

$\theta$	Angle	rad	
$\omega$	Angular speed	$\text{rad s}^{-1}$	
$F_c$	Centripetal force	N	$(\frac{mv^2}{r} \text{ or } mr\omega^2)$
$a$	Acceleration	$\text{ms}^{-2}$	
$\alpha$	Angular acceleration	$(\text{rad s}^{-2})$	
$t$	Time	s	
$\Gamma$	Torque	Nm	
$N$	Normal reaction force	N	
$R$	Radius of a sphere/loop	m	
$I$	Moment of inertia	$\text{kgm}^2$	$(\sum mr^2)$
$E_k$	Kinetic energy	J	
$s$	Position	m	
$v$	Linear velocity	$\text{ms}^{-1}$	
$M$	Mass of whole body	kg	
$W$	Work done	J	
$P$	Power	W	
$p$	Linear momentum	$\text{kgms}^{-1}$	
$L$	Angular momentum	$\text{kgm}^2\text{s}^{-1}$	

Rotational equations

$$\omega = \frac{\theta}{t}$$

$$\alpha = \frac{\Delta \omega}{\Delta t}$$

$$\theta = \omega_i t + \frac{1}{2} \alpha t^2$$

$$\theta = \frac{1}{2} (\omega_i + \omega_f) t$$

$$E_k = \frac{1}{2} I \omega^2$$

$$\omega_f = \omega_i + \alpha t$$

$$\omega_f^2 = \omega_i^2 + 2\alpha\theta$$

$$\Gamma = FR \sin \theta$$

$$\alpha$$

$$\omega$$

$$\theta$$

$$I = \sum mr^2$$

$$E_T = \frac{1}{2} I \omega^2 + \frac{1}{2} M v^2 + Mgh$$

$$\Gamma = I \alpha$$

$$W = \Gamma \Delta \theta$$

$$P = \Gamma \omega$$

$$L = I \omega$$

Equivalent translational equation.

$$v = \frac{s}{t}$$

$$a = \frac{v - u}{t}$$

$$s = ut + \frac{1}{2} at^2$$

$$s = \frac{1}{2} (u + v) t$$

$$E_k = \frac{1}{2} m v^2$$

$$v = u + at$$

$$v^2 = u^2 + 2as$$

$$F$$

$$a = \alpha r$$

$$v = \omega r$$

$$s = \theta r$$

$$M$$

$$E_T = \frac{1}{2} M v^2 + Mgh$$

$$F = ma$$

$$W = F_s \cos \theta$$

$$P = Fv$$

$$p = m v$$