Hidrostática:

①

$W = 700N$

$F_1 = ?$

$A_1 = 80 cm^2$

$A_2 = 400 cm^2$

$F_2 = 700N$

$$\frac{F_1}{A_1} = \frac{F_2}{A_2}$$

$$\frac{F_1}{80} = \frac{700}{400} \rightarrow \boxed{F_1 = 140N}$$

②

$W = 4500N$

$F_1 = ?$

$r_1 = 5cm$

$A_1 = 25\pi$

$r_2 = 15cm$

$A_2 = 225\pi$

$F_2 = 4500N$
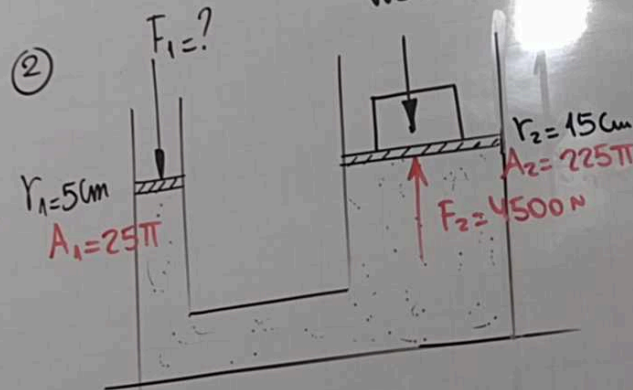
$$\frac{F_1}{A_1} = \frac{F_2}{A_2}$$

$$\frac{F_1}{25\pi} = \frac{4500}{225\pi}$$

$$\boxed{F_1 = 500N}$$

④

$m = 180 kg$

Peso Real $= 1800N$

Peso Aparente $= 1400N$

1) $E = 400N$

$$D_{liq} \cdot g \cdot V_{sum} = 400$$

$$1000 \cdot (10) \cdot V_{metal} = 400$$

$$V_{metal} = 0,04 m^3$$

2) $$D_{metal} = \frac{M_{metal}}{V_{metal}} = \frac{180 kg}{0,04 m^3}$$

$$= 4500 kg/m^3$$
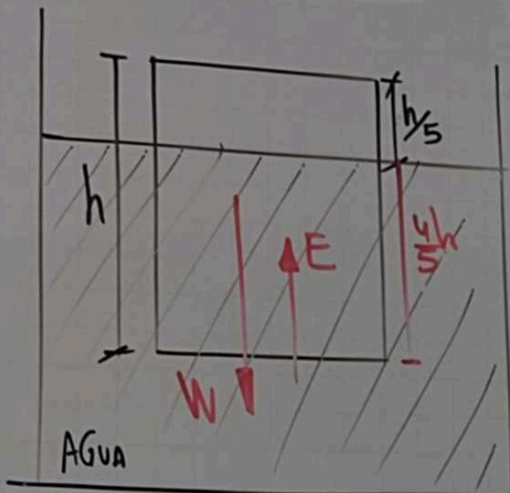
$$D = \frac{m}{V} \rightarrow \boxed{m = D \cdot V}$$

5)

$D_C = \frac{4 \cdot D_{liq}}{5}$

$D_C = \frac{4(1000)}{5}$

$D_C = 800 \, kg/m^3$

AGUA

$W = E$

$mg = D_{liq} \cdot g \cdot V_{SUM}$

$D_C \cdot V_C = 1000 \left(\frac{4 \, V_C}{5} \right)$

$D_C = 800 \, kg/m^3$

6

$F_{ELÁST.} = 70N$

AGUA

$E = 70N$

$140N$
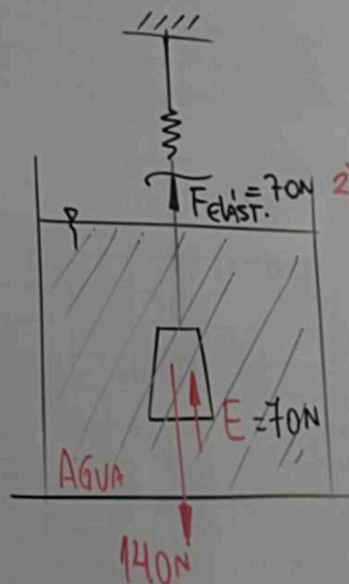
1) $m = 14 kg$

$D_C = 2000 \, kg/m^3$

$V_C = \frac{m}{D_C} = \frac{14}{2000} = \frac{7}{1000} \, m^3 = V_{SUM}$

2) $E = D_{liq} \cdot g \cdot V_{SUM}$

$E = 1000(10)\left(\frac{7}{1000}\right)$

$E = 70N$

3) $F_{ELÁST.} = Kx$

$70 = 700 x$

$x = 0,1 m$

$\boxed{x = 10 cm}$

7

$\uparrow a$

$2,5m$

$V_o = 0$

1) $a = \left(\frac{D_{liq}}{D_{cuerpo}} - 1 \right) g$ $\qquad$ DATO: $\frac{D_C}{D_{liq}} = \frac{2}{3}$

