

Formulas

(you need very few of these!!)

$\vec{F} = \frac{k_0 q_1 q_2}{r^2} \hat{r}$	$\vec{E} = \frac{\vec{F}}{q_o}$	$\vec{F} = q\vec{E}$	$k_e = \frac{1}{4\pi\epsilon_0} = 9 \times 10^9 Nm^2/C^2$	
$E = \frac{k_0 q_1}{r^2}$	$\Delta V = \frac{\Delta PE}{q_0}$	$\Delta V = Ed$	$V = \frac{k_0 q}{r}$	$\Delta PE = q\Delta V$
$\sin = \frac{o}{h}$	$\cos = \frac{a}{h}$	$\tan = \frac{o}{a}$	$\tan 45^\circ = 1$	
$\sin 30^\circ = 0.5 = \cos 60^\circ, \cos 30^\circ = 0.866 = \sin 60^\circ$			$\sin 45^\circ = 0.707 = \cos 45^\circ$	
use $g = 10 \frac{m}{sec^2}$	1in = 2.5cm	$2\pi rad = 360^\circ$	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	
$C = \frac{Q}{V}$	$C = \frac{\epsilon_0 A}{d}$	$C_{eq} = \kappa C_{air}$	$C_{eq} = \sum_{j=1}^n C_j$	$\frac{1}{C_{eq}} = \sum_{j=1}^n \frac{1}{C_j}$
$V = IR$	$R = \frac{\rho L}{A}$		$P = IV = I^2 R = \frac{V^2}{R}$	
$R_{eq} = \sum_{j=1}^n R_j$	$\frac{1}{R_{eq}} = \sum_{j=1}^n \frac{1}{R_j}$			
$q = q_0 e^{-t/RC}$				
$\epsilon_0 = 8.85 \times 10^{-12} \frac{C^2}{N m^2}$				
$W = Fd \cos\theta$	$KE = \frac{1}{2}mv^2$		$F_g = \frac{GMm}{r^2}$	$U_g = mgh$

	$\omega = 2\pi f$		
	$B = \frac{\mu_0 I}{2\pi r}$	$F_B = qvB \sin \theta$	$F_B = IlB \sin \theta$
$\mu_0 = 4\pi \times 10^{-7} T \cdot m/A$		$\Delta PE = \frac{1}{2} LI^2$	$\frac{F_B}{l} = \frac{\mu_0 I_1 I_2}{2\pi d}$
$\Phi_M = BA_{\perp}$	$\varepsilon = -N \frac{\Delta \Phi_M}{\Delta t}$	$\varepsilon = vBl$	$N\Phi_M = LI$
$\varepsilon_0 = 8.85 \times 10^{-12} C^2/N \cdot m^2$	$X_c = \frac{1}{\omega C}$	$X_L = \omega L$	$Z = \sqrt{R^2 + (X_L - X_c)^2}$
$v = iZ$	$\frac{V_p}{V_s} = \frac{N_p}{N_s}$		
$\frac{1}{s_o} + \frac{1}{s_i} = (n_l - 1) \left(\frac{1}{R_1} - \frac{1}{R_2} \right)$	$n = \frac{c}{v}$	$\sin \theta_c = \frac{n_2}{n_1}$	$\frac{1}{f} = (n - 1) \left(\frac{1}{R_1} - \frac{1}{R_2} \right)$
$n_1 \sin \theta_1 = n_2 \sin \theta_2$	$n_1 \lambda_1 = n_2 \lambda_2$	$\Delta y \approx \frac{s}{a} m \lambda$	$I = I_0 \cos^2 \theta$
		$E = hf$	$h = 6.6 \times 10^{-34} J \cdot sec$
$\lambda = \frac{h}{mv}$	$\Delta t_M = \gamma \Delta t_s$	$\Delta L_M = \frac{\Delta L_s}{\gamma}$	$\gamma = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}}$
$E = mc^2$			

