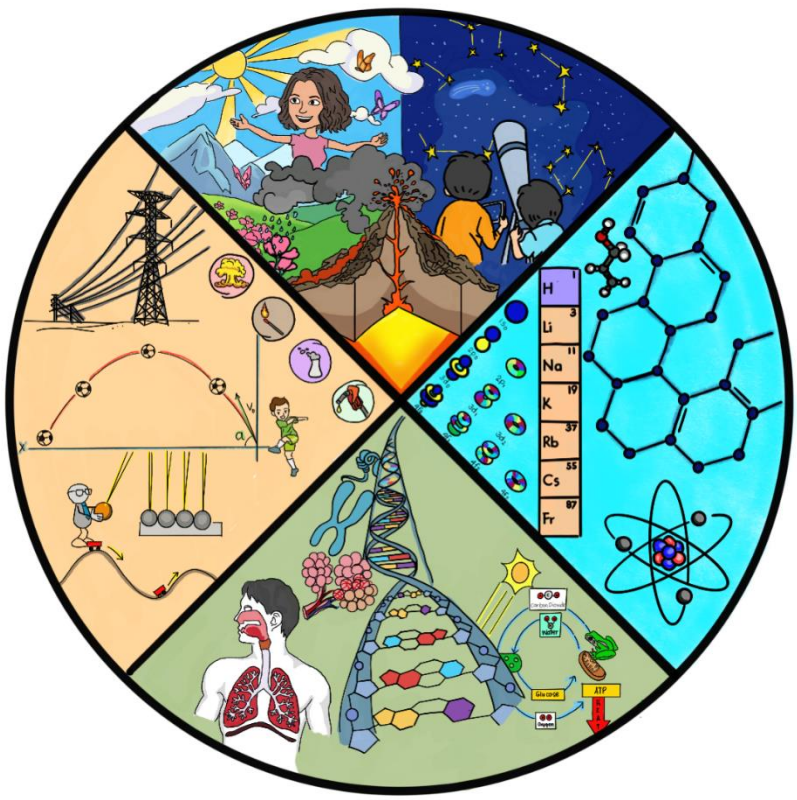
9

Department of Education
National Capital Region
SCHOOLS DIVISION OFFICE
MARIKINA CITY

Science

Quarter 1 -Module 1

How Do the Respiratory and the Circulatory Systems Work Together?



Alma L. Aparece
Catherine C. Balanga

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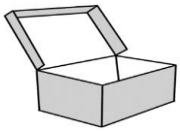


What I Need to Know

The purpose of this module is to help you understand how the respiratory and circulatory systems supply the cells throughout the body with the nutrients, oxygen, and other materials that we need to stay alive.

This module contains the following lessons:

- Lesson 1 – The Parts and Functions of the Respiratory System
- Lesson 2 – The Circulatory system
- Lesson 3 – The Different Types of Circulation

After going through this module, you are expected to **explain how the respiratory and the circulatory systems work together to transport nutrients, gases, and other molecules to the different parts of the body**. **S9LT-Ia-b-26**

Specifically, you are expected to:

- identify the key parts of breathing system and describe the function of each part of the breathing system
- explain how the lungs work
- identify the components of the circulatory system
- explain the different types of circulation and how blood is pumped by the heart; and
- explain the mechanism of how the respiratory and circulatory systems work together.

What I Know

Read and understand each item carefully and encircle the letter corresponding to the word or group of words that completes the sentence.

1. Oxygen (O_2) and carbon dioxide (CO_2) are exchanged among the cells, in the blood, and air in the lungs. What is this process called?
   A. circulation B. respiration C. excretion D. digestion

2. What tube serves as the passage of air from the pharynx to the lungs and is also known as the windpipe?
   A. bronchi B. larynx C. esophagus D. trachea

3. Which is the main organ for gas exchange in the respiratory system?
   A. pharynx B. lungs C. bronchi D. alveoli

4. How will you describe the movement of the diaphragm in inhalation and exhalation process?
   A. The diaphragm relaxes during inhalation and contracts during exhalation.
   B. The diaphragm contracts during inhalation and relaxes during exhalation.
   C. The diaphragm contracts during inhalation and exhalation.
   D. The diaphragm relaxes during inhalation and exhalation.

5. Why do the lungs expand when we breathe in?
   A. air moves in
   B. the diaphragm relaxes
   C. chest relax
   D. rib cage moves downward

6. Why is oxygen important to the blood and to the cells?
   A. Oxygen helps the blood to clot.
   B. Oxygen brings food to the cells.
   C. Oxygen is necessary for cell growth and energy.
   D. Oxygen is not important -- carbon dioxide is the most important substance for the body.

7. Which shows the correct flow of blood in pulmonary circulation?
   A. Right atrium, left ventricle, pulmonary vein, lungs, left atrium, right ventricle, aorta
   B. Right atrium, right ventricle, pulmonary artery, lungs, pulmonary vein, left atrium, left ventricle, aorta
   C. Right atrium, left atrium, pulmonary artery, lung, right ventricle, left ventricle, pulmonary vein, aorta
   D. Right ventricle, aorta, right atrium, right ventricle, pulmonary artery, lungs, pulmonary vein, left atrium, left ventricle

8. Why is the blood that flows from the lungs to the heart bright red and not dark red?
   A. oxygen makes it bright red
   B. carbon dioxide makes it bright red
   C. blood is always bright red
   D. lungs add pigment to the blood

9. Why is oxygen absorbed by the blood?
   A. because blood needs oxygen to transport carbon dioxide
   B. because oxygen is the nutrients need by heart
   C. because oxygen is needed by the blood to produce insulin
   D. because oxygen will be transported by the blood for the cell to produce energy

10. Which blood cells can fight the bacteria or any foreign material that enters to the body?
    A. Plasma
    B. Platelets
    C. Red blood cells
    D. White blood cells

11. Which valve of the heart is found between the left atrium and left ventricle?
    A. aortic valve
    B. bicuspid valve
    C. tricuspid valve
    D. pulmonary valve

12. The heart is responsible for the pumping of oxygenated blood throughout the body. What body system is responsible for this activity?
    A. digestive system
    B. circulatory system
    C. integumentary system
    D. respiratory system

13. Which statement about the heart is true?
    A. The right side of the heart is thicker than the left part of the heart.
    B. The movement of cardiac muscle of the heart is voluntary.
    C. Both sides of the heart pump at the same rate.
    D. The heart is made of smooth muscles.

14. Which of the following protects the human body against invading microorganisms?

I. Red blood cells	II. White blood cells	III. Plasma

    A. I only
    B. II only
    C. III only
    D. I, II, and III

15. Which arteries carry deoxygenated blood?
    A. aorta
    B. renal arteries
    C. coronary arteries
    D. pulmonary arteries

Lesson 1 Parts and Functions of the Respiratory System

What's In

Answer the following questions on a separate sheet of paper.

1. Why do we need to breathe?

_____

_____

2. What do you think happens to the air we breathe in?

_____

_____

What's New

Activity 1.1

The coronavirus disease 2019 (COVID 19) is an infectious disease caused by Severe Acute Respiratory Syndrome-Coronavirus (SARS COV). It was reported that Covid 19 originated from China in 2019. According to Centers for Disease Control and prevention (CDC), the coronavirus is named from the crown-like spikes on their surface, there are four main sub-groupings of coronaviruses known as ALPHA, BETA, GAMMA, and DELTA. The most targeted human body system is the respiratory system.

