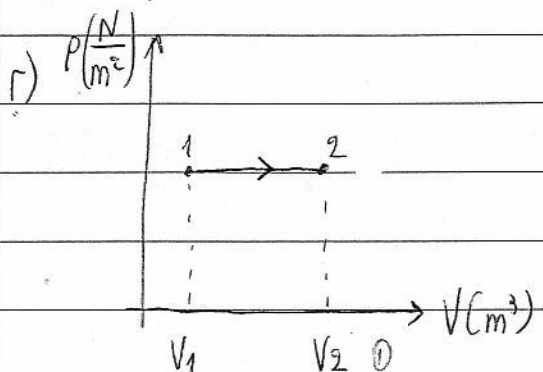
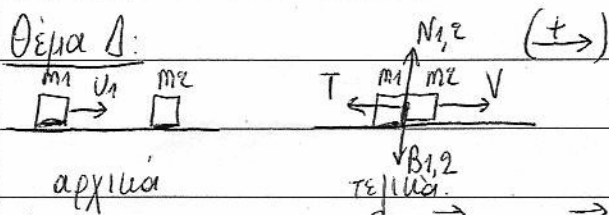


$$\frac{V_1}{T_1} = \frac{V_2}{T_2} \Rightarrow \frac{A \cdot K_1}{300} = \frac{A \cdot 4 \cdot K_1}{T_2} \Rightarrow T_2 = 4 \cdot 300 \Rightarrow T_2 = 1200 \text{ K.}$$



$$\Delta) \frac{v_{\text{εν1}}}{v_{\text{εν2}}} = \sqrt{\frac{3 \cdot R \cdot T_1}{M}} \Rightarrow \frac{v_{\text{εν1}}}{v_{\text{εν2}}} = \sqrt{\frac{300}{1200}} \Rightarrow \frac{v_{\text{εν1}}}{v_{\text{εν2}}} = \frac{1}{2} \Rightarrow v_{\text{εν2}} = 2 \cdot v_{\text{εν1}} \Rightarrow$$

$$v_{\text{εν2}} = 2 \cdot 300 \Rightarrow v_{\text{εν2}} = 600 \text{ m/s.}$$



Α) Εφαρμόζουμε ΑΔΟ: $P_{\text{αρχ}} = P_{\text{τελ}} \Rightarrow m_1 \cdot u_1 = (m_1 + m_2) \cdot V \Rightarrow$

$$u_1 = \frac{(m_1 + m_2) \cdot V}{m_1} \Rightarrow u_1 = \frac{(2000 + 1000) \cdot 4}{2000} \Rightarrow u_1 = \frac{30000}{2000} \cdot 4 \Rightarrow u_1 = 6 \text{ m/s.}$$

Β) $\Delta P_2 = P_{2\text{τελ}} - P_{2\text{αρχ}} \Rightarrow \Delta P_2 = m_2 \cdot V \Rightarrow \Delta P_2 = 1000 \cdot 4 = 4000 \text{ kg} \cdot \text{m/s.}$

γ) Το σύστημα είναι ευθύγραμμη ομαλά επιβραδυνόμενη κίνηση.

$$T = \mu \cdot N_{1,2} = (m_1 + m_2) \cdot a \Rightarrow a = \frac{\mu \cdot N_{1,2}}{m_1 + m_2} \Rightarrow a = \frac{0,1 \cdot (m_1 + m_2) \cdot g}{m_1 + m_2} \Rightarrow a = 0,1 \cdot 10 = 1 \text{ m/s}^2$$

$$0 = v - a \cdot t \Rightarrow v = a \cdot t \Rightarrow t = \frac{v}{a} \Rightarrow t = \frac{4 \text{ m/s}}{1 \text{ m/s}^2} \Rightarrow t = 4 \text{ s.}$$

$$x = v \cdot t - \frac{1}{2} a \cdot t^2 \Rightarrow x = 4 \cdot 4 - \frac{1}{2} \cdot 1 \cdot 4^2 \Rightarrow x = 16 - 8 \Rightarrow x = 8 \text{ m.}$$

Δ) $Q = W_{\text{τριβ}} = W_{\text{κέντ}} \Rightarrow Q = \frac{1}{2} m_1 \cdot u_1^2 \Rightarrow Q = \frac{1}{2} \cdot 2000 \cdot 6^2 \Rightarrow Q = \frac{1}{2} \cdot 2000 \cdot 36 \Rightarrow Q = 36000 \text{ Joule.}$