CORREZIONE COMPITO OTTOBRE

1) $a = costante \quad v_i = 0$

$s_4 = ? \quad t = 4\,s$

Svolgimento:

- moto uniformemente accelerato per $t_i = 0 \rightarrow v_i = 0 \rightarrow s_0 = 4\,m$

$$s = \frac{1}{2}at^2 + v_i t + s_0$$

$$s = \frac{1}{2}at^2 + s_0 \longrightarrow s = \frac{1}{2}at^2 + 4 \quad (*)$$

se $t = 2\,s \rightarrow s = 16\,m$ sostituiamo questi valori in $(*)$

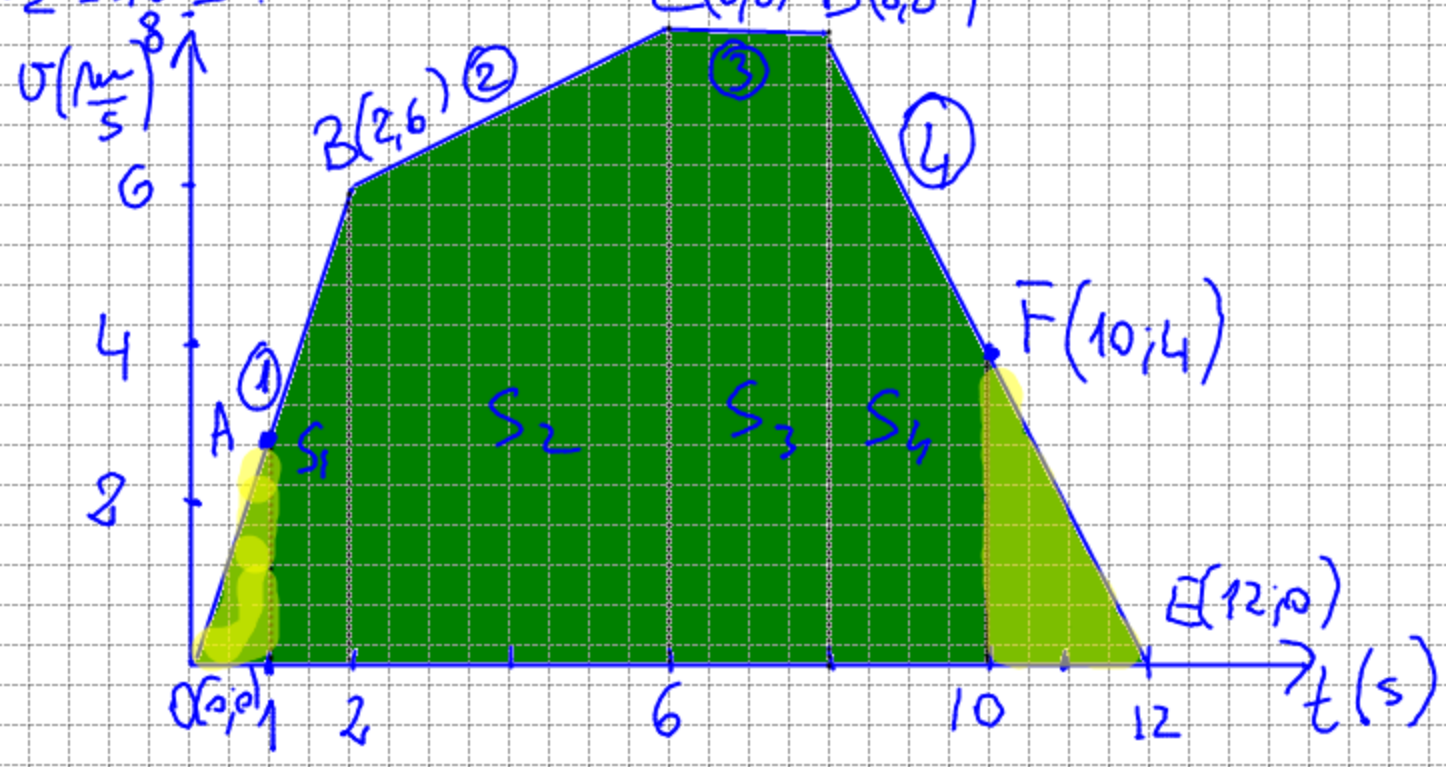
$$16 = \frac{1}{2}a(2)^2 + 4 \qquad 16 = \frac{1}{2}a \cdot 4 + 4 \rightarrow 16 = 2a + 4$$

