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|  | **Photosynthesis**Learning Objective:  |
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| **Essential Question**: What is the process of photosynthesis and where does it take place?  |
| **Questions:**  |  **Photosynthesis- Light*** White light from the sun is a blend of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (colors) of light.
* An object is a certain color because it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a certain portion of the light and absorbs the rest.
* A leaf is green because it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ green light.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are organisms that make their own energy. They don't eat.
* Producers are ­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, meaning they make their own food.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a process that producers use to store light energy as chemical energy (usually in the form of sugars)

**Chemical Equations:** * Chemical equations have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (things that come together) and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (that which is produced).

Reactants ------------------------> Products**Photosynthesis Equation:** **Where? Structure of Chloroplast:** * Photosynthesis occurs in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chloroplast* + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- empty part of chloroplast
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- stack of thylakoids
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- looks like stacks of coins

**What absorbs the light?** * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Green pigment in plants that absorbs the energy from sun and converts it to chemical energy
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Yellow, orange, & red pigments that absorb light energy and pass onto chlorophyll

Draw it!! |
|  | **Topic/ Objective: Photosynthesis**I can explain how \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is made.  |
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| **Essential Question**: What is the difference between the Light Reaction and Calvin Cycle during photosynthesis?  |
| **Questions:**  | **2 Cycles:**There are two cycles that work together to create glucose (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (require light)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (doesn't require light or dark)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- when a chemical (like water) is broken down by photons**Light Reaction- Needs light*** Occurs in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of chloroplasts
	+ Adds a phosphate to \_\_\_\_\_\_\_\_\_\_ (adenosine diphosphate) to become \_\_\_\_\_\_\_\_\_\_\_\_ (adenosine triphosphate).
		- LOTS OF ENERGY IN ATP
	+ Splits \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (H2O) to release O2 (oxygen) and H+(hydrogen)
		- Sends H+ over to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Remember Diffusion?** * After the Light Reaction, oxygen (O2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ out of the cell that we then breathe!

**Calvin Cycle- Doesn't need light!*** Occurs in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of chloroplasts
	+ Takes in\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Carbon Dioxide)
	+ Uses the ATP (energy) and H+ from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Synthesizes (makes) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* This can happen day or night
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| **Summary for BOTH sets of photosynthesis notes:**  |