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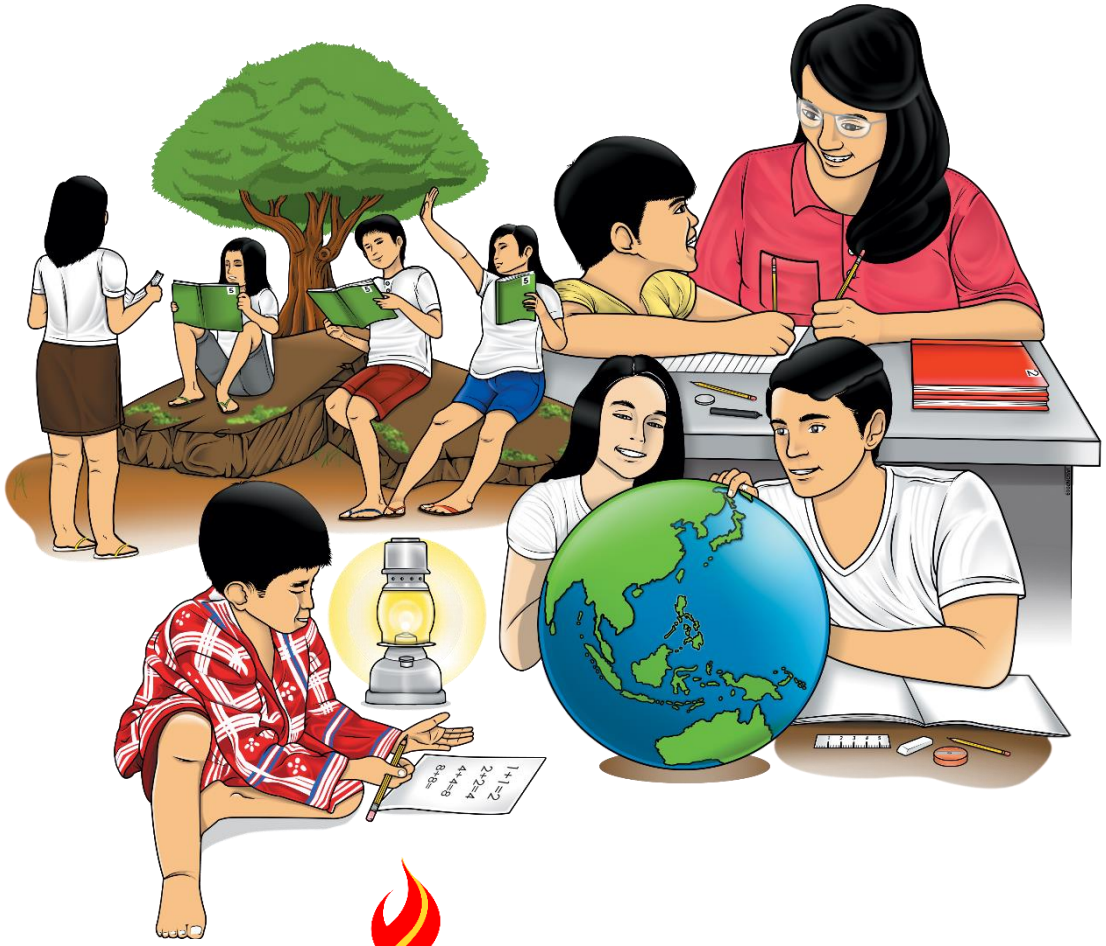
Science
Quarter 2 – Module 1:
"Organs on Duty"



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Science
Quarter 2 – Module 1:
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Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

What I Need to Know

This module contains fun and exciting activities that will help you realize that body organs should be taken care of. It is here to help you master the main functions of the major organs of the body such as stomach, intestines, kidneys, heart, lungs and brain. Series of activities were provided that can help you attain your learning targets. Please be guided by the instructions in each activity and make sure to practice safety precautions at all times. The scope of this module permits it to be used in many different learning situations.

The module is divided into four lessons, namely:

- Lesson 1 - Stomach and intestines (S4LT-IIa-b-1)
- Lesson 2 - Kidneys (S4LT-IIa-b-1)
- Lesson 3 – Heart and lungs (S4LT-IIa-b-1)
- Lesson 4 – Brain (S4LT-IIa-b-1)

After going through this lesson, you are expected to:

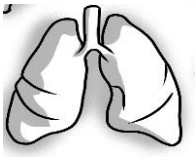
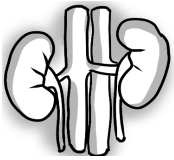
1. describe the main functions of stomach and intestines;
2. classify the main functions of the stomach and intestines;
3. describe the main functions of the kidneys;
4. describe the structure of kidneys;
5. identify ways on how to take care of our kidneys;
6. describe the main functions of the heart;
7. determine the effects of different activities on the heart, pulse beat and lungs;
8. describe the main functions of the brain; and
9. perform simple mind games to help improve brain functions.

What I Know

A. Directions: Arrange the following jumbled letters to form the hidden words. Write your answers in your notebook.

1. D I S G T E O I N –
2. T E I N S N E T I S –
3. N B R I A –
4. T E A R H –
5. S L N U G –

B. Directions: Write the name of the following body organs in your notebook as shown in the pictures.

1. 	4. 
2. 	5. 
3. 	

Illustrated by: Jotham D. Balonzo

C. Directions: Write in your notebook at least one word that comes to your mind when we talk about:

1. stomach - _____
2. intestines - _____
3. kidneys - _____
4. heart - _____
5. lungs - _____
6. brain - _____

How did you find the activity? Try to find out below:

 11-15

 6-10

 0-5

Good job!! It's a good start.

Lesson 1 "Stomach and Intestines"

Good day! How are you? It's good to hear that you are feeling well. Can you stay without food for a day or two? Maybe you can, but surely you will feel weak after. Have you ever thought what happens to the food once you eat it? What part of your body will function when you eat?

In this lesson, you will learn how the stomach and intestines work so that you can have energy to work and play. I hope you will learn much and enjoy all the activities made just for you. So, have fun and good luck to your journey.

What's In

Directions. Write **USEFUL** if the following changes in materials are beneficial to the environment and **HARMFUL** if not. Write your answer in your Science notebook.

_____1. Using old tires as plant pots.

_____2. Burning of plastics.

_____3. Cutting of old cloth and made into an apron.

_____4. Plastic bags dumped into the river.

_____5. Empty plastic bottle made into pencil case.

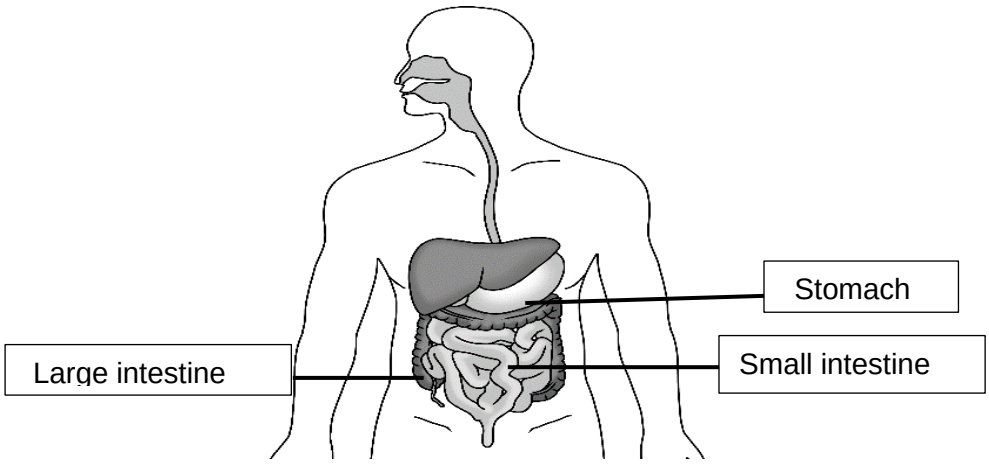
Amazing! You are in the right track. You can now proceed to the other activities.

