1) **Energy Resources**
   a) Energy means something has the ability to cause change. Mostly it is used in science to describe how much potential a physical system has to change.
      i) Mechanical
      ii) Chemical
      iii) Electrical
   b) Two energy sources
      i) Renewable: a resource that can be replenished in a short period of time
         (1) Ex: Wind, sunlight, geothermic heat, biomass
            (a) <u>Biomass</u>: corn and soy beans sugar cane hemp animal waste and, other organic materials
      ii) Nonrenewable: a resource that cannot be replenished in a short period of time
         (1) Ex: Fossil fuels, minerals
            (a) Oil, Coal, natural gas, etc

2) **Fossil Fuels**
   a) Form from fossilized plant matter and bodies of small marine organisms that changed over time because of heat and pressure.
   b) We burn fossil fuels to release the energy stored in them.
   c) Coal
      i) Plants obtained and stored energy. As they died and fell, organic matter piled up. Over millions of years, sediment layers, pressure and temperature increased – leading to coal formation.
      ii) One of the major energy resources in the US- where ¼ of the coal reserves are.
      iii) Must be mined for – ground up, and transported.
   d) Petroleum (Oil) and Natural Gas
      i) Form when tiny marine organisms die. Sediment covers over their remains, and years of heat and pressure lead to oil and natural gas.
      ii) Must be pumped from the natural holding reservoirs.
      iii) Natural Gas is less dense and sits on top of oil, which is less dense an d sits on water.

3) **Consumption and Environmental Effects**
   a) Obtaining fossil fuels
      i) Cost: Harmful to the environment

    ii) Benefit: Good business, creates jobs, gives us the material
b) Using fossil fuels
    i) Cost: Pollution/ harmful to the environment. Causes acid rain.
    ii) Benefit: Gives us energy for electricity and transportation.
c) Consuming fossil fuels
    i) Cost: We have a limited supply- using it quicker than we can get it
    ii) Benefit: Running out forces us to come up with alternative resources

4) Alternative Energy Sources

a) Energy sources other than fossil fuels – are renewable!
    i) Wind energy: electricity
    ii) Solar energy: heat and electricity
    iii) Geothermal: heat and electricity
    iv) Hydroelectric: electricity
    v) Biomass: heat and electricity
    vi) Nuclear: electricity
b) Benefits include:
    i) Alternative fuels are free or very cheap.
    ii) They do not have to be imported from other countries.
    iii) They do not pollute or emit gases into the atmosphere.
    iv) They are safe to use.
c) Costs include:
    i) Equipment is expensive.
    ii) Wind and sunlight are not always available.
    iii) Geothermal energy is only practical in places where magma is close to earth's surface.
    iv) Wind turbines can be noisy and some people think wind turbines do not look nice on the landscape.
    v) The tools used to convert solar energy into electricity are not very efficient.
    vi) Waste from generating nuclear power is poisonous and must be watched carefully.

5) Resource Management

a) <u>Conservation:</u> the preservation, management, and restoration of natural resources
b) Reduce, Reuse, Recycle

c) Paper is the largest source of solid waste.
    i) Can be used to create many recycled materials.
d) Landfill - an area where solid waste is buried between layers of earth
    i) Inexpensive but environmentally costly
e) Biofuels can be used to run cars and are much more environmentally friendly.