Name _____ Class _____ Date _____

SECTION 8-1 REVIEW

ENERGY AND LIFE

VOCABULARY REVIEW **Define the following terms.**

1. **autotroph** _____

_____

2. **heterotroph** _____

_____

3. **ATP** _____

_____

4. ADP _____

_____

5. energy _____

_____

MULTIPLE CHOICE **Write the correct letter in the blank.**

_____ 1. Energy is released from ATP when

a. a phosphate group is added.
b. ATP is exposed to light energy.
c. adenine bonds to ribose.
d. a phosphate group is removed.

_____ 2. Which of the following is not an example of a heterotroph?

a. mushroom b. grass c. leopard d. human

_____ 3. Which of the following is an autotroph?

a. mushroom b. dog c. monkey d. tree

_____ 4. Organisms that make their own food are called

a. autotrophs. b. heterotrophs c. thylakoids. d. decomposers

_____ 5. Which of the following is not a part of an ATP molecule?

a. adenine b. ribose c. glucose d. phosphate groups

_____ 6. Organisms that cannot make their own food and must obtain energy from foods they eat are called

a. producers b. autotrophs d. plants d. heterotrophs

Name _____ Class _____ Date _____

SHORT ANSWER Answer the questions in the space provided.

1. Where do autotrophs get their energy to produce food? (p.201)_____

_____

2. How do living things use ATP? (pp.202-203)_____

_____

3. How is one molecule of ATP formed from one molecule of ADP? (p.202)_____

_____

4. What are the differences between autotrophs and heterotrophs? (p.201)_____

_____

_____

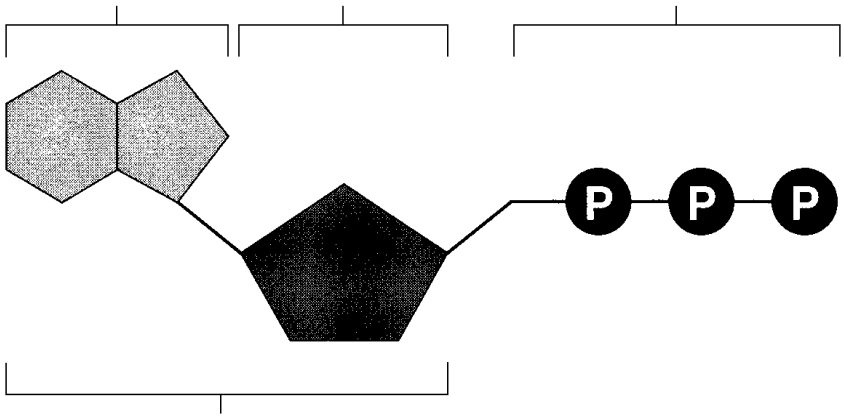
5. When is the energy stored in ATP released? (p.202)_____

_____

6. For what purpose do the characteristics of ATP make it exceptionally useful to all types of cells? (p.203)_____

_____

STRUCTURES AND FUNCTIONS Label each part of the ATP molecule illustrated below. Use the following terms: ribose sugar, phosphate groups, nitrogen base called adenine, and adenosine. (pp.202-203)



1. What is the chemical name for ATP? _____

2. Which two molecules form adenosine? _____

3. How much more energy is stored in one glucose molecule compared to the energy stored in one ATP molecule?

_____

Name _____ Class _____ Date _____

SECTION 8-2 REVIEW

PHOTOSYNTHESIS: AN OVERVIEW

VOCABULARY REVIEW **Define the following terms.**

1. white light _____

_____

2. **photosynthesis** _____

_____

3. **pigment** _____

_____

4. **chlorophyll** _____

_____

5. chloroplasts _____

_____

MULTIPLE CHOICE **Write the correct letter in the blank.**

_____ 1. Which scientist showed that plants used very little soil when they grew?

a. Calvin b. van Helmont c. Priestley d. Ingenhousz

_____ 2. Which of the following are used in the overall reactions for photosynthesis?

a. carbon dioxide b. light c. water d. All of the above.

_____ 3. Most plants appear green because chlorophyll

a. does not absorb light.
b. absorbs green light.
c. reflects green light.
d. absorbs all light.

_____ 4. Photosynthesis uses sunlight to convert water and carbon dioxide into

a. oxygen and chlorophyll.
b. ATP and ADP.
c. oxygen and high energy sugar.
d. nitrogen and minerals.

_____ 5. The color of light that is least useful to a plant during photosynthesis is

a. red. b. blue. c. green. d. violet.

