**A-Day Due Mon., Nov 26 (Assigned: 11/17)**
**B-Day: Due Tues., Nov 27 (Assigned: 11/18)**

# Energy 3

$$E_{before} \pm W = E_{after}$$

$$Eff = \frac{W_{out}}{W_{in}}$$

*Remember to use your notes and follow the steps exactly!*
*YOU MUST SHOW ALL YOUR WORK!*

1. Give the conservation of energy equation for the following situations.

   A) An object is thrown into the air. Find how high it goes.

   B) An object at rest is moved.

   C) A moving object slows down due to friction.

   D) An object is dropped. How fast is it going part way down?

   E) A spring is compressed.

   F) A compressed spring shoots an object into the air.

   E) A moving object is stopped.

2. An object is 45 m above the ground when it is dropped. How fast is the object going just before it hits the ground?

   E) Put in the equations for each kind of energy and solve.

3. A 4 kg object is moving 2 m/s when it is pushed by a 5 N force for 7 m. How fast is it going afterwards?
   A) Conservation of energy equation:
   B) Solve:

4. A 3 kg object is moving 2 m/s. It comes to rest by compressing a spring 0.8 meters. Find the spring constant of the spring.
   A) Conservation of energy equation:
   B) Solve:

5. A 10 kg object is at rest on the ground. It is lifted up 8 m. How much work was done to lift the object?
   A) Conservation of energy equation:
   B) Solve:

   C) If it was lifted up in 4 seconds, how much power was used to lift it.

*So the "work" in the power formula could be the "energy" that the work created.*


**More On Back**

6. A 6 kg object is at rest on the ground. A 25 N force pushes on the object for 4 m. The object ends up moving 5 m/s.
   A) How much work was done on the object?

   B) How much kinetic energy does it have afterwards?

   C) How efficient was the energy transfer?

   D) Where did the energy probably go?

   E) What kind of energy did the lost energy turn into?