What's New

Directions: Answer each activity. Do it in your notebook.

Activity 1: "Think and Describe"

- Study the illustration below and answer the following questions:
  1. What parts/organs are labeled?
  2. Suppose you are eating your favorite snack during recess time in school, what do you think are the body parts involved in breaking down of foods inside your body?
  3. What do you think is the main function of stomach in relation to digestion?
  4. What about the small intestine?
  5. Can you describe each function?



Illustrated by: Jotham D. Balonzo

Activity 2: "Guess Who's Function Is It"

- Read each sentence and guess the part whose function is described. Choose the word in the box. Write your answer in your notebook.

Note: Answers can be repeated.

small intestine	mouth
large intestine	stomach

_____1. It produces enzymes and hydrochloric acid that digest proteins.
_____2. The undigested nutrients from the stomach reach this part and do further digestion.
_____3. When the muscles continue to contract, the food is squeezed and mixed with digestive juices to change the food into a thick liquid called chyme.
_____4. It contains digestive juices and other enzymes that completely digests food and absorbs digested nutrients.
_____5. Receives the undigested food, absorbs water and eliminates wastes through an opening called anus.

Source: *CC Coronel., N Abracia, Ed.D, SEMP (DepEd). Science and Health 4, Your Digestive System, G. Araneta Ave., cor. Ma. Clara Street, Sta. Mesa Heights, Quezon City: SD Publication, 2000, p. 74-80.*

What is It

Points to Remember:

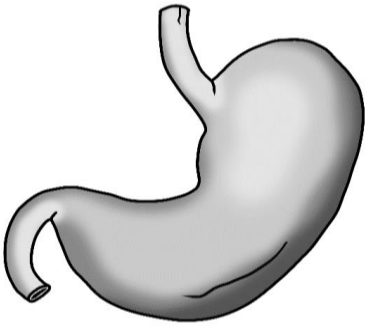
Stomach, Intestines and Digestion

Our body needs energy to perform our daily tasks and play. The food you eat plays a major role in providing energy to our body. How the food you eat is converted into energy is done by the process of digestion. Digestion is the process of

breaking down of food into nutrients. It can be both mechanical and chemical.

Mechanical digestion- causes physical change by breaking food into tiny pieces. This is actually done by the teeth and tongue.

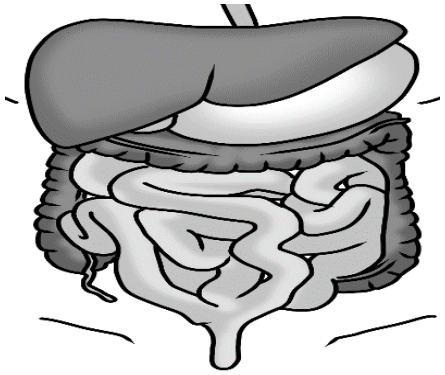
Chemical digestion- happens when the chewed food mixes with the saliva. The enzyme in it changes the starch into sugar.



Illustrated by: Jotham D. Balonzo

STOMACH is a sack-like container of food made from involuntary muscle. It contracts and relaxes in order to digest food. Foods are squeezed, churned and twisted in the stomach. Foods rich in protein and made of fiber stay in the stomach for about 4 – 6 hours. Stomach contains enzymes and hydrochloric acid that digest proteins.

Source: Abutay, L., Bonao, D., Crucis, E., Eslabra, J., Gramaje, Guadamor, M., Hernande, A., Ilagan, L., Llamera, F., Manawatao, R., Panganiban, H., Rojo, J., Tosco, R.R., and Zape, J. Science Grade 4 Learner's Material**,** First Edition 2015, Department of Education (2015), p. 71 - 74



Illustrated by: Jotham D. Balonzo

INTESTINES found inside our body which are long, continuous tube running from the stomach to the anus. The nutrients and water absorption mostly happen in the intestines. These include the **small and large intestine and rectum**.

The size of **small intestine** is about 2.5 cm wide and 7 m long coiled tube. Its function is to absorb most of the nutrients from what we eat and drink. However, the **large intestine** is about 5 feet long and about 3 inches in diameter. The colon absorbs water from wastes, creating stool. As stool enters the rectum, nerves

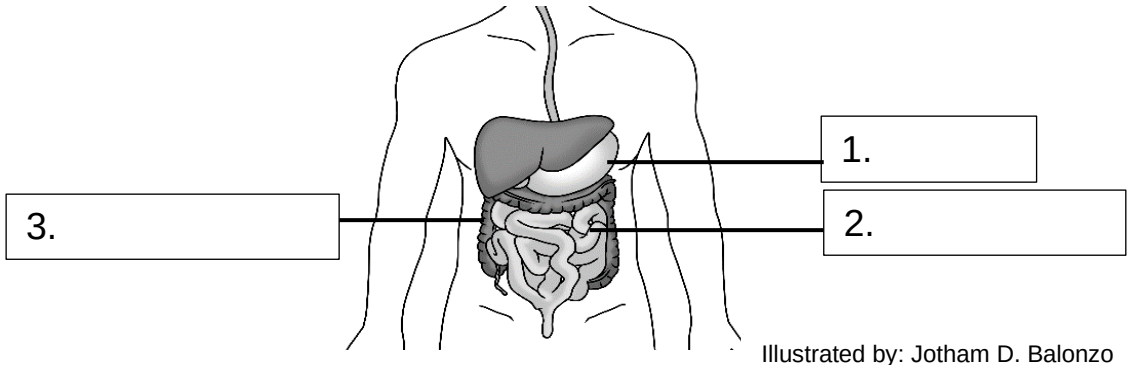
there create the urge to eliminate waste through an opening called anus.

Wonderful! I'm happy to see you working like that.

What's More

Activity 1 "Describe My Main Functions"

A. Directions: Label the parts of the body that are involved in digestion and write its function/s on the table below. Write your answer/s on your notebook.



Illustrated by: Jotham D. Balonzo

Organ	Functions
1.	
2.	
3.	

Wonderful! I'm happy to see you working like that.

Activity 2 "How do I work?"

A. Directions: Put a check mark (√) if the following statements describe the characteristics and functions of the stomach and intestines.

_____1. The stomach is a large organ that is lined with layers of muscles.

_____2. In the stomach, food is broken down into smaller particles.

_____3. The mouth is not involved in the digestion process.

_____4. The small intestine is about 2.5 cm wide and 7m long coiled tube where food is finally digested and absorbed.

_____5. The final digestion takes place in the small intestine.

B. Directions: Draw a smiley face () if the following statement describe the functions of stomach/intestines and draw a sad face () if not.

_____1. Stomach squeezes food.

_____2. Food is physically changed in the stomach.

_____3. The chemical part of digestion happens in the mouth.

_____4. The nutrients are absorbed in the intestines.

_____5. Colon absorbs water from wastes.

Activity 3 "Which is Which?"

Directions: Classify the functions of stomach and intestines by connecting the body parts to its functions. Copy and write your answers in your notebook.

2.

a. Receives undigested food particles, to be passed during defecation process.

b. Produces enzymes and hydrochloric acid that digest proteins.

c. Contains digestive juices and other enzymes that completely digests food and absorbs digested nutrients.

d. As the muscles continue to contract, the food is squeezed and mixed with digestive juices to change the food into thick liquid called chyme.

Wow! What a great effort.

