

CHAPTER

20

DIRECTED READING WORKSHEET

Circulation and Respiration

As you read Chapter 20, which begins on page 486 of your textbook, answer the following questions.

This Really Happened . . . (p. 486)

1. What can doctors do if a person's heart fails?

2. In this chapter, you will study all of the following systems EXCEPT

- | | |
|----------------------------|-------------------------------|
| a. the respiratory system. | c. the cardiovascular system. |
| b. the digestive system. | d. the lymphatic system. |

What Do You Think? (p. 487)

Answer these questions in your ScienceLog now. Then later, you'll have a chance to revise your answers based on what you've learned.

Investigate! (p. 487)

3. What causes the throbbing called a pulse?

Section 1: The Cardiovascular System (p. 488)

4. The system that transports materials to and from your

_____ is made up of blood, the
_____, and blood
_____.

What Is Blood? (p. 488)

5. Your blood is a type of connective tissue.

True or False? (Circle one.)

Chapter 20, continued

6. Which of the following make up the plasma?

(Circle all that apply.)

- | | |
|---------------------------|-----------------------------|
| a. red blood cells | e. minerals |
| b. water | f. white blood cells |
| c. proteins | g. nutrients |
| d. platelets | h. sugars |

7. How does the shape of a red blood cell make it especially well suited for its job?

Mark each of the following statements *True* or *False*.

8. _____ Hemoglobin is a cell that helps to transport the oxygen you inhale to the rest of your body.
9. _____ The bone marrow is where red blood cells are produced.
10. _____ Red blood cells have a relatively short life span because they have no DNA and cannot make proteins.

Answer questions 11–15 after you finish reading about white blood cells on page 489. Choose the term in Column B that best matches the phrase in Column A, and write the corresponding letter in the space provided.

Column A	Column B
____ 11. a tiny particle that can make you sick	a. antibody
____ 12. a chemical that some WBCs release to help fight intruders	b. pathogen
____ 13. formed in the bone marrow	c. white blood cell
____ 14. where some WBCs mature	d. lymphatic organ

15. Which of the following statements are true of platelets?

(Circle all that apply.)

- a.** They last for 5 to 10 days.
- b.** They pinch off fragments of themselves to form a blood clot.
- c.** They are fragments of larger cells.
- d.** They help reduce blood loss.

Chapter 20, continued

Have a Heart (p. 490)

16. Your heart is a four-chambered muscular organ about the size of your

- a.** stomach. **c.** liver.
b. nose. **d.** fist.

17. What causes the lub-dub sounds of your heartbeat?

Use the diagram on page 490 to place the following steps of blood flow through the heart in the correct order. Write the appropriate number in the space provided.

- 18.** _____ Blood is squeezed into the ventricles when the atria contract.
- 19.** _____ Blood enters the atria.
- 20.** _____ Blood is pushed out of the heart when the atria relax and the ventricles contract.

Blood Vessels (p. 491)

21. Look at Figure 8. Capillaries connect

_____ to
 _____.

(large veins or small veins, large arteries or small arteries)

Choose the type of blood vessel in Column B that best matches the description in Column A, and write the corresponding letter in the space provided. Blood vessels can be used more than once.

Column A	Column B
<p>_____ 22. smallest blood vessels in the body</p> <p>_____ 23. direct blood away from the heart</p> <p>_____ 24. many substances can diffuse through their walls</p> <p>_____ 25. direct blood back to the heart</p> <p>_____ 26. push blood with the help of skeletal muscles</p> <p>_____ 27. very close to all living cells in the body</p> <p>_____ 28. have thick walls to withstand pressure</p>	<p>a. arteries</p> <p>b. capillaries</p> <p>c. veins</p>

Chapter 20, continued

Going with the Flow (p. 492)

- 29.** Pulmonary circulation is the process during which blood obtains oxygen from the lungs. True or False? (Circle one.)
- 30.** Systemic circulation is the circulation of blood between the heart and the lungs. True or False? (Circle one.)

Use the diagram on page 492 to answer the following questions. Indicate whether each of the following statements is a part of pulmonary or systemic circulation. In the space provided, write *P* if it is part of pulmonary circulation and *S* if it is part of systemic circulation.

- 31.** _____ Oxygen-poor blood travels through arteries to the lungs.
- 32.** _____ Oxygen-poor blood is delivered to the right atrium of the heart by two large veins.
- 33.** _____ The blood releases carbon dioxide and absorbs oxygen.
- 34.** _____ Oxygen, nutrients, and water are delivered to the body's cells.
- 35.** _____ Oxygen-rich blood pumps from the left ventricle into arteries.

Blood Flows Under Pressure (p. 493)

- 36.** How is blood running through your veins like water running through a hose?

- 37.** The units that blood pressure is reported in are _____.
- 38.** Figure 10 shows a person getting his blood pressure checked. How might your blood pressure indicate a problem with your cardiovascular system?

