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6 - Photosynthesis

Directions: Fill in the blanks with the word or words that best completes each statement.

1. _____ are cellular organelles that contain the pigment chlorophyll.

2. These structures are composed of two main areas: stacks of _____

forming the interconnected _____, and a dense

jelly-like material called the _____.

3. Below find the visible spectrum of light. Fill in the missing data in Table 6.1 and then answer the questions that follow.

Table 6.1

Violet		Blue			Orange	
nm	450 nm	nm	550 nm	600 nm	nm	nm

4. Plants use light in the _____ and _____ nm range; meaning the plants like indigo-blue and orange-red light.

5. Various plant pigments help use light. These pigments are:

_____

and _____ a, b, and c.

6. Chlorophyll is a molecule containing 2 main parts: a complex ring containing a

_____ ion in the center and a non-polar tail.

7. The reactions of photosynthesis take place in two main stages:

a)_____and

b). _____ reactions.

8. The light reactions take place in the _____ membranes.

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9. Light hits the _____ (P 680) causing electrons to be boosted to a higher energy level.

10. The _____ molecule is produced here.

11. As the electron leaves this photo system it loses energy and is reenergized as it enters the _____(P- 700).

11. This energizes the electrons and moves them into the electron_____ chain.

12. This chain passes electrons to NADP+ in the stroma to form the chemical.

_____

13. These electrons are replaced by the splitting of water that also produces _____ and _____.

14. _____ and _____ are produced by the light reactions to be used in the Calvin cycle to reduce carbon dioxide to_____.

15. Carbon fixation begins when a carbon dioxide molecule is attached to a 5 carbon sugar, _____ _____ (RuBP).

16. This is followed by the addition of ATP and _____ to RuBP to form a three carbon compound called _____.

17. One out of every six of these molecules is used to produce _____ while the other 5 are recycled to produce _____.

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18. One molecule of glucose is produced for every _____ turn(s) of the cycle.

Read the following data, Bar graph it and then answer the question that follow.
Four different cotton species were grown under the same conditions except for the type of light each group received. The plants were allowed to bloom and the cotton was harvested. The heights were measured and compared. Below find the results of the experiment.

Cotton Species	Average Height in Meters Red	Average Height in Meters Green	Average Height in Meters Yellow	Average Height in Meters White
A	1.3	0.2	0.6	1.0
B	1.4	0.4	0.7	0.8
C	1.4	0.3	0.7	0.9
D	1.5	0.4	0.5	1.1

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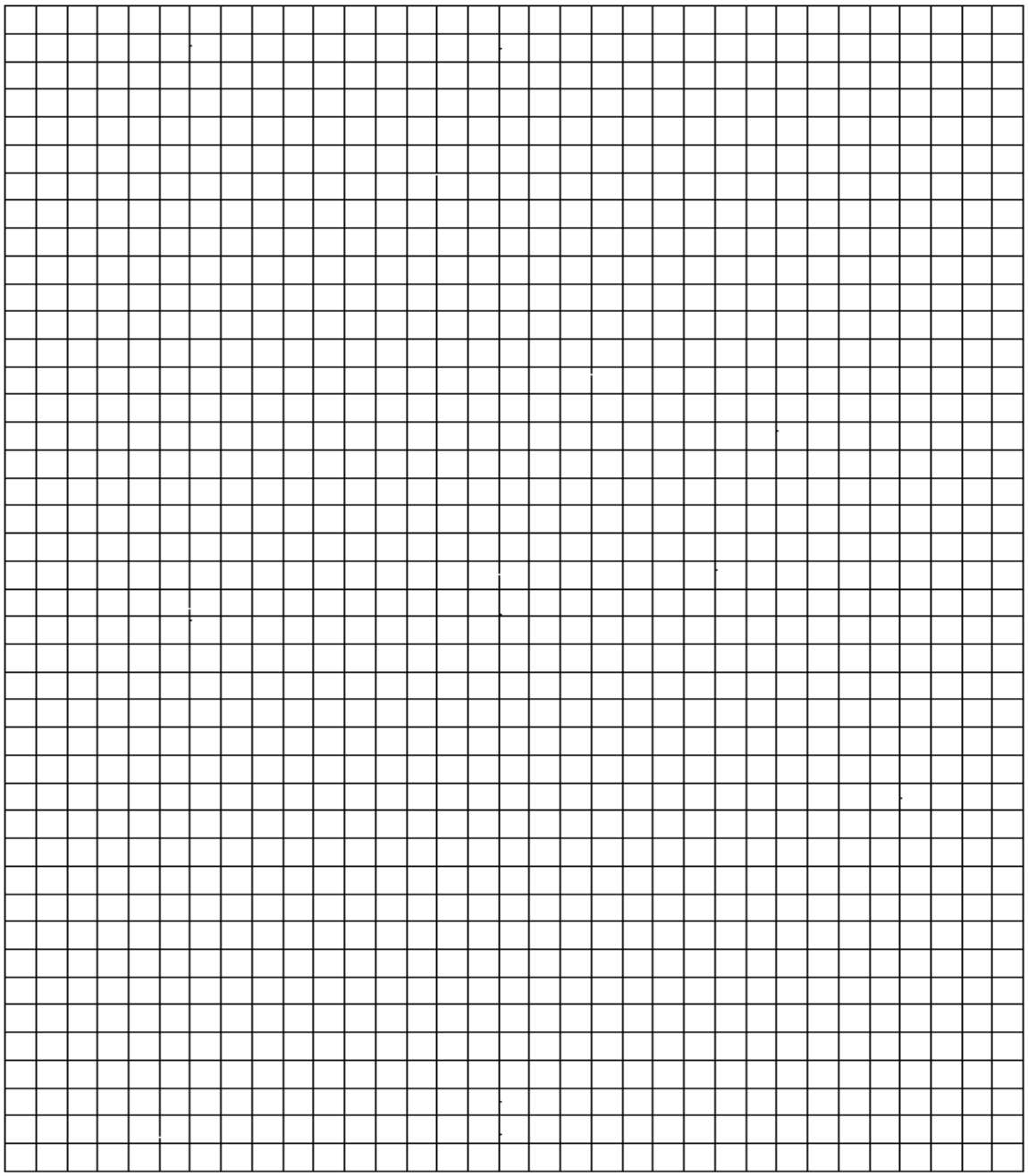
Graph Title: _____



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1. What is the independent variable?

_____.

2. Since all of the variables except one were the same, this is an example of a (n)

_____ experiment.

3. Based on the above data, state an applicable hypothesis.

_____

_____

_____

4. Based on your knowledge of light and its affect on photosynthesis, why do you think plants exposed to red light had the best results?

_____

_____.

_____

5. Why did the plants exposed to white light, show the results as they did?

_____

_____

_____

6. What is the average height for each color of light used in the experiment?

_____

_____

_____

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7. What is the best species of cotton to grow under normal conditions?

_____

8. Why? _____

_____

_____

_____