Formulas (you need very few of these!!)

$x = x_0 + v_0 t + \frac{1}{2} a_x t^2$	$\sum \vec{F} = m\vec{a}$	$W = \int_{\vec{x}_i}^{\vec{x}_f} \vec{F}(x) \cdot d\vec{x}$	$T_c = \frac{5}{9}(T_f - 40) + 40$
$\vec{A} \cdot \vec{B} = \lvert A \rvert \lvert B \rvert \cos\theta$	$\vec{a} \times \vec{b} = \lvert a \rvert \lvert b \rvert \sin\phi \perp$ to both		$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
$\sin\theta = \frac{o}{h}$	$\cos\theta = \frac{a}{h}$	$\tan\theta = \frac{o}{a}$	**use,** $g = 10 \frac{m}{\sec^2}$
$\tan 45° = 1$	$\sin 30° = 0.5 = \cos 60°, \cos 30° = 0.866 = \sin 60°$		
$\sin 45° = 0.707 = \cos 45°$		$C = 2\pi r$	$A = \pi r^2$
$V = \frac{4}{3}\pi r^3$	$A_{cylinder} = 2\pi rh$	$A_{sphere} = 4\pi r^2$	$T_c = \frac{5}{9}(T_f - 40) + 40$
$\Delta L = L\alpha\Delta T$	$\Delta V = V\beta\Delta T$	$T_c = T_K + 273$	$T_F = \frac{9}{5} T_C + 32°$
$W = \int dW = \int_{V_i}^{V_f} p dV$	$\Delta E_{\text{int}} = Q - W$		$Q = cm(T_f - T_i)$
$Q = Lm$	$H = \frac{Q}{t} = kA \frac{T_h - Tc}{L}$		$P_r = \sigma\varepsilon AT^4$
$N_A = 6.02 \times 10^{23} \text{mol}^{-1}$	$pV = nRT$	$pV^\gamma = const$	$\overline{K} = \frac{3}{2} kT$
$W_{isothermal} = nRT \ln(\frac{V_i}{V_f})$	$v_{rms} = \sqrt{\frac{3RT}{M}}$		$k = 1.38 \times 10^{-23}$ J / K
$R = 8.31$ J/mol K	$\gamma = \frac{C_p}{C_v}$		$C_p = C_v + R$
$C_v = \frac{3}{2} R$ (ideal monatomic gas)	$E_{\text{int}} = nC_v T$		$\Delta E_{\text{int}} = nC_V \Delta T$
$\Delta S = S_f - S_i = \int_i^f \frac{dQ}{T}$	$\varepsilon = \frac{\lvert W \rvert}{\lvert Q_h \rvert}$	$K = \frac{\lvert Q_c \rvert}{\lvert W \rvert}$	$\varepsilon = 1 - \frac{\lvert Q_c \rvert}{\lvert Q_h \rvert} = 1 - \frac{T_c}{T_h}$
$K = \frac{\lvert Q_c \rvert}{\lvert Q_h \rvert - \lvert Q_c \rvert} = \frac{T_c}{T_h - T_c}$			

	$\Phi = \oint \vec{E} \cdot d\vec{A}$	$\varepsilon_0 \Phi = q_{enc}$	$\oint \vec{E} \cdot d\vec{A} = \frac{q_{enc}}{\varepsilon_0}$		
$\vec{F} = \frac{q_1 q_2}{4\pi\varepsilon_0 r^2}\hat{r}$	$\vec{E} = \frac{\vec{F}}{q_o}$	$\vec{E} = \frac{\lvert q \rvert}{4\pi\varepsilon_0 r^2}\hat{r}$	$d\vec{E} = \frac{\lvert dq \rvert}{4\pi\varepsilon_0 r^2}\hat{r}$		
$q = \lambda L$	$dq = \lambda ds$	$q = \sigma A$	$dq = \sigma dA$	$q = \rho V$	$dq = \rho dV$
$\varepsilon_0 = 8.85 \times 10^{-12}\, \mathrm{C^2/N\,m^2}$	$k_e = \frac{1}{4\pi\varepsilon_0} = 8.99 \times 10^9\, Nm^2/C^2$				
$V = -\vec{E} \cdot \vec{d}$	$\Delta U = q\Delta V$	$V = \frac{q}{4\pi\varepsilon_0 r}$	$E_x = -\frac{\partial V}{\partial x}$	$E_y = -\frac{\partial V}{\partial y}$	$E_z = -\frac{\partial V}{\partial z}$
$C = \frac{q}{V}$	$C = \frac{\varepsilon_0 A}{d}$	$C_{eq} = \sum_{j=1}^{n} C_j$	$\frac{1}{C_{eq}} = \sum_{j=1}^{n} \frac{1}{C_j}$		
$U = \frac{q^2}{2C} = \frac{1}{2}CV^2$	$C_{eq} = \kappa C_{air}$	$U_B = \frac{1}{2}Li^2$			
$i = \frac{dq}{dt}$	$i = \int \vec{J} \cdot d\vec{A}$	$R = \frac{V}{i}$	$\rho = \frac{1}{\sigma} = \frac{E}{J}$	$R = \frac{\rho L}{A}$	
$R = R_0[1 + \alpha(\Delta T)]$	$P = iV$	$P = i^2 R = \frac{V^2}{R}$	$R_{eq} = \sum_{j=1}^{n} R_j$	$\frac{1}{R_{eq}} = \sum_{j=1}^{n} \frac{1}{R_j}$	
$q = CV(1 - e^{-t/RC})$	$i = \frac{dq}{dt} = \frac{V}{R} e^{-t/RC}$	$q = q_0 e^{-t/RC}$	$i = \frac{dq}{dt} = -\frac{q_0}{RC} e^{-t/RC}$		
$F_B = q\vec{v} \times \vec{B}$	$qvB = \frac{mv^2}{r}$	$F_B = i\vec{L} \times \vec{B}$	$dF_B = id\vec{L} \times \vec{B}$	$\tau = \vec{\mu} \times \vec{B}$	
$\mu = NiA$	$\varepsilon_L = -L\frac{di}{dt}$	$L = \frac{N\Phi_B}{i}$	$d\vec{B} = \frac{\mu_0 i}{4\pi} \frac{d\vec{s} \times \vec{r}}{r^3}$		
$\oint \vec{B} \cdot d\vec{s} = \mu_0 i_{enc}$	$B = \mu_0 in$	$B = \frac{\mu_0 i}{2\pi r}$	$\Phi_B = B \cdot A$		
$\varepsilon = -\frac{d\Phi_B}{dt}$	$\varepsilon = vlB$	$V_s = V_p \frac{N_s}{N_p}$	$I_s = I_p \frac{N_p}{N_s}$		
$I = \frac{\varepsilon_m}{Z}$	$V_{rms} = \frac{\varepsilon_m}{\sqrt{2}}$	$X_L = \omega_d L$	$X_C = \frac{1}{\omega_d C}$	$Z = \sqrt{R^2 + (X_L - X_C)^2}$	$\tan\varphi = \frac{X_L - X_C}{R}$