$$\rightarrow 2a = 16 - 4 \rightarrow 2a = 12 \qquad a = 6\,\frac{m}{s^2}$$

$$s = \frac{1}{2} \cdot 6t^2 + 4 \qquad \boxed{s = 3t^2 + 4}$$

$$s = 3(4)^2 + 4 \qquad s = 52\,m$$

2) $t_1 = 1\,s$ e $t_2 = 10\,s$.



① $v = at$ impongo il passaggio per $B(2;6)$ e trovo a

$6 = a2 \qquad a = 3\,\frac{m}{s^2}$

$\boxed{v = 3t}$ $\qquad v = 3\,\frac{m}{s}$ per $t = 1\,s$. $A(1;3)$

④ $a = \frac{v_E - v_D}{t_E - t_D} \qquad a = \frac{0-8}{12-8} \Rightarrow a = -\frac{8}{4} \qquad a = -2\,\frac{m}{s^2}$

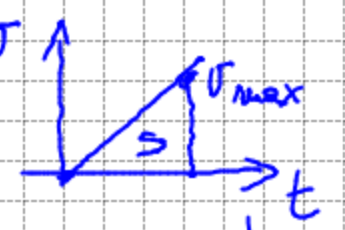
$v = at + v_i \qquad v = -2t + v_i$ impongo il passaggio per E (oppure D)

$0 = -2(12) + v_i \qquad v_i = 24\,\frac{m}{s}$

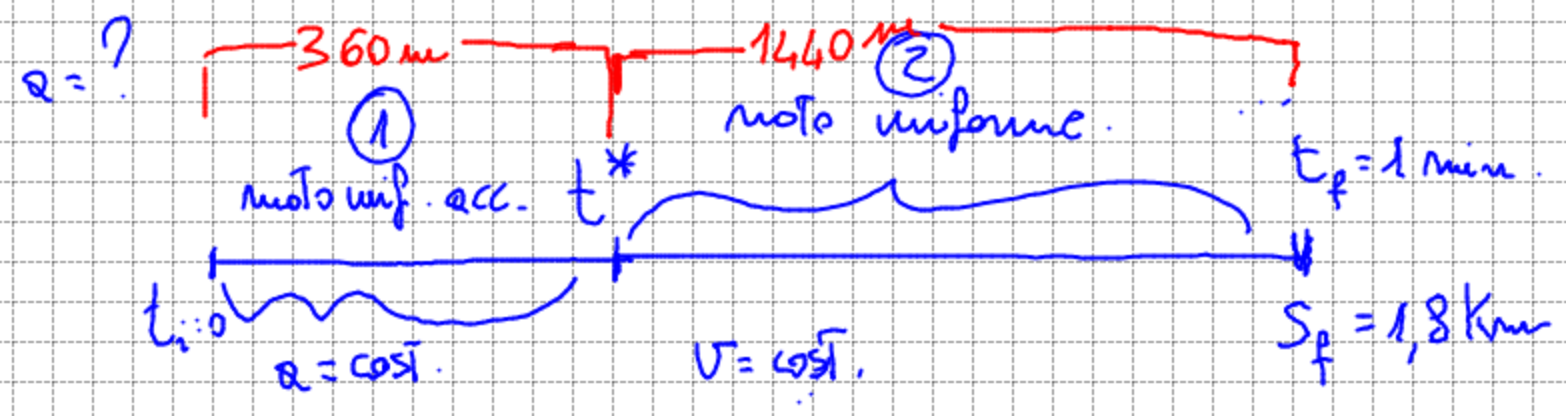
$\boxed{v = -2t + 24}$ se $t = 10\,s \quad v = 4\,\frac{m}{s}$

$$s = \frac{(6+3)1}{2} + \frac{(6+8)2}{2} + 8 \cdot 2 + \frac{(8+4)1}{2} = 60{,}5\ m$$

