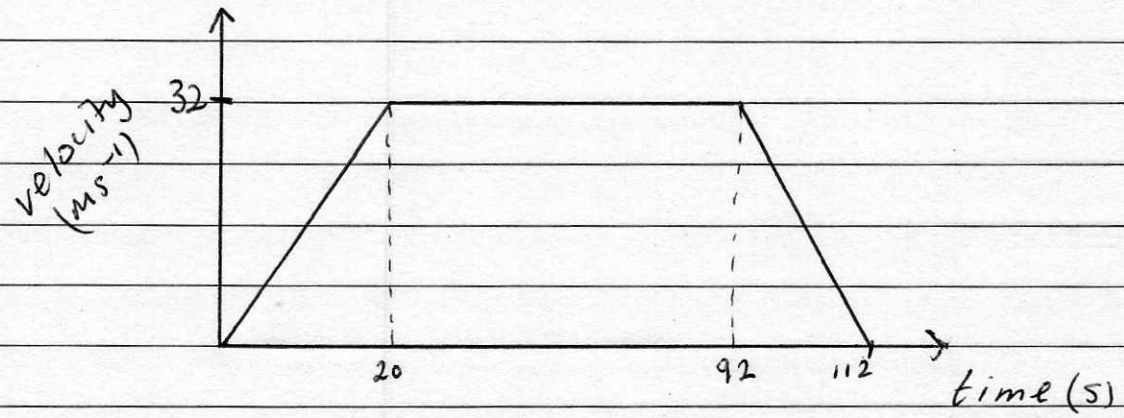
1a) $\frac{112-72}{2} = 20\text{ s}$

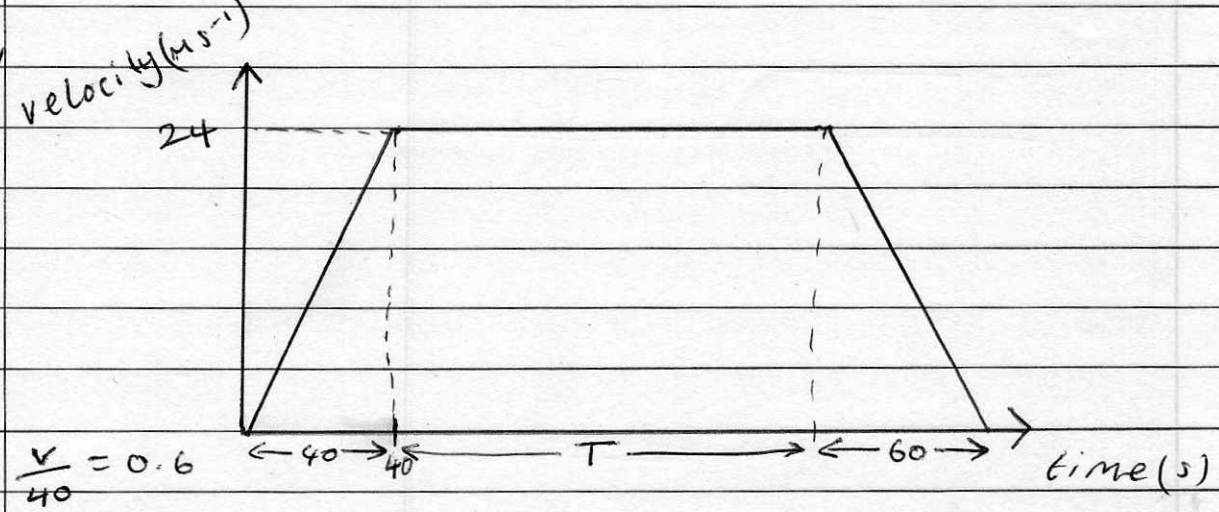
b)



c) Distance = Area Under Graph.