1. What is the name of the virus that caused the coronavirus disease of 2019?

   _____

2. What body system is targeted by this virus?

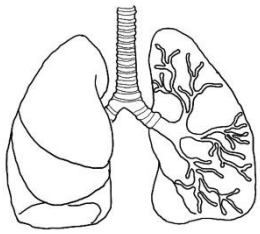
   _____

3. Based on the target body system of the virus, what do you think would be the best entry points of this virus in our body?

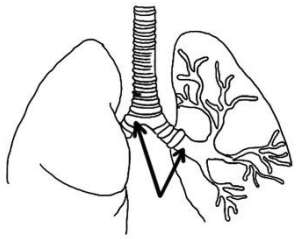
   _____

Activity 1.2

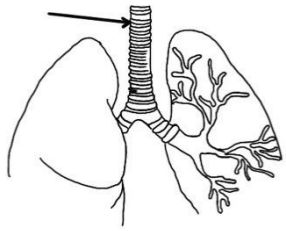
Identify the pathway of air through the respiratory system. Arrange the organs by writing letters A to H on the space provided below the image.



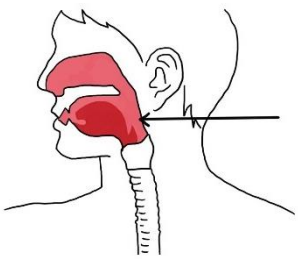
Lungs:_____



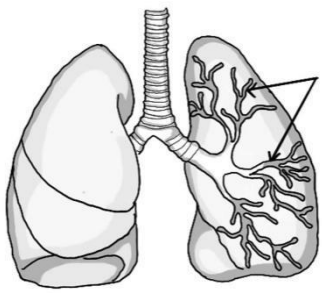
Bronchi: _____



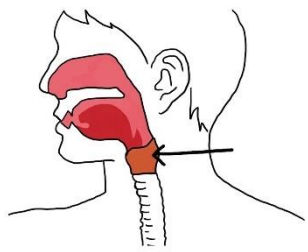
Trachea: _____



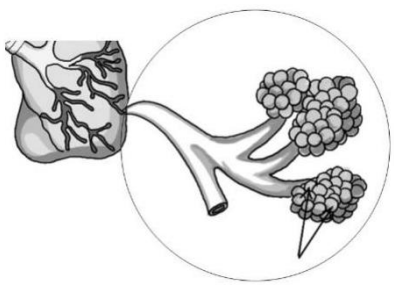
Pharynx: _____



Bronchioles: _____



Larynx: _____



Alveoli: _____

Nose: _____

What Is It

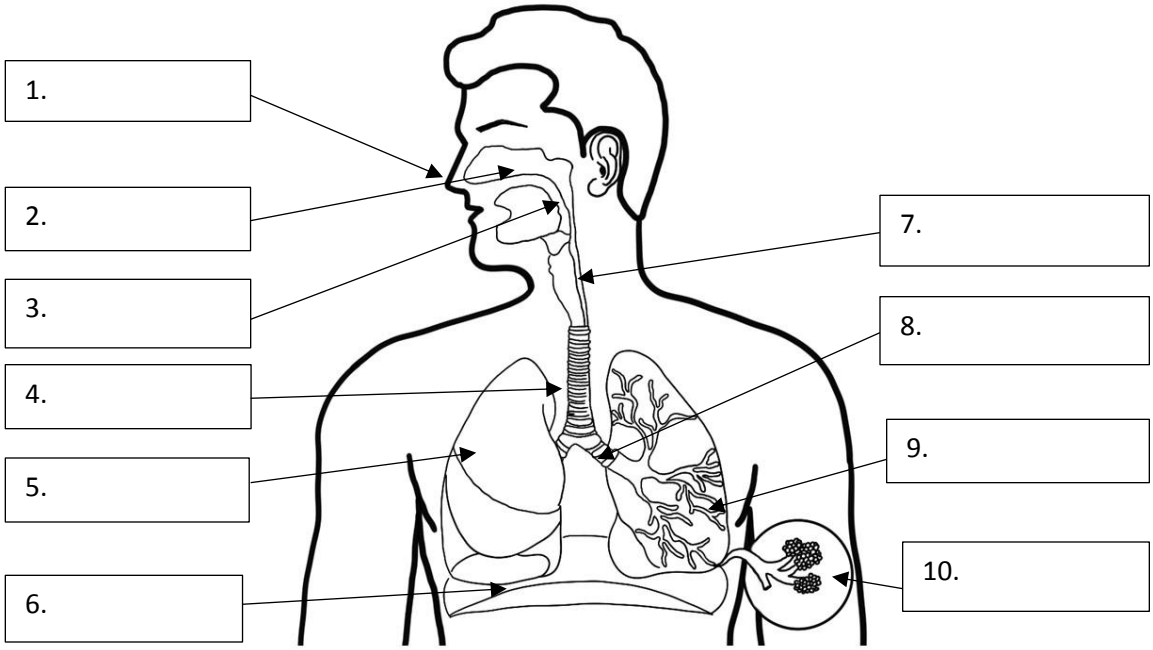
The main function of the Respiratory System is to take in oxygen and take out carbon dioxide. When we breathe in, air enters the body and fills the lungs, where gas exchange takes place. The blood carries oxygen (O_2) and carbon dioxide (CO_2) between the lungs and the trillions of cells throughout the body. The continuous process of taking in oxygen and taking out carbon dioxide from our cells, blood, and air in the lungs is known as respiration. The pathway of air starts with nose, pharynx, larynx, trachea, bronchi, and lungs. Lungs consist of bronchioles and alveoli or air sacs. A flap of cartilage called epiglottis located in front of the larynx and behind the tongue, prevents water or food from entering the trachea. The diaphragm is a dome-shaped muscle that separates thoracic and abdominal cavity and helps in the breathing process.

What's More

Activity 1.3

Respiratory System: PARTS AND FUNCTION

Draw and label the different parts of the respiratory system.



Identify the parts of the respiratory system being defined in the statements below.

_____1. The tube after trachea that passes air to the lungs.
_____2. Part of the lungs where exchange of gases occurs.
_____3. The smallest branches of tubes inside the lungs and the passageway of air from bronchi to alveoli.
_____4. It is located below the larynx and is also called the windpipe.
_____5. A major part of respiratory system where the exchange of oxygen and carbon dioxide occur.
_____6. The passageway of air going to the larynx from nasal cavity.
_____7. It traps the dust particles with the sticky mucous membrane lining and tiny hairs called cilia as it warms and moistens the air.
_____8. It is a dome-shaped muscle that support the breathing process.
_____9. The passageway that air can pass through from the pharynx to the trachea.