What I Have Learned

Directions: Complete the statements below by supplying the correct word from the box. Write your answers in your Science notebook.

stomach	digestion	small intestine
large intestine	enzymes	saliva

I learned that:

The process by which food is broken down into nutrients is called1. _____, 2. _____ is a sack-like container of food made from involuntary muscle. It contracts and relaxes in order to digest food. Stomach contains digestive juices like hydrochloric acid and 3. _____ to make digestion fast. 4._____ and 5._____ are parts of the organs that contribute to helping the body to digest food properly.

What I Can Do

Directions: Answer the following questions briefly. Write your answers in your Science notebook.

a. What did you eat for breakfast?
b. What parts of the body change the food we eat before it will be absorbed by the body cells?
c. What should be done to the food you eat before it can be used by the body for growth?

Yes! What a remarkable effort.

Assessment

A. Directions: Read and analyze each sentence. Write the letter of the correct answers on your notebook.

1. It contains digestive juices like hydrochloric acid for faster digestion.
   a. bones b. heart c. liver d. stomach
2. After chewing or eating the food, it goes through the stomach and ____.
   a. stored c. digested
   b. removed d. goes with the blood
3. It is where final digestion and absorption of food take place.
   a. liver c. stomach
   b. large intestine d. small intestine
4. It is the type of digestion which breaks food into smaller pieces by chewing food in the mouth.
   a. large intestine c. chemical digestion
   b. small intestine d. mechanical digestion

5. The type of digestion involved when the food particles is mixed with the different enzymes and digestive juices in the stomach.

a. large intestine
b. small intestine
c. chemical digestion
d. mechanical digestion

B. Directions: Classify how the following body parts do their functions. Choose the letter of the correct answer on the space provided. Do it in your Science notebook.

1. mouth –
2. stomach –
3. small intestine –
4. large intestine –
5. digestion –

a. The food is squeezed and mixed with digestive juices
b. It is where complete digestion and absorption of digested nutrients happens.
c. The undigested food particles are passed through it and ready for defecation.
d. It is the first part where digestion occurs.
e. The process of breaking down of food.

C. Directions: In your Science notebook, write a short paragraph with at least five sentences describing the functions of the stomach and intestines in the digestive process.

_____.
_____.
_____.
_____.
_____.

That's incredible! You did well in this lesson.

Additional Activities

Directions: Using recyclable or indigenous materials, think of a way on how to make a model of digestive system. Label its parts and describe their functions.

Congratulations! I am happy that you have accomplished the tasks given to you. This time we will explore about the kidneys.

Lesson 2	**"Kidneys"**

How are you today? I hope that you are already familiar with the functions of the stomach and intestines as the major organs in digestion because another organ of the body will be introduced to you. After having this lesson, I hope that you will be enlightened on how important our kidneys are.

Well anyway, how often do you urinate in a day? Have you ever asked yourself where your urine comes from? What do you think is the organ that produces urine?

This lesson contains fun and exciting activities which will help you understand better about kidneys as one of the major organs of our body.

What's In

Directions: Write **TRUE** if the statement is correct and **FALSE** if it is not.

1. The stomach breaks down the food we eat into smaller particles.
2. The nutrients from the food we eat are absorbed by the large intestines.
3. The chemical part of digestion happens when food is broken down into small bits in the mouth and squeezed in the stomach.
4. Small intestine is about 2.5 cm wide and 7 m long coiled tube.
5. Undigested food particles are passed to the small intestine.

What's New

Note to Parent/Learning Facilitator: Guide your children in doing this activity. Remind them of the following precautionary measures. Be careful in handling the materials while performing the activity**.**

Directions: Perform the activity below and answer the guide questions. Write your answers in your Science notebook.

Activity1. "The Organs That Filter"

Objective:

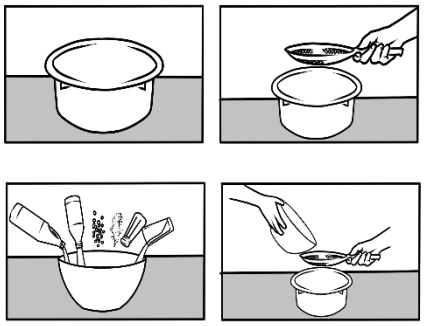
1. Describe the functions of the kidneys to the human body.

Materials needed: salaan/strainer or clean piece of cloth, small basin (palanggana), small plastic bowl, small amount of the following: pebbles, sand, salt, water, fish sauce (patis) or soy sauce

Procedures:

- Set the small basin.

- Put the strainer/clean piece of cloth, on top of a small basin. If you are using clean cloth, secure it not to slip.
- On a separate plastic bowl, mix the water, fish sauce (patis) or soy sauce, salt, sand, and pebbles. Stir well.



Illustrated by: Jotham D. Balonzo

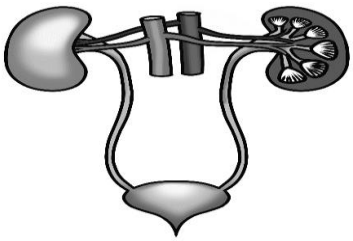
- Pour the mixture on top of the strainer/clean cloth. Secure the strainer/clean cloth not to slip on the mouth of the basin.
- Observe what happens.

Guide questions:

1. What happened to the mixture when you poured it into the strainer/cloth?
2. What was left on the strainer/cloth? What went through on the bottom of the strainer/cloth?
3. What is the role of the strainer/cloth in the activity?
4. Which do you think are the organs represented by the strainer/cloth?
5. Describe the functions of kidney when it comes to filtering liquid waste?

Activity 2: "Spot the Kidneys"

Directions: Identify which are the kidneys. Draw it in your Science notebook and color them red. Be able to describe their functions too.



Illustrated by: Jotham D. Balonzo

Activity 3: "Do I Have Healthy Habits?"

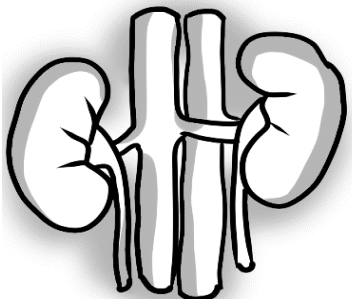
Directions: Below is a list of individual practices. Copy the checklist in your notebook and check **(√)** the column which corresponds to your habits whether you do it always, sometimes or never.

Practices	Always	Sometimes	Never
1. I love to eat salty / junk foods.			
2. I drink 8 – 10 glasses of water a day.			
3. I exercise regularly.			
4. I urinate as the need arises.			
5. I eat healthy and balanced diet.			

That's better! You performed the activities well. For better understanding of the activities, read and understand the information below.

What is It

Points to Remember:



Illustrated by: Jotham D. Balonzo

- KIDNEYS are bean-shaped paired organs which are about 4 to 5 inches long and 2 to 3 inches wide. The KIDNEYS remove urea from the blood through tiny filtering units called nephrons.
- Nephrons are the most important part of each kidney. They take in blood, metabolize nutrients, and help pass out waste products from filtered blood. Each kidney has about 1 million nephrons. Each has its own internal set of structures.

- Kidneys are the major organs of the URINARY SYSTEM. The functions of the urinary system are 1) To remove liquid waste from the blood in the form of urine and 2) to keep a stable balance salt and other substance in the blood and produce hormone that aids the formation of the body cells. The right kidney is slightly lower due to the presence of the liver on the right region of our body.
- The major metabolic wastes produced by our body are filtered by kidneys in the blood like salt, water and nitrogenous wastes.

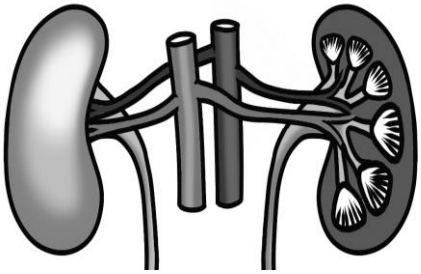
Ways to keep the kidneys healthy:

- Drink 8-10 glasses of water every day.
- Urinate if the need arises.
- Exercise regularly.
- Eat balanced diet.
- Lessen intake of too much sweets and salty food.
- Avoid oily/fatty food.

