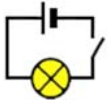
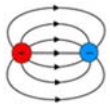



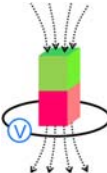




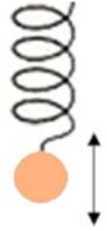

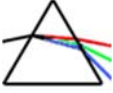

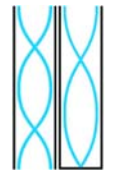

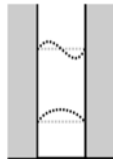

	$W = F s$
	$E = P t$
	$P = U I$
	$I = \frac{\Delta Q}{\Delta t}$
	$R = \frac{U}{I}$
	$E = \frac{F}{q}$
	$E = k \frac{Q}{r^2} \quad k = \frac{1}{4 \pi \epsilon_0 \epsilon_r}$
	$F = k \frac{Q_1 Q_2}{r^2}$
	$\Delta V = \frac{\Delta E_p}{q}$
	$V = k \frac{Q}{r}$
	$W = Q U$
	$E = \frac{\Delta V}{d} = \frac{U}{d}$
	$Q = C U$
	$W = \frac{1}{2} C U^2$

	$B = \mu n l \quad n = N/l$
	$F = B I l \sin \theta$
	$F = B q v \sin \theta$
	$W = \frac{1}{2} L I^2$
	$\Phi = B_{\perp} A$
	$\varepsilon = - \frac{\Delta \Phi}{\Delta t}$
	$F_G = G \frac{m_1 m_2}{r^2}$
	$g = \frac{F_G}{m}$
	$g = G \frac{M}{r^2}$
	$\Delta V = \frac{\Delta E_p}{m}$
	$V = -G \frac{M}{r}$
	$\Delta E_p = m g \Delta h$

	$E_{\text{kin}} = \frac{1}{2} m v^2$
	$p = m v$
	$F = m a$
	$v = \frac{\Delta s}{\Delta t} \quad a = \frac{\Delta v}{\Delta t}$
	$s(t) = s_0 + v_0 t + \frac{1}{2} a t^2$
	$v(t) = v_0 + a t$
	$\omega = \frac{\Delta \theta}{\Delta t} = \frac{v}{r}$
	$a_{\text{cent}} = \frac{v^2}{r} = \omega^2 r$
	$f = \frac{1}{T} \quad \omega = 2 \pi f$
	$F = -k y$
	$a = -\omega^2 y$
	$y = A \sin(\omega t)$
	$\omega_0 = \frac{1}{\sqrt{L C}}$
	$v = f \lambda$
	$y(x, t) = A \sin\left(2\pi\left(\frac{t}{T} - \frac{x}{\lambda}\right)\right)$
	$f_o = f_s \left(\frac{v \pm u_o}{v}\right)$
	$f_o = f_s \left(\frac{v}{v \pm u_s}\right)$

	$\alpha_i = \alpha_r$
	$\frac{\sin \alpha_1}{\sin \alpha_2} = \frac{n_2}{n_1} = \frac{c_1}{c_2}$
	$n \lambda = d \sin \alpha_n$
	$\frac{\Delta y}{D} = \frac{\lambda}{d}$
	$d = \frac{\lambda}{2}$
	$L = n \frac{\lambda}{2} \quad n = 1, 2, 3, \dots$
	$L = n \frac{\lambda}{4} \quad n = 1, 3, 5, \dots$
	$E_\gamma = h f$
	$E_k = h f - W_0$
	$p_\gamma = \frac{h}{\lambda}$
	$\lambda = \frac{h}{p}$
	$\Delta x \Delta p \geq \frac{h}{4\pi}$ $\Delta E \Delta t \geq \frac{h}{4\pi}$
	$E_n = \frac{h^2}{8 m L^2} n^2$
	$E_n = -\frac{13.6 \text{ eV}}{n^2}$
	$W = h f =  E_n - E_m $

$e$	$= 1.602\ 176\ 634 \times 10^{-19} \text{ C}$	
$\epsilon_0$	$= 8.854\ 187\ 81 \times 10^{-12} \text{ A s V}^{-1} \text{ m}^{-1}$	
$\mu_0$	$= 1.256\ 637\ 062 \times 10^{-6} \text{ V s A}^{-1} \text{ m}^{-1}$ $= 4\pi \times 10^{-7} \text{ V s A}^{-1} \text{ m}^{-1}$	
$G$	$= 6.674\ 30 \times 10^{-11} \text{ m}^3 \text{ kg}^{-1} \text{ s}^{-2}$	
$c$	$= 2.997\ 924\ 58 \times 10^8 \text{ m s}^{-1}$	
$h$	$= 6.626\ 070\ 15 \times 10^{-34} \text{ J s}$	
1u	$= 1.660\ 539\ 066 \times 10^{-27} \text{ kg}$	
$m_e$	$= 9.109\ 383\ 70 \times 10^{-31} \text{ kg}$	
$m_p$	$= 1.672\ 621\ 923 \times 10^{-27} \text{ kg}$	
$m_n$	$= 1.674\ 927\ 498 \times 10^{-27} \text{ kg}$	
$M$	$= 5.97 \times 10^{24} \text{ kg}$	
$R$	$= 6.38 \times 10^6 \text{ m}$	
$g$	$= 9.81 \text{ m s}^{-2}$	

$10^{15}$	P	$10^2$	h	$10^{-3}$	m
$10^{12}$	T	$10^1$	da	$10^{-6}$	$\mu$
$10^9$	G	$10^0$		$10^{-9}$	n
$10^6$	M	$10^{-1}$	d	$10^{-12}$	p
$10^3$	k	$10^{-2}$	c	$10^{-15}$	f

$L, s$	m
$m$	kg
$t$	s
$I$	A
$v$	$\text{m s}^{-1}$
$a$	$\text{m s}^{-2}$
$p$	$\text{kg m s}^{-1}$
$\alpha, \theta, \dots$	$\alpha = \alpha \text{ rad} = \alpha^\circ \times \frac{2\pi}{360^\circ}$
$\omega$	$\text{s}^{-1} (= \text{rad s}^{-1})$
$F$	$\text{N} = \text{kg m s}^{-2}$
$E, W$	$\text{J} = \text{N m} = \text{W s}$
$P$	$\text{W} = \text{J s}^{-1} = \text{N m s}^{-1}$
$f$	$\text{Hz} = \text{s}^{-1}$
$Q$	$\text{C} = \text{A s}$
$I$	$\text{A} = \text{C s}^{-1}$
$R$	$\Omega = \text{V A}^{-1}$
$U, V$	$\text{V} = \text{J A}^{-1} \text{ s}^{-1}$
$E$	$\text{V m}^{-1} = \text{N C}^{-1}$
$C$	$\text{F} = \text{C V}^{-1}$
$B$	$\text{T} = \text{V s m}^{-2}$
$\Phi$	$\text{Wb} = \text{V s}$
$L$	$\text{H} = \text{V s A}^{-1}$

