$A_D = B_D = d$

$A_t = \frac{d}{60}$ $B_t = \frac{d}{40}$

A.S. = HARMONIC MEAN of the individ speeds

$$A.S. = \frac{d+d}{\frac{d}{60}+\frac{d}{40}} = \frac{2d}{\frac{2d}{120}}$$

$$= 48 \text{ km/hr}$$

3, 2, 1)

$$\frac{1}{\frac{\frac{1}{a}+\frac{1}{b}}{2}}$$

$$= \frac{2ab}{a+b}$$

$$A.S. = \frac{d+d}{\frac{d}{60}+\frac{d}{40}} = \frac{2d}{\frac{2d}{120/24}}$$

$$= 48 \text{ km/hr}$$

3) 2) 1)

$$\frac{1}{\frac{1}{a}+\frac{1}{b}}$$

$$\frac{}{2}$$

$$= \frac{2ab}{a+b}$$

3) 2) 1)

$$\frac{1}{\frac{1}{a}+\frac{1}{b}+\frac{1}{c}}$$

$$\frac{}{3}$$

$$= \frac{3abc}{ab+bc+ca}$$

① $A_S = 60 km/hr$ $B_S = 40 km/hr$

Dist is a const

$A_D = B_D = d$

$A_t = \frac{d}{60}$ $B_t = \frac{d}{40}$

A.S. = HARMONIC MEAN of the individ speeds

$$A.S. = \frac{d+d}{\frac{d}{60}+\frac{d}{40}} = \frac{2d}{\frac{120}{24}}$$

$= 48 km/hr$

3 2 1

$$\frac{1}{\frac{1}{a}+\frac{1}{b}} \over 2 = \frac{2ab}{a+b}$$

3 2 1

$$\frac{1}{\frac{1}{a}+\frac{1}{b}+\frac{1}{c}} \over 3 = \frac{3abc}{ab+bc+ca}$$

Avg Sp

A	B	Avg
50	30	$\frac{50+30}{2} = 40$

60 km/h 40 km/h $\frac{60+40}{2} = 50 km/h$

$$AS = \frac{\text{Tot Dist}}{\text{Tot Time}}$$

① $A_S = 60 km/hr$ $B_S = 40 km/hr$

$A_D = 360 km$ $B_D = 160 km$

$A_t = \frac{360}{60} = 6 hrs$ $B_t = \frac{160}{40} = 4 hrs$

$$AS = \frac{360+160}{6+4} = \frac{520}{10}$$

$= 52 km/hr$

$A_S = 60$ km/hr $B_S = 40$ km/hr

~~Trick is a Concept~~

$$AS = \frac{60t + 40t}{t + t} = \frac{100t}{2t}$$

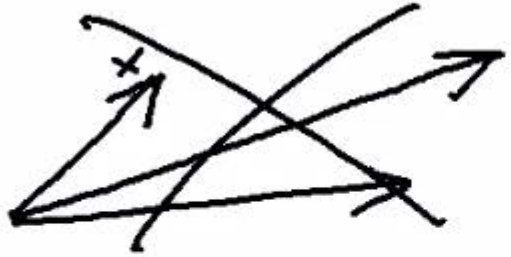
$= 50$ km/hr

$A_t = B_t = t$

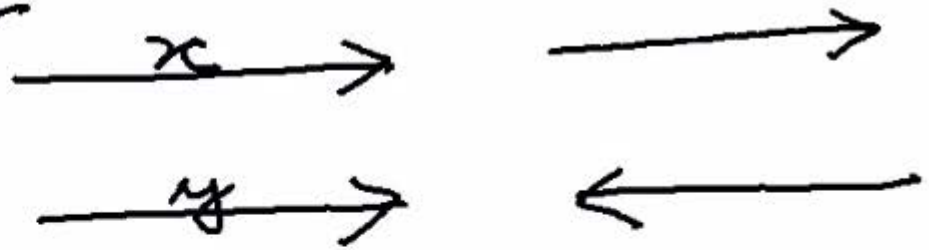
$A_D = 60t$ $B_D = 40t$

A.S. = A. Mean of midle speeds

Relative Speed



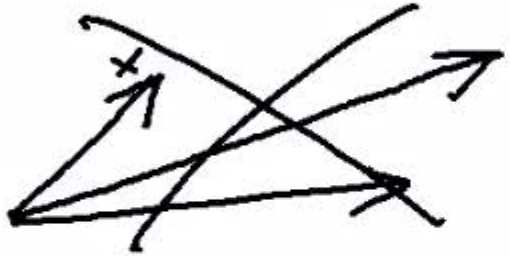
$x > y$



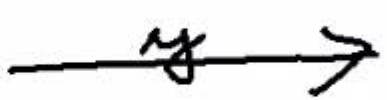
Same Dir.

