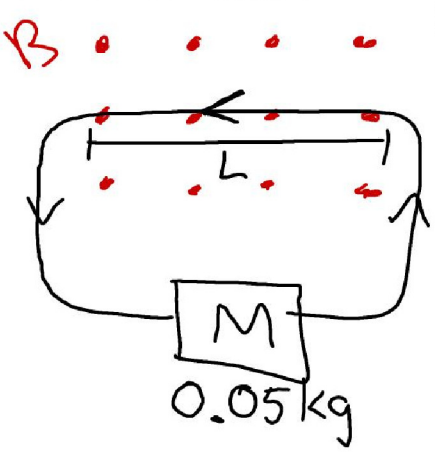
WS 12.2 #3



B = 3 T

L = 0.35 m

A) $I = ? = 0.46\,A$

$F_g = mg$

$F_B = BIL$

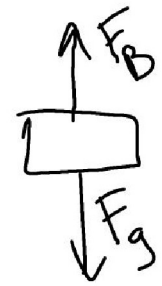
$\Sigma F = 0$

$F_B - F_g = 0$

$BIL - mg = 0$

$(3)I(0.35) - (0.05)(9.8)$

(B)



I is left (ccw)

LESSON BACKGROUNDS

12.3 P4

$I_1 = 3.5\,A$

0.02 m

$I_2 = 5.5\,A$

$F = BIL$

$\frac{F}{L} = BI$

$B_2 = \frac{\mu_0 I_2}{2\pi r} = \frac{(4\pi \times 10^{-7})(5.5)}{2\pi(0.02)}$

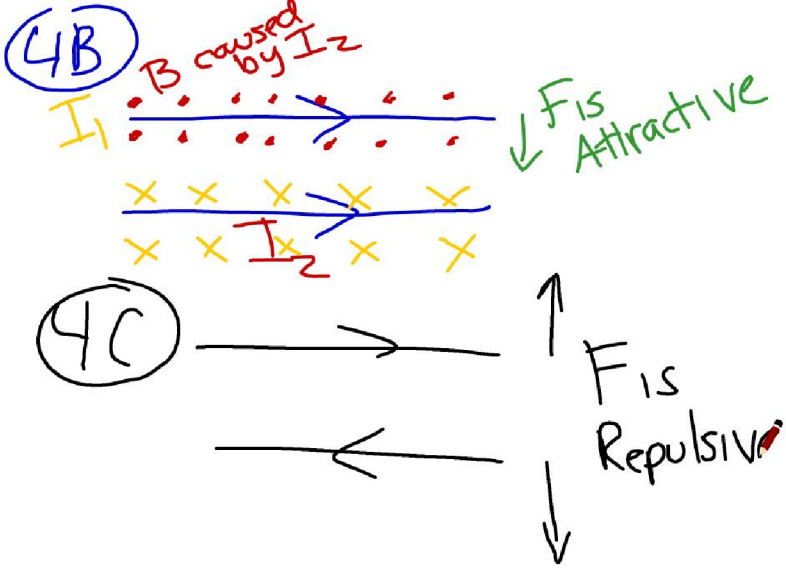
$= 5.5 \times 10^{-5}\,T$

A) $\frac{F}{L} = B_2 I_1$

$= (5.5 \times 10^{-5})(3.5)$

$= 1.925 \times 10^{-4}\,\frac{N}{m}$

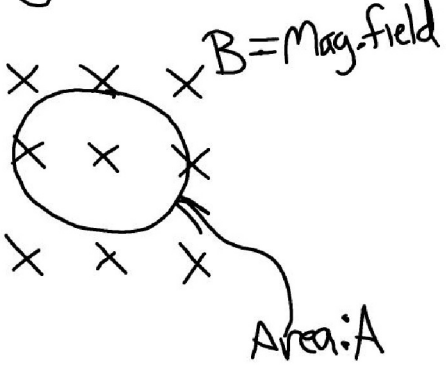
LESSON BACKGROUNDS



LESSON BACKGROUNDS

Flux (Magnetic)

Amount of magnetic field passing through a surface or area



$$\Phi = B \cdot A$$

flux

LESSON BACKGROUNDS

Faraday's Law

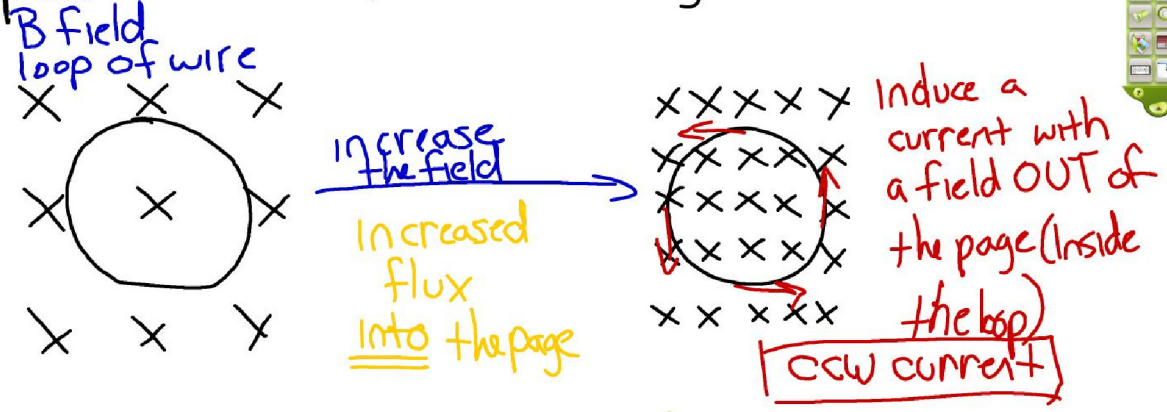
A changing magnetic flux gives rise to an induced EMF

$$\mathcal{E} = \frac{\Delta\Phi}{\Delta t} = \frac{(\Delta B)A}{\Delta t} = \frac{B(\Delta A)}{\Delta t}$$

↑ Voltage

LESSON | BACKGROUNDS

The induced EMF causes a current which causes a magnetic field (RHR2) which opposes (balances) the change in flux.



NEW LESSON | OPEN LESSON | LESSON | BACKGROUNDS | SAVE | SAVE AS | PRINT