

Student: \_\_\_\_\_

1. Energy gathering or concentrating mechanisms that allow light to be collected more efficiently during photosynthesis are called
  - A. mitochondria.
  - B. photosystems.
  - C. light-independent reactions.
  - D. ribulose.
2. The ATP and NADPH produced in the light-dependent reaction stage
  - A. become reactants for cellular respiration.
  - B. are waste products that the plant eliminates.
  - C. become the raw materials for the light-independent reaction stage.
  - D. are the end products of photosynthesis.
3. A correct equation for photosynthesis is
  - A.  $\text{SUN} + 6\text{O}_2 + 6\text{CO}_2 \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{H}_2\text{O}$ .
  - B.  $\text{SUN} + \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$ .
  - C.  $\text{SUN} + 6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$ .
  - D.  $\text{SUN} + 6\text{CO}_2 \rightarrow 6\text{H}_2\text{O} + \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$ .
4. The molecule that traps the sun's energy is
  - A. ATP.
  - B. glyceraldehyde-3-phosphate.
  - C. chloroplast.
  - D. chlorophyll.
5.  $\text{O}_2$  is a product of the
  - A. light-dependent reactions.
  - B. light-independent reactions.
  - C. light-capturing events
  - D. All of the choices are correct.
6. Glyceraldehyde-3-phosphate is an end product of
  - A. light-dependent reactions.
  - B. light-independent reactions.
  - C. glycolysis.
  - D. the electron transport system.
7. The production of ATP occurs
  - A. as hydrogen ions move across membranes.
  - B. in chloroplasts.
  - C. in mitochondria.
  - D. in all of the choices listed.
8. During the light-independent reactions of photosynthesis,
  - A. glyceraldehyde-3-phosphate is produced.
  - B. ADP is produced.
  - C.  $\text{NADP}^+$  is produced.
  - D. All of the choices are correct.

9. In photosynthesis C<sub>3</sub> plants differ from C<sub>4</sub> plants in
- the way they capture light.
  - the way they capture carbon dioxide.
  - the kind of chlorophylls they have.
  - None of the choices is correct.
10. Which of the following kinds of organisms can manufacture the greatest variety of organic compounds?
- aerobic bacteria
  - anaerobic bacteria
  - animals
  - plants
11. Crassulacean acid metabolism (CAM) is a form of photosynthesis that
- encourages the light-independent reactions to take place at night.
  - allows photosynthesis to take place without water.
  - encourages the light-dependent reactions to take place at night.
  - allows photosynthesis to take place without carbon dioxide.
12. The light-independent reactions of photosynthesis (Calvin cycle) take place in the
- thylakoids.
  - cytoplasm.
  - grana.
  - stroma.
13. The light-capturing events of photosynthesis involve
- the stroma.
  - mitochondria
  - cytoplasm.
  - chlorophyll.
14. This portion of photosynthesis is a series of oxidation-reduction reactions during which light energy is transferred to electrons so that the electrons move more rapidly.
- light-dependent reactions
  - proton pump
  - light capturing events
  - light-independent reactions
15. ATP, NADPH, CO<sub>2</sub>, and a five-carbon starter molecule called ribulose are needed for the \_\_\_\_\_ of photosynthesis to occur.
- light-dependent reactions
  - light-independent reactions
  - light-capturing events
  - All of the choices are correct.
16. Almost 80% of this molecule is used to regenerate ribulose so that photosynthesis can continue. The remaining 20% is used by the plant to make other organic molecules.
- pyruvic acid
  - acetyl CoA
  - glyceraldehyde-3-phosphate
  - glucose
17. \_\_\_\_ is NOT part of photosynthesis.
- Trapping the sun's energy
  - Converting glyceraldehyde-3-phosphate into usable energy
  - Splitting water molecules
  - Bonding carbon dioxide to ribulose

