$$\Sigma T = I\alpha$$

I: moment of inertia

- An object's resistance to change angular motion

$$I = \Sigma mr^2$$

units: $kg\,m^2$

α: Angular Acceleration

- rate of change of angular velocity

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

units: $\frac{rad}{s^2}$

$$T = F d_\perp$$

units: Nm

$$\Sigma T = I \alpha$$

unit analysis:

$$Nm = kgm^2 \frac{rad}{s^2}$$

$$Nm = kgm^2 \frac{rad}{s^2} = \frac{kgm^2}{s^2}$$

$$Nm = \left(\frac{kgm}{s^2}\right) \cdot m$$

remember $N = \frac{kgm}{s^2}$

$$Nm = Nm \quad \checkmark$$

Angular Kinetics Analysis

- Identify Torques acting about axis.
  - Identify Forces ON
  - Use $T = Fd_{\perp}$
  - Assign direction to each torque CCW+
- Use $\Sigma T = I\alpha$