3.2 – 3.3 Notes

Can Energy Change Forms?

* Think of an example where energy changes from one form to another
  + Electrical energy changes into light and heat when you turn on a light bulb
* Read through page 80 in your textbooks to get another example of how energy is converted into different forms

Is Energy Destroyed?

* NO! energy is always conserved when it changes forms
* ***Law of conservation of energy***: energy is neither created nor destroyed
  + True in all known cases = law
  + What about the gain and loss of energy?
    - This is simply changing forms, not really gaining or losing
  + Balances the energy in the universe
  + Amount of energy given to an object is equal to the amount of energy gained by that object

Energy Conversions and Unwanted Forms of Energy

* Total amount of energy is always conserved
* Useful amount of energy is less than total
  + Take the example of the fan on page 83
* ***Energy efficiency***: measurement of usable energy after an energy conversion
  + Energy efficient appliances – convert a greater percentage of energy into the desired form than those that are less efficient

Technology and Energy

* **Technology improves energy conversions**
* **Lights** – LED’s light emitting diodes, convert almost all electrical energy into light
  + What are some areas where we use LED’s?
* **Cars** – burning gasoline in cars, fuel injectors, hybrid cars
  + Kinetic energy lost during braking is used to generate electrical energy to recharge battery
* **Technology improves the use of energy resources**
* **Solar Energy:** 
  + Solar cells: layers of light-sensitive materials, convert sunlight directly into electrical energy
  + Sun’s radiation = heating
    - Greenhouses
* **Wind Energy:**
  + Sail ships, windmills to grind grain, pump water
  + Windmills used to generate electrical energy
  + Windmill farms with wind turbines