$R.S. = (x - y)$

Relative Speed

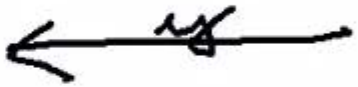


$x > y$



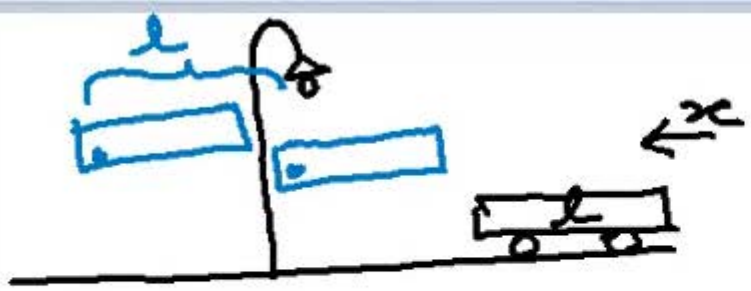
Same Dir

$R.S. = (x - y)$

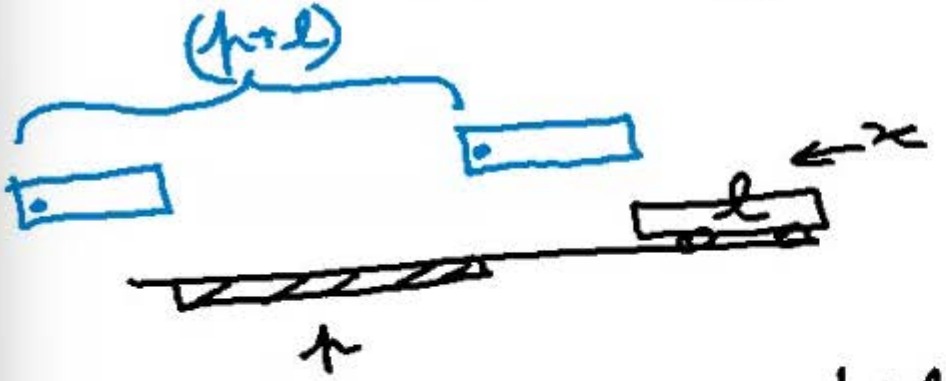


Opp Dir

$RS = (x + y)$



Time Cross LP :- $\frac{l}{x}$



Time Cross Platform :- $\frac{l+l}{x}$

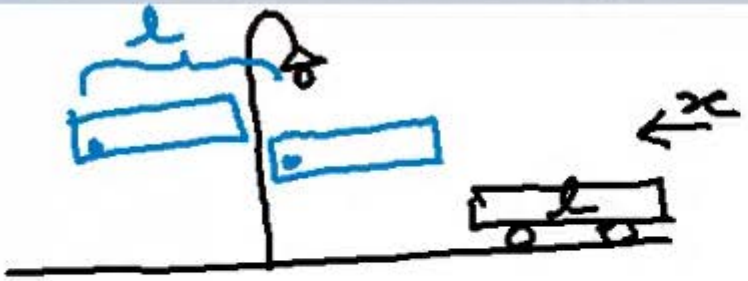
3) $(x > y)$

Time overtake man

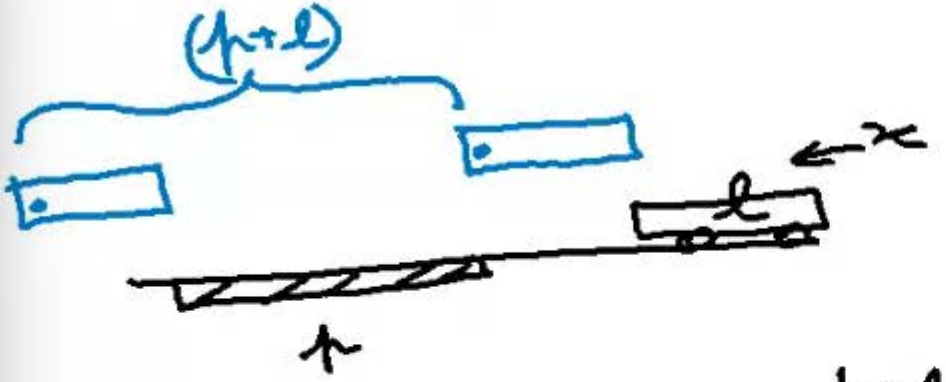
$= \frac{l}{x-y}$

4)