Source: Abutay, L., Bonao, D., Crucis, E., Eslabra, J., Gramaje, Guadamor, M., Hernande, A., Ilagan, L., Llamera, F., Manawatao, R., Panganiban, H., Rojo, J., Tosco, R.R., and Zape, J. Science Grade 4 Learner's Material, First Edition 2015, Department of Education (2015), page 78-87

What's More

A. Directions: From the given illustration, describe the structure of the kidneys. Write your answer in your Science notebook.



Illustrated by: Jotham D. Balonzo

B. Directions: Copy and complete the given table below.

KIDNEYS	
Functions of kidneys	**Ways to take care of the kidneys**

C. Directions: Arrange the following jumbled letters to form the hidden words. Write your answers in your Science notebook.

1. L I U Q D I S W A T E –
2. I N E U R –
3. Y E D N S I K –
4. S A T L –
5. P N E H R O N S –

C. Directions: Write true if the statement is correct and false if not.

_____1. The kidneys are bean-shaped organs which are about four to five inches long and two to three inches wide.
_____2. The left kidney is slightly lower than the right kidney.
_____3. The filtering units of kidneys are called nephrons.
_____4. Kidneys remove solid waste from the blood.
_____5. Kidneys keep a stable balance of salts and other substances in the blood.

D. Directions: Draw a heart (♡) if the statement shows good way of keeping the kidneys healthy and draw a square (□) if not.

_____1. Exercise regularly.
_____2. Drink 8-10 glasses of water every day.
_____3. Eat sweets often.
_____4. Urinate if you feel you need to.
_____5. Avoid salty food.

Good job! You got it right.

What I Have Learned

Directions: Write the letter that corresponds to the number in each box and write the message in your Science notebook.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**

16	17	18	19	20	21	22	23	24	25	26
P	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**

1.

20	8	5		11	9	4	14	5	25	19		18	5	13	15	22	5	
23	1	19	20	5		6	18	15	13		20	8	5		2	15	4	27

2.

20	8	5		21	18	9	14	1	18	25		19	25	19	20	5	13
11	5	5	16	19		1		19	20	1	2	12	5				
2	1	12	1	14	3	5		15	6		19	1	12	20		9	14
20	8	5		2	12	15	15	4									

3.

20	8	5		6	9	12	20	5	18	9	14	7		21	14	9	20
9	19		3	1	12	12	5	4		14	5	16	8	18	15	14	19

TERRIFIC! Aren't you proud of yourself?

What I Can Do

Directions: In your notebook answer the following questions briefly.

1. What advice can you give to your classmate/friend who is fond of eating salty food?
2. How are you going to take care of your kidneys to continue functioning well?

Wonderful! Now you've figured it out!

Assessment

A. Directions: Read the following questions carefully and write the correct answer in your Science notebook.

1. How many kidneys does a person have?

   a. four b. one c. three d. two

2. Which of the following is true about the structure of the kidneys?

   a. heart- shape, 3 to 4 inches long and 2 to 5 inches wide

   b. oblong, 1 to 2 inches long and 2 to 3 inches wide

   c. bean, 4 to 5 inches long and 2 to 3 inches wide

   d. round- shape, 4 to 5 inches long and 2 to 3 inches wide

3. Why is the right kidney slightly lower than the left?

   a. The right kidney is bigger than the left

   b. The right kidney is heavier than the left

c. The stomach pushes the right kidney down

d. Due to the presence of liver on the right region of the body

4. Which of the following is a function of the kidney?

a. They produce blood.

b. They store salt in the blood.

c. They add urea to the blood.

d. They filter metabolic wastes produced by the body.

5. Kidneys are the major part of what body system?

a. digestive system c. urinary system

b. circulatory system d. nervous system

6. Which of the following is NOT a function of the kidney?

a. They filter liquid wastes from the blood.

b. They absorb nutrients from the food we eat.

c. They maintain a stable balance of salt in the blood.

d. They produce hormone that aids the formation of body cells

7. Kidneys remove urea from the blood. What do you call the filtering units that enable kidneys to do this function?

a. bladder b. nephrons c. ureter d. urethra

8. Which of the following is NOT a proper way of taking care of kidneys?

a. exercising regularly

b. eating too much fatty food

c. avoiding too much salty food

d. minimizing the intake of sweets

9. What do you think will happen if our kidneys will not function well?

a. Our body will continue with its normal functions.

b. Our blood will still be cleansed by other body parts.

c. Body wastes from our blood will not be filtered and eliminated.

d. The liver will be the one to take charge of all filtering functions.

10. How can you take care of your kidneys to function properly?

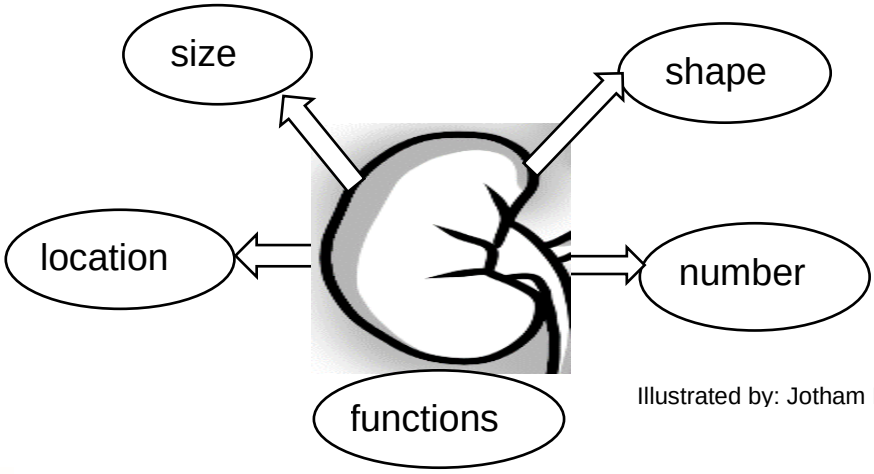
a. eat junk foods

b. drink a lot of soft drinks

c. drink 8-10 glasses of water a day

d. eat more sweets like candies and chocolates

B. Directions: Fill in the needed information in the graphic organizer below. Write your answer in your Science notebook.



Illustrated by: Jotham D. Balonzo

Additional Activities

Directions: Make a sample infomercial to inform people on how to care of the kidneys.

Congratulations! I am happy that you have accomplished the tasks given to you. This time we will explore the heart and the lungs.

Lesson 3

"Heart and Lungs"

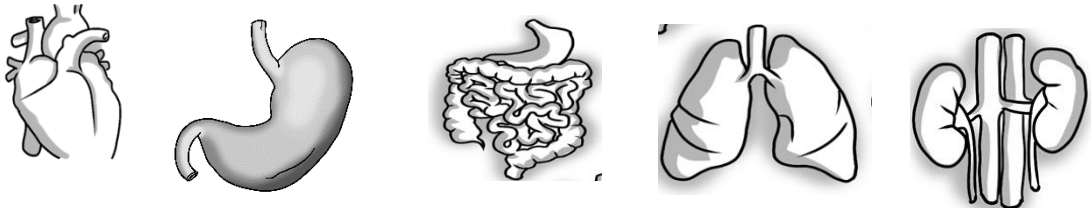
The heart is a hollow muscular organ located between the lungs and is protected by the rib cage. The heart and the lungs support each other to allow distribution of nutrients and oxygen to all parts and the removal of carbon dioxide as waste product in the body.

What's In

Directions: Write the name of the following body organs in your notebook as shown in the pictures.

Activity 1. "Who Am I?"