18. Water molecules are a reactant for
- the electron transport system.
  - the light-independent reactions.
  - the light-dependent reactions.
  - glycolysis.
19. \_\_\_\_ take(s) place within the grana.
- The light-dependent reactions
  - The light-independent reactions
  - The entire photosynthesis process
  - Aerobic cellular respiration
20. Glyceraldehyde-3-phosphate can do all of the following except
- be converted to usable energy for the cell.
  - manufacture lipids.
  - produce trace elements required for plant growth (nitrogen, magnesium, phosphorus, etc.).
  - be converted to ribulose.
21. The oxygen produced by a plant comes most directly from
- CO<sub>2</sub>.
  - H<sub>2</sub>O.
  - C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>.
  - glyceraldehyde-3-phosphate.
22. \_\_\_\_ is NOT needed for the light-dependent reactions.
- NADP
  - ADP + P
  - H<sub>2</sub>O
  - CO<sub>2</sub>
23. Two products of the light-dependent reactions, which become reactants for the light-independent reactions, are
- ATP and NADP.
  - CO<sub>2</sub> and H<sub>2</sub>O.
  - O<sub>2</sub> and ATP.
  - ATP and NADPH<sub>2</sub>.
24. The process of photosynthesis requires the raw materials
- O<sub>2</sub> and H<sub>2</sub>O.
  - CO<sub>2</sub> and H<sub>2</sub>O.
  - sugar and CO<sub>2</sub>.
  - H<sub>2</sub>O and sugar.
25. For the light-independent reactions to continue, glyceraldehyde-3-phosphate must be converted into
- ribulose.
  - carbon dioxide.
  - ATP.
  - glucose.
26. Which one of the following is NOT required for photosynthesis to take place?
- enzymes
  - ATP
  - oxygen
  - carbon dioxide

27. Photosynthesis takes place in
- both plants and animals.
  - animals but not plants.
  - plants but not animals.
  - bacteria only.
28. Which of the following tests would be the best for determining if a cell were carrying on photosynthesis?
- Does the cell contain water?
  - Does the cell produce carbon dioxide?
  - Does the cell release oxygen?
  - Does the cell require oxygen to stay alive?
29. Which is a general equation that summarizes the light-dependent reactions?
- $\text{excited electrons} + \text{H}_2\text{O} + \text{ADP} + \text{NADP}^+ \rightarrow \text{ATP} + \text{NADPH} + \text{O}_2$
  - $\text{ATP} + \text{NADPH} + \text{ribulose} + \text{CO}_2 \rightarrow \text{ADP} + \text{NADP}^+ + \text{complex organic molecule} + \text{ribulose}$
  - $\text{CO}_2 + \text{ATP} + \text{NADH} + 5\text{-ribulose} \rightarrow \text{glyceraldehyde-3-phosphate} + \text{NADP}^+ + \text{ADP} + \text{P}$
  - $\text{SUN} + 6\text{CO}_2 \rightarrow 6\text{H}_2\text{O} + \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
30. Which does NOT occur in the light-independent reactions?
- The 6-carbon molecule immediately divides into two 3-carbon molecules of glyceraldehyde-3-phosphate.
  - Hydrogens from NADPH are transferred to molecules in the Calvin cycle.
  - The 5-carbon ribulose is regenerated.
  - ADP and  $\text{NAD}^+$  are returned to the light-dependent reactions.
31. This form of photosynthesis allows photosynthesis to occur in arid environments while reducing the potential for water loss.
- Calvin cycle
  - Crassulacean acid metabolism
  - photon cycle
  - hydrologic cycle
32. Foxglove produces this valuable medicine used in the treatment of heart disease. The drug containing this compound is known as
- digitalis.
  - aspirin.
  - acetaminophen.
  - morphine.
33. During their life spans, green plants give off more oxygen to the atmosphere than they take in for use in
- fat metabolism.
  - respiration.
  - the Krebs cycle.
  - the Calvin cycle.
34. These reactions take place in the stroma in either the light or dark as long as ATP and NADPH are available.
- light capturing events
  - light-dependent reactions
  - light-independent
  - Calvin cycle

