MOMENTUM

MATHEMATICAL REPRESENTATION

MOMENTUM $\frac{[M][L]}{[T]} \equiv \vec{P} = m\vec{v}$

IMPULSE $\frac{[M][L]}{[T]} \equiv \vec{J} = \Delta\vec{P} = \Sigma\vec{\vec{F}}_{EXT}\,\Delta t$

- CONSERVATION OF MOMENTUM
  - IF $\Sigma\vec{\vec{F}}_{EXT} = \vec{0}$

$$\Delta\vec{P}_{System} = \vec{0}$$

OR

$$\Sigma\vec{P}_i = \Sigma\vec{P}_f$$

* MOMENTUM IS DEPENDENT ON COORDINATE SYS.
  - MAKE SURE VELOCITIES ARE ALL WITH RESPECT TO THE SAME FRAME OF REFERENCE.

- VELOCITY ADDITION

$$\vec{v}_{AB} = \vec{v}_{AC} + \vec{v}_{CB}$$

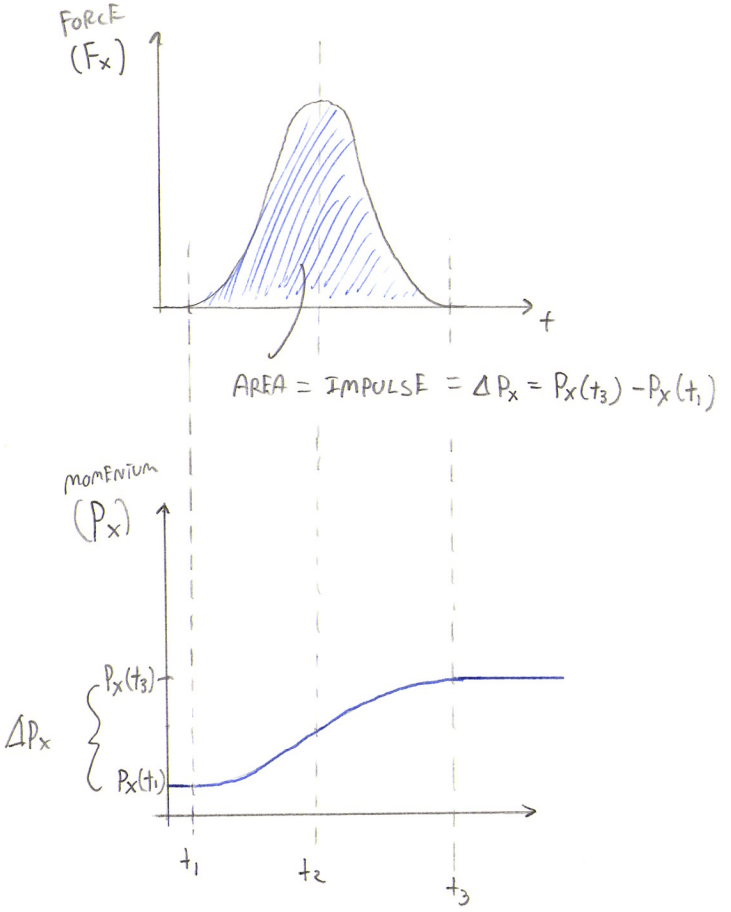
↖ VELOCITY OF A WITH RESPECT TO B

$$\vec{v}_{AC} = -\vec{v}_{CA}$$

- UPDATE NEWTON'S 2ND LAW...

$$\Sigma\vec{F}_{EXT} = m\vec{a} \longrightarrow \Sigma\vec{\vec{F}}_{EXT} = \frac{\Delta\vec{P}}{\Delta t}$$

GRAPHICAL REPRESENTATION



PHYSICAL REPRESENTATION