3) $v_i = 0 \frac{m}{s}$ $\Delta s_1 = 360\,m$ con $a = \cos\tilde{t}$.



poi $v = \cos\tilde{t}$, Dopo 1 min dalla partenza $\Delta s_{1\,min} = 1{,}8\,Km$



- da $t_i = 0$ a t^* il moto è unif. accelerato.

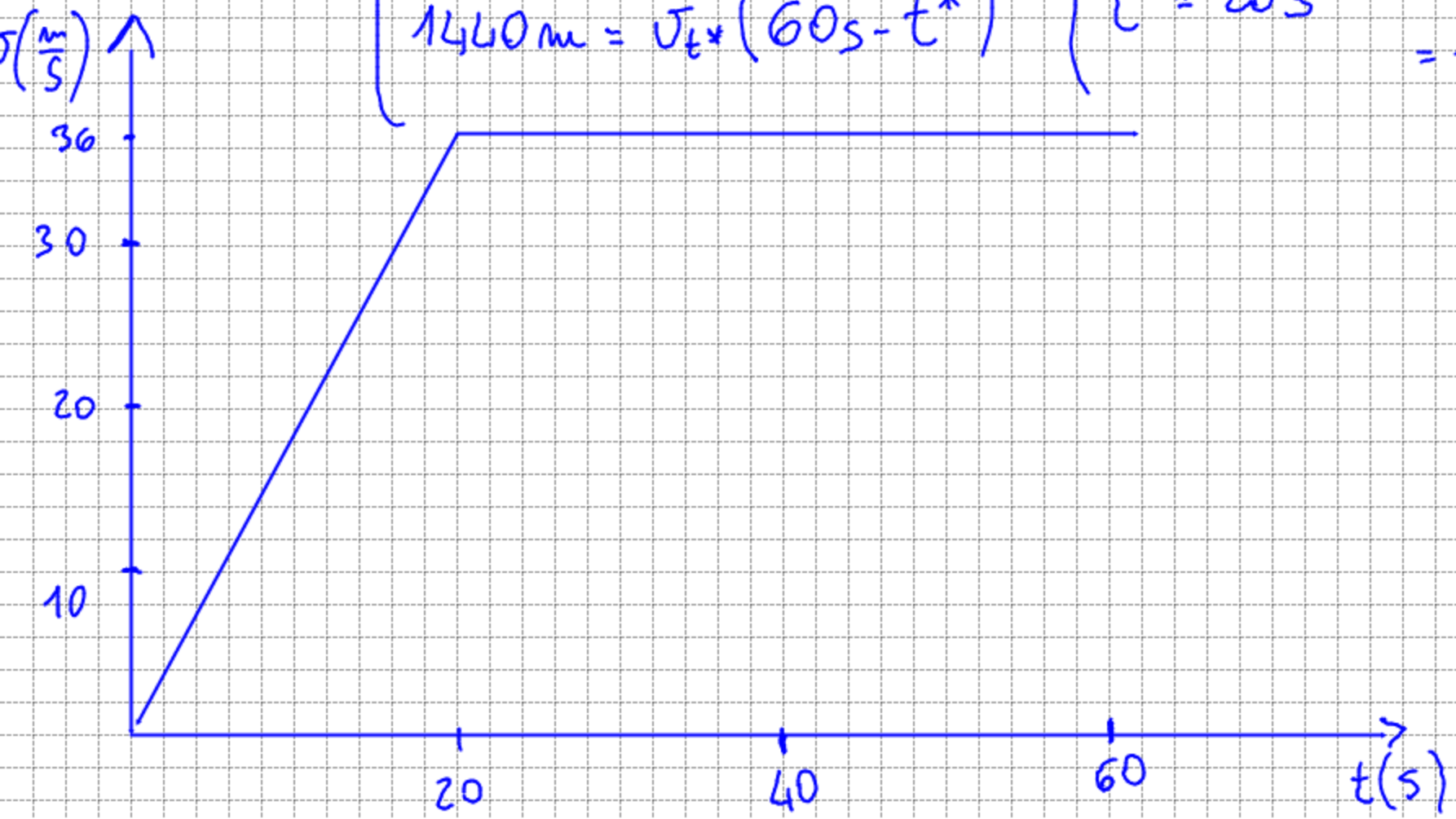
$$S_1 = 360\,m$$

- da t^* a $t_f = 1\,min - t^*$ il moto è rettilineo uniforme

$$S_2 = 1800\,m - 360\,m = 1440\,m.$$

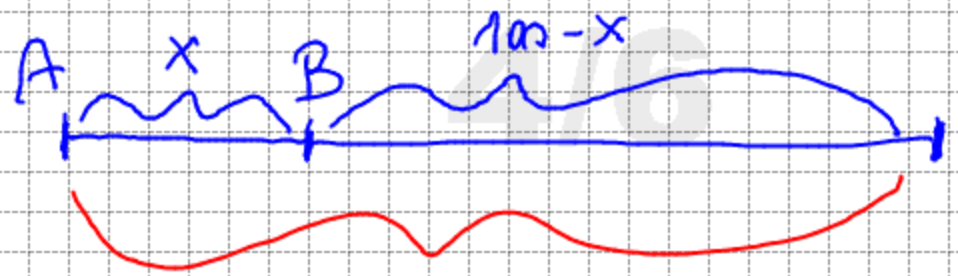
$$\begin{cases} 360\,m = \dfrac{v_{t^*} \cdot t^*}{2} \\ 1440\,m = v_{t^*}(60s - t^*) \end{cases} \quad \begin{cases} v_{t^*} = 36 \frac{m}{s} \\ t^* = 20\,s \end{cases}$$