Activity 1.3: A Simulation on How the Lungs Work

What you need:

- Two identical plastics or Paper bags
- Masking tape / scotch tape
- two drinking straw
- pentel pen

What to do:

1. Draw lines with branches in each plastic / paper bag then, at the end of branches draw circles like grapes.
2. Put the drinking straw inside each plastic or paper bag then tie with scotch/masking tape **(Note:** only half of the straw must be inside).
3. Blow four times into the two-drinking straw simultaneously. Observe what happens to the plastic/ paper bag.
4. Pierce the plastic or paper bag with a sharp pencil.
5. Repeat step 3.

Guide Questions:

1. What does the plastic/ paper bag and drinking straw represent?
   _____
2. What happened to the plastic/paper bag before and after blowing into it?
   _____
3. What happened to the plastic / paper bag after you pierced the plastic/paper bag with a sharp pencil?
   _____
4. How do the lungs work?
   _____

What I Have Learned

Supply the missing word/s to complete the paragraph. Choose from the word/s on the box.

air	connect	exhalation	warms	dust
air sac	diaphragm	separates	transports	cilia

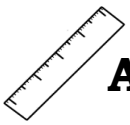
The respiratory system 1._____ oxygen to the blood and gets rid of carbon dioxide as waste material from the body. Nose or nasal cavity moistens and 2._____ the air. It also filters the 3._____ particles using the tiny hairs called 4._____. Bronchi are the two tubes that 5._____ to the bronchioles of the left and right lungs from the trachea. Bronchioles are tiny tubes that serve as a passageway of air from bronchi to the alveoli or 6._____. These are found in the lungs, where the exchange of oxygen and carbon dioxide occur.

Inhalation is the first stage in the process of breathing, intake of the 7._____ into the lungs through the expansion of chest and the second stage is 8._____ where the air is taken out from lungs through the contractions of chest. 9._____ is a dome-shaped muscle that 10._____ the chest and abdominal cavity and help in the breathing process: inhalation and exhalation.

What I Can Do

Enumerate 5 practices that you can do to keep your lungs healthy.

1._____
2._____
3. _____
4._____
5. _____



Assessment

Read and understand each item carefully and encircle the letter corresponding to the word or group of words that completes the sentence.

1. Which is **NOT** a pathway of air in respiration?
   A. Lungs B. Trachea C. Diaphragm D. Pharynx

2. During the breathing process, our lungs contract and relax. Which cause the contraction of lungs?
   A. inhalation B. exhalation C. expansion D. filtration

3. Which warms and moistens the air before entering our body?
   A. trachea B. lungs C. alveoli D. nasal cavity

4. Where does the exchange of gases occur?
   A. nose B. bronchioles C. larynx D. alveoli

5. Which is the correct pathway of air as it enters the human body?
   A. nose, larynx, lungs, bronchi, trachea, bronchioles, pharynx
   B. nose, pharynx, larynx, trachea, bronchi, bronchioles, lungs
   C. nose, pharynx, trachea, larynx, bronchi, bronchioles, lungs
   D. nose, pharynx, larynx, trachea, bronchioles, bronchi, lungs

Additional Activities

POSTER MAKING ACTIVITY

On a short bond paper, make a poster showing effective ways of taking care of the respiratory system.

Criteria:

1. Content: **50%**
   a. Related to the topic respiratory system: **20%**
   b. Practicality of the answer (can be incorporated in their daily routine): 20%
   c. Conciseness of the answer: **10%**
2. Clarity: **25 %**
3. Design (photos, graphics and backgrounds are related to the topic): 25%

Lesson 2 The Circulatory System

What's In

The beating of your heart is a sign of life. Even when you sleep your heart continues to beat steadily. Why is the beating of your heart an essential process?

_____

_____

What's New

PAGASA Warns of Heat Stroke as Temperatures Rise
Published March 30, 2020, 9:59 AM

By Ellalyn De Vera-Ruiz

The Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) advised the public to protect themselves against heat stroke as five of its monitoring stations recorded maximum air temperatures exceeding 36 degrees Celsius on Sunday. PAGASA said the highest temperatures were registered in San Jose, Occidental Mindoro at 37.1 degrees Celsius. The 35.6 degrees Celsius air temperature in Metro Manila on Sunday afternoon was slightly lower than other areas but it was so far the highest record in the metropolis since the start of the warm and dry "summer" season. Its equivalent heat index is 37 degrees Celsius, or how hot the human body felt the heat. Heat index or the "apparent" temperature is what humans perceive or feel as the temperature affects their body. With heat indices ranging from 32 to 41 degrees Celsius, PAGASA said "heat cramps and heat exhaustion are possible" and "continuing activity could result to heatstroke."

Guide Questions

1. From the news article above, why did PAGASA warn the public of heat stroke?

   _____

   _____

2. How does heat affect the circulation of blood in the body?

   _____

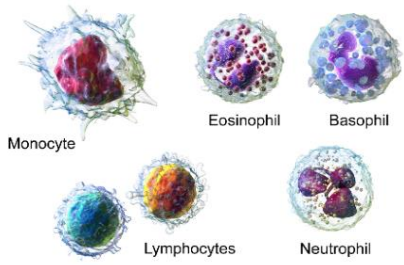
   _____

What Is It

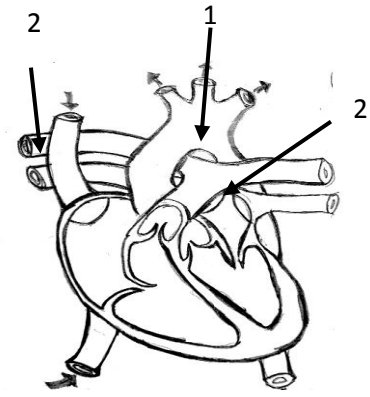
The circulatory system works just like our transportation systems. Through our blood which serves as a circulating fluid, it transports oxygen, nutrients, and other materials needed all throughout the body and eliminates waste materials like carbon dioxide. It is composed of the heart, the blood vessels, and the blood flowing through it.

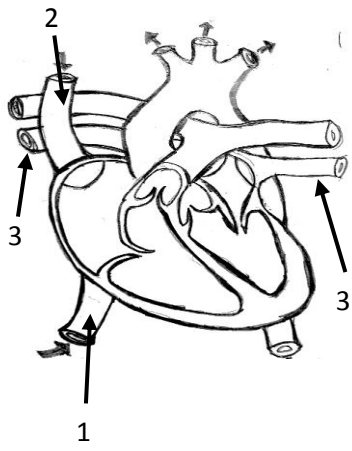
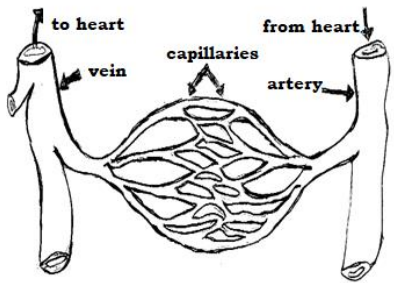
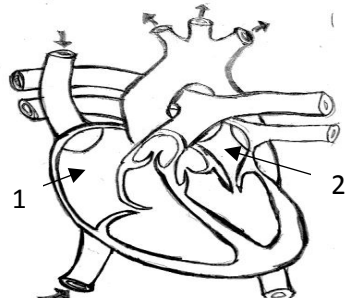
Blood regulates body temperature, transports nutrients and oxygen, and collects metabolic waste products in the body. When the blood is transported from the lungs to the heart it appears bright red due to the absorption of oxygen and iron by the hemoglobin. When the blood flows from the body to the heart it appears dark red because it lacks oxygen and carries the waste metabolic product.

