

acceleration with (5/11)

Next find x : time while at 40 ms^{-1}

distance at constant $40 \text{ ms}^{-1} = 8800$

-1300

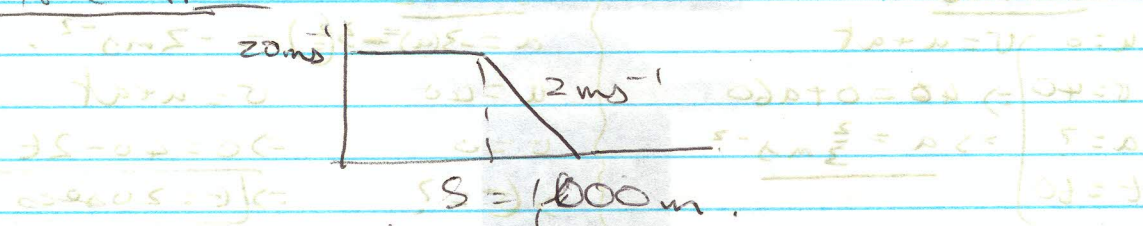
7500

-1200

6300

$\therefore x = \frac{6300}{40} = 157.5 \text{ seconds}$

Next last km



Find t to decel: $v=0$ $u=20$ $a=2$

$\Rightarrow t = -10 \text{ seconds}$

Time at 20 ms^{-1} :

Area = 1000

$20 \cdot t + \frac{1}{2}(20)(10) = 1000$

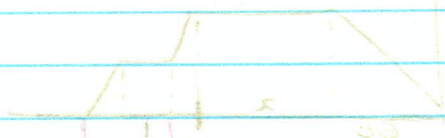
$\Rightarrow 20t = 900$

$\Rightarrow t = 45 \text{ seconds}$

Total next time = $60 + 157.5 + 10 + 45 + 10$

$= 282.5$

\therefore New time is 22.5 secs longer at least.



total time = 60 + 180 + 50 = 290 seconds

$20 + 45 = 65$

$20 + 10 = 30$