Chapter 20, continued

39. In a normal blood pressure reading of 120/80, the number 80 stands for the pressure in the
- arteries when the ventricles relax.
 - arteries when the ventricles contract.
 - ventricles when the ventricles relax.
 - ventricles when the ventricles contract.

Exercise and Blood Flow (p. 493)

Mark each of the following statements *True* or *False*.

- _____ When you exercise, blood flow is reduced to the brain, heart, and lungs so that more blood can go to the muscles.
- _____ Some of your organs, like your kidneys, do not need oxygen when you exercise.
- _____ When your heart beats faster, more oxygen and nutrients are being delivered to your muscles.
- _____ When all the “water faucets” in the body are open, the heart rate slows down.
- _____ Your brain directs blood flow.

Review (p. 493)

Now that you’ve finished reading the first part of Section 1, review what you’ve learned by answering the Review questions in your ScienceLog.

What’s Your Blood Type? (p. 494)

45. Is it safe to give a person blood of any type? Explain.

46. Everyone has type _____, _____, _____, or _____ blood.

Chapter 20, continued

Each of the following statements is false. Change the underlined word to make the statement true. Write the new word in the space provided.

47. Blood type is determined by the antibodies present on the surface of your red blood cells.

48. Type O blood has both A and B antigens.

49. Certain chemicals in plasma, called enzymes, can bind to RBCs and cause the RBCs to clump together.

50. Type O people are universal recipients.

Cardiovascular Problems (p. 495)

51. Cardiovascular problems occur only in the heart. True or False? (Circle one.)

52. Cardiovascular problems affect the movement of _____ through the body.

53. What is wrong with the blood vessel shown in Figure 12?

54. Which of the following statements is NOT true about hypertension?

- a. It is promoted by atherosclerosis.
- b. It weakens blood vessels.
- c. It is an abnormally low blood pressure.
- d. It can lead to a stroke.

Chapter 20, continued

55. List three things mentioned in the text that people can do to reduce their risk of cardiovascular disease.

Review (p. 495)

Now that you've finished Section 1, review what you learned by answering the Review questions in your ScienceLog.

Section 2: The Lymphatic System (p. 496)

1. Your cells are bathed in fluid. What happens to that fluid?

2. The lymphatic system and the cardiovascular system are both _____ systems.

Vessels of the Lymphatic System (p. 496)

3. Besides fluid, the lymph also contains _____ that are too large to enter the blood capillaries.
4. Lymph is carried into lymphatic vessels by _____, the smallest vessels of the lymphatic system.
5. Lymph is not pushed through the lymphatic system by a pump. How does it move?

CHAPTER

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DIRECTED READING WORKSHEET

Circulation and Respiration

As you read Chapter 20, which begins on page 486 of your textbook, answer the following questions.

This Really Happened . . . (p. 486)

1. What can doctors do if a person's heart fails?

They can temporarily replace the heart with an artificial heart, which may be
able to keep the patient alive for a short time.

2. In this chapter, you will study all of the following systems
EXCEPT

- a. the respiratory system. c. the cardiovascular system.
b. the digestive system. d. the lymphatic system.

What Do You Think? (p. 487)

Answer these questions in your ScienceLog now. Then later, you'll have a chance to revise your answers based on what you've learned.

Investigate! (p. 487)

3. What causes the throbbing called a pulse?

The pulse is caused by blood vessels expanding and then returning to their
original position with each heartbeat.

Section 1: The Cardiovascular System (p. 488)

4. The system that transports materials to and from your

cells is made up of blood, the
heart, and blood
vessels.

What Is Blood? (p. 488)

5. Your blood is a type of connective tissue.

True or False? (Circle one.)

Chapter 20, continued

6. Which of the following make up the plasma?

(Circle all that apply.)

- | | |
|---------------------------|-----------------------------|
| a. red blood cells | e. minerals |
| b. water | f. white blood cells |
| c. proteins | g. nutrients |
| d. platelets | h. sugars |

7. How does the shape of a red blood cell make it especially well suited for its job?

The shape of a red blood cell gives it a large surface area to absorb and
release oxygen.

Mark each of the following statements *True* or *False*.

8. False Hemoglobin is a cell that helps to transport the oxygen you inhale to the rest of your body.
9. True The bone marrow is where red blood cells are produced.
10. True Red blood cells have a relatively short life span because they have no DNA and cannot make proteins.

Answer questions 11–15 after you finish reading about white blood cells on page 489. Choose the term in Column B that best matches the phrase in Column A, and write the corresponding letter in the space provided.

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<u>b</u> 11. a tiny particle that can make you sick	a. antibody
<u>a</u> 12. a chemical that some WBCs release to help fight intruders	b. pathogen
<u>c</u> 13. formed in the bone marrow	c. white blood cell
<u>d</u> 14. where some WBCs mature	d. lymphatic organ

15. Which of the following statements are true of platelets?

(Circle all that apply.)

- a.** They last for 5 to 10 days.
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Chapter 20, continued

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- 16.** Your heart is a four-chambered muscular organ about the size of your
- a. stomach.
b. nose.
c. liver.
d. fist.
- 17.** What causes the lub-dub sounds of your heartbeat?

