Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_

Video Notes: Bozeman Science-Photosynthesis <http://www.bozemanscience.com/photosynthesis/>

**Photosynthesis**

1. Name two organisms, other than plants, that carry out photosynthesis.

**Chloroplasts**

1. Draw a typical plant cell as seen under the microscope. Be sure to include (and label) the following: cell wall, cell membrane, cytoplasm, chloroplasts.
2. Label the chloroplast in the picture below:



Describe the following parts of the chloroplast (make sure to include where the light reactions and the Calvin cycle occur):

* 1. Thylakoid membrane:
	2. Granum:
	3. Stroma:

**Chromatography**

1. What is chromatography used for?
2. Draw the chromatography for a leaf.
3. What do each of the bands represent?
4. What does chromatography tell us about plant pigments?
5. What color(s) do plants absorb the most?
6. What color(s) do plants absorb the least?

**Photosynthesis**

1. Write out the equation for photosynthesis:
2. What are the reactants of photosynthesis?
3. How does the plant get the reactants it needs for photosynthesis?
4. What are the products of photosynthesis?
5. How are these products used?
6. Who are plants carrying out photosynthesis for?

**Light Reactions**

1. Where do the light reactions occur?



|  |  |
| --- | --- |
| 1. **Reactants**
 | **Products** |
|  |  |

**Calvin Cycle**

1. Where does the Calvin Cycle take place?

|  |  |
| --- | --- |
| **Reactants** | **Products** |
|  |  |

1. What are photosystems?
2. The splitting of water in the light reactions produces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. As protons move through \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, ATP is made.
4. The electrons in NADPH come from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. The main enzyme of the Calvin cycle is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. The Calvin cycle produces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_which can be assembled into glucose, maltose, etc.
7. Fixing carbon means making it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. What happens to the Calvin cycle if you don’t have ATP, NADPH, or CO2?

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

1. What is photorespiration? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

1. Almost all plants are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plants.
2. How do CAM plants deal with the problem of photorespiration? \_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

1. How do C4 plants deal with the problem of photorespiration? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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