Time cross man

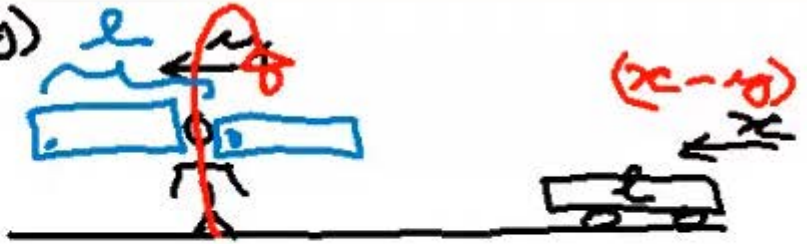


Train Cross LP :- $\frac{l}{x}$



Train Cross Post :- $\frac{l+l}{x}$

3) $(x > y)$

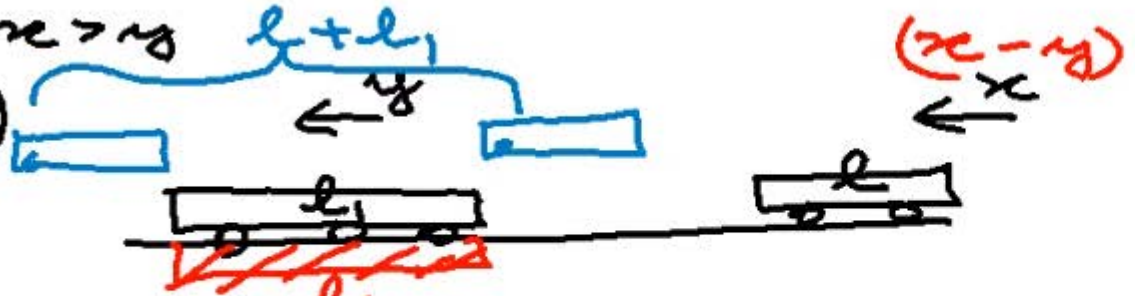


Train overtake man $= \frac{l}{x-y}$

4)

Train cross man $= \frac{l}{x+y}$

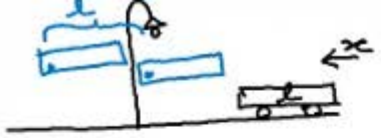
5)



Time to overtake train

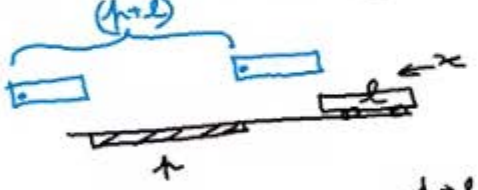
$$= \frac{l + l_1}{x - y}$$

1)



Tim Cross LP :- $\frac{l}{x}$

2)



Tim Cross Post :- $\frac{l+l}{x}$

3)

Tim overtake man

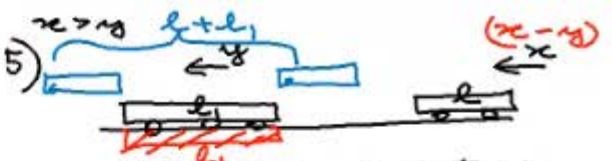
$= \frac{l}{x-y}$

4)

Tim cross man $\frac{l}{x+y}$

$=$

5)



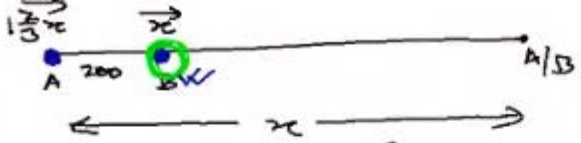
Tim to overtake train

$= \frac{l+l_1}{x-y}$

6)

$= \frac{l_1+l_1}{x+y}$

The running speed of A is 1 & 2/3 times the running speed of B. Both start simultaneously for a race with B having a head-start of 200 ms. They both reach the finishing line simultaneously. Find the length of the race ?



