$$\mu_0 = 4\pi \times 10^{-7} T\,m/A = 1.26 \times 10^{-6} T\,m/A$$
$$k = \frac{1}{4\pi\epsilon_0} = 8.99 \times 10^9\ N \cdot m^2/C^2$$
$$\epsilon_0 = 8.85 \times 10^{-12}\ C^2/\left(N \cdot m^2\right)$$
$$e = 1.60 \times 10^{-19}\ C$$
$$G = 6.67 \times 10^{-11}\ N \cdot m^2/kg^2$$
$$h = 6.626 \times 10^{-34} J \cdot s$$
$$g = 9.8 m/s^2$$
$$c = 3.00 \times 10^8 m/s$$
$$N_\mathrm{A} = 6.02 \times 10^{23}\ \mathrm{mol}^{-1}$$
$$m_\mathrm{e} = 9.11 \times 10^{-31}\ kg$$
$$m_\mathrm{p} = 1.67 \times 10^{-27}\ kg$$
$$1\ \mathrm{m} = 3.28\ \mathrm{ft}$$
$$1\ \mathrm{lb} = 4.45\ N$$
$$1\ \mathrm{eV} = 1.6 \times 10^{-19} J$$
$$\rho_\mathrm{aluminum} = 2.75 \times 10^{-8} \Omega \cdot m$$
$$\rho_\mathrm{silver} = 1.47 \times 10^{-8} \Omega \cdot m$$
$$\rho_\mathrm{copper} = 1.72 \times 10^{-8} \Omega \cdot m$$
$$\rho_\mathrm{gold} = 2.44 \times 10^{-8} \Omega \cdot m$$
$$\rho_\mathrm{steel} = 20 \times 10^{-8} \Omega \cdot m$$
$$\vec{C} = \vec{A} \times \vec{B} \rightarrow \text{thumb} = \text{fingers} \times \text{palm}$$
$$F = k\frac{|q_1||q_2|}{r^2}$$
$$dq = i\ dt$$
$$q = ne$$
$$\vec{E} = \frac{\vec{F}}{q_0}$$
$$E = \frac{1}{4\pi\epsilon_0}\frac{|q|}{r^2}$$
$$E = \frac{qz}{4\pi\epsilon_0 \left(z^2 + R^2\right)^{3/2}} \quad \text{(ring)}$$
$$E = \frac{\sigma}{2\epsilon_0}\left(1 - \frac{z}{\sqrt{z^2 + R^2}}\right) \quad \text{(disk)}$$
$$\Phi = \oint \vec{E} \cdot d\vec{A}$$
$$\epsilon_0 \Phi = q_\mathrm{enc}$$
$$\epsilon_0 \oint \vec{E} \cdot d\vec{A} = q_\mathrm{enc}$$
$$E = \frac{\sigma}{\epsilon_0} \quad \text{(surface)}$$
$$E = \frac{\sigma}{2\epsilon_0} \quad \text{(sheet)}$$
$$E = \frac{\lambda}{2\pi\epsilon_0 r} \quad \text{(line)}$$
$$V \equiv \frac{U}{q} = \frac{-W}{q}$$
$$\Delta V \equiv \frac{K_2 - K_1}{q}$$
$$\Delta V = V_f - V_i = -\int_i^f \vec{E} \cdot d\vec{s}$$
$$V = \frac{1}{4\pi\epsilon_0}\frac{q}{r}$$
$$V = \Sigma_i \frac{1}{4\pi\epsilon_0}\frac{q_i}{r_i}$$
$$V = \int dv = k\int \frac{dq}{r}$$
$$qV = \frac{1}{2}mv^2$$
$$E_s = -\frac{\partial V}{\partial s}$$
$$E_x = -\frac{\partial V}{\partial x}$$
$$E = -\frac{\Delta V}{\Delta x}$$
$$U = \frac{kq_1q_2}{r}$$
$$W = \vec{F} \cdot \vec{d} = q\vec{E} \cdot \vec{d} = qEd\cos\phi$$
$$q = CV$$
$$C = \frac{\epsilon_0 A}{d} \quad \text{parallel}$$
$$E = \frac{Q}{A\epsilon_0}$$
$$C_\mathrm{eq} = \Sigma_{j=1}^n C_j$$
$$C_\mathrm{eq} = \frac{1}{\Sigma_{j=1}^n \frac{1}{C_j}}$$
$$U = \frac{q^2}{2C} = \frac{1}{2}CV^2$$
$$I \equiv \frac{dq}{dt}$$
$$I = \int \mathbf{J} \cdot d\mathbf{A}$$
$$J = \frac{I}{A}$$
$$V = IR$$
$$\rho \equiv \frac{E}{J}$$
$$\mathbf{E} = \rho\mathbf{J}$$
