

③  $\Delta t = 10\text{s}$   $a = \frac{\Delta v}{\Delta t}$   $\Delta s = \frac{1}{2} a \Delta t^2 + v_i \Delta t$

$$\Delta s = 100\text{m}$$

$$a = ?$$

$$v_i = ?$$

$$100 = \frac{1}{2} \cdot a \cdot 10^2 + v_i \cdot 10$$

$$100 = \frac{1}{2} a \cdot 100 + v_i \cdot 10$$

$$100 = \frac{1}{2} \frac{\Delta v}{\Delta t} \cdot 100 + v_i \cdot 10$$

$$100 = \frac{1}{2} \frac{v_f - v_i}{10} \cdot 100 + v_i \cdot 10$$

$$\frac{20}{100} = \frac{v_f + v_i}{2} \cdot 10$$

$$20\text{m/s} = v_f + v_i$$

$$v_i = 20\text{m/s}$$

$$a = \frac{\Delta v}{\Delta t} = \frac{v_f - v_i}{10\text{s}} = \frac{v_f - 20\text{m/s}}{10\text{s}} = \frac{0\text{m/s} - 20\text{m/s}}{10\text{s}}$$

$$a = -\frac{20\text{m/s}}{10\text{s}} = -2\text{m/s}^2$$

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g)  $\Delta s = 100 \text{ m}$

$$\Delta t_A = 10 \text{ s}$$

$$\Delta s_B = 95 \text{ m in } 10 \text{ s}$$

$$\Delta s_A = 105 \text{ m}$$

$$\Delta s_{B2} = 100 \text{ m}$$

CHI VINCE?

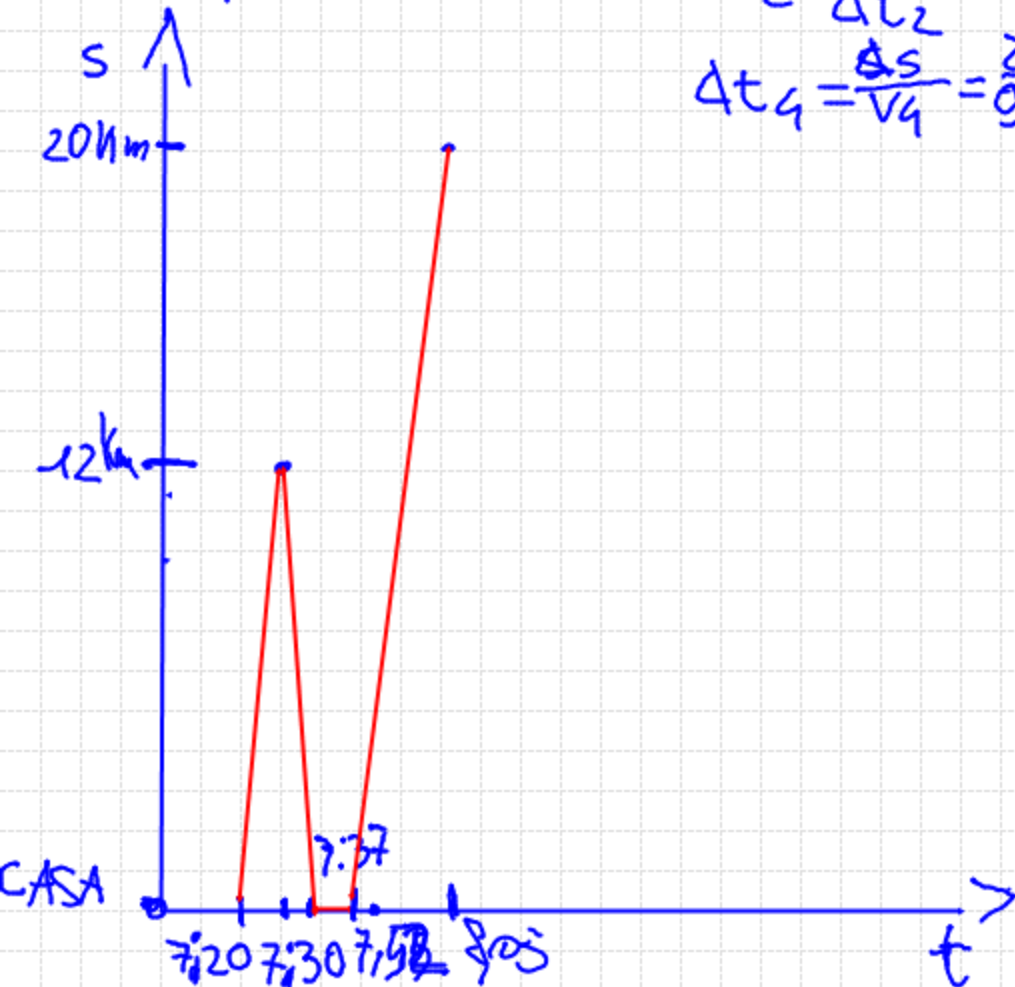
$$v_A = \frac{100 \text{ m}}{10 \text{ s}} = 10 \text{ m/s} \quad \Delta s = v \cdot \Delta t$$

