$F = \frac{kQ_1Q_2}{r^2}$ (Point Charges)

$E = \frac{kQ}{r^2}$ (Point Charge)

$\vec{F} = q\vec{E}$

$\Phi_E = EA\cos\theta$

$\Phi_E = \frac{Q_{encl}}{\varepsilon_0}$

$V = \frac{kQ}{r}$ (Point Charge)

$PE = qV$ $\quad PE = \frac{kQ_1Q_2}{r}$

$E = \frac{\sigma_{surface}}{\varepsilon_0}$ (Charged surface of conductor)

$V = Ed$ (Constant E)

$I = \frac{\Delta Q}{\Delta t}$

$V = IR$

$W = q(V_i - V_f) = \Delta KE$

$R = \frac{\rho L}{A}$

$P = IV = I^2R = \frac{V^2}{R}$

$d\sin\theta = m\lambda$ (double slit max)

$d\sin\theta = \left(m + \frac{1}{2}\right)\lambda$ (double slit min)

$D\sin\theta = m\lambda$ (single slit min)

$2t = m\lambda_{film}$ (thin film, bright or dark)

$k = 9.0\times10^9 \frac{Nm^2}{C^2}$ $\quad \varepsilon_0 = 8.85\times10^{-12}\frac{C^2}{Nm^2}$

$k = \frac{1}{4\pi\varepsilon_0}$ $\quad \mu_0 = 4\pi\times10^{-7}\frac{T\cdot m}{A}$

1 electron $= -1.60\times10^{-19}$ C $\quad$ g = 9.8 m/s^2

$Q = CV$ $\quad PE = \frac{1}{2}CV^2 = \frac{1}{2}QV = \frac{1}{2}\frac{Q^2}{C}$

$C = \frac{\varepsilon_0 A}{d}$ (Parallel Plates) $\quad \tau = RC$

$C = K\frac{\varepsilon_0 A}{d}$ (Dielectric)

$I = I_o e^{-t/\tau}$

$V = V_o(1 - e^{-t/\tau})$

$V = V_o e^{-t/\tau}$

$R_{eq} = R_1 + R_2 + \ldots$ (Series Resistors)

$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \ldots$ (Parallel Resistors)

$\frac{1}{C_{eq}} = \frac{1}{C_1} + \frac{1}{C_2} + \ldots$ (Series Capacitors)

$C_{eq} = C_1 + C_2 + \ldots$ (Parallel Capacitors)

$F = qvB\sin\theta$ $\quad B_{wire} = \frac{\mu_o I}{2\pi r}$ $\quad r = \frac{mv}{qB}$

$F = IlB\sin\theta$ $\quad B_{solenoid} = \frac{\mu_o IN}{L}$ (N loops)

$F = \frac{\mu_o I_1 I_2 l}{2\pi r}$

$\Phi_B = BA\cos\theta$ $\quad |\varepsilon| = \left|N\frac{\Delta\Phi_B}{\Delta t}\right|$

$|\varepsilon| = |Blv|$

$\frac{V_S}{V_P} = \frac{N_S}{N_P} = \frac{I_P}{I_S}$

$\theta_i = \theta_r$

$n_1\sin\theta_1 = n_2\sin\theta_2$ $\quad m = \frac{h_i}{h_o} = -\frac{d_i}{d_o}$

$\sin\theta_c = \frac{n_2}{n_1}$ $\quad \frac{1}{d_o} + \frac{1}{d_i} = \frac{1}{f}$

$\gamma = \frac{1}{\sqrt{1 - \left(\frac{v}{c}\right)^2}}$ $\quad \Delta t = \gamma\Delta t_0$

$L = L_0/\gamma$

$p = \gamma m_0 v$

$E = \gamma m_0 c^2 = E_o + KE_{rel}$

$E_o \equiv m_o c^2$ $\quad KE = (\gamma - 1)m_o c^2$

$E_{ph} = pc = hf = \frac{hc}{\lambda} = \frac{1239.8\text{ eV - nm}}{\lambda\text{ (nm)}}$

$KE_{max} = E - W_0$ $\quad \lambda = \frac{h}{p}$

$E_n = -(13.6\text{ eV})\frac{Z^2}{n^2}$ $\quad r_n = (0.529\text{x}10^{-10}\text{ m})\frac{n^2}{Z}$

$r = 1.2\times10^{-15}m\times A^{1/3}$

$E_{bind} = \left[\left(\sum m_D\right) - m_P\right]c^2$

$N(t) = N_o e^{-\lambda t}$ $\quad \frac{\Delta N}{\Delta t} = -\lambda N$ $\quad T_{1/2} = \frac{\ln(2)}{\lambda} = \frac{0.693}{\lambda}$

$m_e = 9.11\times10^{-31}kg$

$1\text{ eV} = 1.60\text{x}10^{-19}$ Joules

$h = 6.626\times10^{-34}$ J·s

$1u = 1.6605x10^{-27}kg = 931.5\frac{\text{MeV}}{\text{c}^2}$