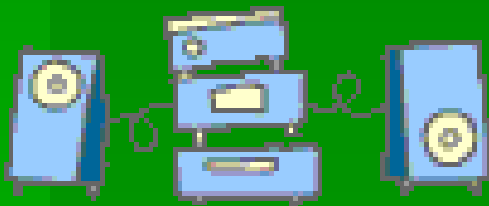
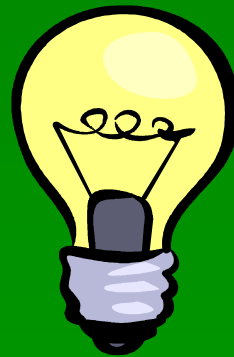
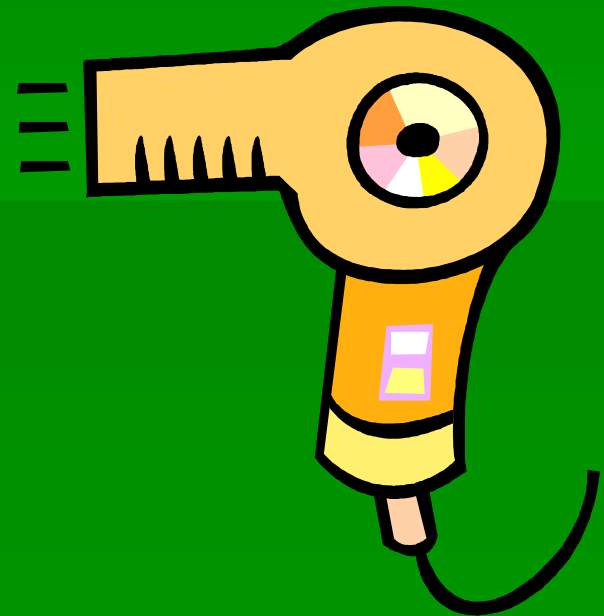


Conservation of Energy



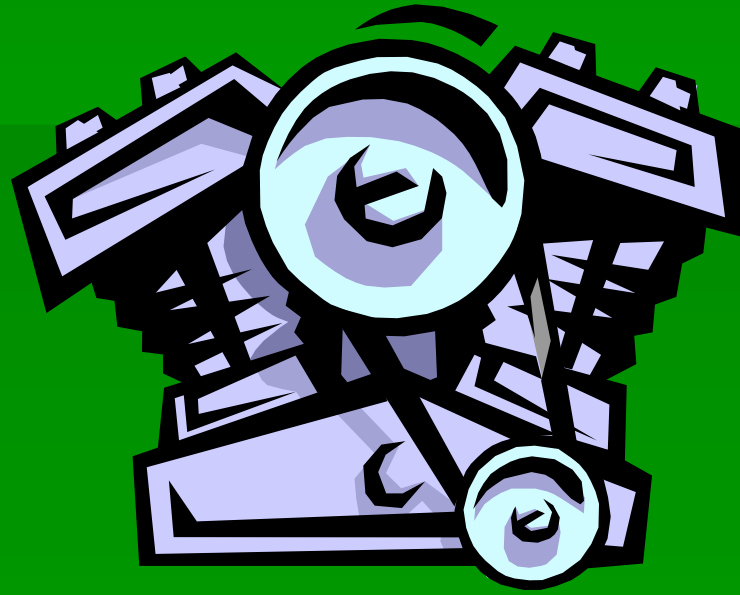
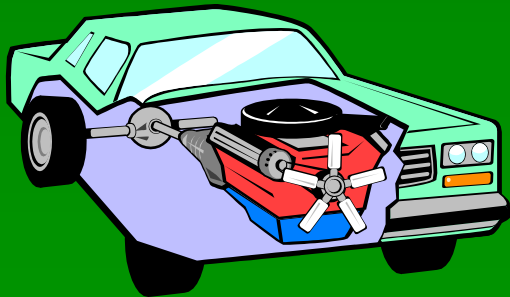
Changing Forms of Energy

- Energy is most noticeable as it transforms from one type to another.
- What are some examples of transforming electrical energy?
 - A lightbulb
 - A hair dryer



Changing forms of Energy

- An example of transforming chemical energy is a car engine. Chemical potential energy in gasoline is transformed into kinetic energy of the car as it moves!!



KE and PE

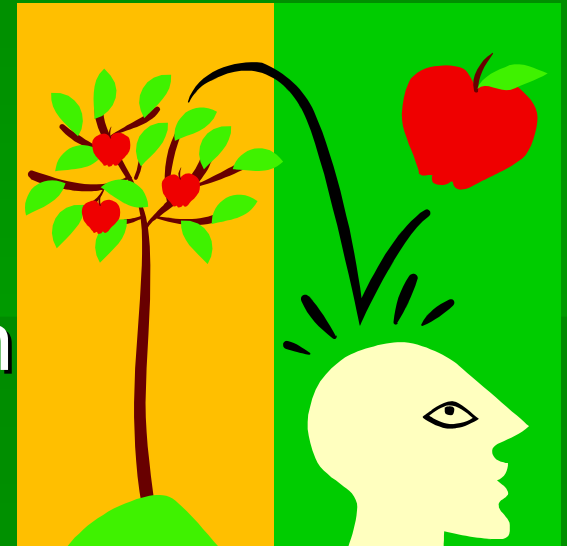


- In many situations, there is a conversion between potential and kinetic energy.
- The total amount of potential and kinetic energy in a system is called the mechanical energy
- Mechanical energy = PE + KE



