



Republic of the Philippines  
Department of Education

**DIVISION OF PARAÑAQUE CITY**

**6**

# SCIENCE

**Self-Learning Module**



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**SCIENCE 6**  
**QUARTER 2 MODULE 1 WEEK 1**



**Learning Competencies (Essential Competencies)**

Explain how the organs of each organ system work together (S6LTIa-b-1.1.1)



**Objective:**

Identify and describe the functions of the organs of the musculoskeletal system.



**Let's Recall (Review)**

**Direction:** Fill in the blanks with the correct answer. Choose your answer from the word bank.

<b>Word Bank:</b>	skull	ribs	joints
	pairs	protection	bones

**BONES AND MUSCLES**

Our skeleton is very useful. They have three functions:(1) \_\_\_\_\_, support and movement. The (2) \_\_\_\_\_protects our brain and the (3) \_\_\_\_\_protects our heart and lungs. Without joints our bodies would have collapsed.

Bones are connected by (4) \_\_\_\_\_. Likewise, knees are joints. Muscles are attached to the\_bones of our skeleton. They allow our bones to move by contracting and relaxing. Muscles usually work in (5) \_\_\_\_\_. On the other hand, cartilage protects the bones and allows them to move easily.



**Let's Understand**

The musculoskeletal system is made up of the body's bones (the skeleton), muscles, cartilage, tendons, ligaments, joints, and other connective tissue that supports and binds tissues and organs together. Its primary functions include supporting the body, allowing motion, and protecting vital organs. The musculoskeletal system provides form, support, stability, and movement to the body.

The skeleton, muscles, cartilage, tendons, ligaments, joints, and other connective tissues are all part of the musculoskeletal system, which work together to provide the body with support, protection, and movement.

The bones of the skeletal system protect the body's internal organs, support the weight of the body, and serve as the main storage system of calcium and phosphorus.

The muscles of the muscular system keep bones in place; they assist with the

movements by contracting and pulling on the bones.

To allow motion, different bones are connected by joints which are connected to other bones and muscle fiber via connective tissues such as tendons and ligaments.

Cartilage prevents the bone ends from rubbing directly on each other.

Malnutrition and arthritis are examples of disorders and diseases in the body that can severely impair the function of the musculoskeletal system.

Musculoskeletal System provides a form of support, stability, movement, and protection to organs.

### Parts and Functions of the Organs of the Musculoskeletal System

PARTS	FUNCTIONS
Bones	body support, vital organs protection, blood cell protection, mechanical basis for movement
Muscles	produce movements, body support, joint stability, body heat production
PARTS	FUNCTIONS
Soft Tissue Structure	
Tendons	bond of fibrous connective tissue that connect muscle to the bone
Ligament	bond of fibrous connective tissue that connects bone to the bone
Synovial membrane	lines the synovial cavity, secretes synovial fluid that lubricates the joint
Joint capsule	dense fibrous connective tissue that encloses and protects the joint
Additional hard tissue	
Joints	two bones connected to each other
Cartilage	cushion between joints, not as rigid as bone, not as flexible as muscle

- A tendon is a band of tissue that connects muscle to the bone. A ligament is an elastic band of tissue that connects bone to bone and provides stability to the joint. Cartilage is a soft, gel-like padding between bones that protects joints and facilitates movement.

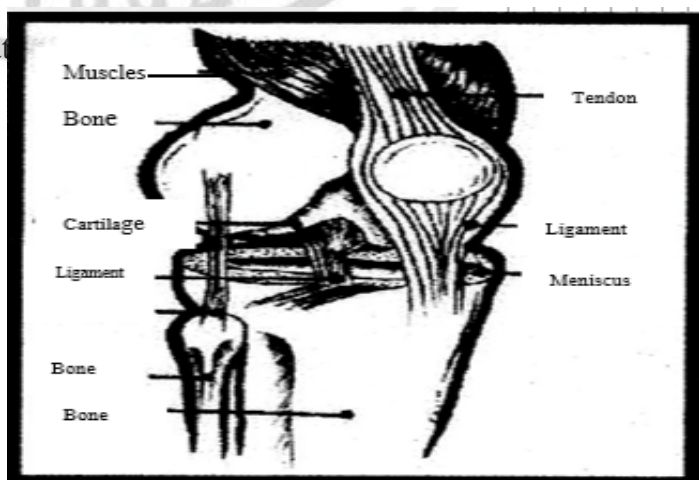


Photo credit to: Ericson Young Villasoto

## Study how muscles work!

Muscles that move your bones work in pairs. When one contracts, the other must relax. For example, your biceps must relax and lengthen when your triceps contract and shorten

