The Table of *Friends* - Algebra Based Physics

Name:	:	Units (SI):	Equation(s)
Relative Error	E_r	Percentage (%)	$E_r = \frac{O-A}{A} \times 100$
Displacement	Δx	Length (m)	$\Delta \vec{x} = x_f - x_i$
Speed	speed	Length / Time (m/s)	$speed = \frac{\text{distance}}{time}$
Velocity	v	Length / Time (m/s)	$\vec{v}_{avg} = \frac{\Delta x}{\Delta t}$
Acceleration	a	Length / Time^2 (m/s^2)	$\vec{a}_{avg} = \frac{\Delta v}{\Delta t}$
Force	F	Newtons, N (kg·m/s^2)	$\sum \vec{F} = m\vec{a}$
Coefficient of Friction	μ	none	$F_f = \mu F_N$
Work	W	Joules, J (N·m)	$W = Fd\cos\theta$
Mechanical Energy	ME	Joules, J (N·m)	$KE = \frac{1}{2}mv^2;\ PE_g = mgh;\ PE_e = \frac{1}{2}kx^2$
Spring Constant	k	N/m	$PE_e = \frac{1}{2}kx^2$ & $F_s = -kx$
Power	P	Watts, W (J/s)	$P = \frac{Work}{Time} = \frac{Fd\cos\theta}{t} = F\vec{v}\cos\theta$
Momentum	p	Kg·m/s (or N·s)	$\vec{p} = m\vec{v}$
Impulse	J	N·s (or Kg·m/s)	$\vec{J} = \vec{F}_{avg}\Delta t = \Delta\vec{p}$
Arc Length	s	M	$s = r\theta$
Angular Displacement	Δθ	radians (degrees, rev)	$\Delta\theta = \theta_f - \theta_i$
Angular Velocity	ω	rad/sec (rev/min)	$\omega = \frac{\Delta\theta}{\Delta t}$
Angular Acceleration	α	rad/sec^2	$\alpha = \frac{\Delta\omega}{\Delta t}$
Tangential Velocity	v_t	m/s	$v_t = r\omega$
Tangential Acceleration	a_t	m/s^2	$a_t = r\alpha$ (always tangent)
Centripetal Acceleration	a_c	m/s^2	$a_c = r\omega^2 = \frac{v_t^2}{r}$ (always in)
Centripetal Force	$\sum \vec{F}_{in}$	Netwons, N	$\sum \vec{F}_{in} = m\vec{a}_c$
Amplitude	A	m or º or rad	None
Period	T	Sec or sec/cycle	$T = 2\pi\sqrt{\frac{L}{g}}$ & $T = 2\pi\sqrt{\frac{m}{k}}$
Frequency	f	Hz (cycles/sec)	$f = \frac{1}{T}$
Wavelength	λ	m	$v = f\lambda$