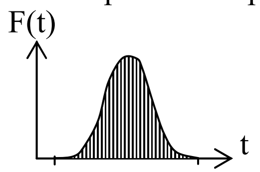
Chapter 10 – Summary

Definitions

$\vec{p} = m\vec{v}$ - (**Momemtum**)	$K = \frac{1}{2}mv^2$ - (**Kinetic Energy**: this has already been defined in chapter 7, remember!)
$\vec{J} = \int_{t_1}^{t_2} \vec{F}(t)dt$ - (**Impulse**)	It follows that we can also compute the impulse by the area under the curve of F(t) against t 
Approximating F(t) to a constant average force F_{avg}: $\vec{J} = \vec{F}_{avg}\Delta t$	

Theorems/Laws

$\vec{J} = \Delta\vec{p}$	<u>Impulse – Linear Momentum Theorem</u>
$\vec{P}_i = \vec{P}_f$	Applies to <u>ALL</u> collisions - <u>Conservation of Momentum in collision</u> - where $\vec{P} = \sum \vec{p}_i$ total linear momentum
$\sum K_i = \sum K_f$	ONLY for ELASTIC collisions – <u>Conservation of Kinetic Energy</u>

Special Results

$\vec{v}_{cm} = \frac{\vec{P}}{M} = \frac{\vec{P}_i}{M} = \frac{\vec{P}_f}{M}$	As $\vec{P}_i = \vec{P}_f = \vec{P}$; note M is the total mass.