35. Which is used in photosynthesis but not in cellular respiration?
- NAD<sup>+</sup>
  - FAD
  - cytochromes
  - NADP<sup>+</sup>
36. Reaction centers are located in the
- grana.
  - thylakoid.
  - antenna complex.
  - All of the choices are correct.
37. The light energy trapped by the antenna complex is used to
- split water into H and O.
  - produce CO<sub>2</sub>.
  - generate ribulose.
  - All of the choices are correct.
38. Carbon fixation begins with carbon dioxide combining with a 5-carbon molecule,
- glucose.
  - ribulose.
  - NADP<sup>+</sup>
  - glyceraldehyde-3-phosphate.
39. Proton pumps are used in photosynthesis
- to pump protons into the thylakoid.
  - between photosystem II and photosystem I.
  - during the light-dependent reaction sequence.
  - All of the choices are correct.
40. Which wavelengths of light are **most likely** to be absorbed by chlorophyll a?
- UV
  - blue
  - red
  - infrared
41. Which wavelengths of light are **most likely** to be absorbed by chlorophyll b?
- UV
  - blue
  - red
  - infrared
42. Thylakoids are found in
- chloroplasts
  - mitochondria
  - liver cells
  - fungus cells
43. It is assumed that the chloroplasts of eukaryotes are evolved from
- animal cells.
  - photosynthetic bacteria.
  - algal cells.
  - fungus cells.

44. In this kind of photosynthesis, carbon dioxide does not directly enter the Calvin cycle but is carried out in two steps and two different kinds of cells.
- A. crassulacean acid metabolism
  - B. C<sub>3</sub>
  - C. C<sub>4</sub>
  - D. C<sub>5</sub>
45. Keeping a plant under green light will
- A. result in its death.
  - B. increase the rate of photosynthesis.
  - C. cause it to lose its accessory pigments.
  - D. cause it to set flowers.
46. Protons are pumped in which stage of photosynthesis?
- A. light-capturing
  - B. light-dependent reactions
  - C. light-independent reactions
  - D. glycolysis
47. Ultimately all organisms are dependant on photosynthesis for their food.  
True False
48. Recent scientific data shows that an increase in atmospheric carbon dioxide levels leads to an increase in photosynthesis and therefore an increase in food production.  
True False
49. Being very specific, the actual end product of photosynthesis is RuBisCO.  
True False

## 7 Key

1. Energy gathering or concentrating mechanisms that allow light to be collected more efficiently during photosynthesis are called
- A. mitochondria.
  - B.** photosystems.
  - C. light-independent reactions.
  - D. ribulose.

*Blooms Level: Understand  
Enger - Chapter 07 #1*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.  
Section: 07.01  
Section: 07.03*

*Topic: Photosynthesis*

2. The ATP and NADPH produced in the light-dependent reaction stage
- A. become reactants for cellular respiration.
  - B. are waste products that the plant eliminates.
  - C.** become the raw materials for the light-independent reaction stage.
  - D. are the end products of photosynthesis.

*Blooms Level: Understand  
Enger - Chapter 07 #2*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.  
Section: 07.03*

*Topic: Photosynthesis*

3. A correct equation for photosynthesis is
- A.  $SUN + 6O_2 + 6CO_2 \rightarrow C_6H_{12}O_6 + 6H_2O$ .
  - B.  $SUN + C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$ .
  - C.**  $SUN + 6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$ .
  - D.  $SUN + 6CO_2 \rightarrow 6H_2O + C_6H_{12}O_6 + 6O_2$ .

*Blooms Level: Remember  
Enger - Chapter 07 #3*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.  
Section: 07.02*

*Topic: Photosynthesis*

4. The molecule that traps the sun's energy is
- A. ATP.
  - B. glyceraldehyde-3-phosphate.
  - C. chloroplast.
  - D.** chlorophyll.

*Blooms Level: Remember  
Enger - Chapter 07 #4*

*Learning Outcome: Explain the role of pigments in photosynthesis.  
Section: 07.02*

*Topic: Photosynthesis*

5.  $O_2$  is a product of the
- A.** light-dependent reactions.
  - B. light-independent reactions.
  - C. light-capturing events
  - D. All of the choices are correct.

*Blooms Level: Remember  
Enger - Chapter 07 #5*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.  
Section: 07.02  
Section: 07.03*

*Topic: Photosynthesis*

6. Glyceraldehyde-3-phosphate is an end product of  
A. light-dependent reactions.  
**B.** light-independent reactions.  
C. glycolysis.  
D. the electron transport system.

