DEVIL ﾠ PHYSICS
BADDEST CLASS ON CAMPUS

GIANCOLI READING ACTIVITY
Sections 6-6 to 6-7

1. Big Idea(s):

   a. Interactions between systems can result in changes in those systems.

   b. Changes that occur as a result of interactions are constrained by conservation laws.

2. Enduring Understanding(s):

   a. Interactions with other objects or systems can change the total energy of a system.

   b. Certain quantities are conserved, in the sense that the changes of those quantities in a given system are always equal to the transfer of that quantity to or from the system by all possible interactions with other systems.

   c. The energy of a system is conserved.

3. Essential Knowledge(s):

   a. The energy of a system includes its kinetic energy, potential energy, and microscopic internal energy. Examples should include gravitational potential energy, elastic potential energy, and kinetic energy.

   b. The internal energy of a system includes the kinetic energy of the objects that make up the system and the potential energy of the configuration of the objects that make up the system.

      i. Since energy is constant in a closed system, changes in a system's potential energy can result in changes to the system's kinetic energy.

      ii. The changes in potential and kinetic energies in a system may be further constrained by the construction of the system.

4. Learning Objective(s):

   a. The student is able to calculate the total energy of a system and justify the mathematical routines used in the calculation of component types of energy within the system whose sum is the total energy.

   b. The student is able to predict changes in the total energy of a system due to changes in position and speed of objects or frictional interactions within the system.

   c. The student is able to describe and make predictions about the internal energy of systems.

   d. The student is able to calculate changes in kinetic energy and potential energy of a system, using information from representations of that system.

5. Read sections 6-6 to 6-7 in your textbook.

6. Write a story that accurately incorporates the terms listed below as they are used in your reading. The story may be fictional, but bonus points if it's not. *Circle or highlight the terms as you use them in your story*.

7. Terms:

    a. Total mechanical energy

    b. Conserved quantity

    c. Conservation of mechanical energy

    d. Rock falling from some height

    e. Energy bucket

    f. Roller coaster car

    g. Speeds on two water slides with different paths

    h. Speed of a pole vaulter

    i. Toy dart gun with a bi-directional spring

    j. Bungee jump

8. Answers may be typed or neatly printed. Drawings may be freehand, but try to make use of the 'Shapes' or 'Insert Clipart" functions of MS Word. If you submit this assignment electronically, the filename must be in the following format, "LastnameFirstinitialPerXReadActX-X". ***You do not need to include this instruction sheet with your work – save the trees, save the squids!***