**Types of Energy Notes**

* **Heat Energy**
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ particles produce heat
  + Heat energy can be produced by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (rubbing together)
  + Heat energy causes changes in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and phase (solid, liquid, gas) of any form of matter
* **Chemical energy**
  + Required to \_\_\_\_\_\_\_\_\_\_\_\_ atoms together (like sugar is needed to make ATP from ADP; a bond with phosphate is created)
  + When bonds are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are forms of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ chemical energy
* **Electromagnetic Energy**
  + Power lines carry electromagnetic energy into your home in the form of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a form of electromagnetic energy (including sunlight)
  + Each color of light (think back to the light spectrum and prisms) represents a different amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy
  + Electromagnetic energy is also carried by \_\_-rays, \_\_\_\_\_\_\_\_\_\_\_\_ waves, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ light
* **Nuclear Energy**
  + The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an atom is the source of nuclear energy
  + When the nucleus \_\_\_\_\_\_\_\_\_\_\_ (fission), nuclear energy is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the form of \_\_\_\_\_\_\_\_\_\_\_ energy and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy
  + Nuclear energy is also released when nuclei \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at high speeds and \_\_\_\_\_\_\_\_ (fuse)
  + The sun’s energy is produced from a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reaction in which \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ nuclei fuse (bond together) to form helium nuclei
  + The most \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_form of energy is nuclear energy
* **Mechanical Energy**
  + When work is done to an object, it acquires energy
  + The energy it acquires is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + When you kick a football, you \_\_\_\_\_\_\_\_ mechanical energy to the football to make it move

**3 Important facts about Energy**

1. Energy is the ability to do \_\_\_\_\_\_\_\_\_\_\_
2. Energy cannot be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, it may only be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from one form to another
3. All living organisms require \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (characteristics of life) in order to carry out life processes; all cells require energy to carry out \_\_\_\_\_\_\_\_ processes

**What we should know so far in a…**

**Photosynthesis**

* Done by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (producers) to obtain \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (ability to do work)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonds) from the sun in the form of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (C6H12O6­)
* Energy transformation =\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_energy -> \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy

**Cell Respiration**

* Done by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (consumers and decomposers)
* Using \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (food) and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (breathing) cells of heterotrophs “charge their batteries”
* ADP = adenosine diphosphate (A-P-P) = “\_\_\_\_\_\_\_\_\_\_\_ battery”
* ATP = adenosine triphosphate (A-P-P-P) = “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ battery”
* Therefore, for our cells to do \_\_\_\_\_\_\_\_\_\_, we must consume food (sugar) that allows our cells to add phosphate to ADP to make ATP which means that the cell’s battery is charged and ready to do work
* More simply, cell respiration uses sugar from the food we eat to let our cells do work!