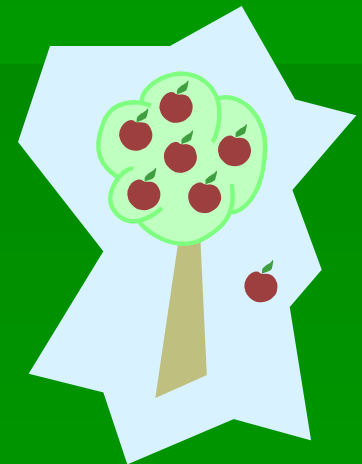
Mechanical Energy

- Mechanical energy is due to the position and motion of the object.
- What happens to the mechanical energy of an apple as it falls from a tree?



Mechanical Energy

- As the apple falls to the ground, its height decreases. Therefore, its GPE decreases.
- The potential energy is not lost... it is converted into kinetic energy as the velocity of the apple increases.
- **What happens to the mechanical energy?**



Mechanical Energy



- The mechanical energy does not change because the loss in potential energy is simply transferred into kinetic energy.
- The energy in the system remains constant!!

The total amount of energy stays the SAME!!

Swinging Along

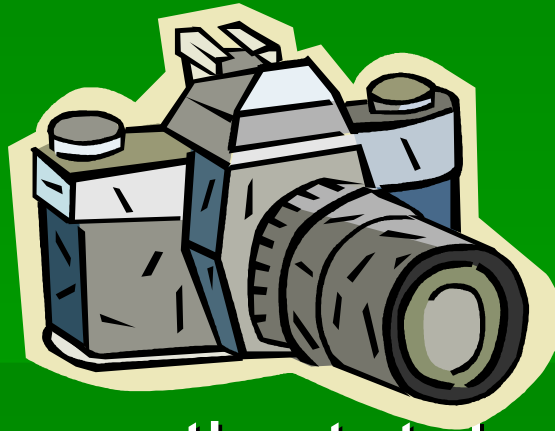


- Think about the changes in energy when you are on a swing...
- At what point do you have the most potential energy?
- At what point do you have the most kinetic energy?
- What happens to the mechanical energy?



The Law of Conservation of Energy

- The Law of Conservation of Energy states that energy cannot be created or destroyed.



- The big picture... the total energy in the universe remains constant.

- But how? If I stop pumping while I'm swinging, I stop!! So, where's the energy?



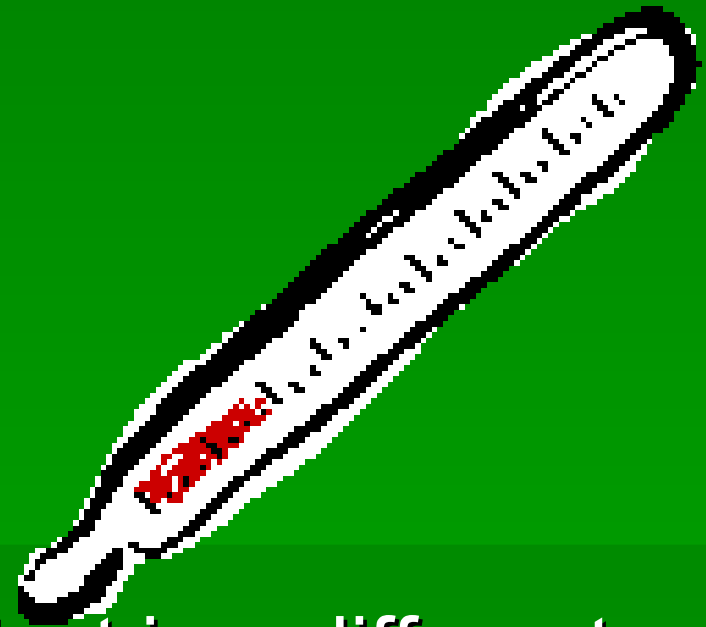
Conservation of Energy

- You need to remember friction...



- As you slow down on the swing, the hooks and the chain rub against each other and air pushes against the rider.

- Friction causes some of the mechanical energy of the swing to change to thermal energy and the temperature of the hooks and chain heat up a little.



- The energy is still there, just in a different form!!

Conservation of Energy

- Energy is transformed... not destroyed!!

The total amount of energy stays the SAME!!

Energy in Your Body

- Even the energy converted in your body follows the law of conservation of energy.

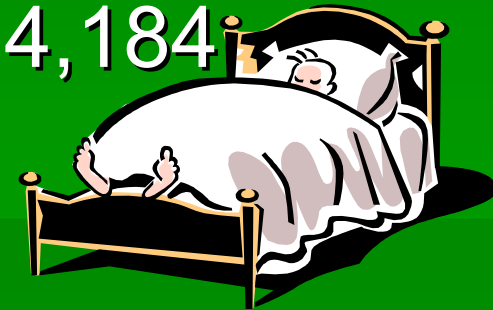


- Chemical potential energy is transferred to kinetic energy that allows your body to move!!

Calories...



- A Calorie (C) is a unit to measure energy in foods.
- 1 Calorie is equal to about 4,184 Joules.



- A person uses about:
 - 55 Calories while sleeping for 1 hour
 - 210 Calories while walking for 1 hour
 - 850 Calories while running for 1 hour

