

**Life Science 7: The Human Body—Cardiovascular
System**

April 13 – April 17

Time Allotment: 30 minutes per day

Student Name: _____

Teacher Name: _____

Packet Overview

Date	Objective(s)	Page Number
Monday, April 13	School Holiday	
Tuesday, April 14	1. Explain the functions of the cardiovascular system. 2. Assess the importance of the human heart relative to other organs in humans.	2
Wednesday, April 15	1. Explain the functions of arteries, capillaries, and veins. 2. Analyze the complexity of the body being able to push blood opposite the force of gravity.	4
Thursday, April 16	1. Explain the four components of blood. 2. Analyze different blood types and what they mean for humans.	6
Friday, April 17	1. Assess the importance of the human heart relative to other organs in humans and other species.	8

Additional Notes: Welcome to your fourth week of Life Science distance learning. It was great to see a lot of you on Zoom the past week! This week, the Friday packet is our first opportunity to start your journaling about a system of the human body. I think it will be an exciting project for you. See details in the Friday, April 17 lesson. Be well, my fine Great-Hearted scholars!

“Zoom” Office Hours: The purpose of these sessions is to provide answers to questions you may have in a tutoring type of environment. All discussions, topics, and questions asked during this time is intended to augment the material and are not compulsory.

2nd Period: Monday & Wednesday, 11:00 am to 11:50 am

3rd Period: Monday & Wednesday, 1:00 pm to 1:50 pm

4th Period: Tuesday & Thursday, 10:00 am to 10:50 am

5th Period: Tuesday & Thursday, 11:00 am to 11:50 am

6th Period: Tuesday & Thursday, 1:00 pm to 1:50 pm

Academic Honesty

I certify that I completed this assignment independently in accordance with the GHNO Academy Honor Code.

Student signature:

I certify that my student completed this assignment independently in accordance with the GHNO Academy Honor Code.

Parent signature:

Tuesday, April 14

- Life Science Unit: Human Body—Cardiovascular System
- Lesson 1: The Heart and Circulation
- Lesson timeline: 15 minutes to read pages 400 – 406 in textbook; 15 minutes to fill out the notes and answer questions

Objectives: Be able to do this by the end of this lesson.

1. Explain the functions of the cardiovascular system.
2. Assess the importance of the human heart relative to other organs in humans.

I. Read Textbook pages 400-406 (15 minutes)

Lesson 1 Socratic Question: Keep this question in mind as you study this lesson!

After you read this lesson, you'll understand how the heart works and that its function is to pump blood to the lungs to get oxygen, and then circulates the oxygen rich blood to the entire body. It's a very mechanical process. Why then do authors, poets, and others reference feelings associated with the heart? For example, if your favorite football team loses in the playoffs, one might say that the devastating loss makes their heart ache. Or a loved one might tell you that they love you with all their heart.

II. Fill out the notes and answer questions below (15 minutes)

1. The cardiovascular system (also known as the _____ system), consists of the following organs: _____, _____, and _____. (page 400)
2. The cardiovascular system performs three functions (page 400):
 - a. _____
 - b. _____
 - c. the blood contains _____
3. The blood carries at least two important substances to the body: _____ and _____. (page 401)
4. Unlike in plants, _____ is considered a waste product for humans, and it is carried by the blood to the lungs, where it is exhaled. (page 401)
5. The heart is a _____, muscular organ that pumps blood throughout the body. Your heart is about the size of your _____. (page 402)
6. The upper chambers of the heart are the left and right _____. The two lower chambers are the left and right _____. _____ are flaps of tissue that prevent blood from flowing backward as it moves through the heart. (page 402)

7. Go to a quiet room and place your fingers on your ear flaps to seal off sound from entering your ears. Keep your fingers like this, close your eyes, and listen. You can hear the blood flowing throughout your body. As you listen, you may faintly hear the “lub dub” sound associated with your heartbeat. What causes this “lub dub” sound? (page 402 and 403)

8. A group of cells in the heart, called the _____, send the signals to make the cardiac muscles contract. It receives internal stimuli from the body and adjusts heartrate according to how much oxygen is needed by the rest of the body. This small group of cells is the reason that your heart beats much faster during exercise, when your muscles need more oxygen to function. (page 404)

9. _____ are blood vessels that carry blood away from the heart. _____ are vessels that carry blood from the body back to the heart. Blood flows into tiny vessels, called _____, where substances like oxygen and carbon dioxide are exchanged between the blood and body cells. (page 404)

10. Describe the two loops associated with the pattern of blood flow. (page 405 and 406)

Loop One:

Loop Two:

Wednesday, April 15

- Life Science Unit: Human Body—Cardiovascular System
- Lesson 2: Blood vessels
- Lesson timeline: 15 minutes to read pages 407 – 411 in textbook; 15 minutes to fill out notes and answer the questions in Section II.

Objective(s): Be able to do this by the end of this lesson.

1. Explain the functions of arteries, capillaries, and veins.
2. Analyze the complexity of the body being able to push blood opposite the force of gravity.

I. Read pages 358 – 364 in textbook (15 minutes)

Lesson 2 Socratic Guiding Question: Keep this question in mind as you study!

