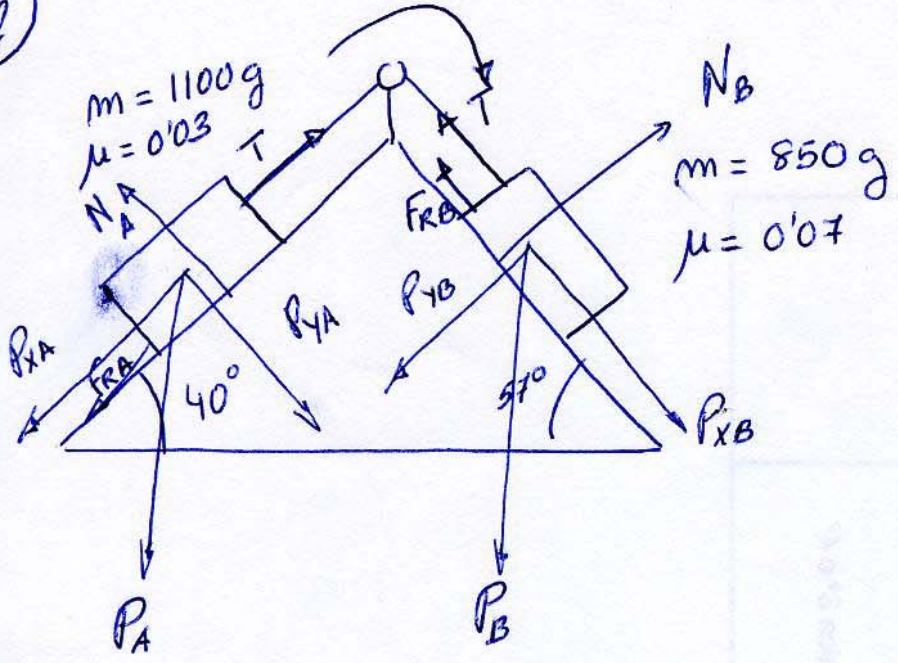


2



$P_{XB} > P_{XA}$

$P_A = m_A \cdot g = 1.1 \cdot 9.81 = 10.8 \text{ N}$

$P_{XA} = P_A \cdot \sin \alpha = 10.8 \cdot \sin 40^\circ = 6.9 \text{ N}$

$P_{YA} = P_A \cdot \cos \alpha = 10.8 \cdot \cos 40^\circ = 8.3 \text{ N} \equiv N_A$

$F_{RA} = N_A \cdot \mu = 8.3 \cdot 0.03 = 0.3 \text{ N}$

$P_B = m_B \cdot g = 0.85 \cdot 9.81 = 8.3 \text{ N}$

$P_{XB} = P_B \cdot \sin \beta = 8.3 \cdot \sin 57^\circ = 7 \text{ N}$

$P_{YB} = P_B \cdot \cos \beta = 8.3 \cdot \cos 57^\circ = 4.5 \text{ N} \equiv N_B$

$F_{RB} = N_B \cdot \mu = 4.5 \cdot 0.07 = 0.3 \text{ N}$

$T - P_{XA} - F_{RA} = m_A \cdot a$

$P_{XB} - T - F_{RB} = m_B \cdot a$

$P_{XB} - P_{XA} - F_{RA} - F_{RB} = (m_A + m_B) \cdot a$

$7 - 6.9 - 0.3 - 0.3 = (1.1 + 0.85) \cdot a$

$a = \frac{-0.5}{1.95}$

No se mueve

$$\textcircled{3} \quad P_{\text{submarino}} = P_{\text{atm}} + P_{\text{H}_2\text{O}}$$

$$P_{\text{submarino}} = 101300 \text{ Pa} + d_{\text{H}_2\text{O}} \cdot g \cdot h$$

$$= 101300 + 1040 \cdot 9.81 \cdot 600 = \underline{\underline{6222740 \text{ Pa}}}$$

$$S_{\text{escotilla}} = \pi r^2 = \pi \cdot 0.25^2 = 0.2 \text{ m}^2$$

$$\phi = 50 \text{ cm} \rightarrow r = 25 \text{ cm} \rightarrow r = 0.25 \text{ m}$$

$$P = \frac{F}{S} \rightarrow F = 6222740 \cdot 0.2 = \underline{\underline{1221832 \text{ N}}}$$

$$\textcircled{4} \quad \frac{F_1}{S_1} = \frac{F_2}{S_2}$$

$$F_1 = P_{\text{persona}} = 75 \cdot 9.81 = \underline{\underline{735.8 \text{ N}}}$$

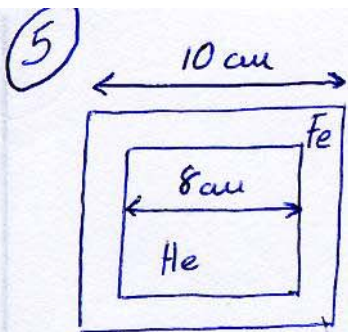
$$S_1 = ?$$

$$F_2 = P_{\text{cañon}} = 7200 \cdot 9.81 = \underline{\underline{70632 \text{ N}}}$$

$$S_2 = 5 \cdot 2.5 = \underline{\underline{12.5 \text{ m}^2}}$$

$$\frac{735.8}{S_1} = \frac{70632}{12.5} \quad S_1 = \frac{735.8 \cdot 12.5}{70632} = 0.13 \text{ m}^2$$

$$S_1 = \pi \cdot r_1^2 \rightarrow r_1 = \sqrt{\frac{S}{\pi}} = \sqrt{\frac{0.13}{\pi}} = \underline{\underline{0.2 \text{ m}}}$$



$$V_{\text{TOTAL}} = L^3 = 0.1^3 = 0.001 \text{ m}^3$$

$$V_{\text{He}} = 0.08^3 = 5.1 \cdot 10^{-4} \text{ m}^3$$

$$V_{\text{Fe}} = V_T - V_{\text{He}} = 0.001 - 5.1 \cdot 10^{-4} = 4.9 \cdot 10^{-4} \text{ m}^3$$

$$P_{\text{cubo}} = P_{\text{Fe}} + P_{\text{He}} = m_{\text{Fe}} \cdot g + m_{\text{He}} \cdot g =$$

$$= V_{\text{Fe}} \cdot d_{\text{Fe}} \cdot g + V_{\text{He}} \cdot d_{\text{He}} \cdot g =$$

$$= 4.9 \cdot 10^{-4} \cdot 7800 \cdot 9.81 + 5.1 \cdot 10^{-4} \cdot 180 \cdot 9.81 =$$

$$= \underline{\underline{38.39 \text{ N}}}$$

$$E = \text{Vagua desplazada} = d_{\text{H}_2\text{O}} \cdot g = 0.001 \cdot 1040 \cdot 9.81 =$$

$$= 10.20 \text{ N}$$

$$P > E$$

$$P_{\text{aparente}} = P - E = 38.39 - 10.20 = \underline{\underline{28.19 \text{ N}}}$$