$$\sigma \equiv \frac{1}{\rho}$$
$$R = \rho\frac{L}{A}$$
$$P = I^2R$$
$$P = \frac{V^2}{R}$$
$$P = \frac{E}{t}$$

$$P = IV$$
$$\mathcal{E} = \frac{dW}{dq}$$
$$i = \frac{\mathcal{E}}{R}$$
$$R_{\text{eq}} = \Sigma_{j=1}^{n} R_j \quad \text{(series)}$$
$$\frac{1}{R_{\text{eq}}} = \Sigma_{j=1}^{n} \frac{1}{R_j} \quad \text{(parallel)}$$
$$P_{\text{emf}} = i\mathcal{E}$$
$$q = q_0 e^{-t/RC}$$
$$T_{1/2} = RC \ln 2$$
$$\vec{F}_B = q\vec{v} \times \vec{B}$$
$$F_B = |q| vB \sin\phi$$
$$|q|vB = \frac{mv^2}{r}$$
$$r = \frac{mv}{|q|B}$$
$$T = \frac{2\pi m}{qB}$$
$$f = \frac{qB}{2\pi m}$$
$$\omega = \frac{qB}{m}$$
$$\vec{F}_B = I\vec{L} \times \vec{B}$$
$$d\vec{F}_B = I\, d\vec{L} \times \vec{B}$$
$$\vec{B} = \frac{\mu_0}{4\pi} \frac{q\ \vec{v} \times \hat{r}}{r^2}$$
$$d\vec{B} = \frac{\mu_0}{4\pi} \frac{I\ d\vec{L} \times \hat{r}}{r^2}$$
$$B = \frac{\mu_0 I}{2\pi r} \quad \text{(long straight wire)}$$
$$B = \frac{\mu_0 I \phi}{4\pi R} \quad \text{(arc)}$$
$$F_{ba} = \frac{\mu_0 L I_a I_b}{2\pi d} \quad \text{(two straight wires)}$$
$$\oint \vec{B} \cdot d\vec{s} = \mu_0 I_{\text{enc}}$$
$$B = \mu_0 I n \quad \text{(solenoid)}$$
$$B = \frac{\mu_0 I N}{2\pi} \frac{1}{r} \quad \text{(toroid)}$$
$$\Phi_B = \int \vec{B} \cdot d\vec{A} \quad \text{(magnetic flux)}$$
$$\Phi_B = BA$$
$$\mathcal{E} = -\frac{d\Phi_B}{dt} \quad \text{(Faraday's Law)}$$
$$\mathcal{E} = BLv$$
$$\oint \vec{E} \cdot d\vec{s} = -\frac{d\Phi_B}{dt}$$
$$L = \frac{N\Phi}{I} \quad \text{(inductance)}$$
$$\frac{L}{l} = \mu_0 n^2 A \quad \text{(solenoid)}$$
$$\mathcal{E}_L = -L\frac{di}{dt}$$
$$L\frac{dI}{dt} + Ri = \mathcal{E}$$
$$i_{\text{rms}} = \frac{i}{\sqrt{2}}$$
$$V_2 = \frac{N_2}{N_1} V_1$$
$$E = cB$$
$$\vec{v} \propto \vec{E} \times \vec{B}$$
$$c = \lambda f$$
$$n = \frac{c}{v}$$
$$I = \frac{1}{2} I_0 \quad \text{(unpolarized)}$$
$$I = I_0 \cos^2\theta \quad \text{(polarized)}$$
$$\theta_1' = \theta_1 \quad \text{(reflection)}$$
$$n_2 \sin\theta_2 = n_1 \sin\theta_1 \quad \text{(refraction)}$$
$$\theta_c = \sin^{-1} \frac{n_2}{n_1}$$
$$s' = -s$$
$$f = \pm\frac{r}{2} \quad \text{(spherical)}$$
$$\frac{1}{s} + \frac{1}{s'} = \frac{1}{f}$$
$$m = \frac{-s'}{s} \quad \text{(magnification)}$$
$$\gamma = \frac{1}{\sqrt{1-(v/c)^2}}$$
$$\Delta t = \gamma \Delta t_0 = \frac{\Delta t_0}{\sqrt{1-(v/c)^2}}$$
$$L = \frac{L_0}{\gamma} = L_0\sqrt{1-(v/c)^2}$$
$$v = \frac{v_1 + v_2}{1 + v_1 v_2/c^2}$$
$$p = \gamma m v$$
$$K = (\gamma - 1)\, mc^2$$
$$E = \gamma mc^2$$
$$E = hf$$
$$\lambda = \frac{h}{p}$$
$$\Delta x\, \Delta p \geq \frac{h}{4\pi} \quad \Delta t\, \Delta E \geq \frac{h}{4\pi}$$