

2012 FEB 27

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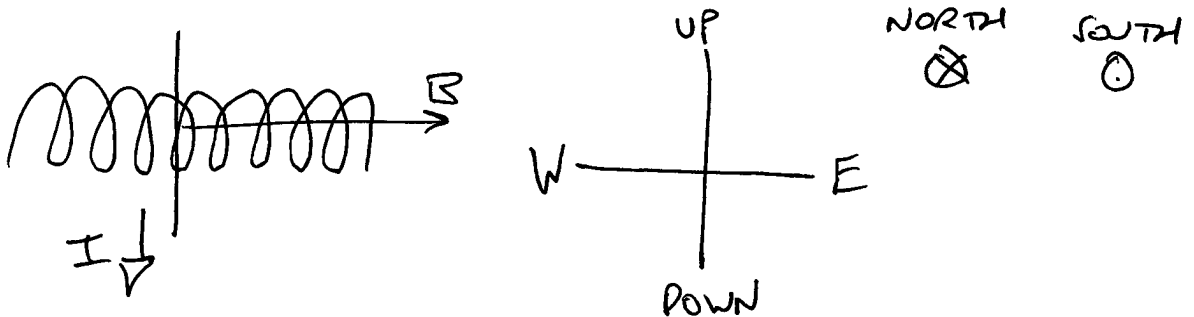
(66, Ch. 20, P 2)

$$\begin{aligned} F &= I l B \sin \theta \\ &= (150 \text{ A})(160 \text{ m})(5 \times 10^{-5} \text{ T}) \sin 65^\circ \\ &= 1.09 \text{ N} \end{aligned}$$

(66, Ch 20, P 50)

$$\begin{aligned} B &= \frac{\mu_0 N I}{l} = \frac{(4\pi \times 10^{-7} \text{ T}\cdot\text{m/A})(550)(33 \text{ A})}{(0.15 \text{ m})} \\ &= 0.152 \text{ T} \end{aligned}$$

$$\begin{aligned} F &= I l B \sin \theta \\ &= (22 \text{ A})(0.03 \text{ m})(0.152 \text{ T}) \sin 90^\circ \end{aligned}$$



$$F = 0.1 \text{ N SOUTH}$$

FARADAY'S LAW

- FARADAY'S LAW DESCRIBES THE THEORY OF HOW POWER PLANTS GENERATE ELECTRICITY.

- EMF

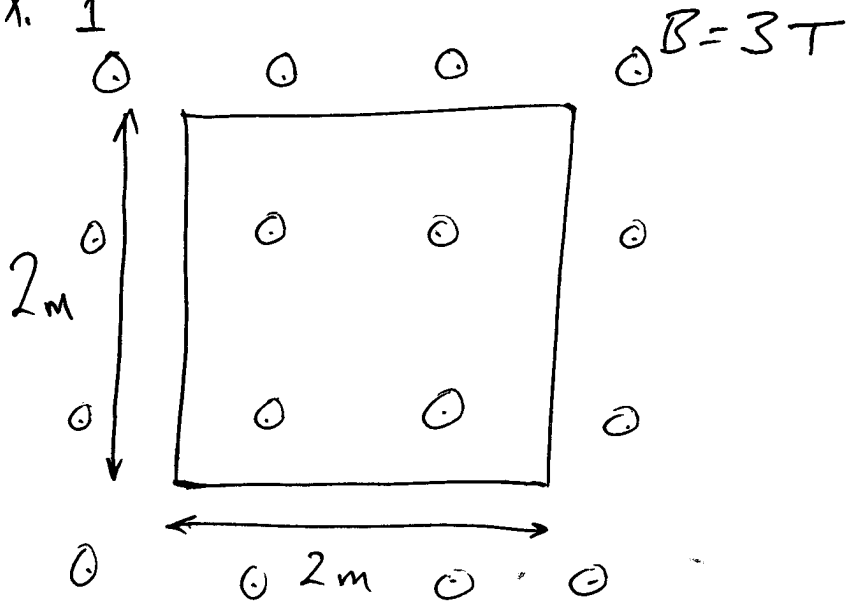
- A GENERALIZATION OF VOLTAGE
- MEASURED IN VOLTS
- LIKE VMPF (EMF) SYMBOL: \mathcal{E}

- MAGNETIC FLUX

- SYMBOL: Φ_B
- UNIT: WEBER (Wb) $Wb = T \cdot m^2$
- SETTING: NEED A SURFACE

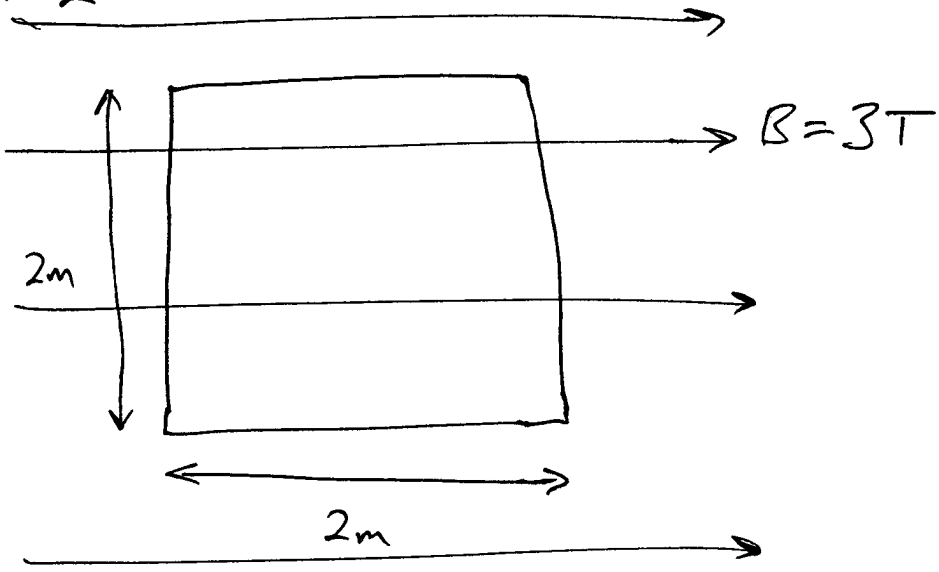
TALK ABOUT MAGNETIC FLUX
THROUGH A SURFACE.

EX. 1



$$\Phi_B = (3T)(4m^2) = 12 T \cdot m^2 = 12 Wb$$

EX. 2



$$\Phi_B = 0$$

$$\Phi_B = BA \cos \theta$$

MAGNETIC FLUX THROUGH SURFACE

MAGNETIC FIELD

AREA OF SURFACE

The diagram shows the equation $\Phi_B = BA \cos \theta$ at the top. Below it, three labels are connected to the equation by arrows: 'MAGNETIC FLUX THROUGH SURFACE' points to Φ_B , 'MAGNETIC FIELD' points to B , and 'AREA OF SURFACE' points to A .

$\theta =$ ANGLE BETWEEN \vec{B}
AND A VECTOR \perp TO SURFACE.