Name: Date: Period:

Rotational Motion Equations

linear/translational	*rotational/angular*	*'bridge'*
		$\ell = r\theta$
$v \equiv \frac{\Delta x}{\Delta t}$	$\omega \equiv \frac{\Delta \theta}{\Delta t}$	$v = r\omega$
$a \equiv \frac{\Delta v}{\Delta t}$	$\alpha \equiv \frac{\Delta \omega}{\Delta t}$	$a_T = r\alpha$
		$a_C = a_R = \omega^2 r$
$F = ma$	$\tau = I\alpha$	$\tau \equiv rF_\perp$
$W \equiv F_\parallel d$	$W_r = \tau \Delta\theta$	
$KE_t = \frac{1}{2}mv^2$	$KE_r = \frac{1}{2}I\alpha^2$	
$PE = mgy$		
$p = mv$	$L = I\omega$	
$v = v_0 + at$	$\omega = \omega_0 + \alpha t$	*"Old Faithful"*
$x = x_0 + v_0 t + \frac{1}{2}at^2$	$\theta = \theta_0 + \omega_0 t + \frac{1}{2}\alpha t^2$	*"The Big Chalupa"*
$v^2 = v_0^2 + 2a(x - x_0)$	$\omega^2 = \omega_0^2 + 2\alpha(\theta - \theta_0)$	*"Ain't Got No Time"*
	$I \equiv mr^2$	
$I_{\text{hoop}} = MR^2$	$I_{\text{disc}} = \frac{1}{2}MR^2$	$I_{\text{sphere}} = \frac{2}{5}MR^2$
1 rev $= 360^\circ = 2\pi$ rad	1 rpm $= 0.1047$ rad/s	