RS of $A = 1\frac{2}{3} - 1 = \frac{2}{3}$ units

①

$A_D = x \quad B_D = (x-200)$

$A_S = 1\frac{2}{3}k \quad B_S = k$

$A_t = \frac{x}{1\frac{2}{3}k} \quad B_t = \frac{(x-200)}{k}$

$A_t = B_t \Rightarrow \frac{x}{1\frac{2}{3}k} = \frac{x-200}{k}$

$3x = 5x - 1000$

$2x = 1000$

$x = 500$

②

Time is const

$\therefore$ Dists

$A_S : B_S = 1\frac{2}{3} : 1 = 5 : 3$

$A_D : B_D = 5 : 3$

$5k - 3k = 200$

$2k = 200$

$k = 100$

$A_D = 5 \times 100 = 500$

③

$\text{Time} = \frac{200}{\frac{2}{3}} = 300$ mins

Actual speed of $A = 1\frac{2}{3}$

Act dist by $A = 1\frac{2}{3} \times 300 = \frac{5}{3} \times 300 = 500$ m

A person reaches his office 1 hour late travelling at 40 kmph. If he travels at 50 kmph, he is late by 40 minutes. What is the distance he has to travel to reach his office?

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While covering a certain distance if a person increases his speed from 50 kmph to 60 kmph he saves 5 minutes. What is the distance covered by him?

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(A) 36 kmph (B) 44 kmph
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A person travelled from A to B at 40 kmph and returned back at 60 kmph. What is his average speed for the entire journey?

(A) 48 kmph (B) 54 kmph
(C) 42 kmph (D) 50 kmph

- Three cars have the ratio of their speeds as 5 : 6 : 7. Find the ratio of the times they would take to travel a certain distance.
  (A) 7 : 6 : 5 (B) 30 : 35 : 42
  (C) 5 : 6 : 7 (D) 42 : 35 : 30

- Bharani and Anand are 180 km apart. They start simultaneously towards each other at speeds of 10 kmph and 20 kmph respectively. In how many hours will they meet?
  (A) 5 (B) 6 (C) 4 (D) 7

- The ratio of the speeds of A and B is 3 : 7. If B takes 20 minutes less than A to cover a certain distance, then what is the time taken by A to cover the distance?
  (A) 31 min (B) 22 min (C) 28 min (D) 35 min

- Travelling at three-fifth of his usual speed a man is late by 20 minutes. What is his usual time to cover the same distance?
  (A) 25 min (B) 30 min (C) 40 min (D) 35 min

- Travelling at a speed of 8 kmph, a student reaches school from his house 10 minutes early. If he travels at 6 kmph, he is late by 20 minutes. Find the distance between the school and the house.
  (A) 11 km (B) 10 km (C) 12 km (D) 9 km

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  (C) 5 : 6 : 7 (D) 42 : 35 : 30

$\frac{1}{5} : \frac{1}{6} : \frac{1}{7}$

42 : 35 : 30

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$A_s : B_s = 3 : 7$

$A_t : B_t = 7 : 3$

$7 - 3 = 4u = 20$ mins

$7u = 35$ min

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$Sp = \frac{3}{5}$ of Orig Sp

Dist cont

$Time = \frac{5}{3}$ of Orig Time

$\frac{2}{3}$ of orig time more = 20 min

$Orig\ time = \frac{20 \times 3}{2}$

$= 30$ min

- Kiran travels from A to B by car and returns from B to A by cycle in 7 hours. If he travels both ways by car he saves 3 hours. What is the time taken to cover both ways by cycle?
  (A) 8 hours (B) 10 hours
  (C) 14 hours (D) 12 hours

- A train, 225 m long, crossed a 175 m long platform in 10 seconds. Find the speed of the train.
  (A) 35 m/s (B) 40 m/s (C) 38 m/s (D) 33 m/s

- A train, 245 m long, running at 60 kmph crosses another train moving in the same direction at 38 kmph in 90 seconds. What is the length of the second train?
  (A) 305 m (B) 335 m (C) 315 m (D) 325 m

- A train, 600 m long, is running at 45 kmph. In what time will it cross a person moving at 9 kmph in the opposite direction?
  (A) 36 sec (B) 40 sec (C) 34 sec (D) 38 sec

- A train running at a speed of 36 kmph crosses an electric pole in 12 seconds. In how much time will it cross a platform 350 m long?
  (A) 44 sec (B) 49 sec (C) 42 sec (D) 47 sec

