

$$\textcircled{1}. \quad P_{\text{apparent}} = 2,6 \text{ N} \quad \Rightarrow \quad F_{\text{Arch}} = P_{\text{réel}} - P_{\text{apparent}} = 3,8 - 2,6 = \underline{\underline{1,2 \text{ N}}}$$

$$P_{\text{réel}} = 3,8 \text{ N}$$

$$\textcircled{2}. \quad P_{\text{apparent}} = 1,8 \text{ N} \quad \Rightarrow \quad P_{\text{réel}} = P_{\text{apparent}} + F_{\text{Arch}} = 1,8 + 0,4 = \underline{\underline{2,2 \text{ N}}}$$

$$F_{\text{Arch}} = 0,4 \text{ N}$$

$$\textcircled{3}. \quad F_A = \rho_{\text{eau}} \cdot g \cdot V_{\text{imm}}$$

$$V_{\text{imm}} = \pi r^2 h = \pi \left(\frac{2}{100} \right)^2 \cdot 0,12 \hat{=} 1,508 \cdot 10^{-4} \text{ m}^3$$

! dimensions en m !

$$\Rightarrow F_A = 1000 \cdot 9,81 \cdot 1,508 \cdot 10^{-4} \hat{=} \underline{\underline{1,48 \text{ N}}}$$

$$\textcircled{4}. \quad \rho = \frac{m}{V} \quad \Rightarrow \quad m = \rho \cdot V = \rho_{\text{acier}} \cdot V_{\text{imm}} = 7800 \cdot 1,508 \cdot 10^{-4}$$

$$= 1,18 \text{ kg}$$

$$\underline{\underline{1176 \text{ g}}}$$

$$\textcircled{5}. \quad P_{\text{réel}} = 5,0 \text{ N} \quad \Rightarrow \quad F_{\text{Arch}} = 5,0 - 4,0 = 1,0 \text{ N} = \rho \cdot g \cdot V_{\text{imm}}$$

$$P_{\text{apparent}} = 4,0 \text{ N}$$

$$\Rightarrow \rho = \frac{F_{\text{Arch}}}{g \cdot V_{\text{imm}}} = \frac{1,0}{9,81 \cdot 0,0001} = \underline{\underline{1019 \frac{\text{kg}}{\text{m}^3}}}$$

$$(100 \text{ cm}^3 \xrightarrow{\div 1000} 0,1 \text{ dm}^3 \xrightarrow{\div 1000} 0,0001 \text{ m}^3)$$

$\textcircled{6}$. l'objet flotte $\Rightarrow$ Poids réel = F_{Arch} !

$$\textcircled{a}. \quad F_{\text{Arch}} = \rho \cdot g \cdot V_{\text{imm}} = 1000 \cdot 9,81 \cdot 2,5 = \underline{\underline{24525 \text{ N}}}$$

$$\textcircled{b}. \quad \text{Volume eau déplacé} = V_{\text{imm}} = \underline{\underline{2,5 \text{ m}^3}}$$

$$\textcircled{c}. \quad F_{\text{Arch}} = m \cdot g \quad \Rightarrow \quad m = \frac{F_{\text{Arch}}}{g} = \underline{\underline{2500 \text{ kg}}}$$

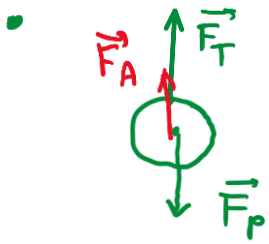
⑦. L'objet est entièrement immergé à la profondeur de 1m.

Lorsque cela arrive, on a $F_{Arché} = \rho \cdot g \cdot V_{imm} = 6000 \text{ N}$

$$V_{imm} = 1 \text{ m} \times 1 \text{ m} \times 1 \text{ m} = 1 \text{ m}^3$$

$$\Rightarrow \rho_{liquide} = \frac{F_{Arché}}{g \cdot V_{imm}} = \frac{6000 \text{ N}}{9,81 \cdot 1} \approx \underline{\underline{611,6 \text{ kg/m}^3}}$$

$$\textcircled{8}. \rho = \frac{m}{V} \Rightarrow m = \rho \cdot V = \rho \cdot \frac{4}{3} \pi R^3 = 7800 \cdot \frac{4}{3} \pi \cdot \left(\frac{8}{100}\right)^3 \approx \underline{\underline{16,73 \text{ kg}}}$$



$$\bullet P_{apparent} = P_{réel} - F_{Arché}$$

$$\text{avec: } -P_{réel} = m \cdot g \approx 164,1 \text{ N}$$

$$-F_{Arché} = \rho_{eau} \cdot g \cdot V = 1000 \cdot 9,81 \cdot \frac{4}{3} \pi \left(\frac{8}{100}\right)^3 \approx 21,0 \text{ N}$$

$$\Rightarrow P_{apparent} = 164,1 - 21,0 \approx \underline{\underline{143,1 \text{ N}}}$$