If blood pressure indicates the relative strength of the heart’s contractions, why is high blood pressure considered bad? Wouldn’t it mean that your heart is stronger? Stronger contractions in skeletal muscles are considered an indicator of strength, but is it different in cardiac muscles?

II. Notes and discussion questions about textbook reading, pages 358 – 364. (10 minutes)

1. Do your best to fill in this flow chart of the heart, blood vessels, lungs, and transportation to the body tissues. (page 407)

Heart → _____ Artery → Lungs → Left _____ → Left _____ →
 _____ (largest blood vessel in the body) → Arteries → _____ = Oxygenated
 Blood to all the body’s organs and tissues

2. Describe the structure of an artery. (page 407 and 408)

3. Describe the structure of a vein. (page 410)

4. How are veins and arteries different in form and function? (page 408 – 410)

5. Create a flow chart, like the one for #1, only for veins. (page 410) (Hint: Heart would be the last stop in the flow chart)

6. In the capillaries, materials are exchanged between the _____ and the _____.
(page 409)

7. Describe the process of diffusion and how it is important for the body. (page 409)

8. Blood exerts a pressure, called blood pressure on the walls of blood vessels. This pressure is caused by the force with which the _____ contract. (page 411)

9. The further you move away from the heart, the force or pressure *increases* or *decreases*.
(Circle or underline correct answer)

10. In as many ways as possible, describe how blood can flow from your legs, back up to your heart...against the force of gravity. (at least 3 separate reasons)

Thursday, April 16

- Life Science Unit: Human Body—Cardiovascular System
- Lesson 3: Blood and Lymph
- Lesson timeline: **15 minutes to read pages 413 – 418; 15 minutes to fill in notes and answer the questions**

Objective(s): Be able to do this by the end of this lesson.

1. Explain the four components of blood.
2. Analyze different blood types and what they mean for humans.

I. Read pages 413 – 418 in your textbook (15 minutes)

Lesson 3 Socratic Guiding Question: Keep this question in mind as you study!

II. Notes and discussion questions about textbook reading. (15 minutes)

1. List the four components of blood. Next to each component, label it is a cell, a part of a cell, or a liquid. (page 382, 383).

2. Plasma is the primary transporter of everything but oxygen. In fact ___ percent of plasma is made up of dissolved materials, while the ___ percent is water. (page 413)

3. Name 6 different types of molecules that plasma carries. (page 413)

4. Red blood cells are the transporter of oxygen received from the lungs and then delivered throughout the body. Red blood cells are produced in the _____. These cells contain an iron-containing protein, called _____, which binds chemically to oxygen molecules. (page 414)

5. Describe 4 ways in which white blood cells are different that red blood cells. (page 415)

6. What does the textbook describe as the main function of platelets? (page 416)

7. What is the name of the protein that is formed by a chemical chain reaction started by the platelets? (page 416) _____

8. This blood type is the universal donor: _____. (can be **transfused** into a person with any blood type) This blood type is the universal recipient: _____. (can be **received** from a person with any blood type) (page 417)

9. Explain why a person with type O blood cannot receive a transfusion of type A blood. (page 417)

10. Where does lymph come from? What happens to lymph after it travels through the lymphatic system? (page 418)

Friday, April 17

- Life Science Unit: Human Body—Cardiovascular System
- Lesson 4: Cardiovascular System Review
- Lesson timeline: **7 minutes** to read Study Guide on page 425; **23 minutes** to work on **Cardiovascular System Project**

Objective(s): Be able to do this by the end of this lesson.

1. Assess the importance of the human heart relative to other organs in humans and other species.

I. Read Study Guide on Page 425 in your textbook (5 minutes)

II. Cardiovascular System Project (25 minutes)

PROCEDURES:

1. Get out a plain sheet of paper and turn to page 403 in your textbook.
2. At the very top of your paper, write your name and class period.
3. Label the top of the paper with the Heading, "The Cardiovascular System".
4. Trace the diagram of the heart from page 403 so that your picture is in the relative center of the piece of paper. It doesn't have to be a perfect picture, and I expect this part of you to take between 5 to 10 minutes. Please do include the arrows that indicate the flow of blood.
5. The next part of this project is up to your imagination. I want you to connect the arrows (arteries) from the lungs to the heart (oxygenated blood) and then show the flow of oxygenated blood to the body. *Your diagram of the connection to the lungs does not need to be in scale with the heart.*
6. Next connect the return of de-oxygenated blood through the veins, back to the heart, and then to the lungs. *Your diagram of the connection does not need to be in scale with the heart. (Steps 5 and 6 should take 10 to 12 minutes)*
7. Finally, draw two small boxes in the bottom left and bottom right corner of the paper. Pick two organ systems that benefit from the cardiovascular system (see list on page 339). Label one of the boxes with an organ system and describe in words at least 2 things that it receives from the cardiovascular system that are necessary for its proper function. Now do the same thing for the second box.
8. See next page for a rough sketch of Steps 1 – 4, to give you an idea of the layout. Steps 5 and 6 are up to you! For Step 7, you should fill in the boxes with a description in writing, not a picture.
9. Set a timer for 25 minutes. If you have not finished when the timer goes off, you may use 10 minutes to finish the project during your next lesson on Monday, April 20.

Name: _____

Class Period: _____

Cardiovascular System