$$v_B = \frac{95 \text{ m}}{10 \text{ s}} = 9,5 \text{ m/s}$$

$$\Delta t_A = \frac{\Delta s_A}{v_A} = \frac{105 \text{ m}}{10 \text{ m/s}} = 10,50$$

$$\Delta t_B = \frac{\Delta s_B}{v_B} = \frac{100 \text{ m}}{9,5 \text{ m/s}}$$

10)  $\Delta s = 20 \text{ km}$   
 $t_1 = 7:20 \text{ h}$   
 $v_1 = 72 \text{ km/h}$   
 $t_2 = 7:30 \text{ h}$   
 $v_2 = 108 \text{ km/h}$   
 $t_3 = 7:45 \text{ h}$   
 $v_3 = 0 \text{ km/h}$   
 $v_4 = 90 \text{ km/h}$



- 1 COSTRUIRE IL GRAFICO  
POSIZIONE-TEMPO
- 2 STABILIRE SE IL PROF. ARRIVA  
IN TEMPO A SCUOLA (8:00h)

$$s_1 = v_1 \cdot \Delta t_1 \quad s_1 = 72 \text{ km/h} \cdot 10 \text{ min}$$

$$s_1 = \frac{72 \text{ km}}{\text{h}} \cdot \frac{1}{6} \text{ h} = 12 \text{ km}$$

$$v_2 = \frac{s_1}{\Delta t_2} \quad \Delta t_2 = \frac{s_1}{v_2} = \frac{12 \text{ km}}{108 \text{ km/h}} = 0,1 \text{ h} = 7 \text{ min}$$

$$\Delta t_4 = \frac{\Delta s}{v_4} = \frac{20 \text{ km}}{90 \text{ km/h}} = 0,2 \text{ h} = 13 \text{ min}$$

8)

$$s_1 = 6 \text{ km}$$

$$v_1 = 80 \text{ km/h}$$

$$s_2 = 6 \text{ km}$$

$$v_2 = 120 \text{ km/h}$$

$$v_m = ?$$

$$t_1 = \frac{6 \text{ km}}{80 \text{ km/h}} = 0,075 \text{ h} = 0 \text{ h} + 0,075 \times 60 \text{ min} =$$

$$= 0 \text{ h} + 4,5 \text{ min} = 0 \text{ h} + 4 \text{ min} + 0,5 \times 60 \text{ s} =$$

$$= 4 \text{ min } 30 \text{ sec} = 270 \text{ sec}$$

$$t_2 = \frac{6 \text{ km}}{120 \frac{\text{km}}{\text{h}}} = 0,05 \text{ h} = 0 \text{ h} + 0,05 \times 60 \text{ min} =$$

$$= 0 \text{ h} + 3 \text{ min} = 180 \text{ sec}$$

$$v_m = \frac{s_1 + s_2}{t_1 + t_2} = \frac{12 \text{ km}}{450 \text{ s}} = 26,7 \text{ m/s} = 96 \text{ km/h}$$

