Wednesday, April 10/13
Science 122

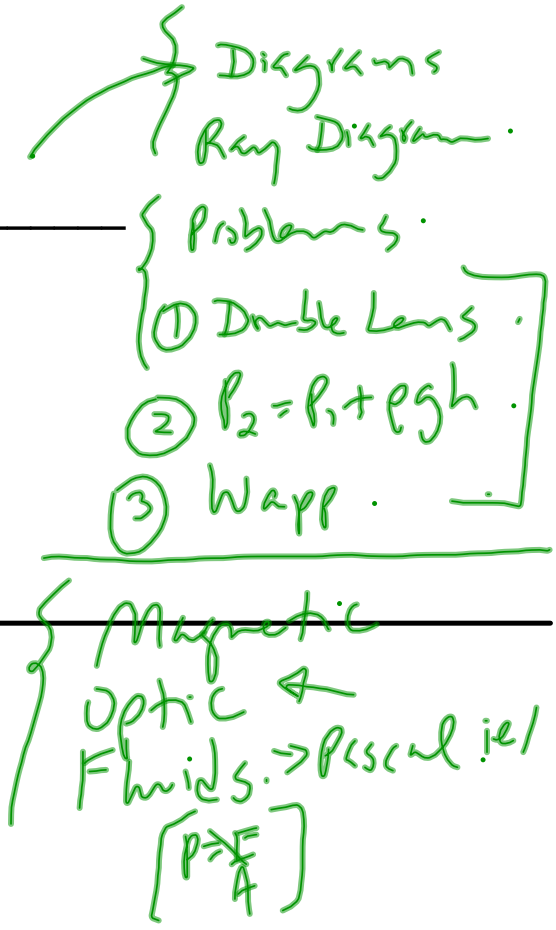
Announcements

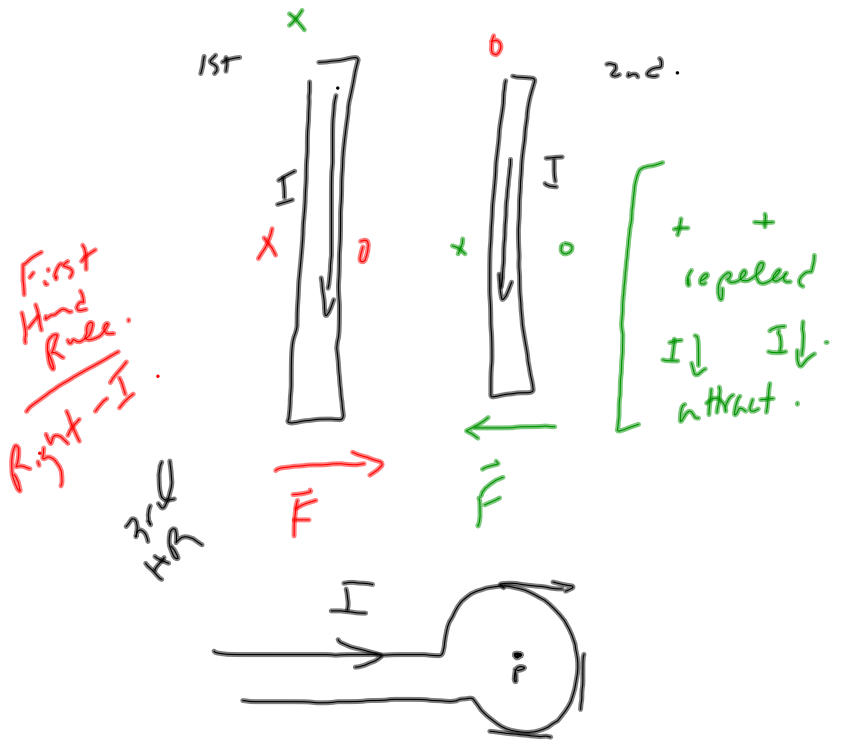
** Need an activity re a course topic before the end of May.

