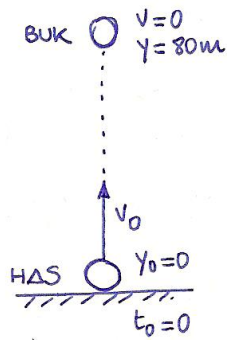


Dinamika eta jauzi libre: EBAZPENAK

① BUK $v=0$
 $y=80m$



a) hasierako abiadura:

$$v = v_0 - 10 \frac{m}{s^2} \cdot t \xrightarrow{\text{datuak}} 0 = v_0 - 10 \frac{m}{s^2} \cdot t$$

$$\Delta y = v_0 \cdot t - 5 \frac{m}{s^2} \cdot t^2 \xrightarrow{\text{datuak}} 80m = v_0 \cdot t - 5 \frac{m}{s^2} \cdot t^2$$

$$\Delta y = y - y_0 = 80m$$

SISTEMA

$$\begin{cases} 0 = v_0 - 10t \rightarrow v_0 = 10t \\ 80 = v_0 \cdot t - 5t^2 \end{cases}$$

$$80 = v_0 \cdot t - 5t^2 \xrightarrow{\text{ORDEZKATUZ}} 80 = (10 \cdot t) \cdot t - 5t^2 \rightarrow 80 = 5t^2 \rightarrow$$

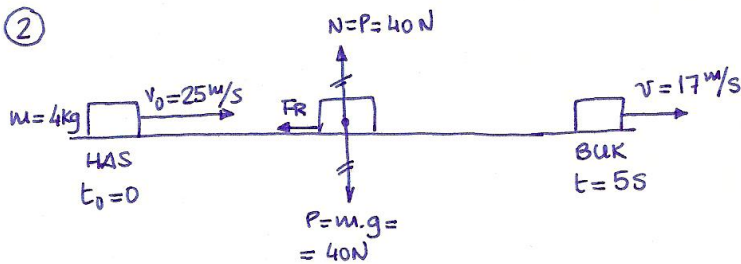
$$\rightarrow \frac{80}{5} = t^2 = 16 \rightarrow \boxed{t = 4s}$$

$$v_0 = 10 \cdot t \xrightarrow{t=4s} \boxed{v_0 = 40 \frac{m}{s}}$$

b) denbora airlean

$$t = 2 \times 4s = \boxed{8s}$$

②



a) azelerazioa $v = v_0 + at \xrightarrow{\text{datuak}} 17 \frac{m}{s} = 25 \frac{m}{s} + a \cdot 5s \rightarrow$

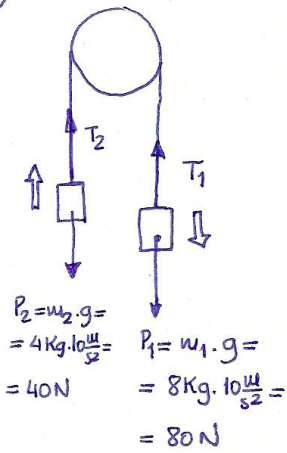
$$\rightarrow 17 \frac{m}{s} - 25 \frac{m}{s} = a \cdot 5s \rightarrow a = \frac{-8m/s}{5s} = \boxed{-1.6 \frac{m}{s^2}}$$

b) F_R

$$F_T = m \cdot a \xrightarrow{\text{datuak}} -F_R = 4kg \cdot (-1.6 \frac{m}{s^2}) = -6.4N$$

$$\uparrow F_T = -F_R \quad \boxed{F_R = 6.4N}$$

③



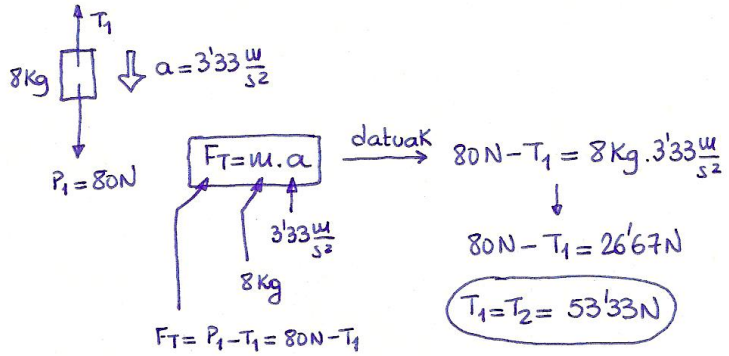
a) azelerazioa

$$F_T = m_T \cdot a \xrightarrow{\text{datuak}} 40 \text{ N} = 12 \text{ kg} \cdot a \rightarrow a = \frac{40 \text{ N}}{12 \text{ kg}} = 3'33 \frac{\text{m}}{\text{s}^2}$$

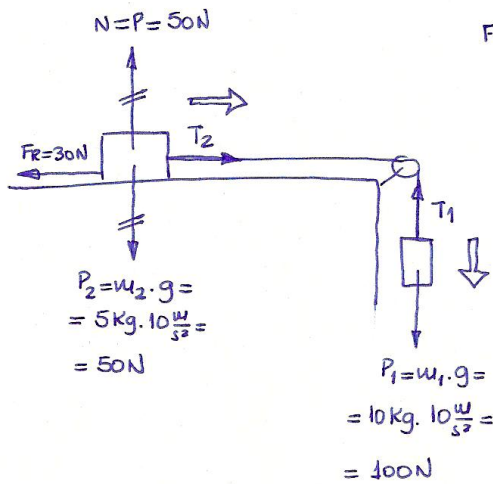
$$m_T = 8 \text{ kg} + 4 \text{ kg} = 12 \text{ kg}$$

$$F_T = P_1 - T_1 + T_2 - P_2 = 80 \text{ N} - T_1 + T_2 - 40 \text{ N} = 40 \text{ N}$$

b) tentsioak



④



a) azelerazioa

$$F_T = m_T \cdot a$$

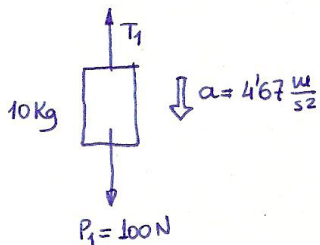
$$m_T = 10 \text{ kg} + 5 \text{ kg} = 15 \text{ kg}$$

$$F_T = P_1 - T_1 + T_2 - F_r = 100 \text{ N} - 30 \text{ N} = 70 \text{ N}$$

$$70 \text{ N} = 15 \text{ kg} \cdot a$$

$$a = \frac{70 \text{ N}}{15 \text{ kg}} = 4'67 \frac{\text{m}}{\text{s}^2}$$

b) tentsioak



$$F_T = m \cdot a$$

$$F_T = P_1 - T_1 = 100 \text{ N} - T_1$$

$$m = 10 \text{ kg}$$

$$a = 4'67 \frac{\text{m}}{\text{s}^2}$$

$$100 \text{ N} - T_1 = 10 \text{ kg} \cdot 4'67 \frac{\text{m}}{\text{s}^2}$$

$$100 \text{ N} - T_1 = 46'7 \text{ N}$$

$$T_1 = T_2 = 100 \text{ N} - 46'7 \text{ N}$$

$$T_1 = T_2 = 53'3 \text{ N}$$