Physics Mr. Roy

CHAPTER 9 – Energy
REVIEW SHEET

Physics

1) Definitions
   a) Work
   b) Joule
   c) Power
   d) Watt
   e) Energy
   f) Mechanical energy
   g) Potential energy
   h) Kinetic energy
   i) Work-energy theorem
   j) Law of conservation of energy
   k) Machine
   l) Lever
   m) Fulcrum
   n) Mechanical advantage
   o) Pulley
   p) Efficiency
   q) Sources of our energy

Problem Solving
Work with constant force problems
$W = F\,d$ or $F\,d\cos\theta$

Kinetic and Potential Energy problems
Find the work done (change in energy) to stop a car, lift a book or climb a mountain.
$KE = \frac{1}{2}mv^2$, $PE_g = mgy$, $PE_E = \frac{1}{2}kx^2$ ($F=-kx$)

Conservation of mechanical energy problems - Law of Conservation of Energy
Given an initial velocity, calculate the maximum height (and vice versa). $E_2=E_1$= constant (for conservative forces only)
or
$W_{NC} = \Delta KE + \Delta PE$

Power and efficiency
How much power is required to lift a mass a certain height in a given time and so on?
Efficiency – AMA/IMA

Machines
$Work_{in} = work_{out}$
Ideal Mechanical Advantage $=d_{in}/d_{out}$, and
Actual Mechanical Advantage$=F_{out}/F_{in}$

Elastic Collisions
Find the velocities of each particle after two particles collide elastically.
Use two equations to find two unknowns:
Conservation of momentum $-m_1v_1+m_2v_2=m_1v_1'+m_2v_2'$
Conservation of energy (& momentum) – $V_1-V_2=V_2'-V_1'$

Find the velocities of a particle using a ballistic pendulum.

Internet Site: - http://northwoodschool.org/mattroy/
Tutorials, animations, demonstrations and other good stuff