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SHORT ANSWER Answer the questions in the space provided.

1. Describe how pigments obtain energy from sunlight. (p.207)_____

   _____

2. Write the overall equation for photosynthesis in both symbols and words. (p.206)_____

   _____

3. What is the relationship between pigments and photosynthesis? (p.207)_____

   _____

4. What does the mnemonic Roy G. Biv stand for? (think "rainbow")_____

   _____

5. If a plant is kept under green light for an extended period of time, what will happen to the plant's ability to produce carbohydrates, like glucose? (p.207)_____

   _____

6. A plant that has a high amount of carotene would have leaves of what color? Explain your answer. (p.207)

   _____

7. Design an experiment to test the effects of air pollution on plants. Be sure to include the control setup. (pp.8-10)

   Ask Question: Why are the plants along a dusty road smaller in size than those same kind of plants found along a freeway?

   Form Hypothesis: The dust that settles on the plant leaves blocks sunlight and interferes with photosynthesis.

   Design a Controlled Experiment for this Hypothesis:

Control Setup	Experimental Setup

Name _____ Class _____ Date _____

SECTION 8-3 REVIEW

THE REACTIONS OF PHOTOSYNTHESIS

VOCABULARY REVIEW **Distinguish between the terms in each of the following pairs of terms.**

1. **photosystem** I, **photosystem** II _____

_____

2. **thylakoid**, **stroma** _____

_____

3. **$NADP^+$**, NADPH _____

_____

4. **light dependent reaction**, **Calvin cycle** _____

_____

MULTIPLE CHOICE **Write the correct letter in the blank.**

_____ 1. The Calvin cycle takes place in the

a. stroma. b. stomata. c. granum. d. root.

_____ 2. The light independent reaction of photosynthesis is also known as the

a. Calvin cycle.
b. Priestley cycle.
c. Ingenhousz cycle.
d. None of the above.

_____ 3. The first process in the light dependent reaction of photosynthesis is

a. light absorption.
b. oxygen production.
c. electron transport.
d. ATP formation.

_____ 4. If you continue to increase the intensity of light that a plant receives, what happens?

a. The rate of photosynthesis increases with light intensity.
b. The rate of photosynthesis decreases with light intensity.
c. The rate of photosynthesis increases and then levels off.
d. The rate of photosynthesis does not change.

_____ 5. What is the final product of the Calvin cycle?

a. oxygen gas b. ATP c. NADPH d. high energy sugar

_____ 6. The stroma is the fluid filled interior of the chloroplast that surrounds the

a. thylakoids. b. chloroplasts. c. plant cells. d. Both b and c.

Name _____ Class _____ Date _____

SHORT ANSWER Answer the questions in the space provided.

1. List two factors that affect the rate of photosynthesis. (p.214)_____

   _____

2. Photosystems I and II are both located in the thylakoid membrane. What advantage does their proximity provide? (p.210)_____

   _____

3. What compounds are formed from carbon dioxide in the Calvin cycle? (pp.212-213)_____

   _____

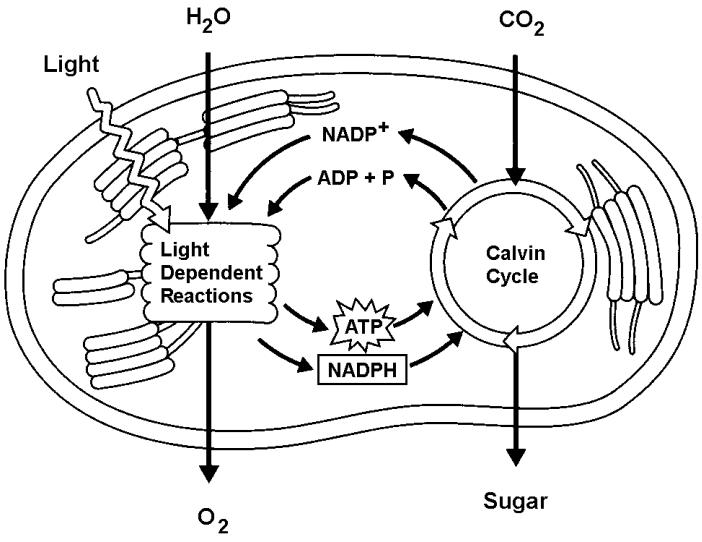
4. What effect does weather have on the process of photosynthesis? (p.214)_____