The lub-dub sounds of my heartbeat are caused by my heart valves closing.

Use the diagram on page 490 to place the following steps of blood flow through the heart in the correct order. Write the appropriate number in the space provided.

18. 2 Blood is squeezed into the ventricles when the atria contract.
19. 1 Blood enters the atria.
20. 3 Blood is pushed out of the heart when the atria relax and the ventricles contract.

Blood Vessels (p. 491)

- 21.** Look at Figure 8. Capillaries connect

small veins _____ to
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(large veins or small veins, large arteries or small arteries)

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<u> c </u> 25. direct blood back to the heart	
<u> c </u> 26. push blood with the help of skeletal muscles	
<u> b </u> 27. very close to all living cells in the body	
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Chapter 20, continued

Going with the Flow (p. 492)

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31. P Oxygen-poor blood travels through arteries to the lungs.
32. S Oxygen-poor blood is delivered to the right atrium of the heart by two large veins.
33. P The blood releases carbon dioxide and absorbs oxygen.
34. S Oxygen, nutrients, and water are delivered to the body's cells.
35. S Oxygen-rich blood pumps from the left ventricle into arteries.

Blood Flows Under Pressure (p. 493)

36. How is blood running through your veins like water running through a hose?

Water in the hose pushes against the inside of the hose and causes the
hose to stiffen, similar to the way blood pushing on veins causes the veins
to stiffen.

37. The units that blood pressure is reported in are mm Hg.

38. Figure 10 shows a person getting his blood pressure checked. How might your blood pressure indicate a problem with your cardiovascular system?

If your blood pressure is consistently high or low, it might indicate that
there is a problem with your cardiovascular system.

Chapter 20, continued

39. In a normal blood pressure reading of 120/80, the number 80 stands for the pressure in the
- a. arteries when the ventricles relax.
 - b. arteries when the ventricles contract.
 - c. ventricles when the ventricles relax.
 - d. ventricles when the ventricles contract.

Exercise and Blood Flow (p. 493)

Mark each of the following statements *True* or *False*.

40. False When you exercise, blood flow is reduced to the brain, heart, and lungs so that more blood can go to the muscles.
41. False Some of your organs, like your kidneys, do not need oxygen when you exercise.
42. True When your heart beats faster, more oxygen and nutrients are being delivered to your muscles.
43. True When all the “water faucets” in the body are open, the heart rate slows down.
44. True Your brain directs blood flow.

Review (p. 493)

Now that you’ve finished reading the first part of Section 1, review what you’ve learned by answering the Review questions in your ScienceLog.

What’s Your Blood Type? (p. 494)

45. Is it safe to give a person blood of any type? Explain.

No; it isn’t safe to give someone blood of any type because mixing some
blood types can cause a person’s RBCs to clump together, forming a clot,
which can block vessels and cause death.

46. Everyone has type A, B,
AB, or O blood.

Chapter 20, continued

Each of the following statements is false. Change the underlined word to make the statement true. Write the new word in the space provided.

47. Blood type is determined by the antibodies present on the surface of your red blood cells.

antigens

48. Type O blood has both A and B antigens.

Type AB

49. Certain chemicals in plasma, called enzymes, can bind to RBCs and cause the RBCs to clump together.

antibodies

50. Type O people are universal recipients.

donors

Cardiovascular Problems (p. 495)

51. Cardiovascular problems occur only in the heart. True or False?
(Circle one.)

52. Cardiovascular problems affect the movement of
blood through the body.

53. What is wrong with the blood vessel shown in Figure 12?

The blood vessel shown in Figure 12 has atherosclerosis, a cardiovascular problem in which fatty deposits build up inside the blood vessels. The deposits can block blood flow.

54. Which of the following statements is NOT true about hypertension?

- a. It is promoted by atherosclerosis.
- b. It weakens blood vessels.
- c. It is an abnormally low blood pressure.
- d. It can lead to a stroke.

Chapter 20, continued

55. List three things mentioned in the text that people can do to reduce their risk of cardiovascular disease.

Answers should include three of the following: never smoking; eating a diet low in animal fat, palm and coconut oils, and salt; eating many fruits, vegetables, and whole grains; and exercising regularly.

Review (p. 495)

Now that you've finished Section 1, review what you learned by answering the Review questions in your ScienceLog.

Section 2: The Lymphatic System (p. 496)

1. Your cells are bathed in fluid. What happens to that fluid?

The fluid is either reabsorbed by the capillaries or collected by my lymphatic system and returned to my blood.

2. The lymphatic system and the cardiovascular system are both _____ systems.

circulatory

Vessels of the Lymphatic System (p. 496)

3. Besides fluid, the lymph also contains _____ particles that are too large to enter the blood capillaries.
4. Lymph is carried into lymphatic vessels by _____ lymph capillaries, the smallest vessels of the lymphatic system.
5. Lymph is not pushed through the lymphatic system by a pump. How does it move?

The squeezing of the skeletal muscles forces the lymph to move through the vessels.