1. **2.** **3.** **4.** **5.**



Illustrated by: Jotham D. Balonzo

1. _____ 2. _____

3. _____ 4. _____

5. _____

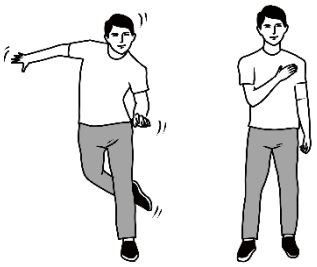
Good job! You got it right!

What's New

Activity 1. "The Heart"

What to do:

1. Move to the rhythm of a music or song and afterwards feel and try to listen to your heart beat.
2. Put your palm against your chest.



Illustrated by: Jotham D. Balonzo

Guide Questions:

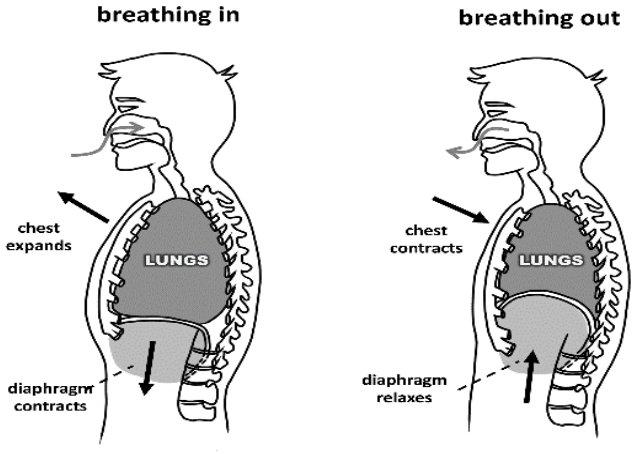
1. What do you feel?
2. What is pumping in your chest?
3. What organ is responsible for pumping blood?
4. What is the function of the heart?

Activity 2. "The Lungs"

Note: *You can perform the activity in pair and study the illustration indicated below.*

What to do:

1. Ask your mother/father or sibling to lie down and relax.
2. Tell him or her to breathe normally.
3. Observe the movement of the diaphragm and the chest cavity.



Illustrated by: Jotham D. Balonzo

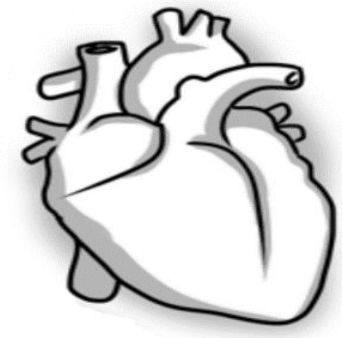
Guide Questions:

1. What did you observe from the activity?
2. What happened when a person inhale and exhale?
3. What organ is responsible for breathing?
4. What is the main function of the lungs?

That's better! You performed the activities well. For more activities, read and understand the information below.

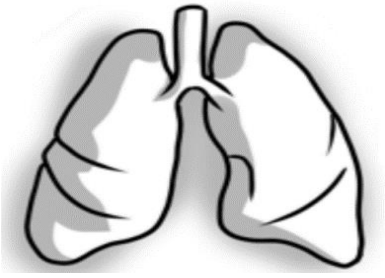
What is It

Points to Remember:



Illustrated by: Jotham D. Balonzo

The *Heart* is a hollow muscular organ located near the lungs and is protected by the rib cage. Its size is about the size of your fist. It is made up of cardiac muscles which is an example of an involuntary muscle. Its function is to pump blood to the different parts of the body. The *pulse beat* is also the beat of your heart. The blood carries the oxygen needed by the different parts of the body. If the heart will stop pumping the person will die.



Illustrated by: Jotham D. Balonzo

The pair of *lungs* is located near the heart and is protected by the rib cage. It is made up of tiny air sacs that filters the oxygen that enters the body to ensure that the heart receives clean oxygen. Carbon dioxide is a waste material that is removed by the body through the lungs. *Breathing* is the process of moving air **into** and **out** of the lungs to facilitate gas exchange with the internal environment, mostly by bringing in oxygen and flushing out carbon dioxide. Breathing involves two processes. When a person

breathe in, or **inhale** *(takes in oxygen),* the diaphragm contracts and moves downward. The **chest cavity enlarges** as the lungs expand into it.

To **exhale** is to breathe out *(takes out carbon dioxide).* It is the opposite of inhale. When **a person breathe out**, or **exhale**, the diaphragm and rib muscles **relaxes, reducing** the space in the chest cavity. The chest cavity or lungs gets smaller, similar to the releasing of air from a balloon. Person can breathe (inhale and exhale) through the mouth and nose. A normal adult lungs could weigh approximately 1000 grams.

Source: Abutay, L., Bonao, D., Crucis, E., Eslabra, J., Gramaje, Guadamor, M., Hernande, A., Ilagan, L., Llamera, F., Manawatao, R., Panganiban, H., Rojo, J., Tosco, R.R., and Zape, J. Science Grade 4 Learner's Material, First Edition 2015, Department of Education (2015), page 84

What's More

Directions: Perform the different activities indicated in this lesson, then answer the guide questions. Write your answers in your Science notebook.

Note to Parent/Learning Facilitator:

Remind your child of the precautionary measures and safety protocols in doing this activity.

Guide and supervise your child at all times.

Activity 1. "My Pulse Beat and My Breathing in Different Activities"

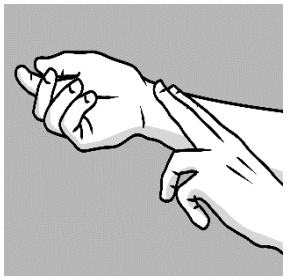
What you need:

stop watch/watch, pen/pencil, paper

What to do:

A. How to get your pulse beat.

1. Turn your right hand so that your palm faces upward.
2. Using your forefinger *(pointer finger)* and middle finger of your left hand, apply



Illustrated by: Jotham D. Balonzo

pressure on your right wrist. The pulsating movement you feel is known as the pulse beat.

B. Activities:

1. Stand still and relax for 3 minutes. Then count and record your pulse beat for one minute in tabulated form.

2. Move to the rhythm of a fast music or song for another 3 or 5 minutes. Determine and record your pulse beat for one minute in the same table.

3. Put a check mark on the appropriate column in breathing rate.

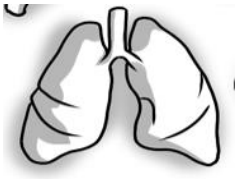
ACTIVITIES	**Number of Pulse Beats per Minute after doing the activity**	**Breathing Rate**	
		Fast	**Slow**
standing and relaxing			
dancing			

Guide Questions:

1. What did you observe after you have performed the activities? Were there differences in your recorded data?
2. What does pulse mean?
3. What happen to the pulse beat when activities demand more body movement? How about the breathing?
4. What organs are directly involved or affected when the body demands more oxygen?
5. Do you think pulse beat is a vital sign of life? Why?

Activity 2. "The Organs Functions"

Directions: Write the functions of the following body organs shown in the pictures below. Do it on your notebook.

Body Organ	Functions
	_____
	_____

Illustrated by: Jotham D. Balonzo

That's better! Keep it up!

Activity 3: Think and Learn

A. Directions: Match column A to column B. Write the letter of your answer in your notebook.

A	B
___1. It filters the oxygen that enters the body.	a. heart
___2. The process of taking air into and expelling it from the lungs is called ___.	b. lungs
___3. These means to breathe in and to breathe out air into our lungs through our noses and mouth.	c. breathing
___4. It is also known as the beat of the heart.	d. inhale/exhale
___5. It pumps blood allowing the distribution of nutrients in all parts of the body	e. pulse beat

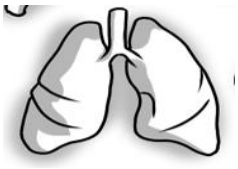
B. Directions: Put a check mark (✓) on the following characteristics that would describe the heart and the lungs and cross mark (**x**) if not.

