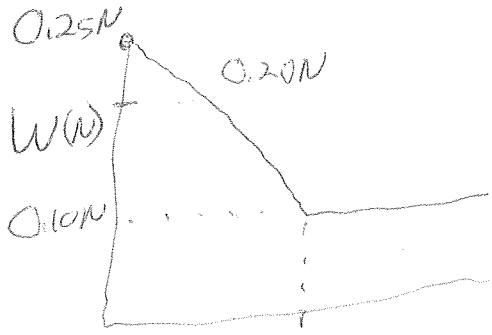
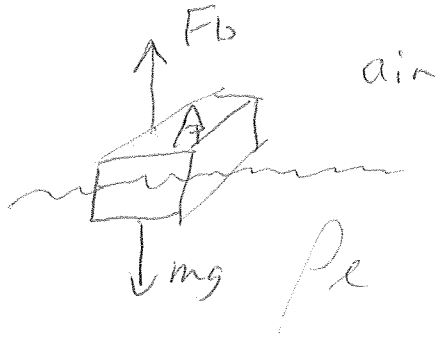
14-36 Push rectangular block underwater, measuring apparent weight as a function of depth h. Block is "d" high.



Out of water, (h=0), weight is 0.25 N.

This decreases till it's totally submerged, at 1.5 cm (so that must be "d").

"A" = 5.67 cm²



F_b is max when all the way under,

so $W = -(F_b - mg)$

$F_b = (0.25N - 0.10N) = 0.15N$

"mg" ← max F_b

$F_b = (\rho g \text{ Volume})$ ← we want to know ρ_e

so $\rho_e = \frac{F_b}{gV} = \frac{0.15N}{9.8 m/s^2 (1.5 \cdot 5.67) \times 10^{-4} m^3}$

$\rho_e = 1800 \text{ kg/m}^3 = 1.8 \text{ g/cm}^3$

(water = 1.0 g/cm³. Wonder what this stuff is?)