

Primera

$$P = m \cdot g$$

$$12 \text{ Kg} \rightarrow 70 \text{ cm}$$

$$15 \text{ Kg} \rightarrow 85 \text{ cm}$$

$$117'72 \text{ N} \rightarrow 0'7 \text{ m}$$

$$147'15 \text{ N} \rightarrow 0'85 \text{ m}$$

$$F = k(L - L_0)$$

$$117'72 = k(0'7 - L_0) \Rightarrow$$

$$147'15 = k(0'85 - L_0)$$

$$k = \frac{117'72}{0'7 - L_0}$$

$$k = \frac{147'15}{0'85 - L_0}$$

↙ Igualamos  
constantes

$$\frac{117'72}{0'7 - L_0} = \frac{147'15}{0'85 - L_0} \Rightarrow 117'72(0'85 - L_0) = 147'15(0'7 - L_0)$$

$$100'06 - 117'72 L_0 = 103 - 147'15 L_0$$

$$147'15 L_0 - 117'72 L_0 = 103 - 100'06$$

$$29'43 L_0 = 2'94$$

$$L_0 = \frac{2'94}{29'43} = \underline{\underline{0'1 \text{ m}}}$$

$$k = \frac{117'72}{0'7 - 0'1} = 196'2 \frac{\text{N}}{\text{m}}$$

$$m = 8 \text{ Kg} \rightarrow P = 78'5 \text{ N}$$

$$78'5 \text{ N} = 196'2 \frac{\text{N}}{\text{m}} (L - 0'1)$$

$$78'5 = 196'2 L_0 - 19'62$$

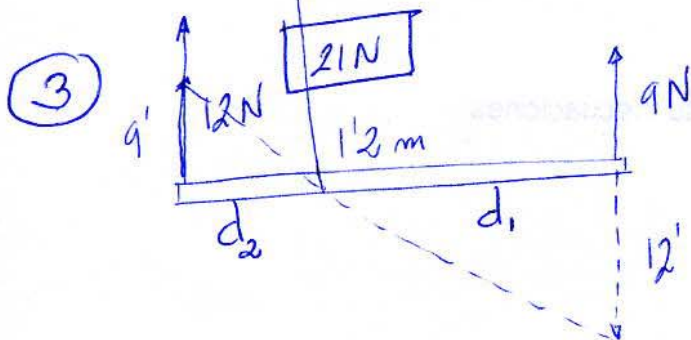
$$L_0 = \frac{78'5 + 19'62}{196'2} = 0'5 \text{ m}$$

②  $v_0 = 30 \text{ m/s}$        $v_f = v_0 + g t$        $t = \frac{45-30}{9.81} = \underline{1.5 \text{ s}}$   
 $v_f = 45 \text{ m/s}$        $45 = 30 + 9.81 \cdot t$

$v_f^2 = v_0^2 + 2 g s \rightarrow 45^2 = 30^2 + 2 \cdot 9.81 \cdot s$

$s = \frac{45^2 - 30^2}{2 \cdot 9.81} = \underline{57.33 \text{ m}}$

$v_f = v_0 + g t \rightarrow v_f = 45 + 9.81 \cdot 10 = \underline{143.1 \text{ m/s}}$



$F_1 \cdot d_1 = F_2 \cdot d_2$   
 $d_1 + d_2 = d_T$

$F_T = 9 + 12 = \underline{21 \text{ N}}$

$9 \cdot d_1 = 12 \cdot d_2$   
 $d_1 + d_2 = 1.2$   
 $d_1 = 1.2 - d_2 \rightarrow 9(1.2 - d_2) = 12 d_2$   
 $10.8 - 9 d_2 = 12 d_2 \rightarrow 10.8 = 9 d_2 + 12 d_2$

$d_2 = \frac{10.8}{21} = \underline{0.51 \text{ m}}$        $d_1 = 1.2 - 0.51 = \underline{0.69 \text{ m}}$

④  $p_{atm} = 101300 \text{ Pa} = 760 \text{ mmHg}$

$P = 10000 \text{ mmHg} \cdot \frac{101300 \text{ Pa}}{760 \text{ mmHg}} = 1332894.7 \text{ Pa}$

$P = P_{atm} + \rho \cdot g \cdot h$

$1332894.7 = 101300 + 1024 \cdot 9.81 \cdot h$

$h = \frac{1332894.7 - 101300}{1024 \cdot 9.81}$

$h = \underline{122.6 \text{ m}}$



$$\textcircled{5} \quad V_{\text{cilindro}} = \text{base} \times \text{altura} = \pi r^2 \cdot L$$

$$V = \pi \cdot 0'07^2 \cdot 0'7 = 0'01 \text{ m}^3$$

↑  
 $\phi = 14 \text{ cm} \rightarrow r = 7 \text{ cm} = 0'07 \text{ m}$

$$V_{\text{AL}} = V_{\text{TOTAL}} - V_{\text{PLÁSTICO}} = \frac{\pi \cdot 0'075^2 \cdot 0'7}{0'0123} - 0'01 = \underline{0'0023 \text{ m}^3}$$

$$P_{\text{CILINDRO}} = P_{\text{AL}} + P_{\text{PLÁSTICO}} = 0'0023 \cdot 2700 \cdot 9'81 + 0'01 \cdot 350 \cdot 9'81$$

$$P = V \cdot d \cdot g \quad \underline{P_c = 95'25 \text{ N}}$$

$$E = V_{\text{CILINDRO}} \cdot d_{\text{H}_2\text{O}} \cdot g = 0'0123 \cdot 1040 \cdot 9'81 = 125'48 \text{ N}$$

$$E > P \quad \underline{\text{flota}}$$

Volumen sumergido \*

flotando



$$P = E \quad 95'25 = V_c \cdot d \cdot g$$

$$V_c = \frac{95'25}{1040 \cdot 9'81} = 9'3 \cdot 10^{-3} \text{ m}^3$$

$$V_{\text{CILINDRO VISIBL}} = 0'0123 - 9'3 \cdot 10^{-3} = 2'96 \cdot 10^{-3} \text{ m}^3$$

$$\% \text{ cilindro} = \% \text{ anista} = \frac{2'96 \cdot 10^{-3}}{0'0123} \times 100 = 24\%$$

$$\textcircled{6} \quad 147'15 \cdot 0'4 + 490'5 \cdot 0'3 + 147'15 \cdot 0'18 = 784'8 \cdot x + 490'5 \cdot (0'2 + x)$$

$$232'5 = 784'8 x + 98'1 + 490'5 x$$

$$x = \frac{232'5 - 98'1}{(784'8 + 490'5)} = 0'1 \text{ m} = 10 \text{ cm}$$