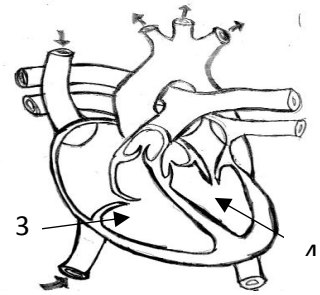
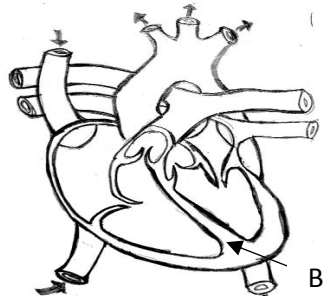
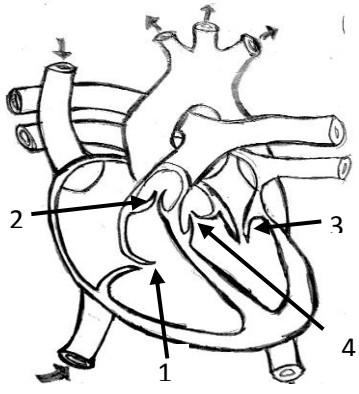
Components of Blood	Description	Illustration
1. Plasma	Transport nutrients, hormones, enzymes and blood components to the different parts of the body. • 55 percent of blood fluid • yellowish fluid	 **Figure 1. Lipemic Plasma** https://bit.ly/3qsPnrj
2. Red blood cells/ Erythrocytes	• absorb oxygen • small biconcave disks shaped • bright red in color due to iron-containing protein called hemoglobin • 40-44 percent of the blood • develop in the bone marrow • circulates for about 100-120 days	 **Figure 2. Red Blood Cell** https://bit.ly/3jhuxJY

3. White blood cells/ Leukocytes	• less than 1 percent of the blood • fight foreign materials or pathogens like virus and bacteria	 White Blood Cells **Figure 3. White Blood Cell** https://bit.ly/3jhuxJYhttps://bit.ly/3jg4VNu
4. Platelets/ Thrombocytes	• responsible for blood clotting • smaller than red and white blood cells	 **Figure 4. Platelets** https://bit.ly/3xW4xI4

Blood vessels serves as the passageway that transport blood throughout the body. There are three kinds of blood vessels: the artery, vein, and capillary.

Kinds of Blood Vessel	Description	Illustration
A. Artery	• thicker than vein • carries oxygenated blood except the pulmonary artery • transports blood from the heart to the body • The smallest artery is arterioles.	 **Figure 5a. Structure of the Heart (Arteries)**
1. Aorta	biggest artery	
2. Pulmonary Artery	the only artery that transports blood towards the heart	
3. Renal artery	found in the kidney	
4.Portal artery	found in the liver	
5. Coronary Artery	found in the heart	

B. Vein	• thinner than artery • carries deoxygenated blood except the pulmonary vein • transports blood from the body towards the heart • The smallest vein is venules.	 **Figure 5b. Structure of the Heart (Veins)**
1. Inferior Vena Cava	transports blood from the lower extremities of the body towards the heart	
2. Superior Vena Cava	transports blood from the upper extremities of the body towards the heart	
3. Pulmonary vein	the only vein that transports blood away from the heart	
4.Renal Vein	found in the kidney	
5.Portal Vein	found in the liver	
C. CAPILLARY	The smallest blood vessel where the exchange of materials like carbon dioxide and oxygen occurs.	 **Figure 5c. Structure of the Heart (Capillary)**
Parts of the Heart	**Description**	**Illustration**
A. 4 Chambers 1. Atria a. Right Atrium b. Left Atrium	Upper chamber -collects/receives deoxygenated blood from the body -collects/receives oxygenated blood from the lungs	 **Figure 5d. Structure of the Heart (Chambers)**

2. Ventricles a. Right Ventricle b. Left Ventricle	Lower chamber -pumps blood from the atrium to the lungs -pumps blood from the left atrium to the body -thicker than the right ventricle	 **Figure 5e. Structure of the Heart (Chambers)**
B. SEPTUM	- separates the left side and the right side of the heart - prevents the mixing of oxygenated and deoxygenated blood	 **Figure 5f. Structure of the Heart (Septum)**
C. 4 VALVES 1. Tricuspid valve 2. Pulmonary valve 3. Bicuspid valve 4. Aortic valve	- flap of tissue that prevents the backflow of the blood between the atria and the ventricles - control the flow of blood within the heart - prevent the back-flow and act as one-way inlet of the blood -found between the right atrium and the right ventricle -found between the left ventricle and the pulmonary artery -found between the left atrium and the left ventricle -found between the left ventricle and aorta	 **Figure 5g. Structure of the Heart (Valves)**

The image below shows the pathway of deoxygenated blood (arrow highlighted with blue), and oxygenated blood (arrow highlighted with red).