$$a_m = \frac{36 \frac{m}{s}}{20\,s} = 1{,}8 \frac{m}{s^2}$$



4) $V_A = 9\ m/s$

$V_B = 8{,}4\ m/s$



$$t_A = \frac{100\ m}{9\ m/s} = 11{,}11\ s$$

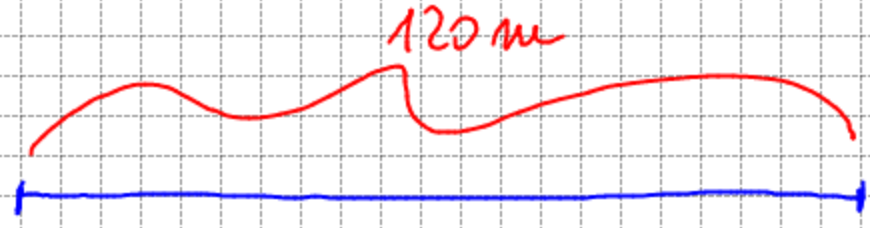
$$t_B = \frac{(100 - x)\ m}{8{,}4\ m/s} = 11{,}11\ s$$

$100 - x = 93{,}32$

$x = 6{,}67\ m$

$x = 6{,}67\ m = 667\ cm$

5)



$V_i = 144 \frac{km}{h} = 40 \frac{m}{s}$

$v_f = 0 \frac{m}{s}$

$v_f^2 - v_i^2 = 2a\Delta s$

moto unif. decelerato.

$a = \frac{v_f^2 - v_i^2}{2\Delta s} = \frac{0 - (1600)}{240}$

$a = -6{,}7 \frac{m}{s^2}$

$a = \frac{\Delta v}{\Delta t} \qquad \Delta t = \frac{\Delta v}{a} \qquad \Delta t = \frac{-40}{-6{,}7} = 6{,}0\,s$