12)

$$V_F = 100 \text{ km/h} = 27,8 \text{ m/s}$$

$$\Delta t_F = 6 \text{ s}$$

$$V_G = 90 \text{ km/h}$$

$$\Delta s_G = 75 \text{ m}$$

$$a = \frac{\Delta v}{\Delta t} = \frac{27,8 \text{ m/s} - 0 \text{ m/s}}{6 \text{ s}} = \frac{27,8 \text{ m/s}}{6 \text{ s}} = 4,6 \text{ m/s}^2$$

$$V_f^2 - V_i^2 = 2a \cdot \Delta s$$

$$(90 \text{ km/h})^2 - 0 = 2a \cdot 75 \text{ m}$$

$$625 \text{ m}^2/\text{s}^2 = 2a \cdot 75 \text{ m}$$

$$a = 4,2 \text{ m/s}^2$$

13)

$$v_i = 126 \text{ km/h}$$

$$\Delta s = 110 \text{ m}$$

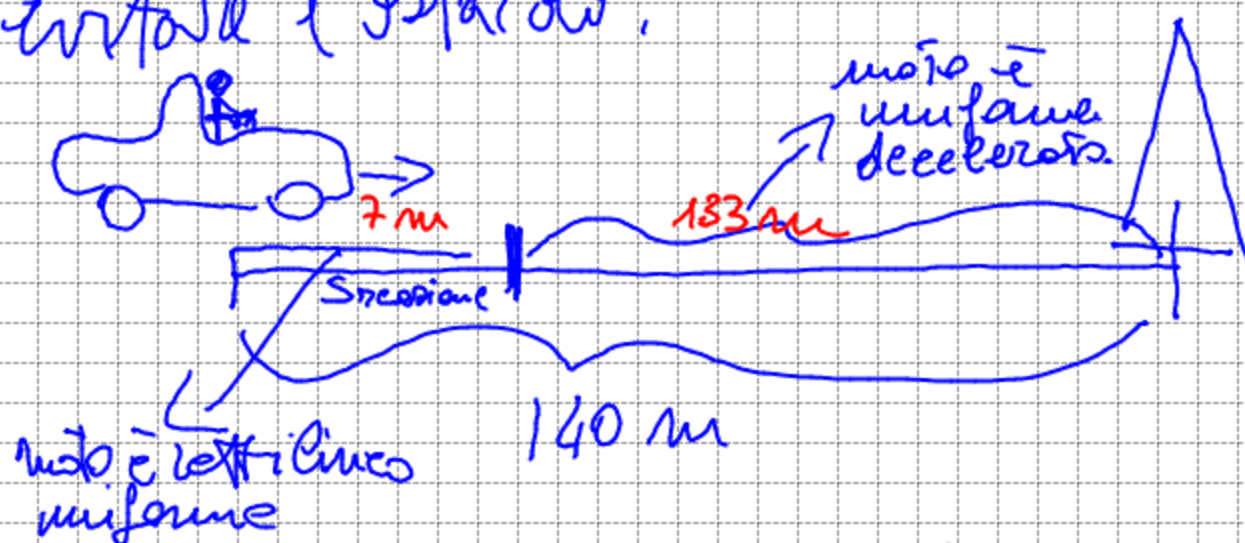
$$s_{\text{REAZIONE}} = v_i \cdot \Delta t_{\text{REAZIONE}}$$

$$\Delta t_{\text{REAZIONE}} = 0,2 \text{ s}$$

$$v_1 = \frac{126}{3,6} \text{ m/s} = 35 \text{ m/s}$$

$$a = -5 \text{ m/s}^2$$

le fa  
a evitare l'ostacolo?



$$s_{\text{REAZIONE}} = 35 \text{ m/s} \cdot 0,2 \text{ s} = 7 \text{ m}$$

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

suppongo  $v_f = 0$

$$\Delta s = \frac{0 - \left(35 \frac{\text{m}}{\text{s}}\right)^2}{2(-5 \frac{\text{m}}{\text{s}^2})} = \frac{-1225 \frac{\text{m}^2}{\text{s}^2}}{-10 \frac{\text{m}}{\text{s}^2}} = 122,5 \text{ m}$$

$$s_{\text{TOT}} = \Delta s + s_{\text{rea}} = 122,5 + 7 = 129,5 \text{ m}$$