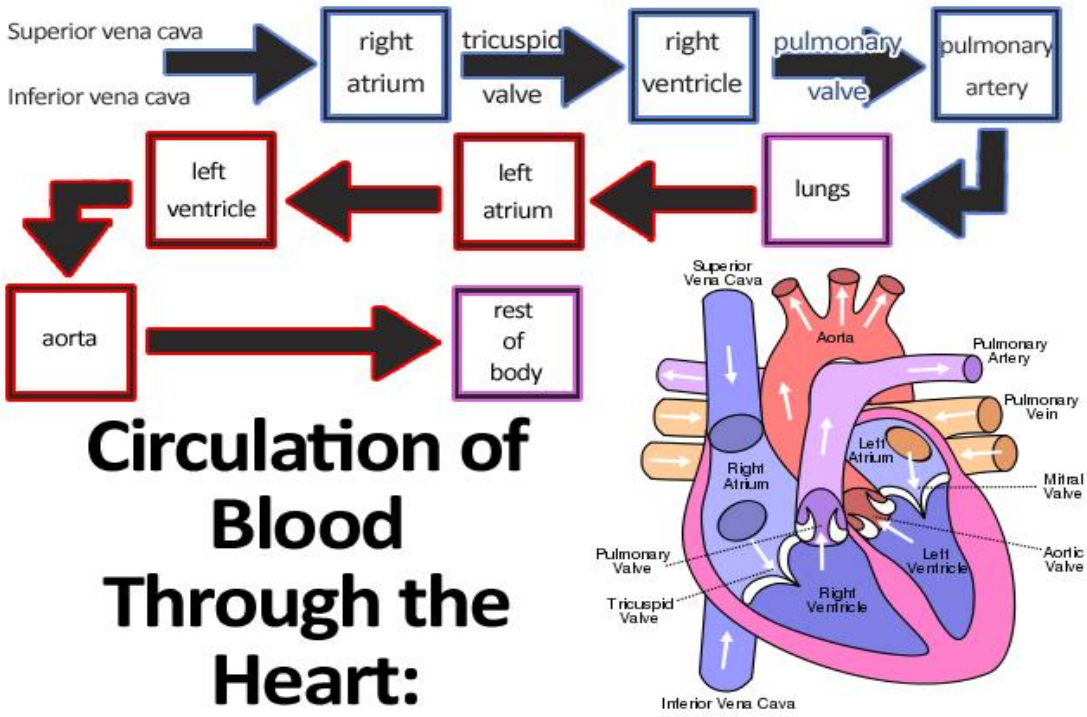


Figure 6. Circulation of Blood through the Heart
https://bit.ly/3vX4j2e

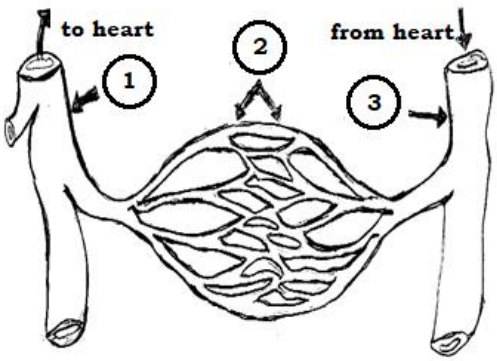
What's More

Activity 2: Blood Vessels

What to do:

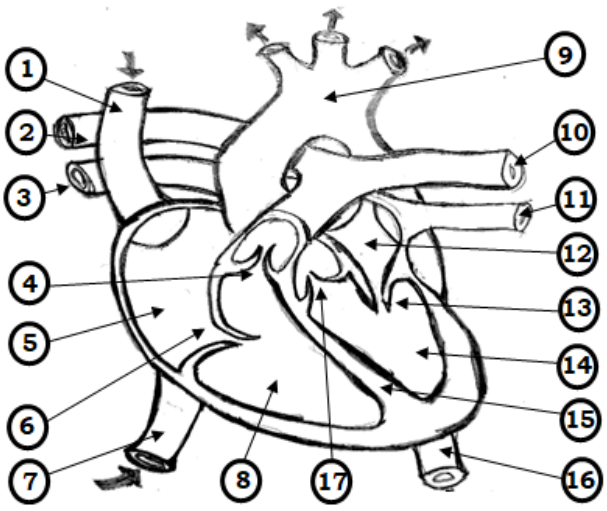
1. Draw the blood vessels and the heart on a short bond paper. Use red color for the parts that carry oxygenated blood and blue color for the parts that carry deoxygenated blood.
2. Write the name of the types of blood vessels and the parts of the heart being identified on the space provided.

A. BLOOD VESSEL



1. _____
2. _____
3. _____

B. THE HEART



1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____

Guide Questions:

Answer the following questions.

1. Differentiate oxygenated blood from deoxygenated blood.

   _____

2. Differentiate veins from artery.

   _____

3. List the arteries and veins found in the heart.

ARTERY	VEIN
_____	_____
_____	_____

4. Cite at least 2 differences between the atrium and the ventricle.

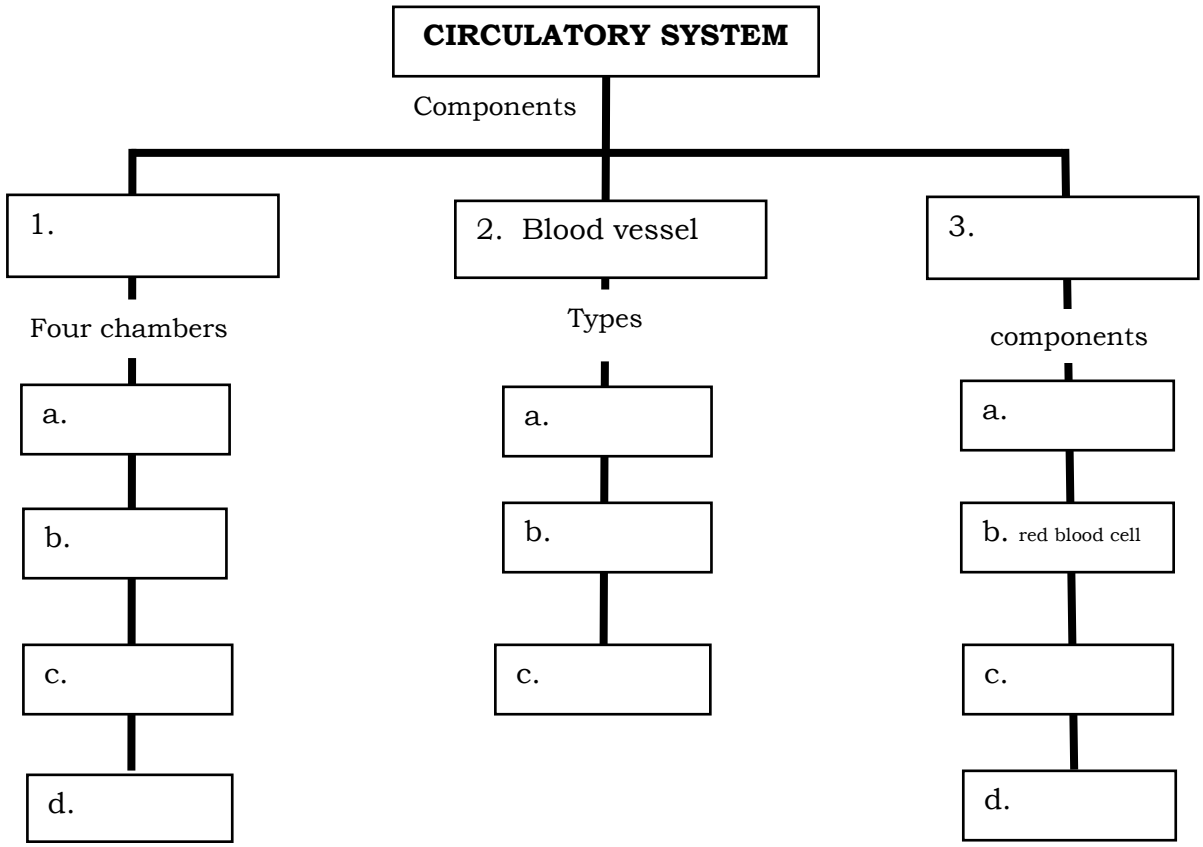
_____

_____

What I Have Learned

CONCEPT-MAPPING

Copy and answer the concept map on a separate sheet of paper.



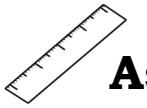
What I Can Do

Explain how regular exercise can help in the circulation of blood.

_____

_____

_____



Assessment

Read and understand each item carefully and encircle the letter corresponding to the word or group of words that completes the sentence.

1. Ventricles are the lower chambers of the heart. Which statement correctly describes the function of the ventricles.
   A. Ventricle pumps the blood from the lungs to the heart.
   B. Ventricle pumps blood from the lungs and back to the heart.
   C. Ventricle pumps blood from the brain to the lungs and the heart to the lungs.
   D. Ventricle pumps blood from the heart to the lungs and different parts of the body.

