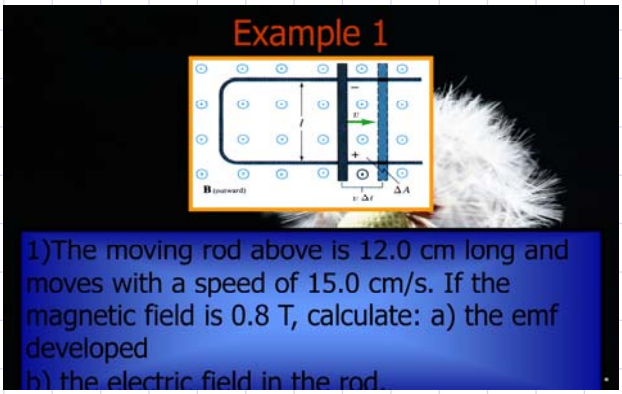
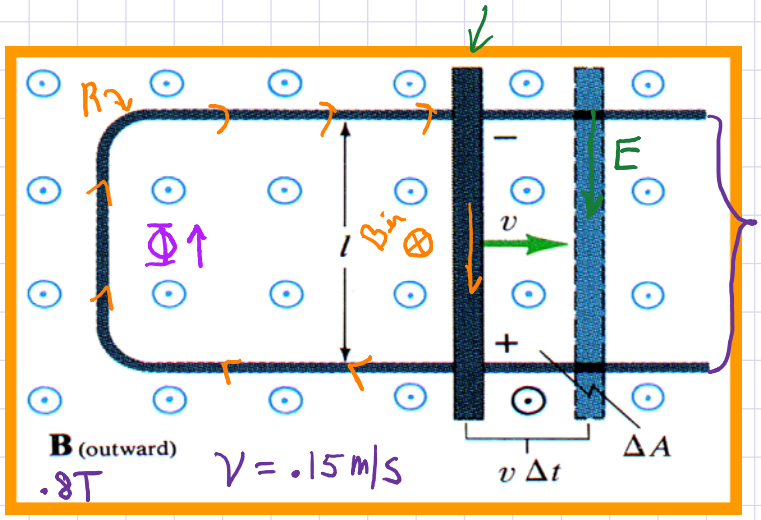
Example 1

Monday, April 20, 2015 7:40 AM





$$\mathcal{E} = -\frac{\Delta \Phi}{\Delta t} = -\frac{\Delta (BA)}{\Delta t}$$

$$\mathcal{E} = -B\frac{\Delta A}{\Delta t}$$

$$\mathcal{E} = -B\frac{V \Delta t l}{\Delta t}$$

$$\mathcal{E} = -BVl \qquad \frac{N}{m/s \cdot C}$$

$$\mathcal{E} = -(.8T)(.15\,m/s)(.12\,m)$$

$$\mathcal{E} = 1.44 \times 10^{-2} V$$

$$\Delta A = V \Delta t\, l$$

$$\frac{J}{C} = V$$

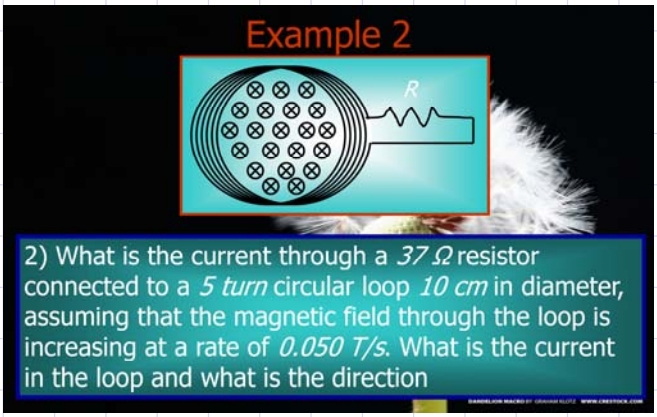
$$\mathcal{E} = iR$$

$$i = \frac{\mathcal{E}}{R}$$

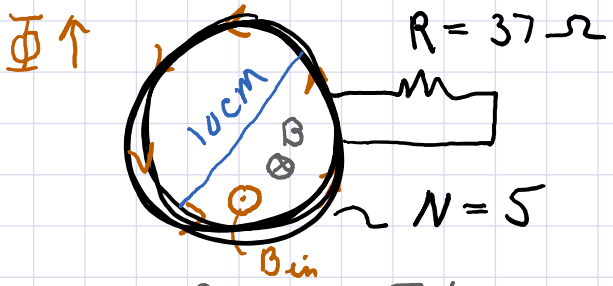
$$E = \frac{V}{l} = \frac{1.44 \times 10^{-2} V}{.12\,m} = 1.2 \times 10^{-1} N/C$$

Example 2

Monday, April 20, 2015 7:42 AM



$r = 5\,cm = .05\,m$



$B = .05\,T/s$

$$\mathcal{E} = -N\frac{\Delta(BA)}{\Delta t}$$

$$\mathcal{E} = -NA\frac{\Delta B}{\Delta t}$$

$$\mathcal{E} = -(5)(\pi)(.05m)^2(.05\,T/s)$$

$$\mathcal{E} = 1.96 \times 10^{-3}\,V$$

$$i = \frac{\mathcal{E}}{R} = \frac{1.96 \times 10^{-3}\,V}{37\,\Omega} = 5.3 \times 10^{-5}\,A$$