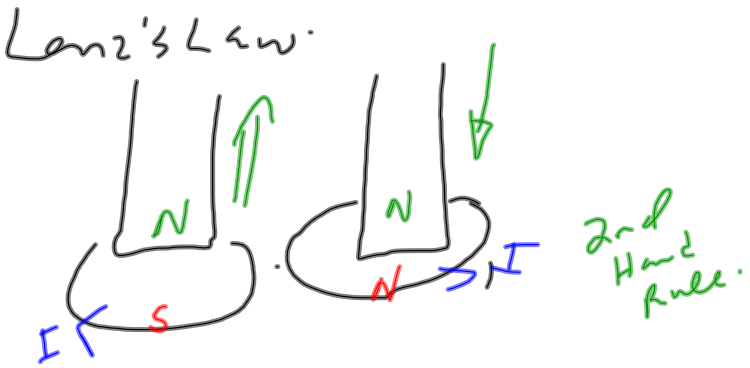
Multiple Intelligences - Surveys

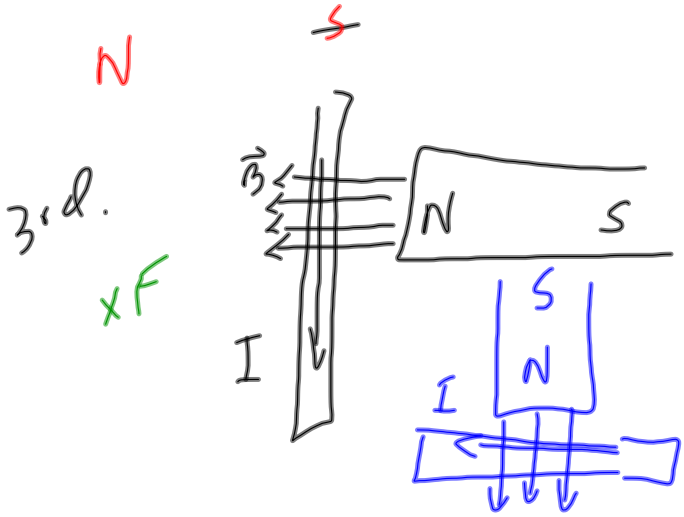
Midterm: Date - Friday, April 12

1. Return: Mock ICA - Today
2. Continuity Equation - Problems
3. Bernoulli's Equation




1st
2nd.
I
I
F
F
repelled
attract.
3rd
RHR


Lenz's Law.
N
S
I
2nd Hand Rule.


N
S
3rd.
F
I
N
S

$cm^2 \times \left(\frac{10^{-2}\,m^2}{1\,cm^2}\right)$

1. model | elephant

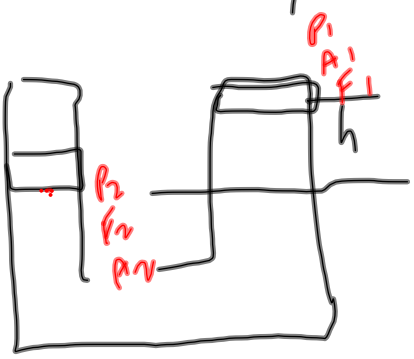
$P_m = \frac{F_m}{A_m}$ | $P_e = \frac{F_e}{A_e}$

$$\frac{P_m}{P_e} = \frac{\frac{F_m}{A_m}}{\frac{F_e}{A_e}} = \frac{F_m}{A_m} \times \frac{A_e}{F_e} = \left[\frac{500}{1}\right]$$

500 : 1

1 : 500

2. hydraulic system ⇒ Pascal's Principle.



$P_2 = P_1 + \rho g h$

$\frac{F_2}{A_2} = \frac{F_1}{A_1} + \rho g h$.

$d \rightarrow r_{cm} \rightarrow m$.

$h = 1.0\,m$.

3. ratios ⇒ Think iceberg.

$m_p = 72\,kg$

$V_p = 0.089\,m^3$

$\rho_p = \frac{m_p}{V_p} = 808.99\,\frac{kg}{m^3}$

Visible = ?

$\frac{\rho_p}{\rho_{water}} = 80.899\%$ sub.

$\frac{\rho_p}{\rho_w} = \frac{V_{sub.}}{V_p}$

$\frac{\rho_p}{\rho_w} = 0.8099$

19.1% visible.

$V_p \times 0.1901 = 0.17\,m^3$

4. Water | Alcohol

$W_{app\,w} = W - F_{Bw}$ | $W_{app\,a} = W - F_{Ba}$

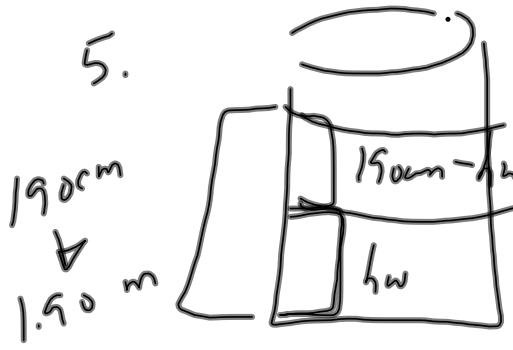
$W = W_{app\,w} + F_{Bw}$ | $W = W_{app\,a} + F_{Ba}$

$$V_0 = 3.682 \times 10^{-4}\ m^3$$

$$\Rightarrow W_{app\,w} = \rho_0 V_0 g - \rho_w V_0 g$$

$$\rho_0 = 7.93 \times 10^3\ \frac{kg}{m^3}$$

5.



$P_1 = 1.01 \times 10^5 P_a$

P_2

$P_3 = 1.19 \times 10^5 P_a$

$P_2 = P_1 + \rho_{oil} g h_{oil}$ $\quad\|\quad$ $P_3 = P_2 + \rho_{H_2O} g h_{water}$

$h_w = 127\,cm.$

$\left[V = \frac{4}{3}\pi r^3 \right]$

6.

$\left[F_B = W_B + W_L \right]$

$\rho_{air} V_B g = \rho_{He} V_B g + W_L$

$5.4 \times 10^3 N.$