**Understanding Energy and it Forms Guided Notes**

1. ENERGY
   1. Energy is the measure of the ability \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (work)
   2. The property of an object that enables it to do work
   3. Units of energy: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (J) = newton x meter = N x m
2. Types of Energy
   1. Energy appears in many forms. There are five main forms of energy:
      1. Mechanical (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
      2. Chemical
      3. Electromagnetic
      4. Heat (\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
      5. Nuclear
3. Kinetic Energy
   1. Kinetic energy is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   2. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the object moves- the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ kinetic energy
   3. Kinetic energy depends on both \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. Potential Energy
   1. The amount of energy that is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. 3 types of potential energy
      1. Elastic
         1. Ex. Pulling a rubber band back and holding
      2. Chemical
         1. Ex. Burning a match
      3. Gravitational
         1. Ex. A bolder resting on top of a hill
   3. Objects at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ positions have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gravitational potential energy then objects in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ positions
5. Chemical Energy
   1. Chemical energy is the energy stored in the bonds of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and molecules.
   2. This form of potential energy is not released until the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are broken.
   3. Fossil fuels and biomass store chemical energy.
   4. Examples:
      1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_…bonds are broken to release energy for your body to store and use.
      2. a Sports… your body uses energy stored in your muscles obtained from food.
      3. Fire–a chemical change.
6. Electromagnetic Energy
   1. A form of energy that is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from objects in the form of electrical and magnetic waves that can travel through space
   2. Moving electric charges
   3. Examples:
      1. Power lines carry electricity
      2. Electric motors are driven by electromagnetic energy
      3. Light is this form of energy (X-rays, radio waves, laser light etc.)
7. Thermal Energy
   1. The internal energy or thermal energy of a substance is determined by the movement of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the potential energy of the arrangement of molecules.
      1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the measure of the average kinetic energy of the molecules.
      2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the energy transferred from a warmer substance to a colder one by the collisions of molecules.
   2. Units of Thermal Energy
      1. The unit for all energy is the joule.
      2. However, sometimes the calorie is used for heat.
      3. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is defined as the amount of heat needed to raise 1 g of a substance 1 degree Celsius.
         1. A Calorie (food calorie, with a capital C) is 1000 cal
         2. 1 cal = 4.18 joules or 1kcal = 4180 J
8. Nuclear Energy
   1. When the nucleus of an atom \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, nuclear energy is released.
   2. Nuclear energy is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ form of energy.
   3. Fission/fusion