* Angular Momentum

$\vec{L} = \vec{r} \times \vec{p}$. $L = rp\sin\theta$

$L = mvr$ or $L = I\omega$

Conservation of angular momentum

$I_1\omega_1 = I_2\omega_2$

Torque

$\tau = I\frac{d\omega}{dt}$

$\boxed{\tau = I\alpha}$

5.1 LAW OF CONSERVATION OF ANGULAR MOMENTUM

In case of translation motion, we define force as $\vec{F} = \frac{d\vec{p}}{dt}$.

For rotational motion, we define torque.

$$\vec{\tau} = \frac{d\vec{L}}{dt}$$

So if the net torque on a particle (or system) is zero; $\frac{d\vec{L}}{dt} = 0$,

i.e., $\vec{L}$ = constant.