HEART	LUNGS
____ 1. size of a fist	___ 1. 2 lungs
____ 2. protected by skull	___ 2. breathing
____ 3. pumps blood	___ 3. made up or air sacs
____ 4. made up of muscle	___ 4. protected by the rib cage
____ 5. located just behind and slightly left of the breastbone	___ 5. exchange of gases occur

What I Have Learned

Now that you have performed all the activities about the major functions of the heart and lungs, answer briefly the following statements to check whether you have really mastered the lesson**.** Do it in your notebook.

Distinguishing Characteristics	**HEART**  Illustrated by: Jotham D. Balonzo
Size	
Location	
how many	
made up of	
Functions	

Distinguishing Characteristics	***LUNGS***  Illustrated by: Jotham D. Balonzo
Size	
Location	
how many	
made up of	
Functions	

TERRIFIC! Aren't you proud of yourself?

What I Can Do

Directions: In your Science notebook answer the following questions briefly.

1. What do you think will happen to a person if the heart and lungs stop working?

2. What must you do for your heart and lungs to function well?

Wonderful! Now you've figured it out!

Assessment

A. Directions: Modified TRUE or FALSE. Write **TRUE** if the statement is **correct**. If the statement is FALSE, **underline the word** that makes it wrong then **change the word** to make it correct. Do this in your notebook.

_____1. Heart is a hollow muscular organ.

_____2. Lungs is protected by the ribcage.

_____3. The lungs filters the oxygen that enters the body.

_____4. The heart and lungs support each other to allow distribution of nutrients and oxygen to all parts and removal of carbon dioxide as a waste product in the body.

_____5. The cardiac or heart muscles are contracting involuntarily.

_____6. Activities that demands more body movements decreases pulse rate and the lungs requires less air or oxygen supply.

_____7. When a person breathes or inhales *(takes in oxygen)*, the diaphragm contracts or moves downward and the chest cavity enlarges.

_____8. Drinking too much alcohol and smoking is good for the heart and lungs.

_____9. The chest cavity or lungs gets smaller as the person exhales or breathe out carbon dioxide.

_____10. Good habits can help prevent the occurrence of heart and lung problems.

B. Directions: Below are the characteristics and functions of the heart and lungs. Draw a (♡) if the statement describes the heart and () if the statement describes the lungs.

_____11. _____ is as big as fist.

_____12. Carbon dioxide is a waste material that is removed by the body through the _____.

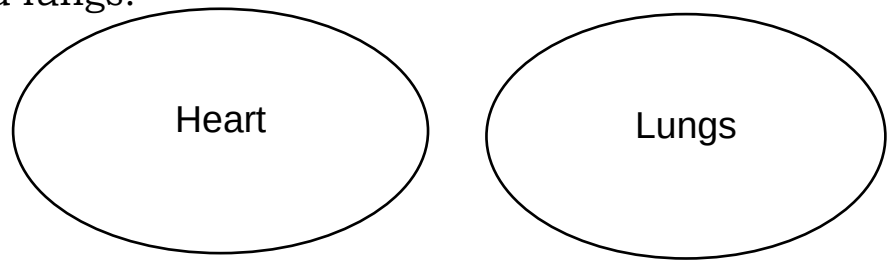
_____13. The _____ receives clean oxygen.

_____14. The _____ hollow muscular organ located between lungs.

_____15. The _____ filters the oxygen that enters your body.

Additional Activities

A. Directions: In your Science notebook write a short essay about heart and lungs.



B. Directions: Using the materials below, make a poster showing proper care of heart and lungs.

crayon pencil short bond paper

Congratulations! I am happy that you have accomplished the tasks given to you. Next time we will study about brain.

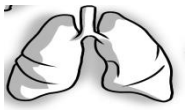
Lesson 4	**"Brain"**

Good day! How are you? It's good to hear that you are feeling well. It means that your body organs do their functions effectively.

In this lesson, you will learn about the functions of the brain and perform some activities that boost your mind.

What's In

Directions: Let us recall the functions of each of the following organs. Match the pictures in Column A to their functions in Column B.

A	B
1. 	a. It filters the oxygen that enters the body.
2. 	b. It contains digestive juices like pepsin to make digestion fast.
3. 	c. It pumps blood allowing the distribution of nutrients in all parts of the body.
4. 	d. It is where final digestion and absorption of food takes place.
5. 	e. It removes body waste like urine and urea from the blood.

Illustrated by: Jotham D. Balonzo

Amazing! You are in the right track. You can now proceed to the other activities.

What's New

Directions: Perform each activity. Be able to answer the questions. Write your answers in your notebook.

Activity 1: "BRAIN FUNCTION"

What to do:

1. In one minute, try to memorize the following words.

brain	function	information
voluntary	sends	interprets
involuntary	receives	habit
movement	balance	
spinal cord	skill	

2. Write the words you memorized on a sheet of paper, without looking at the module.

Guide Questions:

1. How many words did you remember?
2. What do you think is the part of your body that made you remember those words?
3. What is the function of the brain?

Good job! For more activities, read and understand the information below.

What is It

Points to Remember:

BRAIN is a highly complex organ of human being. It is found in the head and is protected by the skull, a soft tissue called

meninges and a cushion of fluid. It weighs 1.5 kilograms and contains billions of neurons.

- **THE FUNCTIONS OF THE BRAIN:**

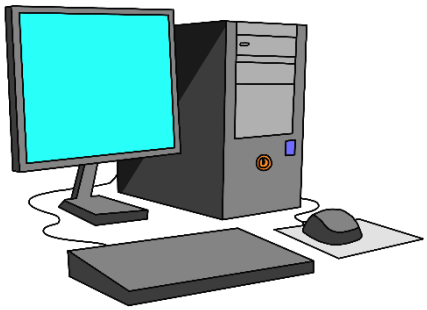
Illustrated by: Jotham D. Balonzo

- It controls the involuntary activities of the body like thinking, solving problems, and memorizing details and decision making.
- It controls the muscle movement of the body like walking and writing.
- It coordinates muscular actions.
- It is responsible for man's ability to learn habits and develop skills.
- It maintains the person's sense of balance.
- It connects the brain to the spinal cord.
- It controls the involuntary muscles of the body and coordinates functions like beating of the heart.

The main function of the brain is that it processes the information it receives and sends instructions to the different parts of the body.

Source: Abutay, L., Bonao, D., Crucis, E., Eslabra, J., Gramaje, Guadamor, M., Hernande, A., Ilagan, L., Llamera, F., Manawatao, R., Panganiban, H., Rojo, J., Tosco, R.R., and Zape, J. Science Grade 4 Learner's Material**,** First Edition 2015, Department of Education (2015), p. 94

How exactly does your brain function?



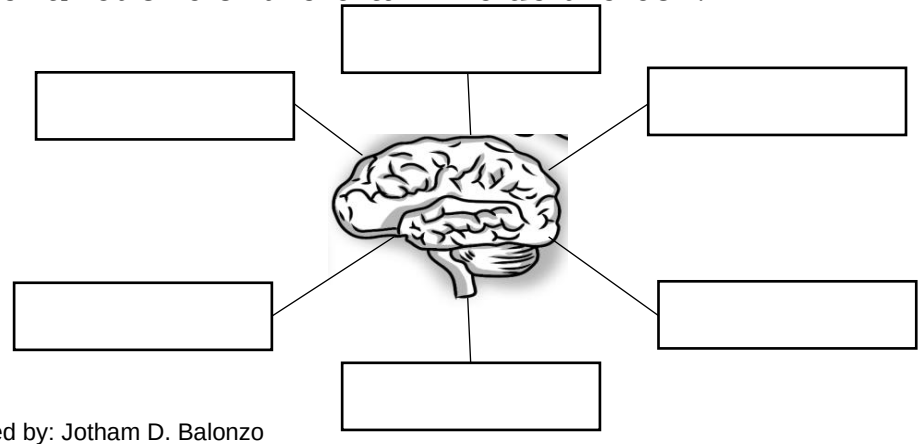
First, a sense organ perceives stimuli. In the above situation, the light was the stimulus. Your brain makes meanings on the information of the stimulus. Then, it decides what and how to respond. Afterwards, it commands a body part to do exactly how it wants to respond. The brain is like a computer machine. It processes information that is fed to it. It also creates meanings the moment the parts of it are activated depending on what type of information comes to the brain.