2. What is the largest artery found in the body?
   A. pulmonary artery
   B. aorta
   C. superior vena cava
   D. inferior vena cava

3. Why is it important to separate deoxygenated blood from oxygenated blood?
   A. to provide more oxygen to cell.
   B. to provide carbon dioxide to cell.
   C. to make the flow of blood smoothly.
   D. to change the red color of blood to purple

4. Atria is the plural term of the atrium where blood _____ from the body or lungs.
   A. separates B. pumps C. moves away D. collects

5. What is the only vein that carries oxygenated blood?
   A. superior vena cava
   B. inferior vena cava
   C. pulmonary vein
   D. aorta

Additional Activity

You have learned the various parts and functions of the respiratory and circulatory systems. This time, you need to recall all the main concepts discussed from the lessons to be able to proceed with the next activities!

PICK AND MATCH!

Match in the appropriate column the parts and functions listed in the boxes.

A. Parts

Alveoli	Blood	Capillaries	Lungs	Trachea
Arteries	Bronchi	Heart	Nose	Veins
Atria	Bronchioles	Larynx	Pharynx	Ventricles

B. Functions

Moves gases into and out of the blood
Separates oxygen-poor and oxygen-rich blood
Carries oxygen and nutrients to the cells
Transports blood, gases and nutrients.
Exchange of gases in the alveoli
Picks up oxygen from the air
Expels carbon dioxide and water
Heart pumps blood throughout the body
Collects and takes out carbon dioxide from all parts of the body

Categories	Respiratory System	Circulatory System
A. Parts		
B. Functions		

Lesson 3	Types of Circulation

What's In

Answer the following questions on a separate sheet of paper.

1. How does the blood transport oxygen, nutrients, and water to the different part of the body?

   _____

2. How does the blood circulate in our body?

   _____

What's New

Pacemaker is a device that is placed in the chest of people with irregular heart rhythm. It sends electrical pulses that cause the heart to beat at a normal state. The pacemaker is used to treat arrhythmia where the heart rate is either too fast or too slow and this normalizes the circulation of blood.

Answer the following questions.

1. What is a pacemaker?

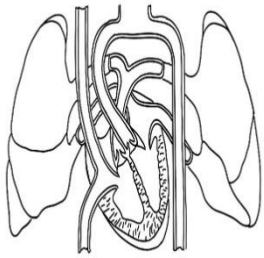
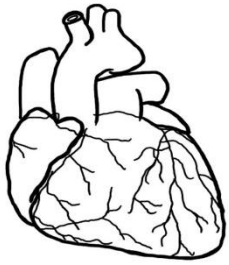
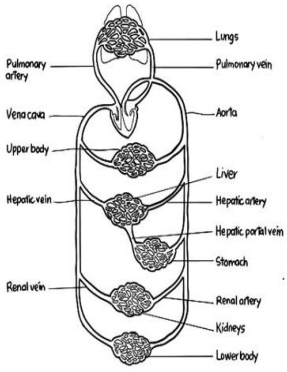
   _____

2. How does a pacemaker work?

   _____

What Is It

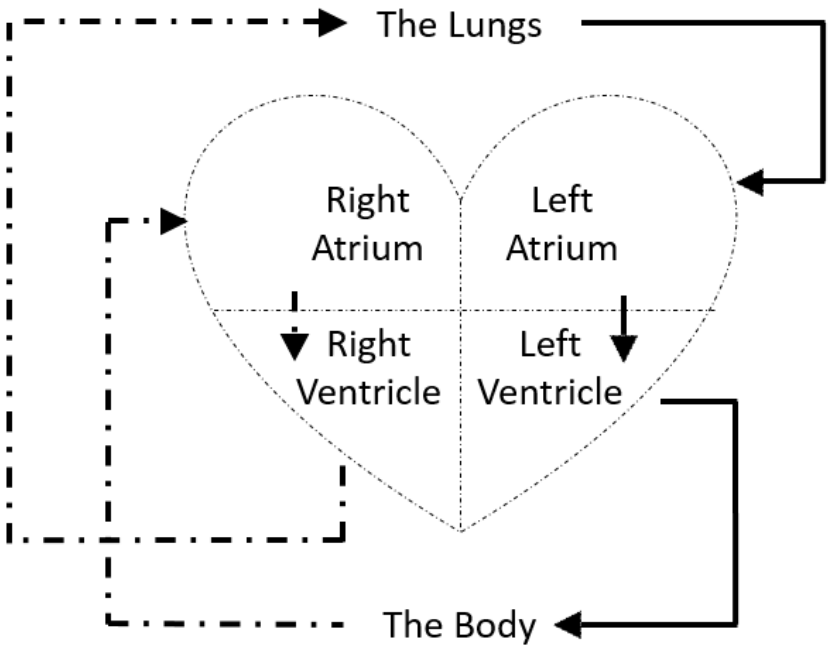
There are three types of circulation: pulmonary, coronary, and systemic. Pulmonary circulation is the movement of blood from the heart to the lungs and back to the heart while systemic circulation is the movement of the blood from the heart to the rest of the body excluding the lungs. Coronary circulation is the movement of blood within the heart. Respiratory and circulatory works in tandem to sustain the oxygen level in the body that is needed by the cell to function properly.

Types of Circulation		Description
Pulmonary		The blood moves from the heart to the lungs and back to the heart. The deoxygenated blood from the right side of the heart enters the lungs. Then the blood becomes oxygenated.
Coronary		The blood moves within the heart. Coronary arteries provide oxygenated blood to the heart muscle, while the coronary veins remove the blood once it has been deoxygenated.
Systemic		The blood circulates from the heart to the rest of the body. The oxygenated blood is transported from the left side of the heart to the different parts of the body.

What's More

Activity 3: The Mechanism of How the Respiratory and Circulatory Systems Work Together

The respiratory and the circulatory systems work together to perform the important job of gas exchange in our body. Observe closely the schematic diagram on the next page.



Legend:

Flow of oxygenated blood

Flow of deoxygenated blood

Copy the illustration on a separate sheet of paper. Color the arrows RED if it shows the flow of oxygenated blood and BLUE if it shows the flow of deoxygenated blood. Construct 3 sentences based on the diagram.

1. _____
2. _____
3. _____

What I Have Learned

Answer the following questions based on what you have learned from Lesson 3.

1. What are the 3 types of circulation? Explain each type briefly.

   _____

2. How are pulmonary and systemic circulation related?

   _____

3. How are the functions of the respiratory and the circulatory systems related?

   _____

What I Can Do

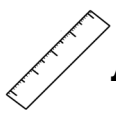
Atherosclerosis is the building up of cholesterol and fatty deposits in the inner wall of the arteries which leads to Corona Artery Disease. How can you protect yourself from having coronary artery disease?

_____

_____

_____

_____



Assessment

Read and understand each item carefully and encircle the letter corresponding to the word or group of words that completes the sentence.

