**ATP Guided Notes**

CELLS NEED ENERGY!

ATP Molecule Picture

1. Energy comes from two sources:

 (1) \_\_\_\_\_\_\_\_\_ – ultimate source of energy

 for all living things on our planet

 (2) \_\_\_\_\_\_\_\_\_ – eating food gives us the

 energy we need to perform functions

 required for survival

2. The sun provides \_\_\_\_\_\_\_\_\_\_\_\_ energy that some organisms can use directly for energy. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are organisms that make their own food. Examples of autotrophs include \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. Other organisms cannot use the sun’s energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. These organisms, called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, obtain energy from the \_\_\_\_\_\_\_\_\_ they eat. Examples of heterotrophs include lions, deer, mushrooms (get food by decomposing other organisms), \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. A cell’s energy is supplied by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The energy “currency” produced by the mitochondria is \_\_\_\_\_\_\_\_ (Adenosine Triphosphate).

5. Cells use \_\_\_\_\_\_\_to store and release energy. ATP is made up of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_ (5 carbon sugar), and three \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ groups.

6. The three phosphate groups that make up ATP have the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (negative). Remember that opposite charges \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, while like charges \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

7. Why does it require a lot of energy to get the phosphate groups to bond?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. There is lots of energy stored in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ present between the phosphate groups.

9. The chemical bonds in ATP can be broken, energy is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_ is formed. ADP is now free to bind another \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ group.

10. How is the ADP molecule recharged?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. The ADP → ATP chemical reaction (recharging the battery) happens with the help of the enzyme \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which is found in the inner folds of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

12. Cells can regenerate \_\_\_\_\_ from \_\_\_\_ as needed by using foods like

 glucose. Organisms (like us!) must release the \_\_\_\_\_\_\_\_\_\_\_\_\_

ADP Molecule

 associated with glucose and other compounds to perform basic

functions required for life.

\*\*\*As long as phosphate groups are available, the cell has an unlimited

supply of energy\*\*\*