Center of Mass

$P_{tot} = M_{tot} V_{cm}$ $\quad F_{ext}\Delta t = \Delta P_{tot} = M_{tot}\Delta V_{cm}$

So if $F_{ext} = 0$ then V_{cm} is constant

Also: $F_{ext} = M_{tot} a_{cm}$

Center of Mass of a system behaves in a SIMPLE way

- moves like a point particle!
- velocity of CM is unaffected by collision if $F_{ext} = 0$

(pork chop demo)