

Momentum

- Momentum - is the quantity of motion of a moving body.
 - Objects mass multiplied by its velocity

• $p = \text{Momentum}$

• Formulae:

$$p = mv$$

$p = \text{momentum (kgm/s)}$

$m = \text{mass (kg)}$

$v = \text{velocity (m/s)}$

Impulse Momentum theory

- Impulse - Is the product of a force and time for which it acts.
- $f \Delta T = p_f - p_i$
- $p_i = \text{Initial momentum}$
- $p_f = \text{Final momentum}$
- $f = \frac{\Delta p}{\Delta T}$
- Shorter the time the greater the force.
- Longer the time LESS of a force

Collisions

- Conservation of momentum - can be created or destroyed but can be changed.
- $p_{1i} + p_{2i} = p_{1f} + p_{2f}$ • $M_1 v_1 + m_2 v_2 = M_1 v_1' + m_2 v_2'$
 - elastic collision
 - bouncing off each other

$p_{1i} = 1^{\text{st}} \text{ initial}$

$p_{2i} = 2^{\text{nd}} \text{ initial}$

$p_{1f} = 1^{\text{st}} \text{ final}$

MOMENTUM

- Inelastic collision - objects stick together
- $m_1 v_1 + m_2 v_2 = (m_1 + m_2) v_f$
- Explosions - Backwards or collisions
 $(m_1 + m_2) v = m_1 v_{1f} + m_2 v_{2f}$