Momentum and Collisions PH III

Linear momentum

$\vec{p} = m\vec{v}$

Impulse-momentum theorem

$F = ma = m\frac{v - v_0}{\Delta t} = \frac{mv - mv_0}{\Delta t}$

$F\Delta t = mv - mv_0 = \Delta p$

In a collision we may need to use average force

Law of conservation of momentum

When no external forces act on a system of 2 or more objects, the total momentum before a collision is equal to the total momentum after the collision

Inelastic - momentum conserved, KE not

Perfectly inelastic - momentum conserved

Elastic - momentum and KE conserved

$\Sigma p_i = \Sigma p_f$