Problems on Train

Important factors on train

1. Length of Train
2. length pole, car, man = 0
3. Relative speed

Relative speed

car1 → = speed of car1 in relation to car2

car2 →

x km/hr → ← y km/hr

OPP Attract (x+y)

x →
y →
Same
Subtract
(x−y)

1.) Two trains with lengths 126 m and 119 m respectively are moving towards each other. Their speeds are 12 m/s and 23 m/s respectively. What will be the time needed by train to cross each other.

T_1 12 m/s → ← T_2 23 m/s

126 m 119 m

since train are in opp we have to add +

so

126 + 119

$x + y = 12 + 23 = 35$

$\frac{245}{35} = 7$ sec

length of train must be included in distance travelled

3.] A train passes a stationary pole in 15 seconds The train also passes a 200 m long bridge, what is length of ~~bridge~~ the speed of M t

$$200+l = 1$$

$$\frac{D}{T} = \frac{D}{T} = \frac{1}{8} = \frac{200+l}{24}$$

$$l = 80m$$

$$S = \frac{D}{T} = \frac{80}{8} = 10 m/s$$

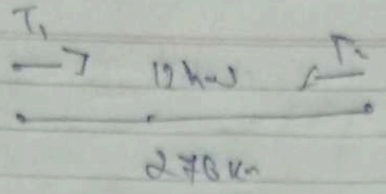
5.] A train having length 150 m passes a platform of 550m length. The time taken for it is 56 seconds. In how much time will the train take to pass the platform 90

$$S = S \qquad \frac{150+550}{56} = \frac{150+250}{T}$$

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

$$T = 31 seconds$$

4.] Stations M and N are 276 Km apart. At exact same time, a train starts from M and other from N towards N and M respectively. These trains meet after 12 hrs. The train travelling M to N is slower by 14 Km/hr in comparison to other train. What is speed of slower train?



$ST_1 = x$

$ST_2 = (x+14)$ km/h.

$D_1 + D_2 = 276$

$x \times 12 + (x+14)\,12 = 276$

$x = 4.5$ km/h.

5.) From P and Q two trains start moving towards each other at same time. Their speed are 120 km/h. and 100 km/hrs. when two trains meet one has covered 40 km more than other train. find the distance between P and Q

$T_1 = 120$ km $T_2 = 100$ km

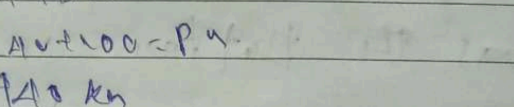
$T_1 = 240$ km $T_2 = 200$ km

$DT_1 + DT_2 = PQ$

$240 + 200 = PQ$

440 km

6.) Two trains A and B leave Kolkata for Sikkim at 8:00 pm and 8:30 pm respectively and run at 90 km/hr and 120 km/hr, At what distance from Kolkata, when are two trains



$D = D$ only distance is s..

$S \times T = S \times T$

$90 \times T = 120 \times (T - 0.5)$

$T = 2$ hrs

$90 \times 2 = 180$ km

classmate
Date
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7) A train overtakes 2 boys who are running at the rate of 8 Km/hr and 16 Km/hr in same direction. The train completely passes them in 36 secs and 40 secs respectively. what is length of train

D = D

ST = ST

$(S-8)\frac{\times 36}{60\times 60} = S-16 \times \frac{40}{60\times 60}$ S = 88 Km/h.

Sec taken

$L = D = (88-16)\frac{40}{60\times 60} = 0.8$ Km

8) With stoppage, the speed of train is 36 Km/hr. However without stoppage it is 40 Km/h. find out how many minutes does train stop

$T = D/S = \frac{4 Km}{40 Km/h} = T = \frac{1}{10}$ h.

Take ideal one

1hr for

$1/10 =$?

$\frac{60}{10} =$ 6 minutes

9) There are 2 trains P and Q moving in same direction. They are equal length and cross a stationary pole in 5 secs and 6 secs respectively. In how much time cross each other

$T = \frac{D}{S}$ — S = Relative

$\overset{P}{\rightarrow}$, $\overset{Q}{\rightarrow}$ = $L + L = 2L$

$S_P = \frac{D}{T} = \frac{L}{5\,secs}$ $S_Q = \frac{D}{T} = \frac{L}{6\,sec}$

$R_S = \frac{1}{6} - \frac{1}{5}$

$D = \frac{2L}{\frac{1}{6} - \frac{1}{5}} = \frac{2L}{L/30} = t = 60\,secs$