1. Which type of circulation is described when oxygenated blood moves away from the heart to the different parts of the body?
   A. portal circulation
   B. systemic circulation
   C. pulmonary circulation
   D. coronary circulation

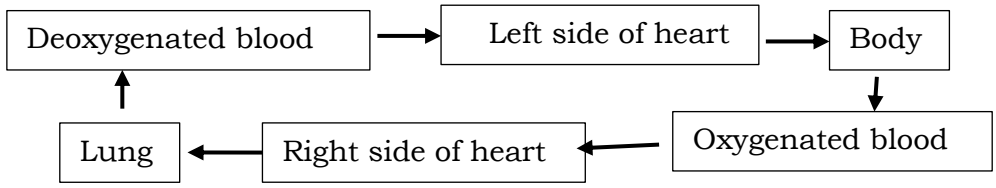
2. The left part of the heart carries oxygenated blood. What does the right side of the heart carries?
   A. red blood cell
   B. oxygenated blood
   C. blood with platelets
   D. deoxygenated blood

3. Why is pulmonary circulation important to the body?
   A. It helps to adjust body temperature.
   B. It exchanges oxygen and carbon dioxide
   C. It pumps the deoxygenated blood from the heart to the body
   D. It helps the heart transform oxygenated blood to deoxygenated blood.

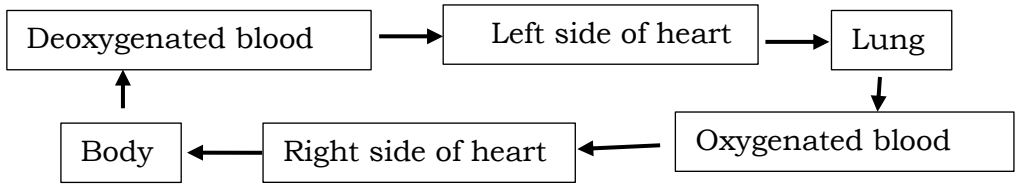
4. What type of blood circulation shows the movement of blood through the tissue of the heart?
   A. pulmonary circulation
   B. portal circulation
   C. lungs circulation
   D. coronary circulation

5. Which of the following shows the correct flow of blood in systemic circulation?

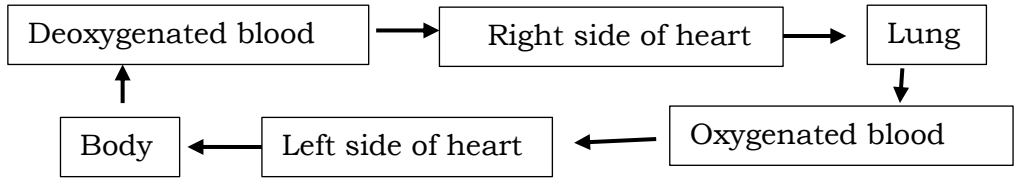
A.



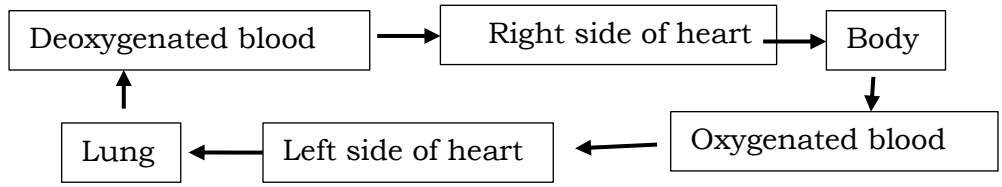
B.



C.

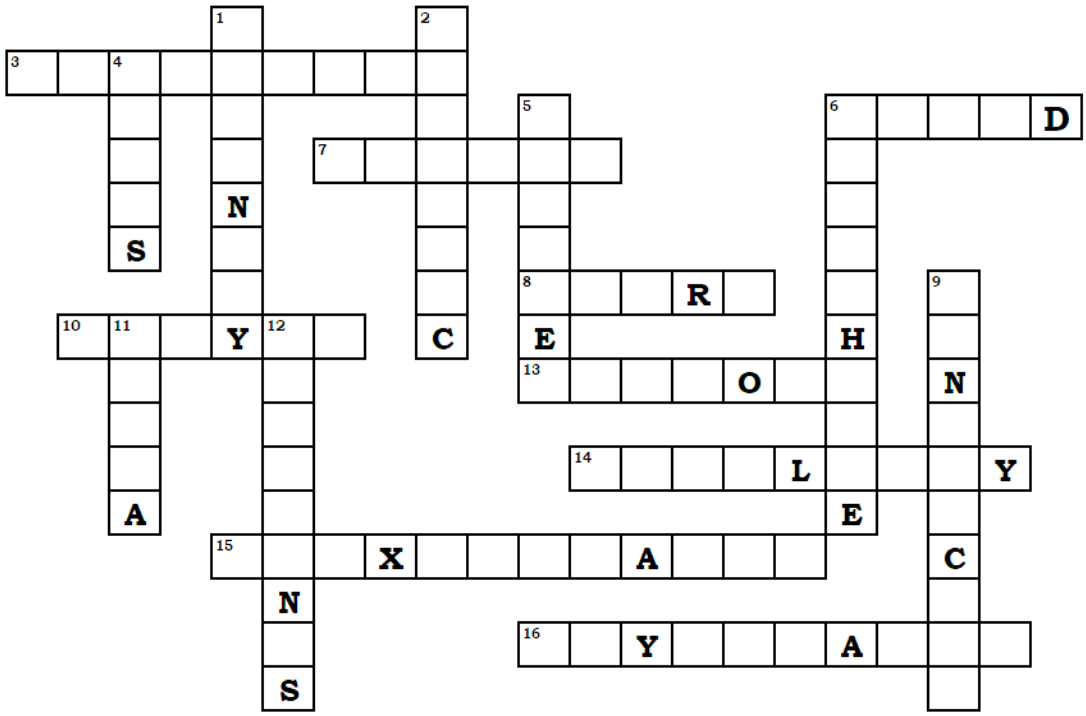


D.



Additional Activities

Complete the crossword puzzle by filling a word that fits its clue.



ACROSS

1. A type of blood circulation from the heart to the lungs and back to the heart.
2. It is the fluid that transports oxygen and nutrients to the body.
3. It carries blood away from the heart
4. Pumping organ of the body
5. The voice box
6. Tiny air sacs where exchange of gases occur.
7. The smallest type of blood vessel
8. It is a kind of blood with large amount of carbon dioxide and wastes
9. It is a kind of blood with large amount of oxygen and nutrients needed by the body

DOWN

10. The primary organ of the respiratory system
11. The upper chambers of the heart
12. The type of blood circulation within the heart and heart tissues
13. Aside from oxygen, these are also carried by the blood to the body parts

14. The type of blood circulation from the heart to the body and back to the heart
15. The windpipe
16. It is the smallest tube that connects from the bronchi to the alveoli
17. These are the lower chambers of the heart

Posttest

Read and understand each item carefully and encircle the letter corresponding to the word or group of words that completes the sentence.

1. Most veins carry deoxygenated blood from the different parts of the body to the heart. Which vein carry oxygenated blood?
   A. inferior vena cava
   B. pulmonary vein
   C. renal vein
   D. superior vena cava

2. Which blood cell is responsible for the absorption of oxygen in the blood?
   A. platelets B. white blood cells C. red blood cell D. bacteria

3. What do you call the part of the respiratory system that looks like bunch of grapes where the exchange of gases occurs?
   A. alveoli B. bronchi C. larynx D. trachea

4. Which statement is FALSE?
   A. The blood in the aorta is oxygenated.
   B. The blood in superior vena cava is deoxygenated.
   C. The blood in the pulmonary vein is deoxygenated.
   D. The blood in the pulmonary artery is deoxygenated.