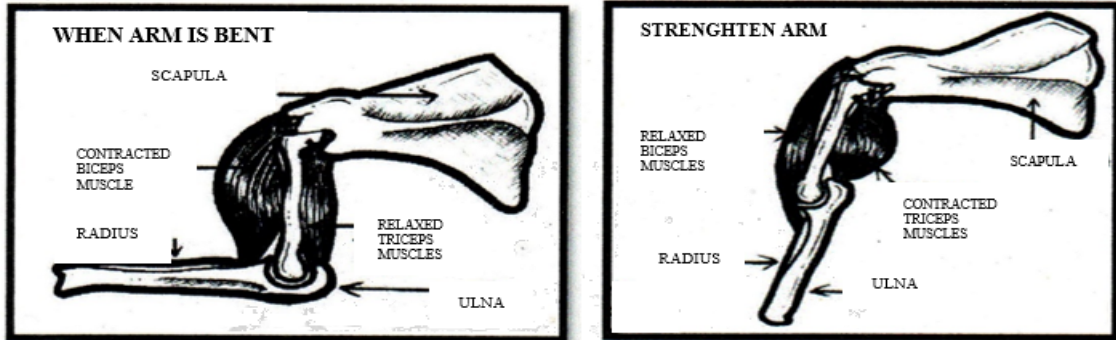


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### Let's Apply

**Direction:** Explain how the boys playing basketball use their musculoskeletal system. Write your explanation on the space provided below.




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Photo credit to: Ericson Young Villasoto



### Let's Analyze

Fill in the missing spaces with the organ or function of the musculoskeletal system.

PARTS	FUNCTION
bones	-
-	produce movements, body support stability, body heat production

cartilage	-
tendons	-
-	bond of fibrous connective tissue that connects bone to bone
joints	-



### Let's Try (Evaluation)

**Direction:** Read each question carefully. Choose the letter of the correct answer. Write your answer on the space provided before the number.

\_\_\_\_\_ 1. Which of the following is NOT the function of the musculoskeletal system?

- A. allowing motion
- B. circulating blood
- C. supporting the body
- D. protecting vital organs

\_\_\_\_\_ 2. Given the following characteristics of muscles, which describes skeletal muscles?

- A. they are muscles found in the heart
- B. they are muscles found in the brain
- C. they are tissues that connect muscle to another muscle
- D. they are muscles which are attached to the bones and are responsible for movement.

\_\_\_\_\_ 3. Cartilage serves as a cushion to joints. Which of the following is/are the function/s of cartilage?

- I. soft
  - II. gel-like padding
  - III. prevents movement
  - IV. connects muscles to bones
- A. I and II      B. II and III      C. I and IV      D. III and IV

\_\_\_\_\_ 4. How do muscles work?

- A. they work by branches
- B. they work in groups
- C. they work according to order or sequence
- D. they work in pairs

\_\_\_\_\_ 5. In movement, what happens with biceps when the triceps contract?

- A. they contract
- B. they freeze
- C. they relax
- D. they stretch



### Objective

At the end of this activity, learners should be able to describe how the organs of the digestive, respiratory and circulatory systems work together.



**Let's Recall**

A. **Direction:** Label the parts of the human digestive system. Choose your answer from the word bank found below. Write your answer on the space provide below.

**WORD BANK**

mouth	stomach	small intestine	lungs
gallbladder	bile duct	liver	pancreas
anus	diaphragm	rectum	pancreas