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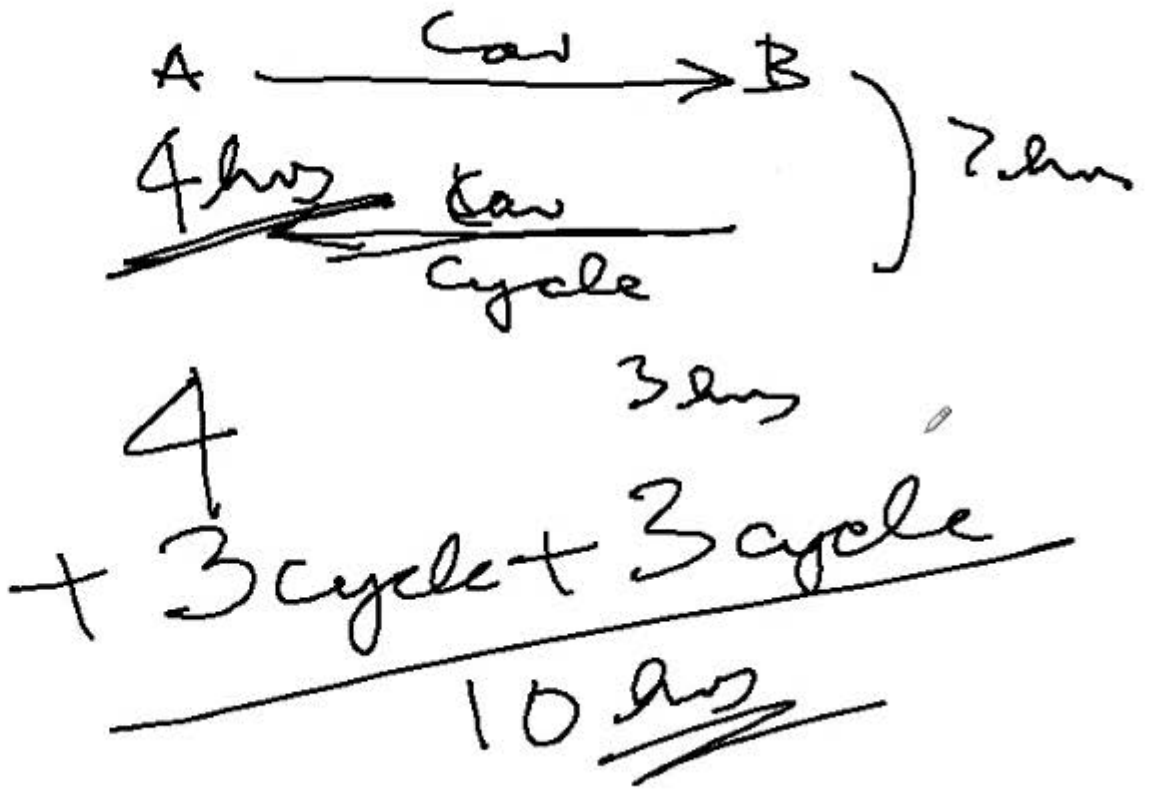

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$$\text{km/hr} = \frac{5}{18}\ \text{m/s}$$

$$\frac{225+175}{10} = \frac{400}{10} = 40\ \text{m/sec}$$

$$\frac{245+l}{22\times\frac{5}{18}} = 90$$

$$245+l = 550$$

$$l = 295$$

- Kiran travels from A to B by car and returns from B to A by cycle in 7 hours. If he travels both ways by car he saves 3 hours. What is the time taken to cover both ways by cycle?
  (A) 8 hours (B) 10 hours
  (C) 14 hours (D) 12 hours

- A train, 225 m long, crossed a 175 m long platform in 10 seconds. Find the speed of the train.
  (A) 35 m/s (B) 40 m/s (C) 38 m/s (D) 33 m/s

- A train, 245 m long, running at 60 kmph crosses another train moving in the same direction at 38 kmph in 90 seconds. What is the length of the second train?
  (A) 305 m (B) 335 m (C) 315 m (D) 325 m

- A train, 600 m long, is running at 45 kmph. In what time will it cross a person moving at 9 kmph in the opposite direction?
  (A) 36 sec (B) 40 sec (C) 34 sec (D) 38 sec

- A train running at a speed of 36 kmph crosses an electric pole in 12 seconds. In how much time will it cross a platform 350 m long?
  (A) 44 sec (B) 49 sec (C) 42 sec (D) 47 sec

$\frac{600}{54 \times \frac{5}{18}} = 40 \text{ sec}$

$36 \times \frac{5}{18} = 10 \text{ m/sec}$

$\frac{l}{10} = 12$

$l = 120 \text{ m}$

$\frac{350 + 120}{10} = 47 \text{ sec}$