Introduction to Torque

Rotation	Translation
$\Delta\theta$	Δx
ω	v
α	a
I	m
$\frac{1}{2}I\omega^2$	$\frac{1}{2}mv^2$
$I\vec{\omega} = \vec{L}$	$m\vec{v} = \vec{p}$
$\sum \vec{\tau} = I\vec{\alpha}$	$\sum \vec{F} = m\vec{a}$

τ is tau = torque

Force vector could be broken up into $\vec{F}_{\parallel}$ and $\vec{F}_{\perp}$

Only $\vec{F}_{\perp}$ matters because $\vec{F}_{\parallel}$ pushes into it

$\sum \vec{\tau} \propto \vec{F}_{\perp}$

$\sum \vec{\tau} \propto \vec{r}$, lever-arm

$\sum \vec{\tau} = \vec{r} \cdot \vec{F}$

Note: Dot Product took parallel and gave back scalar

We want perpendiular and vector

$F_{\perp} = F \sin\theta$

$|\vec{\tau}| = |\vec{r}| \cdot |F \sin\theta|$

$|\vec{\tau}| = |\vec{r}_{\perp}| \cdot |\vec{F}|$