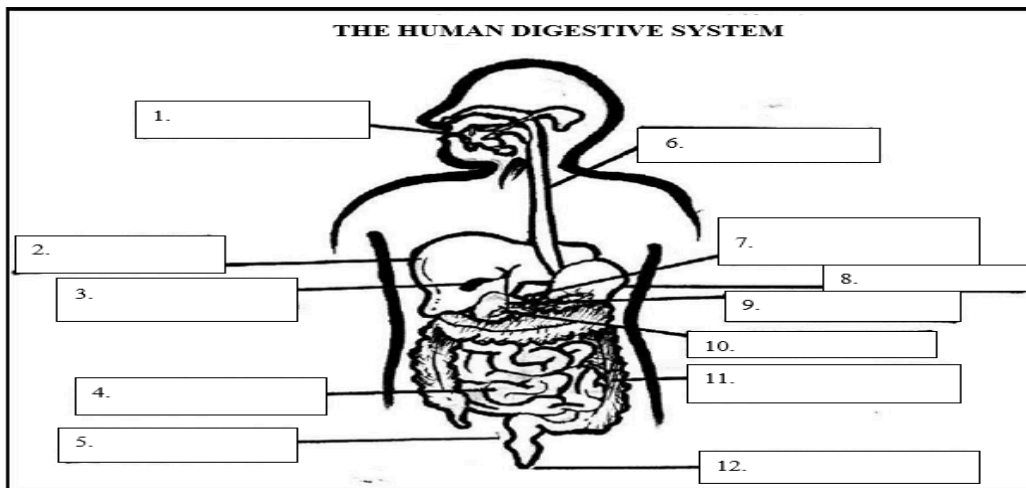


Photo credit to: Ericson Young Villasoto

B. **Directions:** Choose the organs which are involved in Respiratory System. Write your answer on your answer sheet.

Diaphragm	Bronchus	Arteries
Mouth	Alveoli	Trachea
Larynx	Rib cage	Bronchioles
Lungs	Esophagus	Nose

C. **Direction:** Match the description in column A with the parts of the Circulatory system in column B. Write the letter of your answer on the space provided.

**Column A**

- \_\_\_\_\_ 1. pumps blood all throughout the body
- \_\_\_\_\_ 2. receiving chambers of the heart

**Column B**

- A. arteries
- B. ventricles

- \_\_\_\_\_3. pumping chambers of the heart
- \_\_\_\_\_4. largest artery which distribute oxygenated blood to the different vessel parts of the body
- \_\_\_\_\_5. tubes where blood pass through

- C. atria
- D. aorta
- E. blood
- F. septum

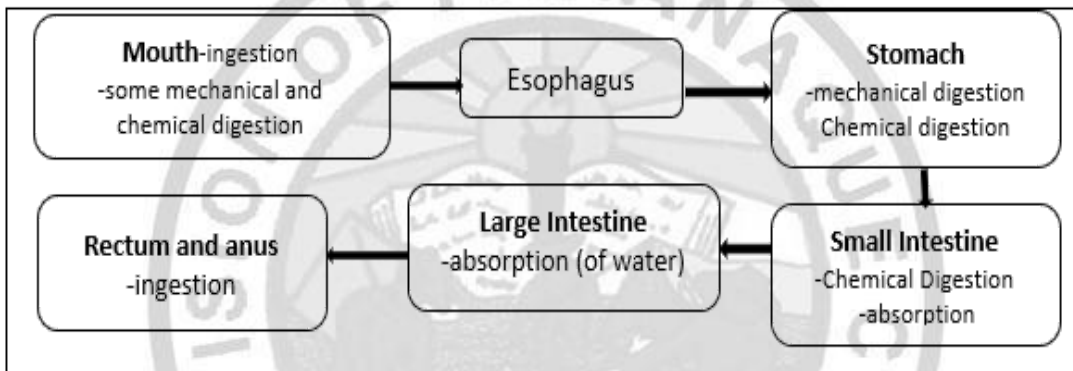


**Let's Understand (Study the Concept)**

The respiratory system carries oxygen to and removes carbon dioxide from the blood. The circulatory system transports dissolved gases and nutrients through the body. The digestive system breaks down food, absorbs nutrients, and eliminates solid waste. Organ systems working together carry out important tasks in the body.

How the organs of the digestive, respiratory and circulatory systems work together?

Digestive system breaks down large molecules (e.g., starch) into simple molecules such as glucose. These are then transported to cells of the body via the circulatory system.



The respiratory system causes the diffusion of oxygen into the blood and the diffusion of CO<sub>2</sub> out of the blood. This oxygen is then transported to cells of the body via the circulatory system



Photo credit to: Ericson Young Villasoto

**Circulatory System**

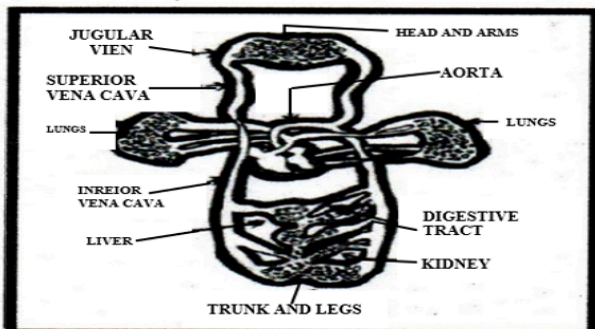


Photo credit to: Ericson Young Villasoto

- Contains heart and all the blood vessels
- Responsible for movement of blood nutrients and gas
- Heart pumps blood to lungs to receive oxygen and to the rest of the body

