

Momentum

Momentum - "Mass in Motion"

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

\vec{p} -> momentum (kgm/s)

m -> mass (kg)

\vec{v} -> velocity (m/s)

Change in Momentum

$$\Delta\vec{p} = \vec{p}_f - \vec{p}_i$$

$$\Delta\vec{p} = m\vec{v}_f - m\vec{v}_i$$

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

Impulse

$$\vec{J} = \vec{F}t$$

\vec{J} -> impulse (Ns or kgm/s)

\vec{F} -> force (N)

t -> time (s)

$$\vec{F} = ma$$

$$\vec{F} = m \left(\frac{v_f - v_o}{t} \right)$$

$$\vec{F}t = \Delta \vec{p}$$

$$\vec{F}t = \vec{p}_f - \vec{p}_i$$

$$\vec{F}t = m\vec{v}_f - m\vec{v}_o \quad m(\Delta v)$$

$$\vec{J} = \vec{F}t = \Delta \vec{p} = m\vec{v}_f - m\vec{v}_o$$

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Problems # 29 - 35

$$Ft = m(v_f - v_o)$$