ROTATIONAL MOTION EQUATIONS

	ANGULAR QUANTITIES	LINEAR QUANTITIES	ANGULAR-LINEAR CONVERSIONS
Displacement	$\theta = l/r$	$\mathbf{d}$	$l = r\theta$
Velocity	$\bar{\omega} = \theta/\Delta t$, $\omega = 2\pi f$	$\bar{\mathbf{v}} = \mathbf{d}/\Delta t$	$v = r\omega$
Acceleration	$\alpha = \Delta\omega/\Delta t = (\omega - \omega_o)/t$	$\mathbf{a} = \Delta\mathbf{v}/\Delta t = (\mathbf{v} - \mathbf{v}_o)/t$	$a_T = r\alpha$, $a_C = r\omega^2$
Inertia	$I = \Sigma mr^2$, $I = Mk^2$	m	
Force	$\tau = r \times \mathbf{F} = I\alpha = \Delta\mathbf{L}/\Delta t$	$\mathbf{F} = m\mathbf{a} = \Delta\mathbf{p}/\Delta t$	$\tau = rF\sin\theta$
Work	$W = \tau \bullet \theta = \Delta RKE$	$W = \mathbf{F} \bullet d$	
Kinetic Energy	$RKE = \frac{1}{2}I\omega^2$	$TKE = \frac{1}{2}mv^2$	$KE_{Total} = \frac{1}{2}mv_{cm}^2 + \frac{1}{2}I_{cm}\omega^2$
Momentum	$\mathbf{L} = I\omega$	$\mathbf{p} = m\mathbf{v}$	

Kinematic Equations for Uniformly Accelerated Rotational Motion

ANGULAR	LINEAR
$\omega = \omega_o + \alpha t$	$v = v_o + at$
$\theta = \omega_o t + \frac{1}{2}\alpha t^2$	$d = v_o t + \frac{1}{2}at^2$
$\omega^2 = \omega_o^2 + 2\alpha\theta$	$v^2 = v_o^2 + 2ad$
$\bar{\omega} = \frac{1}{2}(\omega_o + \omega)$	$\bar{v} = \frac{1}{2}(v_o + v)$