*Blooms Level: Remember*  
*Enger - Chapter 07 #6*  
*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*  
*Section: 07.03*  
*Topic: Photosynthesis*

7. The production of ATP occurs  
A. as hydrogen ions move across membranes.  
B. in chloroplasts.  
C. in mitochondria.  
**D.** in all of the choices listed.

*Blooms Level: Remember*  
*Enger - Chapter 07 #7*  
*Learning Outcome: Describe other aspects of plant metabolism.*  
*Section: 07.03*  
*Topic: Photosynthesis*

8. During the light-independent reactions of photosynthesis,  
A. glyceraldehyde-3-phosphate is produced.  
B. ADP is produced.  
C. NADP<sup>+</sup> is produced.  
**D.** All of the choices are correct.

*Blooms Level: Understand*  
*Enger - Chapter 07 #8*  
*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*  
*Section: 07.03*  
*Topic: Photosynthesis*

9. In photosynthesis C<sub>3</sub> plants differ from C<sub>4</sub> plants in  
A. the way they capture light.  
**B.** the way they capture carbon dioxide.  
C. the kind of chlorophylls they have.  
D. None of the choices is correct.

*Blooms Level: Analyze*  
*Enger - Chapter 07 #9*  
*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*  
*Section: 07.03*  
*Topic: Photosynthesis*

10. Which of the following kinds of organisms can manufacture the greatest variety of organic compounds?  
A. aerobic bacteria  
B. anaerobic bacteria  
C. animals  
**D.** plants

*Blooms Level: Remember*  
*Enger - Chapter 07 #10*  
*Learning Outcome: Describe other aspects of plant metabolism.*  
*Section: 07.04*  
*Topic: Photosynthesis*

11. Crassulacean acid metabolism (CAM) is a form of photosynthesis that  
**A.** encourages the light-independent reactions to take place at night.  
B. allows photosynthesis to take place without water.  
C. encourages the light-dependent reactions to take place at night.  
D. allows photosynthesis to take place without carbon dioxide.

*Blooms Level: Understand*  
*Enger - Chapter 07 #11*  
*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*  
*Section: 07.03*  
*Topic: Photosynthesis*



12. The light-independent reactions of photosynthesis (Calvin cycle) take place in the
- A. thylakoids.
  - B. cytoplasm.
  - C. grana.
  - D. stroma.**

*Blooms Level: Remember  
Enger - Chapter 07 #12  
Section: 07.03  
Topic: Photosynthesis*

13. The light-capturing events of photosynthesis involve
- A. the stroma.
  - B. mitochondria
  - C. cytoplasm.
  - D. chlorophyll.**

*Blooms Level: Understand  
Enger - Chapter 07 #13  
Section: 07.03  
Topic: Photosynthesis*

14. This portion of photosynthesis is a series of oxidation-reduction reactions during which light energy is transferred to electrons so that the electrons move more rapidly.
- A. light-dependent reactions
  - B. proton pump
  - C. light capturing events**
  - D. light-independent reactions

*Blooms Level: Evaluate  
Enger - Chapter 07 #14  
Section: 07.03  
Topic: Photosynthesis*

15. ATP, NADPH, CO<sub>2</sub>, and a five-carbon starter molecule called ribulose are needed for the \_\_\_\_\_ of photosynthesis to occur.
- A. light-dependent reactions
  - B. light-independent reactions**
  - C. light-capturing events
  - D. All of the choices are correct.

*Blooms Level: Understand  
Enger - Chapter 07 #15  
Section: 07.03  
Topic: Photosynthesis*

16. Almost 80% of this molecule is used to regenerate ribulose so that photosynthesis can continue. The remaining 20% is used by the plant to make other organic molecules.
- A. pyruvic acid
  - B. acetyl CoA
  - C. glyceraldehyde-3-phosphate**
  - D. glucose

*Blooms Level: Apply  
Enger - Chapter 07 #16  
Section: 07.03  
Topic: Photosynthesis*

17. \_\_\_\_\_ is NOT part of photosynthesis.
- A. Trapping the sun's energy
  - B. Converting glyceraldehyde-3-phosphate into usable energy**
  - C. Splitting water molecules
  - D. Bonding carbon dioxide to ribulose

*Blooms Level: Evaluate  
Enger - Chapter 07 #17  
Section: 07.03  
Topic: Photosynthesis*

18. Water molecules are a reactant for  
A. the electron transport system.  
B. the light-independent reactions.  
**C.** the light-dependent reactions.  
D. glycolysis.

