

**Life Science 7: The Human Body—Muscular System,  
Skin, and Digestive System**

April 6 – April 9

*Time Allotment: 30 minutes per day*

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

Teacher Name: \_\_\_\_\_

## Packet Overview

Date	Objective(s)	Page Number
Monday, April 6	1. Explain the two types of muscle action and the three types of muscles in the human body 2. Analyze how muscles work and differentiate between the human muscle system and other vertebrates.	2
Tuesday, April 7	1. Explain the functions of the skin. 2. Evaluate the two layers of skin and the components of each layer	4
Wednesday, April 8	1. Evaluate the functions of the digestive system. 2. Analyze what other organ systems work in concert with the digestive system.	6
Thursday, April 9	1. Evaluate the functions of the digestive system. 2. Analyze what other organ systems work in concert with the digestive system.	8
Friday, April 10	School Holiday	N/A

**Additional Notes:** Welcome to your third week of Life Science distance learning. We'll begin introducing additional methods of learning this week, starting with optional video class time together. I hope that you have taken the opportunity to observe nature...if not, take some time this week to make an observation! Be well, my fine Great-Hearted scholars!

**“Zoom” Office Hours:** The purpose of these sessions are to answer 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 is not compulsory. A meeting link will be sent to your parent(s)/guardian(s) email address.

**2<sup>nd</sup> Period:** Monday & Wednesday, 11:00 am to 11:50 am

**3<sup>rd</sup> Period:** Monday & Wednesday, 1:00 pm to 1:50 pm

**4<sup>th</sup> Period:** Tuesday & Thursday, 10:00 am to 10:50 am

**5<sup>th</sup> Period:** Tuesday & Thursday, 11:00 am to 11:50 am

**6<sup>th</sup> 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:*

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**Monday, April 6**

- Life Science Unit: Human Body—Muscular System, Skin, and Digestive System
- Lesson 1: Muscular System
- Lesson timeline: 10 minutes to read pages 352 – 356 in textbook; 15 minutes to answer the questions included below the reading; 5 minutes to conduct an experiment

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

1. Explain the two types of muscle action and the three types of muscles in the human body.
2. Analyze how muscles work and differentiate between the human muscle system and other vertebrates.

**I. Read Textbook pages 352-356 (10 minutes)**

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

As you sit completely still, how many muscles in your body do you think are actively working? What about when you are sleeping? Is this the same for all vertebrates?

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

1. A human has about \_\_\_\_ (number) muscles. (page 352)

2. \_\_\_\_\_ muscles are ones that are not under your conscious control. Two examples of these types of muscles:

\_\_\_\_\_

3. \_\_\_\_\_ muscles are under your control. Two examples of these muscles: \_\_\_\_\_ and \_\_\_\_\_. (page 352)

\_\_\_\_\_

4. Name the three types of muscles in the human body and write out the definition of each type of muscle. (page 353 - 355)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. Skeletal muscles are the only type of muscle that attaches to bone. What is the name of the connective tissue that attaches the muscle to the bone? \_\_\_\_\_ (page 354)

6. On page 355, the book describes that muscles can only contract (or get shorter). In your own words describe what must happen when you use your bicep to bring your hand towards your body and then extend your hand away from your body. (page 355)

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7. How do voluntary and involuntary muscles differ in structure and function? (page 352 – 355)

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8. Let's return to our friend, the sloth. Now that you've read about the features of skeletal muscles, and the fact that they are striated (or banded), how do you think the sloth's skeletal muscles might differ in their striations? Remember that the textbook gives an example of a swim meet in which the swimmer quickly reacts to the starting gun.

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### III. Experiment Time!

**PURPOSE:** Demonstrate that the muscular system is only as good as the nervous system.

**BACKGROUND:** Have you ever picked up the wrong the can of soda? Maybe you had just about finished a can of soda, and placed it down somewhere, and you came back a few minutes later and started to pick it up to have a sip. If you happened to do this and grabbed the wrong can, this one almost completely full, what happened when you did this? Why?

**METHODS/MATERIALS:** Enlist the help of a sibling, guardian, or parent. Using three cans (or if cans aren't available, three plastic cups) fill them with various levels of water. Fill one so that it is almost full, fill another halfway, and for the third, put in a little bit of water. Create labels next to the cups, one labeled "full", one labeled "half", and one labeled "almost empty". Close your eyes, and have your helper arrange the cups so that may or may not match the labels.

**OBSERVATION:** If you are using cans, you may open your eyes. If you are using plastic cups, keep yours eyes closed. Now grab one of the cups and try to pretend that the labels are accurate. If you are able to convince yourself that the labels are accurate you could have some interesting results as you pick up each of the cans/cups.

**CONCLUSION:** Our skeletal muscular system relies on senses and on the nervous system to do almost all of its tasks. Organ systems rely on one another in almost every activity.

