$$e = 1.6 \times 10^{-19}\ C \qquad m_e = 9.11 \times 10^{-31}\ kg \qquad m_p = 1.67 \times 10^{-27}\ kg$$

$$k = 9 \times 10^{9}\ Nm^2/C^2 \qquad I = \frac{\Delta Q}{\Delta t}$$

$$W = \Delta Q\mathcal{E} \qquad V = IR \qquad R = \rho\left(\frac{L}{A}\right)$$

$$P = IV \qquad R = R_1 + R_2 + R_3 + \cdots \qquad \frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \cdots$$

$$C = C_1 + C_2 + C_3 + \cdots \qquad \frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3} + \cdots$$

$$\mu_0 = 4\pi \times 10^{-7}\ T\ m/\ A \qquad F = |q|vB\sin\theta \qquad r = mv/|q|B$$

$$F = ILB\sin\theta \qquad \tau = NIAB\sin\theta \qquad B = \frac{\mu_0 I}{2\pi r}$$

$$F = \frac{\mu_0 I_1 I_2}{2\pi d}L \qquad B = \frac{N\mu_0 I}{2R} \qquad B = \mu_0 nI$$

$$\Phi = BA\cos\theta \qquad \mathcal{E} = -N\frac{\Delta\Phi}{\Delta t} \qquad |\mathcal{E}| = Bvl$$