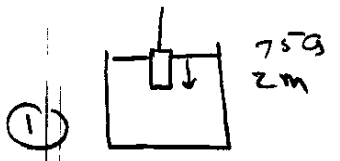
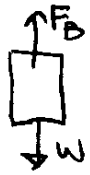
Ph 212 MT I
Solutions



[6] a) 

F_B = Weight Object (floats)

$= mg$

$= (75 \times 10^{-3} kg)(9.8\ m/s^2)$

$= 0.735 N$ (up or as indicated by arrow)

[5] b) $p = p_0 + \rho g h = 1.01 \times 10^5 Pa + (1000 kg/m^3)(9.8 \frac{m}{s^2})(2m) = (1.01 + .196) \times 10^5 Pa$

$= 1.21 \times 10^5 Pa$

(the density of water, 1 g/cc, is the definition of the g/cc)

[10] c) $F_B = W_{water} = \rho_w V_{displaced}$

$F_B = W_{cylinder}$

$\rho V = \rho_{water} \cdot .7V$

$\rho = .7 \rho_{water} = 0.7 g/cc = 700 kg/m^3$

[5] d) All we can say is that cylinder is denser than the oil, i.e. $\rho_{oil} < \rho_{stone} = 700 kg/m^3$

($\rho_{oil} < \rho_{water}$ too, yet $\rho_{stone} < \rho_{water}$, so above more restrictive)