**Tuesday, April 7**

- Life Science Unit: Human Body—Muscular System, Skin, and Digestive System
- Lesson 2: Skin
- Lesson timeline: 20 minutes to read pages 358 – 364 in textbook; 20 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 the skin.
2. Evaluate the two layers of skin and the components of each layer.

**I. Read pages 358 – 364 in textbook (see pages below) (20 minutes)**

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

According to the textbook, “Many blood vessels run through the skin. When you become too warm, these blood vessels enlarge to increase the amount of blood that flows through them. This allows heat to move from your body into the outside environment.” Think about this in terms of homeostasis. Can you apply this idea of responsiveness the same at the macro-level (whole body) and the micro-level (individual cells)?

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

1. Describe seven functions of the skin. (pg 358)

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2. Page 359, “The skin helps the body maintain homeostasis, or stable internal conditions, by keeping body temperature steady in spite of changing external conditions.”

a. How is this different from the sloth?

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b. How is this similar to the elephant (name a specific body part)?

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3. The skin does so many things, but one of the most incredible is the way it interacts with the environment. The nerves in the skin provide information about such things as \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_. (page 359)

4. As sensitive as human skin is to the environment, the sloth is just the opposite. Come up with a hypothesis about why the sloth was so insensitive to pain.

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5. The skin consists of two main layers, the \_\_\_\_\_ and the \_\_\_\_\_. (page 360)

6. The epidermis is mostly responsible for providing a protective barrier. Describe at least two ways in which the epidermis protects the body. (page 360 and 361)

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7. The dermis contains nerves, blood vessels, sweat glands, hairs, and oil glands. Based on the textbook and on your own reasoning, describe what each of these structures might do for the skin. (page 361)

Nerves: \_\_\_\_\_

Blood Vessels: \_\_\_\_\_

Sweat Glands: \_\_\_\_\_

Hairs: \_\_\_\_\_

Oil Glands: \_\_\_\_\_

**Wednesday, April 8**

- Life Science Unit: Human Body—Muscular System, Skin, and Digestive System
- Lesson 3: The Digestive System
- Lesson timeline: **15 minutes** to read pages 382 – 387; **15 minutes** to fill in notes and **answer the questions**

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

1. Evaluate the functions of the digestive system.
2. Analyze what other organ systems work in concert with the digestive system.

**I. Read pages 382 – 387 in your textbook (15 minutes) (Is that a young Mr. Luke in the picture on page 383??)**

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

Do you think that the length of time for digestion can tell you anything about the level of activity or the overall function of a particular animal?

**II. Notes and discussion questions about textbook reading, pages 382 - 387 (15 minutes)**

1. List the three important functions that the digestive system performs for the body (page 382, 383).

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2. If you had to describe, in writing (to someone who had not read the textbook), how would you describe the difference between mechanical and chemical digestion? (page 384)

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3. List the parts of the digestive system that are involved in mechanical digestion. (Hint: there are at least 4) (page 384 - 387)

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4. List the parts of the digestive system that are involved in chemical digestion. (Hint: there are at least 3) (page 384 - 387)

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5. Terms and Definitions

Digestion (page 382): \_\_\_\_\_

Absorption (page 383): \_\_\_\_\_

Saliva (page 384): \_\_\_\_\_

Enzyme (page 384): \_\_\_\_\_

Epiglottis (page 385): \_\_\_\_\_

Esophagus (page 385): \_\_\_\_\_

Peristalsis (page 385): \_\_\_\_\_

6. Explain how the structure of the incisors relates to their function. (page 384)

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7. Describe peristalsis and explain its function in the digestive system. (page 385)

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8. What is the function of pepsin? (page 386)

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9. What other organ systems are involved in the digestive system? How?

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**Thursday, April 9**

- Life Science Unit: Human Body—Muscular System, Skin, and Digestive System
- Lesson 4: The Digestive System
- Lesson timeline: **10 minutes** to read pages 390 - 393; **20 minutes** to answer the questions included below the reading

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

1. Evaluate the functions of the digestive system.
2. Analyze what other organ systems work in concert with the digestive system.

**I. Read Pages 390 – 393 from your textbook (10 minutes)**

**Lesson 4 Socratic Guiding Question:** Keep this question in mind as you study!

Is there any organ system in the body (Figure 3 on page 339) that does not rely on the digestive system? Why or why not?

**II. Notes and discussion questions about pages 390 - 393 (20 minutes)**

1. What two digestive processes occur in the small intestine? Briefly describe each process (page 390/391)

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2. Which nutrient is absorbed in the large intestine? (page 393) \_\_\_\_\_

3. How do the liver and pancreas function in the digestive process? (page 391/392)

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4. Bile is produced by the \_\_\_\_\_. (page 391)

5. (Long answer question) What is your assessment of the role of the digestive system as it relates to other organ systems of the body? Look at Figure 3 on page 339 and A) describe the role that other organ systems play to help the digestive system function and B) analyze and explain which organ systems might benefit from the actions of the digestive system. I understand that you haven't studied all the organ systems yet, but I want you to do your best to analyze it based on what you know about digestion and how organ systems work together.

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