*Blooms Level: Remember  
Enger - Chapter 07 #18  
Section: 07.03  
Topic: Photosynthesis*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

19. \_\_\_\_ take(s) place within the grana.  
**A.** The light-dependent reactions  
B. The light-independent reactions  
C. The entire photosynthesis process  
D. Aerobic cellular respiration

*Blooms Level: Understand  
Enger - Chapter 07 #19  
Section: 07.03  
Topic: Photosynthesis*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

20. Glyceraldehyde-3-phosphate can do all of the following except  
A. be converted to usable energy for the cell.  
B. manufacture lipids.  
**C.** produce trace elements required for plant growth (nitrogen, magnesium, phosphorus, etc.).  
D. be converted to ribulose.

*Blooms Level: Understand  
Enger - Chapter 07 #20  
Section: 07.03  
Topic: Photosynthesis*

*Learning Outcome: Explain the role of glyceraldehyde-3-phosphate in plant metabolism.*

21. The oxygen produced by a plant comes most directly from  
A.  $\text{CO}_2$ .  
**B.**  $\text{H}_2\text{O}$ .  
C.  $\text{C}_6\text{H}_{12}\text{O}_6$ .  
D. glyceraldehyde-3-phosphate.

*Blooms Level: Understand  
Enger - Chapter 07 #21  
Section: 07.03  
Topic: Photosynthesis*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

22. \_\_\_\_ is NOT needed for the light-dependent reactions.  
A. NADP  
B.  $\text{ADP} + \text{P}$   
C.  $\text{H}_2\text{O}$   
**D.**  $\text{CO}_2$

*Blooms Level: Remember  
Enger - Chapter 07 #22  
Section: 07.03  
Topic: Photosynthesis*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

23. Two products of the light-dependent reactions, which become reactants for the light-independent reactions, are  
A. ATP and NADP.  
B.  $\text{CO}_2$  and  $\text{H}_2\text{O}$ .  
C.  $\text{O}_2$  and ATP.  
**D.** ATP and  $\text{NADPH}_2$ .

*Blooms Level: Understand  
Enger - Chapter 07 #23  
Section: 07.03  
Topic: Photosynthesis*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

24. The process of photosynthesis requires the raw materials
- A. O<sub>2</sub> and H<sub>2</sub>O.
  - B.** CO<sub>2</sub> and H<sub>2</sub>O.
  - C. sugar and CO<sub>2</sub>.
  - D. H<sub>2</sub>O and sugar.

*Blooms Level: Understand  
Enger - Chapter 07 #24*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.  
Section: 07.02*

*Topic: Photosynthesis*

25. For the light-independent reactions to continue, glyceraldehyde-3-phosphate must be converted into
- A.** ribulose.
  - B. carbon dioxide.
  - C. ATP.
  - D. glucose.

*Blooms Level: Understand  
Enger - Chapter 07 #25*

*Learning Outcome: Explain the role of glyceraldehyde-3-phosphate in plant metabolism.  
Section: 07.03*

*Topic: Photosynthesis*

26. Which one of the following is NOT required for photosynthesis to take place?
- A. enzymes
  - B. ATP
  - C.** oxygen
  - D. carbon dioxide

*Blooms Level: Remember  
Enger - Chapter 07 #26*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.  
Section: 07.03*

*Topic: Photosynthesis*

27. Photosynthesis takes place in
- A. both plants and animals.
  - B. animals but not plants.
  - C.** plants but not animals.
  - D. bacteria only.