## Respiratory System

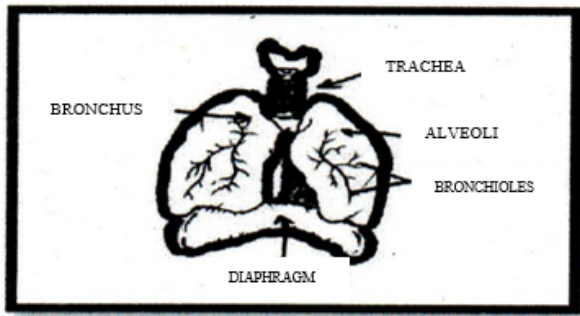


Photo credit to: Ericson Young Villasoto

Responsible for bringing in oxygen and ridding our bodies of carbon dioxide

Lungs, diaphragm, and windpipe

Oxygenates our entire body

When the cells have both oxygen and glucose, they can respire to release energy, producing water and carbon dioxide (the CO<sub>2</sub> is carried through the circulatory system to the lungs where it is removed through the respiratory system).



### Let's Apply

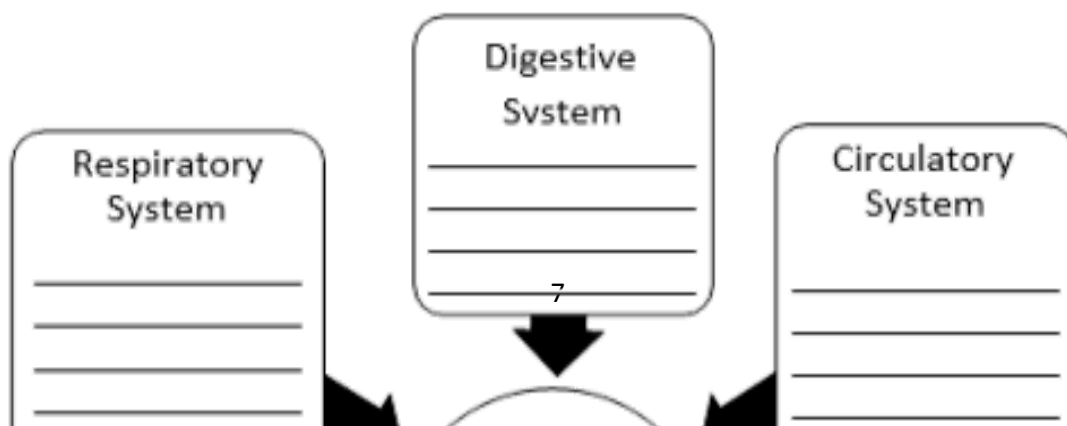
**Direction:** Arrange the following statements according to the process on how the respiratory, digestive, and circulatory system work together. Number each of the steps according to the sequence it occurs. Use numbers. 1-5.

- \_\_\_ Water is absorbed.
- \_\_\_ Food is broken into small pieces.
- \_\_\_ Nutrients pass through the blood stream.
- \_\_\_ Waste is removed from the body.
- \_\_\_ Food is liquefied and digested into forms that cell can use.



### Let's Analyze

The respiratory system carries oxygen to and removes carbon dioxide from the blood. The circulatory system transports dissolved gases and nutrients through the body. The digestive system breaks down food, absorbs nutrients, and eliminates solid waste. Organ systems working together carry out important tasks in the body. Cite through this diagram the function of the Digestive, Respiratory and Circulatory System.





### Let's Try

**Direction:** Fill in the blanks with the correct answer. Choose your answer from the word bank below.

### WORD BANK

nervous system	distribute	removes
circulatory system	eliminates	digestive system
	respiratory system	

The (1)\_\_\_\_\_carries oxygen to and (2)\_\_\_\_\_carbon dioxide from the blood. The (3)\_\_\_\_\_transports dissolved gases and nutrients through the body. The (4)\_\_\_\_\_breaks down foods, absorbs nutrients, and (5)\_\_\_\_\_solid waste.

Organ systems working together to carry out important tasks in the body.



### Let's Create

**Direction:** Complete this table by giving the functions of the organs of musculoskeletal system. Write your answers on your answer sheet. (2 points each)

Bones	Muscles
_____	_____
_____	_____
<div style="border: 1px solid black; border-radius: 15px; padding: 5px; display: inline-block;"> <b>Functions of the organs of musculoskeletal system</b> </div>	
Tendons	Ligaments
_____	_____

**LEARNING AREA (Science VI)**  
**Self-Learning Module (Pansariling Pampagkatutong Modyul)**  
**Quarter 2 - Module 1 (The Musculoskeletal System)**



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**LEARNING AREA (Science VI)**  
**Self-Learning Module (Pansariling Pampagkatutong Modyul)**  
**Quarter 2 - Module 1 (The Musculoskeletal System)**  
**First Edition, 2020**

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Published by the Department of Education  
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Undersecretary: Diosdado M. San Antonio

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Printed in the Philippines by \_\_\_\_\_

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