Let's check what you have learned so far! Good luck…

What's More

Activity 1: "Complete my Functions"

Directions: Draw and complete this figure in your notebook by writing the functions of the brain inside the box.



Illustrated by: Jotham D. Balonzo

Activity 2: "How does brain functions?"

Directions: Look at this picture then answer the following questions. Write your answer in your Science notebook.

Illustrated by: Jotham D. Balonzo

1. What does the boy see?
2. What is he planning with the ice cream he is holding?
3. What do you think is the taste of the food?
4. How does the boy see the food?
5. How does he taste it?
6. How does the brain functions with the other organs?

That's better! Keep it up!

Activity 3: Think and Understand

A. Directions: Write in your notebook at least five words that comes to your mind when we talk about brain.

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

B. Directions: Read the following statements. Put a check mark (✓) if the statement describes the function of the brain and a cross mark (x) if it is not. Write your answers in your notebook.

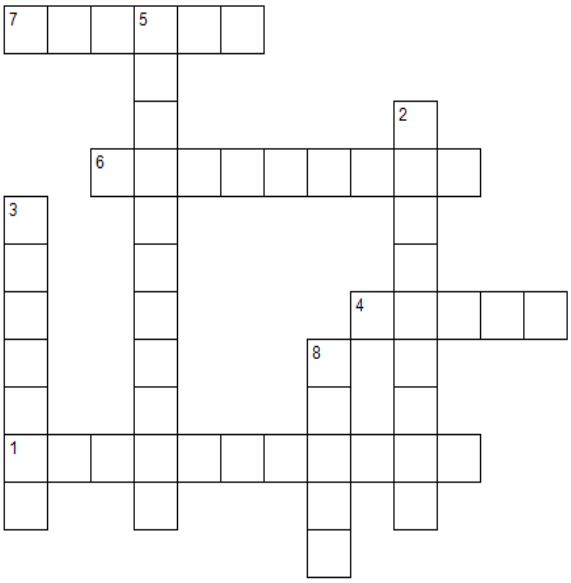
1. It controls the voluntary muscles of the body.
2. It connects the brain to the spinal cord.
3. It breaks down the food that we eat into smaller particles.
4. It distributes nutrients and oxygen to the parts of the body.
5. It helps maintain a sense of balance.

C. Directions: Copy in your Science notebook the sentences that show ways of keeping your brain to function well.

1. Eating a balanced diet
2. Drinking 5-6 glasses of water daily
3. Exercising once a week
4. Getting enough rest
5. Avoiding alcohol, cigarettes and drugs

What I Have Learned

Directions: Recall the lesson and try to look for the words related to the functions of the brain in this crossword puzzle. Write your answers in your notebook.



Across:
1. brain _____ muscular actions
4. brain _____ instructions to different parts of the body
6. activities such as solving problems and memorizing details
7. brain is responsible for learning _____ and skills

Down:
2. brain _____ information it receives
3. brain maintains the person's sense of _____ when it moves
5. activities such as beating of the heart and digesting of food
8. control center of the body

TERRIFIC! Aren't you proud of yourself?

What I Can Do

Directions: Recall the lesson and try to look for the words related to the functions of the brain in this puzzle.

b	b	a	l	a	n	c	e	p	k
r	g	h	c	o	n	t	r	o	l
a	g	s	p	s	k	i	l	l	s
i	m	e	m	o	r	y	o	t	p
n	k	h	a	b	i	t	v	h	q
h	l	t	h	i	n	k	i	n	g
g	v	o	l	u	n	t	a	r	y
s	p	i	n	a	l	c	o	r	d
a	r	h	c	a	t	n	m	d	e
w	m	o	v	e	m	e	n	t	h

Puzzles are examples of mind games that can improve the function of your brain.

Wonderful! Now you've figured it out!

Assessment

A. Directions: Choose the letter of the correct answer. Write your answers in your Science notebook.

1. Which is the command center of the body?
   a. blood b. brain c. heart d. stomach
2. Which of the following is NOT a voluntary activity?
   a. breathing b. memorizing
   c. problem solving d. thinking
3. Which of the following is an example of an involuntary activity of the body which the brain controls?
   a. eating b. running
   c. walking d. beating of the heart

4. Which could NOT be a result if a person's brain is damaged?
    a. sense of balance is affected
    b. inability to memorize details
    c. inability to walk or write
    d. unfiltered oxygen in the body

5. Which of the following is not a function of the brain?
    a. It coordinates muscular actions.
    b. It connects the brain to the spinal cord.
    c. It filters the oxygen that enters the body.
    d. It processes information and sends instruction.

6. Which of the following shows the correct function of the brain?
    a. It contains digestive juice called pepsin.
    b. It removes body wastes like urine and urea from the blood.
    c. It controls the voluntary and involuntary activities of the body.
    d. It pumps blood for the distribution of nutrients to body parts.

7. What is the reason why some patients with a damaged brain could not see anymore?
    a. The eyes were damaged like the brain.
    b. The brain cannot connect anymore with the eyes.
    c. The part of the brain responsible for seeing was damaged.
    d. The brain cannot receive and send information due to the damage.

8. How do brain initially functions when a person sees his/her favorite food?
    a. It ignores the message.
    b. It commands to eat the food right away.
    c. It commands to walk away from the food.
    d. It sends a message to your tongue to salivate.

B. Directions: Choose seven functions of the brain from the following sentences. Write the letters of the correct answer in your notebook.

a. It pumps blood.
b. It coordinates muscular actions.
c. It controls the muscles of the body.
d. It protects major organs of the body.
e. It connects the brain and spinal cord.
f. It controls voluntary activities of the body.
g. It controls involuntary activities of the body.
h. It processes information and sends instruction.
i. It allows food to be broken down into nutrients.
j. It is responsible for man's ability to learn habits and develop skills.

Additional Activities

Directions: Try solving this small brain game named Sudoku. Doing this kind of activity helps the brain perform its function well.
Mechanics: Each row, column and square (9 spaces each) needs to be filled out with numbers 1-9, without repeating any numbers within the row, column or square.

5			4	6	7	3		9
9		3	8	1		4	2	7
1	7	4	2		3			
2	3	1	9	7	6	8	5	4
8	5	7	1	2	4		9	
4	9	6	3		8	1	7	2
				8	9	2	6	
7	8	2	6	4	1			5
	1					7		8

Congratulations! I am happy that you have accomplished the tasks given to you. See you next time.

Answer Key

LESSON 1

Activity 2: How do I work?

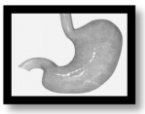
A.

1. √
2. √
3.
4. √
5. √

B.

1. 
2. 
3. 
4. 
5. 

ACTIVITY 3. "Which is Which?"

1. 
2. 

a.
b.
c.
d.

What I Have Learned

1. digestion
2. stomach
3. enzymes
4. small intestine
5. large intestine

What I Can Do

a. Pupils answer may vary.
b. mouth, stomach, intestines
c. It should be changed into nutrients readily absorbed by the body cells.