*Blooms Level: Remember  
Enger - Chapter 07 #27*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.  
Section: 07.01*

*Topic: Photosynthesis*

28. Which of the following tests would be the best for determining if a cell were carrying on photosynthesis?
- A. Does the cell contain water?
  - B. Does the cell produce carbon dioxide?
  - C.** Does the cell release oxygen?
  - D. Does the cell require oxygen to stay alive?

*Blooms Level: Evaluate  
Enger - Chapter 07 #28*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.  
Section: 07.02*

*Section: 07.03*

*Topic: Photosynthesis*

29. Which is a general equation that summarizes the light-dependent reactions?  
**A.** excited electrons + H<sub>2</sub>O + ADP + NADP<sup>+</sup> → ATP + NADPH + O<sub>2</sub>  
 B. ATP + NADPH + ribulose + CO<sub>2</sub> → ADP + NADP<sup>+</sup> + complex organic molecule + ribulose  
 C. CO<sub>2</sub> + ATP + NADH + 5-ribulose → glyceraldehyde-3-phosphate + NADP<sup>+</sup> + ADP + P  
 D. SUN + 6CO<sub>2</sub> → 6H<sub>2</sub>O + C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> + 6O<sub>2</sub>

*Blooms Level: Evaluate*

*Enger - Chapter 07 #29*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

*Section: 07.03*

*Topic: Photosynthesis*

30. Which does NOT occur in the light-independent reactions?  
 A. The 6-carbon molecule immediately divides into two 3-carbon molecules of glyceraldehyde-3-phosphate.  
 B. Hydrogens from NADPH are transferred to molecules in the Calvin cycle.  
 C. The 5-carbon ribulose is regenerated.  
**D.** ADP and NAD<sup>+</sup> are returned to the light-dependent reactions.

*Blooms Level: Understand*

*Enger - Chapter 07 #30*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

*Section: 07.03*

*Topic: Photosynthesis*

31. This form of photosynthesis allows photosynthesis to occur in arid environments while reducing the potential for water loss.  
 A. Calvin cycle  
**B.** Crassulacean acid metabolism  
 C. photon cycle  
 D. hydrologic cycle

*Blooms Level: Remember*

*Enger - Chapter 07 #31*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

*Section: 07.03*

*Topic: Photosynthesis*

32. Foxglove produces this valuable medicine used in the treatment of heart disease. The drug containing this compound is known as  
**A.** digitalis.  
 B. aspirin.  
 C. acetaminophen.  
 D. morphine.

*Blooms Level: Remember*

*Enger - Chapter 07 #32*

*Learning Outcome: Describe other aspects of plant metabolism.*

*Section: 07.04*

*Topic: Photosynthesis*

33. During their life spans, green plants give off more oxygen to the atmosphere than they take in for use in  
 A. fat metabolism.  
**B.** respiration.  
 C. the Krebs cycle.  
 D. the Calvin cycle.

*Blooms Level: Evaluate*

*Enger - Chapter 07 #33*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

*Section: 07.03*

*Topic: Photosynthesis*

34. These reactions take place in the stroma in either the light or dark as long as ATP and NADPH are available.
- A. light capturing events
  - B. light-dependent reactions
  - C.** light-independent
  - D. Calvin cycle

*Blooms Level: Understand*  
*Enger - Chapter 07 #34*  
*Section: 07.03*  
*Topic: Photosynthesis*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

35. Which is used in photosynthesis but not in cellular respiration?
- A.  $\text{NAD}^+$
  - B. FAD
  - C. cytochromes
  - D.**  $\text{NADP}^+$

*Blooms Level: Evaluate*  
*Enger - Chapter 07 #35*  
*Section: 07.03*  
*Topic: Photosynthesis*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

36. Reaction centers are located in the
- A. grana.
  - B. thylakoid.
  - C. antenna complex.
  - D.** All of the choices are correct.

*Blooms Level: Remember*  
*Enger - Chapter 07 #36*  
*Section: 07.02*  
*Topic: Photosynthesis*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

37. The light energy trapped by the antenna complex is used to
- A.** split water into H and O.
  - B. produce  $\text{CO}_2$ .
  - C. generate ribulose.
  - D. All of the choices are correct.