$a = \left(\frac{3}{2} - 1 \right) \cdot 10 = 5 \, m/s^2$

2) $d = V_o t + \frac{1}{2} a t^2$

$2,5 = \frac{1}{2}(5)t^2 \rightarrow t = 1 s$

$Vol. Hombre = 80\cancel{l} \times \dfrac{1m^3}{100\cancel{0l}} = 0,08m^3$

⑧

$+A \bullet \quad V_{o=0}$

$4m$

$8 \bullet V_B$

$X \quad \bullet \downarrow a$

$C \bullet \; V=0$

AGUA

2) $\overline{AB}:\; V_F^2 = V_o^2 + 2gh$

$V_B^2 = 2(10)(4)$

$V_B^2 = 80$

3) $\overline{BC}.\; V_F^2 = V_o^2 - 2a.d$

$0 = 80 - 2(20)(x)$

$\boxed{x = 2m}$

⑩ AIRE
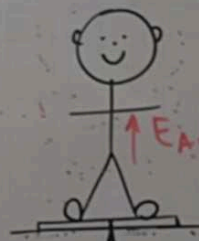
$\uparrow E_{AIRE}$

$N = 800N$

Rpta: $800N + 0,96N$

$= 800,96N$

$E_{AIRE} = D_{AIRE}.g.V_{SUM}$

$= (1,2)(10)(0,08)$

$= 0,96N$

1) $D_{CUERPO} = 0,\overline{3}\; g/cm^3 = \dfrac{1}{3}\, g/cm^3$

$D_{AGUA} = 1 g/cm^3$

$a = \left(\dfrac{D_{liq}}{D_{cuerpo}} - 1\right).g = \left(\dfrac{1}{\frac{1}{3}} - 1\right).10 = 20 m/s^2$

ONUS

3m³

(11)

Hg   W↓   ↑E

$V_{SUM} = 0.574 V_C$

$\boxed{V_{SUM} = 57.4\% V_C}$

∴ $V_{FUERA} = 42.6\% V_C$

$W = E$
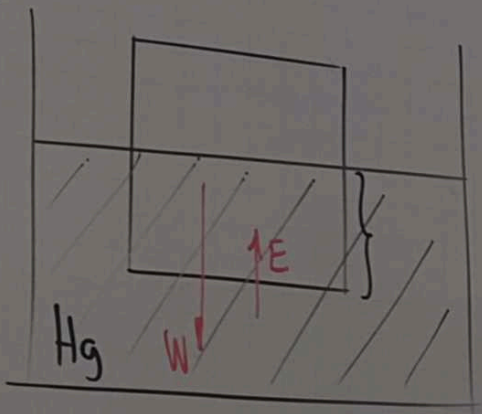
$mg = D_{liq} \cdot g \cdot V_{sum}$

$D_C V_C = D_{liq} \cdot V_{SUM}$

$7.8 V_C = 13.6 V_{SUM}$

/ $1 cm = 10^{-2} m$
$1 cm^3 = 10^{-6} m^3$

/ $K = 10 \dfrac{\vec{kg}}{m} = 100 \dfrac{N}{m}$

(16)

$D_{ACEITE} = 0.6 g/cm^3 = 600 kg/m^3$
$D_{AGUA} = 1 g/cm^3 = 1000 kg/m^3$

→ ACEITE
↑$E_{AC} = 3N$
↑$E_{AGUA} = 5N$ →AGUA
$W_C = 4N$ ↓$KX = 4N$

1) $V_{Cuerpo} = 1000 cm^3 = 10^3 (10^{-6} m^3) = 10^{-3} m^3$
$D_{Cuerpo} = 0.4 g/cm^3$
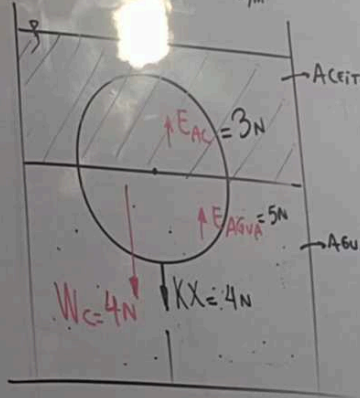
$M = D_C \cdot V_C$
$m = 400g = 0.4 kg$

2) $E_{AC} = D_{AC} \cdot g \cdot V_{SUM}$
$= 600(10)\left(\dfrac{10^{-3}}{2}\right)$
$= 3N$

3) $E_{Agua} = D_{agua} \cdot g \cdot V_{SUM}$
$= 1000(10) \cdot \dfrac{10^{-3}}{2}$
$= 5N$