   _____

5. If there is no light coming into the chloroplasts, how will this affect the Calvin cycle? (p.212)_____

   _____

STRUCTURES AND FUNCTIONS Use the diagram below to answer the following questions on the lines provided. (p.209)



1. What process is shown in the above diagram? _____

2. What organelle is shown in this diagram? _____

3. What are the products of the light dependent reactions? _____

4. What are the products of the Calvin cycle? _____

5. What chemical from the atmosphere is used in the Calvin cycle to produce sugars? _____

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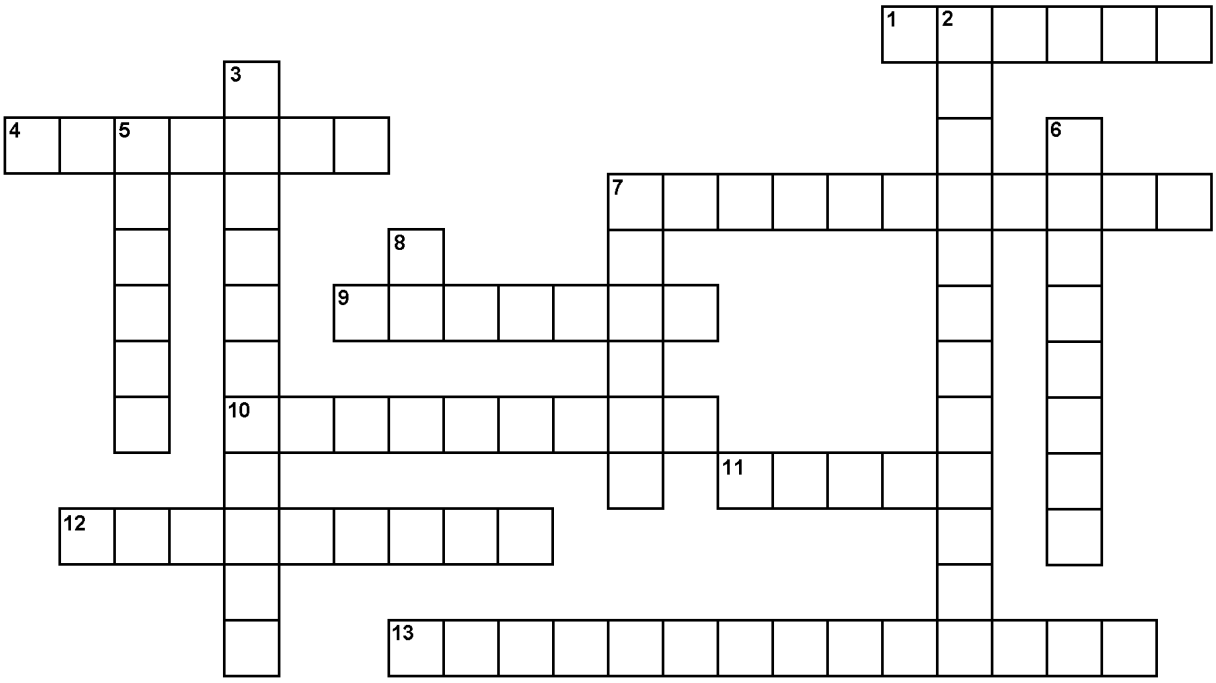
VOCABULARY - CHAPTER 8

The crossword puzzle is a simple way to master some of the more important vocabulary terms in this chapter.



Across

1. the fluid filled interior of the chloroplast where the dark reaction, or Calvin cycle, occurs
4. any substance that is capable of absorbing light energy
7. a green pigment
9. Roy G. Biv represents the colors of the ___ spectrum
10. a coin-shaped sac that contains plant pigments used in the light dependent reaction of photosynthesis
11. a high energy electron acceptor - nicotinamide adenine dinucleotide phosphate reduced; abbreviated
12. a producer, like plants, algae, and some bacteria
13. process that captures sunlight energy and converts CO_2 and H_2O into the sugar

Down

2. adenosine _____, also known as ATP, is a cell's main energy molecule
3. organism that cannot make its own food
5. a stack of thylakoids in a chloroplast
6. ATP _____ is an enzyme that adds a phosphate group to ADP
7. the _____ cycle occurs in the stroma of the chloroplast
8. the younger photosystem - it produces ATP and splits water; PS _____

The following term is **not** used in this chapter but is found in this puzzle. Use a reference source and look up its meaning so you can complete this vocabulary puzzle. **visible**.