Chapter 5 Work and Energy

NET WORK *This equation applies only when the force is constant.*	$W_{net} = F_{net} d \cos \theta$
KINETIC ENERGY	$KE = \frac{1}{2} mv^2$
WORK-KINETIC ENERGY THEOREM	$W_{net} = \Delta KE$
GRAVITATIONAL POTENTIAL ENERGY	$PE_g = mgh$
ELASTIC POTENTIAL ENERGY	$PE_{elastic} = \frac{1}{2} kx^2$
MECHANICAL ENERGY	$ME = KE + \Sigma PE$
CONSERVATION OF MECHANICAL ENERGY *This equation is valid only if nonmechanical forms of energy (such as friction) are disregarded.*	$ME_i = ME_f$
POWER	$P = \frac{W}{\Delta t} = Fv$

Chapter 6 Momentum and Collisions

MOMENTUM	$\mathbf{p} = m\mathbf{v}$
IMPULSE-MOMENTUM THEOREM *This equation is valid only when the force is constant.*	$\mathbf{F}\Delta t = \Delta \mathbf{p} = m\mathbf{v_f} - m\mathbf{v_i}$
CONSERVATION OF MOMENTUM *These equations are valid for a closed system, that is, when no external forces act on the system during the collision. When such external forces are either negligibly small or act for too short a time to make a significant change in the momentum, these equations represent a good approximation. The second equation is valid for two-body collisions.*	$\mathbf{p_i} = \mathbf{p_f}$ $m_1\mathbf{v_{1,i}} + m_2\mathbf{v_{2,i}} = m_1\mathbf{v_{1,f}} + m_2\mathbf{v_{2,f}}$