Assessment

A.	B.	C.
1. d	1. d	– Pupils' answer may vary
2. c	2. a	
3. d	3. b	
4. d	4. c	
5. c	5. e	

Additional Activities

Pupils' answers may vary.

ACTIVITY 1. "Think and Describe"

1. stomach, small intestine, large intestine
2. mouth, stomach and intestines
3. to digest foods and absorb by the body
4-5. Pupils answer may vary

ACTIVITY 2. Guess Who's Function is it?"

1. stomach
2. small intestine
3. stomach
4. small intestine
5. large intestine

What's More

A.

1. stomach 2. small intestine
3. large intestine

Organ	Functions
1. stomach	• squeezes food into small particles • releases digestive enzymes and hydrochloric acid that helps in digesting fats
2. small intestine	• contains digestive juices and other enzymes that completely digests food and absorbs digested nutrients. • change the food into thick liquid called chyme.
3. large intestine	• undigested food particles are passed through it and ready for defecation.

A.

1. DIGESTION
2. INTESTINES
3. BRAIN
4. HEART
5. LUNGS

B.

1. HEART
2. INTESTINES
3. LUNGS
4. STOMACH
5. BRAIN

C. Pupils' answer may vary

1. USEFUL
2. HARMFUL
3. USEFUL
4. HARMFUL
5. USEFUL

LESSON 2

C.

1. LIQUID WASTE	4. SALT
2. URINE	5.NEPHRONS
3. KIDNEYS	

D. E.

1. true 1.
2. false 2.
3. true 3.
4. false 4.
5. true 5.

What I Have Learned

1. The kidneys remove waste from the body.
2. The urinary system keeps a stable balance of salt in the blood.
3. The filtering unit is called nephrons.

What I Can Do

Pupils' answer may vary

Assessment

A.

1. d	6. b
2. c	7. b
3. d	8. b
4. d	9. c
5. c	10.c

B. .

size	4-5 inches long; 2-3 inches wide
shape	bean-shaped
location	below the liver
number of pieces	2
functions	Remove urea from the blood Keep a stable balance of salt

Additional Activities

a. Pupils' answer may vary.

What's In

A.

1.	TRUE	4.	TRUE
2.	FALSE	5.	FALSE
3.	TRUE		

B. Pupil' answer may vary

What's New

Activity 1 "The Organ That Filters"

Guide questions:

1. The poured mixtures were filtered.
2. The waste part of the liquid mixtures including the dissolved particles of the salt.
3. They filter wastes from the mixtures.
4. The kidneys
5. They remove liquid wastes from the body

Activity 2 "Spot the Kidneys"

Activity 3. Do I have healty habits?"

Pupils' answer may vary.

What's More

A. Pupils; answer may vary.

B.

- Eat healthy and balanced diet.

Dink 8-10 glasses of water daily.

- Urinate frequently.
- minimize intake of sweets and salty foods.
- Do not eat to much fatty foods.
- Exercise regularly.

LESSON 3

Activity 3: Think and Learn

A. Functions of the Heart and lungs

1. b 2. c 3. d 4. e 5. a

B.

Heart	*Lungs*
1. ✓	1. ✓
2. X	2. ✓
3. ✓	3. ✓
4. ✓	4. ✓
5. ✓	5. ✓

What I Have Learned

Distinguishing Characteristics	**HEART**	**LUNGS**
size	fist	Adult lungs could weigh 1000 grams
location	near the lungs left side of the lungs	Near the heart
how many	1	2
made up of	muscle or heart muscle	air sacs
functions	Pumps blood throughout the body	Filter the air or oxygen that enters the body

What I Can Do

1. The person may die. 2. Pupils' answer may vary

Assessment

1.
1. True 2. True 3. True 4. True 5. True
6. decrease – increases less – more
7. True 8. good – bad 9. Tue 10. True
11. 12. 13. 14. 15.

Additional Activities

a. Pupils' answer may vary.
b. Pupils' answer may vary.

What's In

1. heart 2. stomach 3. intestines 4. lungs 5. kidneys

What's New

Activity 1: "The Heart"

Answer to Guide Questions:

1. beat of the heart 2. heart is beating 3. heart
4. The heart pumps blood to the different part s of the body.

Activity 2: "The Lungs"

1. The chest and the diaphragm moves.
2. Inhale – the diaphragm contract or moves downward while the chest cavity enlarges or expands.

Exhale – the chest cavity or the lungs gets smaller as it releases the air or carbon dioxide and the diaphragm relaxes.

3. lungs 4. It filters the air that enters in the body

What's More

Activity 1: "My Pulse Beat and My Breathing in Different Activities"

ACTIVITIES	**Number of Pulse Beats per Minute after doing the activity**	**Breathing Rate**	
		Fast	**Slow**
standing and relaxing	Pupils' answer may vary		✓
dancing	Pupils' answer may vary	✓	

Guide questions:

1. When people perform strenuous activities the pulse beat faster because the heart is coping with the activity. Breathing rate changes also. Yes
2. A pulse is also called as the beat of the heart.
3. Pulse beats faster, and we also breathe faster as we perform strenuous activities.
4. Heart and lungs
5. Yes, because pulse beat is also called as the beat of the heart.

Activity 2. "The Organs Functions"

Lungs – filters the oxygen that enters the body to ensure that the heart receives clean oxygen.
Heart – pumps blood to the different parts of the body.

LESSON 4

What I Have Learned

Across: 1. coordinates, 4. sends, 6. Voluntary, 7. Habits

Down: 2. Interprets, 3. balance, 5. Involuntary, 8. brain

What I Can Do

b	b	a	l	a	n	c	e	p	k
r	g	h	c	o	n	t	r	o	l
a	g	s	p	s	k	i	l	l	s
i	m	e	m	o	r	y	o	t	p
n	k	h	a	b	i	t	v	h	q
h	l	t	h	i	n	k	i	n	g
g	v	o	l	u	n	t	a	r	y
s	p	i	n	a	l	c	o	r	d
a	r	h	c	a	t	n	m	d	e
W	m	o	v	e	m	e	n	t	h

Assessment

A.

1. b 2. a 3. d 4. d 5. c 6. c 7. c 8. d

B. a, b, c, e, f, g, h, j

Additional Activities

5	2	8	4	6	7	3	1	9
9	6	3	8	1	5	4	2	7
1	7	4	2	9	3	5	8	6
2	3	1	9	7	6	8	5	4
8	5	7	1	2	4	6	9	3
4	9	6	3	5	8	1	7	2
3	4	5	7	8	9	2	6	1
7	8	2	6	4	1	9	3	5
6	1	9	5	3	2	7	4	8

What's In

C. 1. a 2. c 3. e 4. d 5. b

What's New

Activity 1: Brain Function

Guide Questions:

1. Answers may vary
2. brain
3. Brain helps us remember or memorize words.

What's More

Activity 1: Complete my Functions

1. Possible Answers:
   - It controls the involuntary activities of the body like thinking, solving problems, and memorizing details and decision making.
   - It controls the muscle movement of the body like walking and writing.
   - It coordinates muscular actions.
   - It is responsible for man's ability to learn habits and develop skills.
   - It maintains the person's sense of balance.
   - It connects the brain to the spinal cord.
   - It controls the involuntary muscles of the body and coordinates functions like beating of the heart.

Activity 2: How does brain function?

1. Ice cream
2. Eat it
3. Sweet
4. Through the eyes and brain
5. Through the tongue and brain
6. The brain receives message from the organs and interprets it for action.

Activity 3: Think and Understand

A. Pupils' answers may vary.

B. 1. x 2. √ 3. x 4. x 5. √

C. 1. ☺ 2. ☹ 3. ☹ 4. ☺ 5. ☺

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