$\frac{1}{2} \cdot 20 \cdot 32 + 72 \times 32 + \frac{1}{2} 20 \cdot 32 = 2944\text{ m}$ ~~2880 m~~

2a)



$\frac{v}{40} = 0.6$

$0.6 \times 40 = 24$

$\frac{24}{t} = 0.4$

$t = 60$

b) Area Under Graph = 4000

$\frac{1}{2} \times 40 \times 24 + 24T + \frac{1}{2} \times 60 \times 24 = 4000$

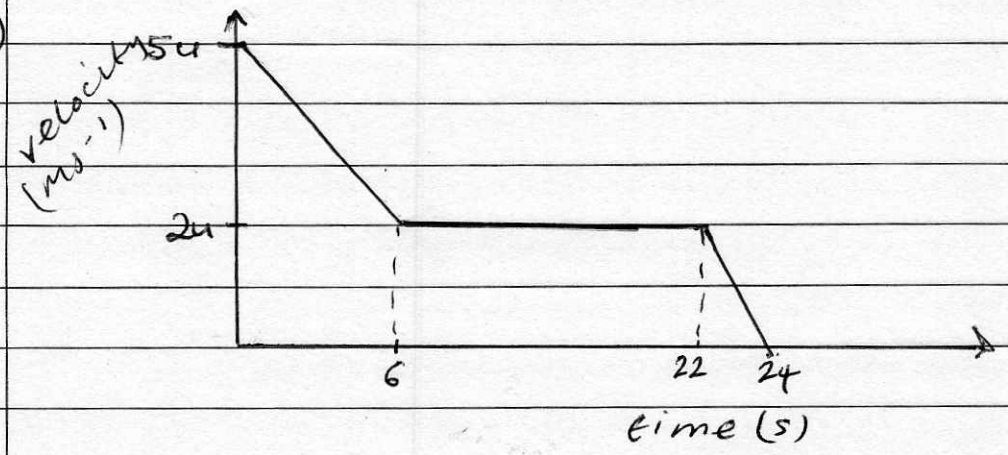
$480 + 24T + 720 = 4000$

$24T = 2800$

$T = \frac{350}{3}$

Total Time $= \frac{350}{3} + 100 = \frac{650}{3}\text{ s}$

3a)



b) First deceleration $= \frac{3u}{6} = \frac{1}{2}u \quad ms^{-2}$

Second deceleration $= \frac{2u}{2} = u \quad ms^{-2}$

c) $220 = \frac{1}{2} \cdot 6 \cdot 3u + 22 \cdot 2u + \frac{1}{2} \cdot 2 \cdot 2u$

$220 = 9u + 44u + 2u$

$220 = 55u$

$u = 4$

4a) $a = \frac{v}{6} \qquad 1.5a = \frac{v}{t}$

$6a = v \qquad 1.5at = v$

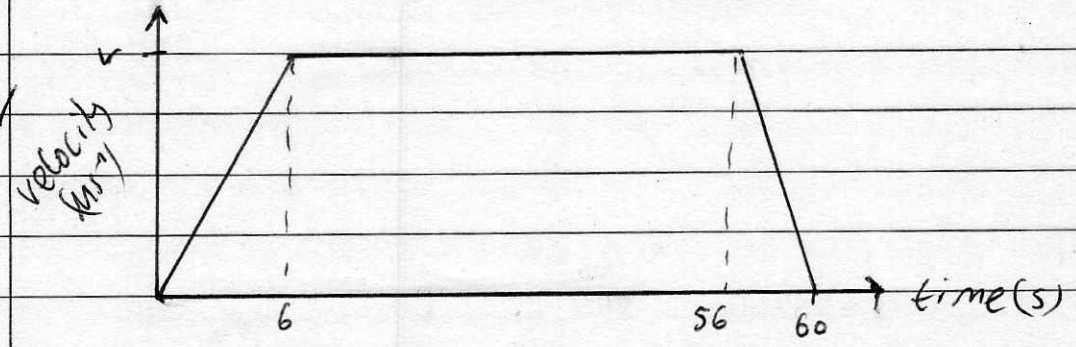
$6a = 1.5at$

$t = 4$

Total time $= 6 + 50 + 4$

$= 60$ seconds.

b)



c) $\frac{60+50}{2} \cdot v = 1320$

$55v = 1320$

$v = 24 \quad ms^{-1}$