

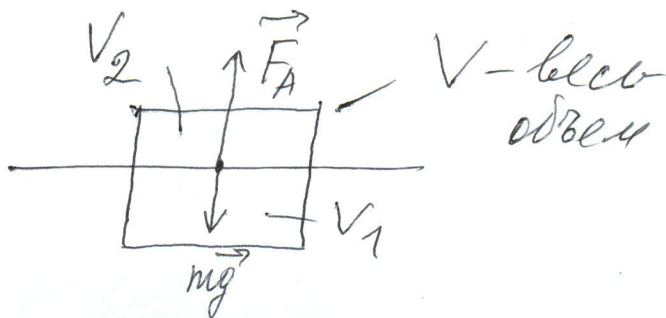
6) Дано:

$$V = 80 \text{ см}^3 = 0,008 \text{ м}^3$$

$$m = 0,032 \text{ кг}$$

$$\rho_b = 1000 \frac{\text{кг}}{\text{м}^3}$$

$V_2 = ?$



V_1 - объем погруженной части

V_2 - объем погруженной части.

$$F_A = F_{\text{тяж}}; F_A = mg$$

$$F_A = \rho_b \cdot g \cdot V_1;$$

$$\rho_b g V_1 = mg$$

$$\rho_b g V_1 = mg, \text{ т.к. } V = V_1 + V_2, \text{ откуда:}$$

$$V_1 = V - V_2$$

$$\rho_b g (V - V_2) = mg$$

$$\rho_b g V - \rho_b g V_2 = mg$$

$$\rho_b g V - mg = \rho_b g V_2 \quad | :g$$

$$\rho_b V - m = \rho_b V_2$$

$$V_2 = \frac{\rho_b V - m}{\rho_b}$$

$$V_2 = \frac{1000 \cdot 0,008 - 0,032}{1000} =$$

$$= 7,97 \cdot 10^{-3} \text{ м}^3 =$$

$$= 0,0079 \text{ м}^3 = 79 \text{ см}^3$$

7) Дано:

P

$$P_b = \frac{P}{5}$$

$$\rho_b = 1000 \frac{\text{кг}}{\text{м}^3}$$

$\rho_T = ?$

$$P_b = P - F_A; \frac{P}{5} = P - F_A$$

$$F_A = P - \frac{P}{5} = \frac{4}{5} P, F_A = \rho_b \cdot g \cdot V_T$$

$$\rho_b g V_T = \frac{4}{5} P; P = mg$$

$$\rho_b g V_T = \frac{4mg}{5}; \rho_b \cdot V_T = \frac{4m}{5};$$

$$5 \rho_b V_T = 4m \rightarrow 5 \rho_b = \frac{4m}{V_T}, \text{ где } \frac{m}{V_T} = \rho_T$$

$$5 \rho_b = 4 \rho_T \rightarrow \rho_T = \frac{5 \rho_b}{4} \rho_T = \frac{5 \cdot 1000}{4} = 1250 \frac{\text{кг}}{\text{м}^3}$$

8) Дано:

ρ_1

P_1

ρ_2

P_2

$\rho = ?$

$$P_1 = P - F_{A1} \quad (1)$$

$$P_2 = P - F_{A2} \quad (2) \quad P = mg$$

$$m = \rho V \quad (3); \quad F_A = \rho_{\text{ж}} g \cdot V$$

$$P_1 = \rho V g - \rho_1 g \cdot V \quad (4)$$

$$P_2 = \rho V g - \rho_2 g \cdot V \quad (5)$$

Сложим (4) и (5):

$$\frac{P_1}{P_2} = \frac{\cancel{\rho V g} (P - P_1)}{\cancel{\rho V g} (P - P_2)} = \frac{P - P_1}{P - P_2}$$

$$P_1(P - P_2) = P_2(P - P_1)$$

$$\underline{P_1 P} - \underline{P_1 P_2} = \underline{P_2 P} - \underline{P_2 P_1}$$

$$P_1 P - P_2 P = P_1 P_2 - P_2 P_1$$

$$P(P_1 - P_2) = P_1 P_2 - P_2 P_1$$

$$\boxed{P = \frac{P_1 P_2 - P_2 P_1}{P_1 - P_2}} \quad \underline{\text{Всё!}}$$

9) Дано:

$$P_c = 25000 \text{ Н}$$

$$F_{\text{воздух}} = 100000 \text{ Н}$$

$$P_r = ?$$

$$F_{\text{воздух}} = P_c - P_r$$

$$P_r = F_{\text{воздух}} - P_c$$

$$P_r = 100000 \text{ Н} - 25000 = 75000 \text{ Н}$$

$$\text{Ответ: } P_r = 75000 \text{ Н}$$

10) Дано:

$$m_1 = 108 \text{ кг}$$

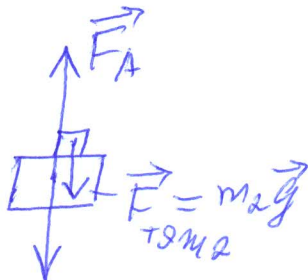
$$m_2 = 70 \text{ кг}$$

$$\rho_1 = 800 \frac{\text{кг}}{\text{м}^3}$$

$$\rho_2 = 1000 \frac{\text{кг}}{\text{м}^3}$$

$$m_2 = ?$$

(найти массу и сравнить с m_2)



$$\vec{F} = m_1 \vec{g}$$

$$F_A = m_1 g + m_2 g (1)$$

$$F_A = \rho_2 g V (2)$$

$$\rho_2 g V = m_1 g + m_2 g \quad | :g$$

$$\cancel{\rho_2 V = m_1 + m_2}$$

$$\rho_2 V = m_1 + m_2 (3)$$

$$\frac{m}{\rho} = V$$

$$\rho_2 \frac{m_1}{\rho_1} = m_1 + m_2$$

$$\frac{\rho_2 m_1}{\rho_1} - m_1 = m_2 (4)$$

$$m_2 = \frac{1000 \cdot 108}{800} - 108 = \underline{\underline{27 \text{ кг}}}$$

Ответ: груз массой 70 кг такой груз поднимать не сможем. Только массой 27 кг.