\[ v_f = v_i + at \]
\[ d = \frac{1}{2}(v_i + v_f)t \]
\[ d = v_it + \frac{1}{2}at^2 \]
\[ v_f^2 = v_i^2 + 2ad \]
\[ v = \frac{d}{t} \]
\[ F_{net} = ma \]
\[ F_g = \frac{Gm_1m_2}{r^2} = mg \]
\[ F_s \leq \mu_s N \]
\[ F_k = \mu_k N \]
\[ a_c = \frac{v_f^2}{r} \]
\[ v_c = \frac{2\pi r}{T} \]
\[ F_s = -kx \]
\[ p = mv \]
\[ I = F\Delta t \]
\[ KE = \frac{1}{2}mv^2 \]
\[ PE_g = \frac{Gm_1m_2}{r} = mgh \]
\[ W = Fd \]
\[ P = \frac{W}{t} = Fv \]
\[ PE_s = \frac{1}{2}kx^2 \]
\[ F_E = \frac{kq_1q_2}{r^2} \]
\[ F_E = qE \]
\[ PE_E = \frac{kq_1q_2}{r} = qV \]

\( v \) = velocity
\( a \) = acceleration
\( t \) = time
\( d \) or \( x \) = displacement
\( F_{net} \) = net force
\( m \) = mass or order number
\( F_g \) = force due to gravity
\( G \) = gravitational constant
\( r \) = radius
\( g \) = acceleration due to gravity
\( F_s \) = spring force or static force
\( \mu_s \) = coefficient of static friction
\( \mu_k \) = coefficient of kinetic friction
\( a_c \) = centripetal acceleration
\( v_c \) = tangential velocity
\( T \) = period
\( k \) = spring constant or Coulomb’s constant
\( p \) = momentum
\( I \) = impulse
\( F \) = force
\( KE \) = kinetic energy
\( PE_g \) = gravitational potential energy
\( h \) = height
\( W \) = work
\( P \) = power
\( PE_s \) = spring potential energy
\( F_E \) = electrostatic force
\( q \) = charge
\( E \) = electric field
\( PE_E \) = electric potential energy
\( V \) = electric potential

equations continued on next page
$V = \frac{kq_1}{r}$

$V = IR$

$I = \frac{q}{t}$

$P = IV$

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

$F_B = qvB$

$F_B = BIl$

$T_p = 2\pi\sqrt{\frac{l}{g}}$

$T = \frac{1}{f}$

$f = \frac{1}{T}$

$v = \lambda f$

$n = \frac{c}{v}$

$n_1 \sin \Theta_1 = n_2 \sin \Theta_2$

$\sin \Theta_c = \frac{n_2}{n_1}$

$\frac{1}{f} = \frac{1}{d_i} + \frac{1}{d_o}$

$M = \frac{h_i}{h_o} = -\frac{d_i}{d_o}$

$f = \frac{R}{2}$

$y_{min} \approx \frac{L\lambda m}{a}$

$y_{max} \approx \frac{L\lambda m}{b}$

$E = \Delta mc^2$

$m_{remaining} = m_{initial} \left(\frac{1}{2}\right)^{\#HLs}$

$\#HLs = \frac{t_{total}}{t_{half-life}}$