



Name \_\_\_\_\_

Period \_\_\_\_\_

Date \_\_\_\_\_

**SECTION**  
**4.2**

OVERVIEW OF PHOTOSYNTHESIS  
**Study Guide**

**KEY CONCEPT**

The overall process of photosynthesis produces sugars that store chemical energy.

**VOCABULARY**

photosynthesis

light-dependent reactions

chlorophyll

light-independent reactions

thylakoid

**MAIN IDEA: Photosynthetic organisms are producers.**

1. Why are some organisms called producers?

\_\_\_\_\_

2. What is the function of photosynthesis?

\_\_\_\_\_

3. What is chlorophyll?

\_\_\_\_\_

**MAIN IDEA: Photosynthesis in plants occurs in chloroplasts.**

4. What are chloroplasts?

\_\_\_\_\_

5. In which two parts of a chloroplast does photosynthesis take place?

\_\_\_\_\_

6. What are thylakoids?

\_\_\_\_\_

7. Write the chemical equation for the overall process of photosynthesis. Then explain what the equation means and identify the reactants, products, and the meaning of the several arrows.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

8. What are the differences between the light-dependent reactions and the light-independent reactions?

\_\_\_\_\_

\_\_\_\_\_

## Section 4.2 STUDY GUIDE CONTINUED

Use the space below to sketch and label a chloroplast. On the sketch, write the four steps of the photosynthesis process.

**Vocabulary Check**

9. The prefix *photo-* means “light,” and *synthesis* means “to put together.” How do those meanings tell you what happens during photosynthesis?

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10. The prefix *chloro-* means “green,” and the suffix *-phyll* means “leaf.” How are these meanings related to chlorophyll?

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11. The prefix *in-* means “not.” How does this meaning tell you which reactions in photosynthesis require light, and which reactions do not?

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Name

Period

Date

**SECTION**  
**4.3**

PHOTOSYNTHESIS IN DETAIL

**Study Guide**

**KEY CONCEPT**

Photosynthesis requires a series of chemical reactions.

**VOCABULARY**

photosystem	ATP synthase
electron transport chain	Calvin cycle

**MAIN IDEA:** The first stage of photosynthesis captures and transfers energy.

1. Overall, what is the function of the light-dependent reactions?

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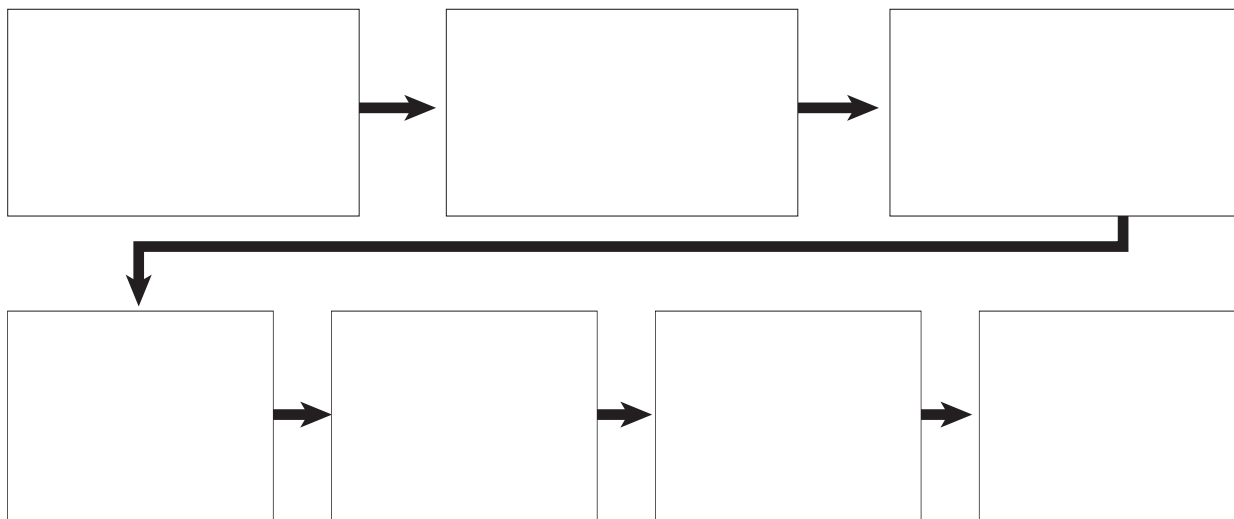
2. What are photosystems?

\_\_\_\_\_

3. Which molecules carry energy to the light-independent reactions?

\_\_\_\_\_

Fill in the sequence diagram below to follow the seven steps of the light-dependent reactions.



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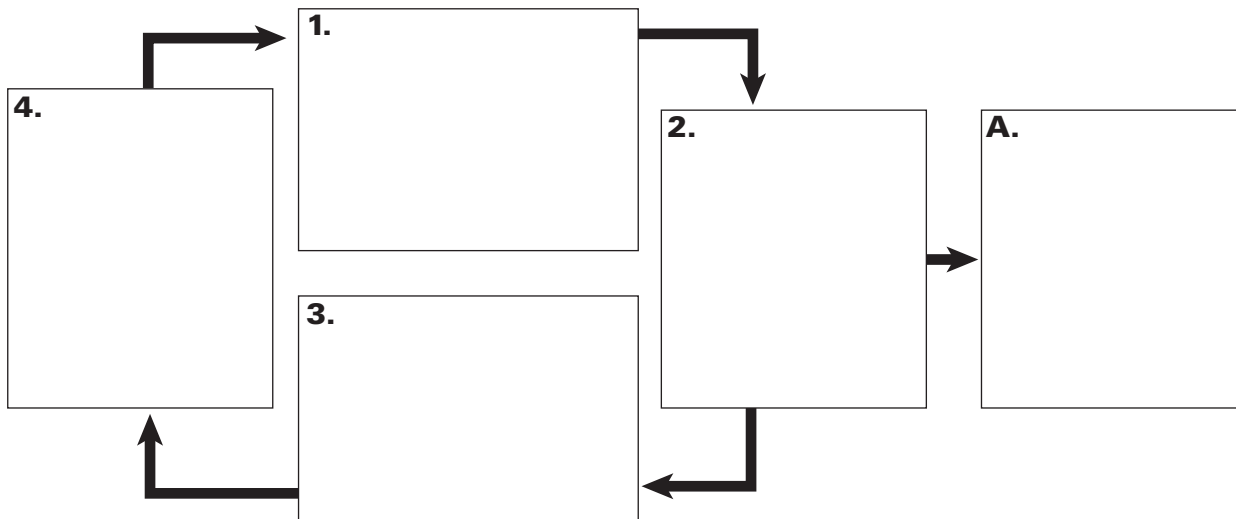
## Section 4.3 STUDY GUIDE CONTINUED

**MAIN IDEA:** The second stage of photosynthesis uses energy from the first stage to make sugars.

4. What is the function of the Calvin cycle?

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Fill in the cycle diagram to summarize the four steps of the Calvin cycle.



### Vocabulary Check

5. What is the electron transport chain?

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6. The first part of an enzyme's name tells you about its function. All enzymes end with the suffix *-ase*. What does this information tell you about ATP synthase?

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7. What does the word *cycle* tell you about the chemical reactions of the Calvin cycle?

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