4) $kx = 4$
$100x = 4$
$x = 0.04 m$
$x = 4 cm$

$F(4\ell) = 200(\ell)$

$\underline{F = 50N}$ ↙

20

$P_{GAS} = 900mmHg$

$P_{ATM} = 1ATM = 1,013\times10^5 Pa = 76\,cmHg = 760mmHg$

GAS

P_{GAS}

P_{ATM}

→Hg

$h = ?$

X   Y
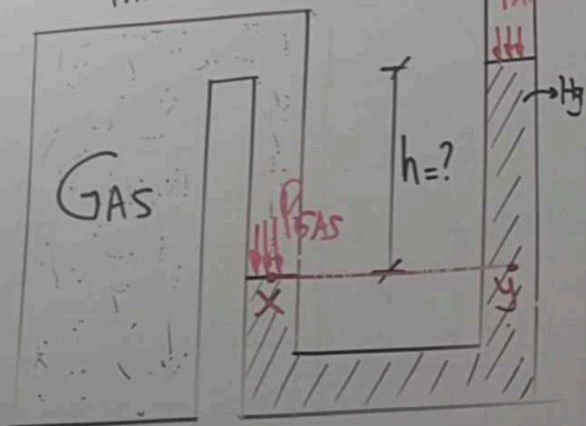
$P_x = P_y$

$\therefore\ P_{Hg} = 140mmHg$

$P_{GAS} = P_{Hg} + P_{ATM}$

$h = 140mm = 14cm$ ↙

$900mmHg = P_{Hg} + 760mmHg$

22

F

$F_1 = 200N$

3ℓ ℓ

$1)\ \dfrac{F_1}{A} = \dfrac{600}{3A}$

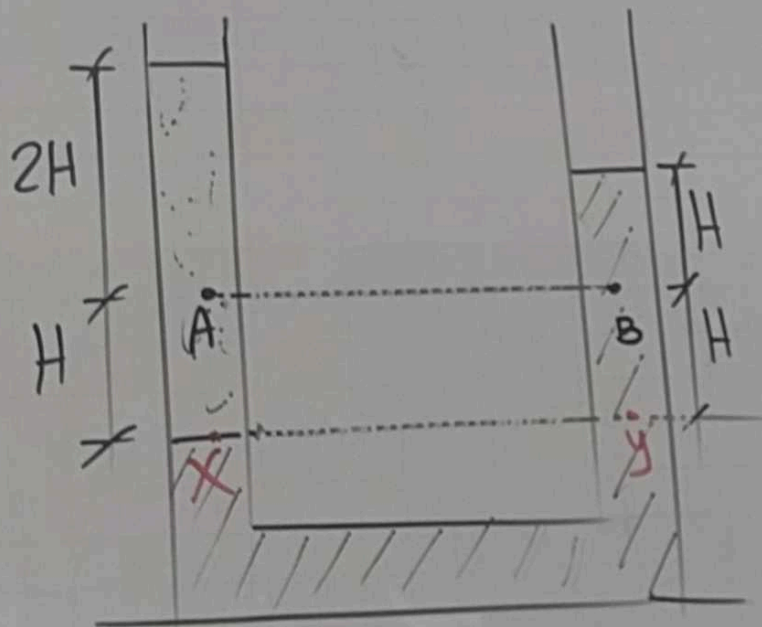$\boxed{F_1 = 200N}$

$W = 600N$

A F_1

3A

$F_2 = 600N$
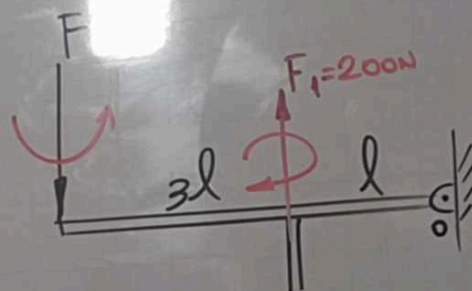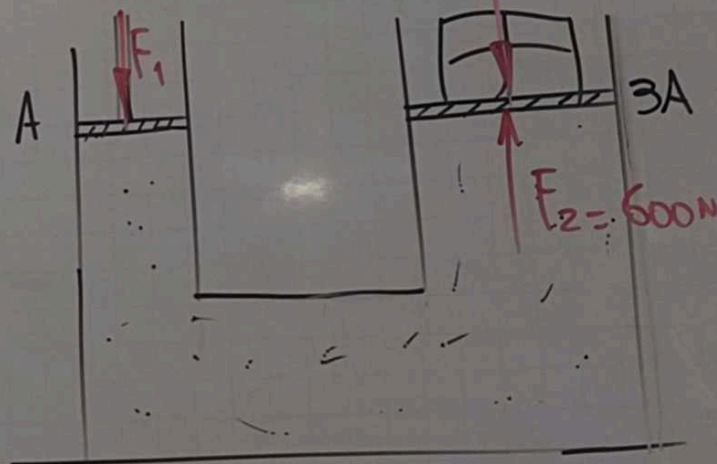
(40)

$$\frac{(P_{hid})_A}{(P_{hid})_B} = \frac{D_A \cdot g \cdot (2H)}{D_B \cdot g \cdot H} = 2\frac{D_A}{D_B} = 2\left(\frac{2}{3}\right) = \frac{4}{3}$$

$$P_x = P_y$$

$$D_A \cdot g \cdot (3H) = D_B \cdot g \cdot (2H)$$

$$\frac{D_A}{D_B} = \frac{2}{3}$$