5. Which is the function of the respiratory system? The respiratory system provides _____ to the body.
   A. carbon dioxide and oxygen
   B. carbon dioxide
   C. oxygen
   D. blood

6. Which is the correct order of air flow during exhalation?
   A. alveoli, bronchus, bronchi, trachea, larynx, pharynx, nasal cavity or nose
   B. nose or nasal cavity, pharynx, larynx, trachea, bronchi, bronchus, alveoli
   C. pharynx, trachea, bronchus, bronchi, larynx, alveoli, nasal activity or nose
   D. nasal cavity or nose, bronchi, trachea, pharynx, larynx, alveoli, bronchus

7. Where does the right ventricle send blood?
   A. to the lower part of the body
   B. to the lungs, heart, and head
   C. to the heart
   D. to the lungs

8. Which type of blood circulation is described when the heart pumps oxygenated blood to the different parts of the body?
   A. pulmonary circulation
   B. systemic circulation
   C. blood pressure
   D. lymphatic system

9. A flap tissue that prevents the backflow of blood between the atria and the ventricle.
   A. epiglottis B. vein C. artery D. valve

10. Which blood cell is responsible for blood clotting?
   A. red blood cell B. platelet C. white blood cell D. hemoglobin

11. A dome-shaped muscle that separates the chest cavity and abdominal cavity that helps to increase the pressure during inhalation is called _____?
   A. lungs B. heart C. liver D. diaphragm

12. When we inhale, particles are trapped in a layer of mucus and tiny hairs found in the nasal cavity. What do you call these tiny hairs that filter particles to enter the lungs?
   A. valve B. mucus C. cilia D. alveoli

13. What is the automatic reaction of the body when foreign material accidentally enters the trachea?
   A. cough B. sneeze C. fever D. choke

14. A flap of tissue that prevents food from entering the trachea.
   A. valve B. epiglottis C. cilia D. alveoli

15. Which of the components of blood that responsible for the absorption of oxygen and iron?
   A. white blood cell
   B. red blood cell
   C. platelets
   D. plasma

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Answer Key

Lesson 1

What I Know

1. B	6.C	11. B
2.D	7. B	12.B
3.B	8. A	13. B
4.B	9. D	14. B
5.A	10. D	15.D

What's In

1.We breath because the body needs oxygen and gets rid the carbon dioxide.
2. The air will enter to our lungs and bloodstream.

What's New

1. The name of the virus is SARS-COV2.
2. Respiratory system and other related body systems.
3. External body parts related to the respiratory system like the oral and nasal cavity.

Activity 1.1

1.	Lungs- G	5.	Bronchioles – F
2.	Bronchi – E	6.	Larynx – C
3.	Trachea- D	7.	Alveoli -H
4.	Pharynx -B	8.	Nose-A

Activity 1.2

1.	Nose	6.	diaphragm
2.	Nasal cavity	7.	larynx
3.	Pharynx	8.	bronchus
4.	Trachea	9.	bronchiole
5.	Lungs	10.	Alveoli

Activity 1.3

1.	Bronchus	6.	Pharynx
2.	Alveoli	7.	Nasal cavity
3.	Bronchioles	8.	Diaphragm
4.	Trachea	9.	Larynx
5.	lung		

What's More

1. Plastic or paper bag represents the lungs while the drinking straw represents the trachea and bronchi.

2. The plastic or paper bag inflated.

3. The air came out of the paper bag until the air in the paper bag runs out.

4. The lungs take in oxygen and eliminate the carbon dioxide from the blood.

What I have learned

1. transports	5. Connects	9. diaphragm
2. warm	6. Air sacs	10. separates
3. dust	7. air	
4. cilia	8. exhalation	

What I can do

The answers may vary.

Assessment

1.D 2. B 3. A 4. D 5.C

Continuation of Lesson 1

What Can I Do :

The answers may vary(.

Assessment

1. C 2. A 3. D 4.D 5. D

Additional Activities

The answers may vary.

Lesson 2

What's In

The beating of heart signifies that blood circulated in the body.

What's New

1. PAGASA warns the public to protect themselves from heat stroke.
2. Increasing body temperature can increase the blood pressure of the body.

What's More

Activity 2A

1.	Vein	4.	Venule
2.	Capillaries	5.	Arteriole
3.	Artery		

Activity 2B

1.	Superior vena cava	15.	septum
2.	Right Pulmonary artery	16.	Aorta
3.	Right Pulmonary veins	17.	Aortic valve
4.	Pulmonary valve	18.	Aortic valve
5.	Right atrium	19.	Left ventricle
6.	Tricuspid valve	20.	Aorta

7. Inferior vena cava20. Aorta
8. Right ventricle
9. Aorta
10. Left Pulmonary artery
11. Left pulmonary veins
12. Left atrium
13. Mitral / bicuspid valve
14. Left Ventricle

Guide Questions

1. Oxygenated blood is blood that is rich in oxygen and deoxygenated blood poor in oxygen.
2. Vein blood towards the heart and artery blood away from heart.
3. Artery: Pulmonary artery and Aorta
   Vein: Superior and inferior Vena Cava
   Pulmonary vein

What I have learned

A. Heart
4 CHAMBERS
Right atrium and Right ventricle
Left Atrium and Left ventricle
B. Blood vessels: Artery, Vein and capillaries
C.Blood
components: white blood cell, Red blood cells, Platelets, plasma

What I can do

The answers may vary.

Assessment

1.D 2. B 3. A 4. D 5.C

Answer Key

Lesson 2

Additional Activities

Categories	Respiratory System	Circulatory System
A. Parts	Lungs Alveoli Bronchi Pharynx Larynx Trachea Bronchioles Nose	Heart Veins Arteries Ventricles Atria Capillaries Blood
B. Functions	Moves gases into and out of the blood Exchange of gases in the alveoli Expels carbon dioxide and water Picks up oxygen from the air	Carries oxygen and nutrients to the cell Heart pumps blood throughout the body Transport blood, gases and nutrients Separates oxygen-poor and oxygen-rich blood Collects and takes out carbon dioxide from all parts of the body

Answer Key

Lesson 3

What's In

1. Nutrients, oxygen and water transported through circulation of blood.
2. The blood circulated in the body when heart pumps the blood into different parts of the body and blood back to the heart.

What's New

1. Pacemaker is a device use by a person who has abnormal heart rhythms.
2. Pacemaker send electrical pulse in right atrium.

What's More

The answers may vary.

What I have learned

1. Pulmonary circulation blood move from heart to lung back to lung.
   Coronary circulation blood move within the heart.
   Systemic circulation blood move from body, heart and lungs back to the heart and distributed with different organs in the body then back again to heart.
2. Pulmonary and coronary circulation are parts of systemic circulation because the heart and lungs also involve.
3. Pulmonary is one part of systemic circulation.

What I can do

The answer may vary.

Assessment

1. B
2. D
3. B
4. D
5. C

Lesson 3 Continuation

Additional Activity

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