*Blooms Level: Understand*  
*Enger - Chapter 07 #37*  
*Section: 07.03*  
*Topic: Photosynthesis*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

38. Carbon fixation begins with carbon dioxide combining with a 5-carbon molecule,
- A. glucose.
  - B.** ribulose.
  - C.  $\text{NADP}^+$
  - D. glyceraldehyde-3-phosphate.

*Blooms Level: Understand*  
*Enger - Chapter 07 #38*  
*Section: 07.03*  
*Topic: Photosynthesis*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

39. Proton pumps are used in photosynthesis
- A. to pump protons into the thylakoid.
  - B. between photosystem II and photosystem I.
  - C. during the light-dependent reaction sequence.
  - D.** All of the choices are correct.

*Blooms Level: Understand*  
*Enger - Chapter 07 #39*  
*Section: 07.03*  
*Topic: Photosynthesis*

*Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.*

40. Which wavelengths of light are **most likely** to be absorbed by chlorophyll a?  
A. UV  
B. blue  
**C.** red  
D. infrared

*Blooms Level: Remember  
Enger - Chapter 07 #40  
Learning Outcome: Explain the role of pigments in photosynthesis.  
Section: 07.03  
Topic: Photosynthesis*

41. Which wavelengths of light are **most likely** to be absorbed by chlorophyll b?  
A. UV  
**B.** blue  
C. red  
D. infrared

*Blooms Level: Remember  
Enger - Chapter 07 #41  
Learning Outcome: Explain the role of pigments in photosynthesis.  
Section: 07.03  
Topic: Photosynthesis*

42. Thylakoids are found in  
**A.** chloroplasts  
B. mitochondria  
C. liver cells  
D. fungal cells

*Blooms Level: Remember  
Enger - Chapter 07 #42  
Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.  
Section: 07.03  
Topic: Photosynthesis*

43. It is assumed that the chloroplasts of eukaryotes are evolved from  
A. animal cells.  
**B.** photosynthetic bacteria.  
C. algal cells.  
D. fungal cells.

*Blooms Level: Understand  
Enger - Chapter 07 #43  
Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.  
Section: 07.05  
Topic: Photosynthesis*

44. In this kind of photosynthesis, carbon dioxide does not directly enter the Calvin cycle but is carried out in two steps and two different kinds of cells.  
A. crassulacean acid metabolism  
B. C3  
**C.** C4  
D. C5

*Blooms Level: Analyze  
Enger - Chapter 07 #44  
Learning Outcome: Describe other aspects of plant metabolism.  
Section: 07.03  
Topic: Photosynthesis*

45. Keeping a plant under green light will  
**A.** result in its death.  
B. increase the rate of photosynthesis.  
C. cause it to lose its accessory pigments.  
D. cause it to set flowers.

*Blooms Level: Evaluate  
Enger - Chapter 07 #45  
Learning Outcome: Explain the role of pigments in photosynthesis.  
Section: 07.03  
Topic: Photosynthesis*

46. Protons are pumped in which stage of photosynthesis?  
A. light-capturing  
**B.** light-dependent reactions  
C. light-independent reactions  
D. glycolysis

*Blooms Level: Understand  
Enger - Chapter 07 #46  
Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.  
Section: 07.03  
Topic: Photosynthesis*

47. Ultimately all organisms are dependant on photosynthesis for their food.  
**TRUE**

*Blooms Level: Understand  
Enger - Chapter 07 #47  
Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.  
Section: 07.01  
Topic: Photosynthesis*

48. Recent scientific data shows that an increase in atmospheric carbon dioxide levels leads to an increase in photosynthesis and therefore an increase in food production.  
**FALSE**

*Blooms Level: Apply  
Enger - Chapter 07 #48  
Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.  
Section: 07.03  
Topic: Photosynthesis*

49. Being very specific, the actual end product of photosynthesis is RuBisCO.  
**FALSE**

*Blooms Level: Understand  
Enger - Chapter 07 #49  
Learning Outcome: Describe the reactants and products of the light-dependent and light-independent reactions of photosynthesis.  
Section: 07.03  
Topic: Photosynthesis*

# 7 Summary

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