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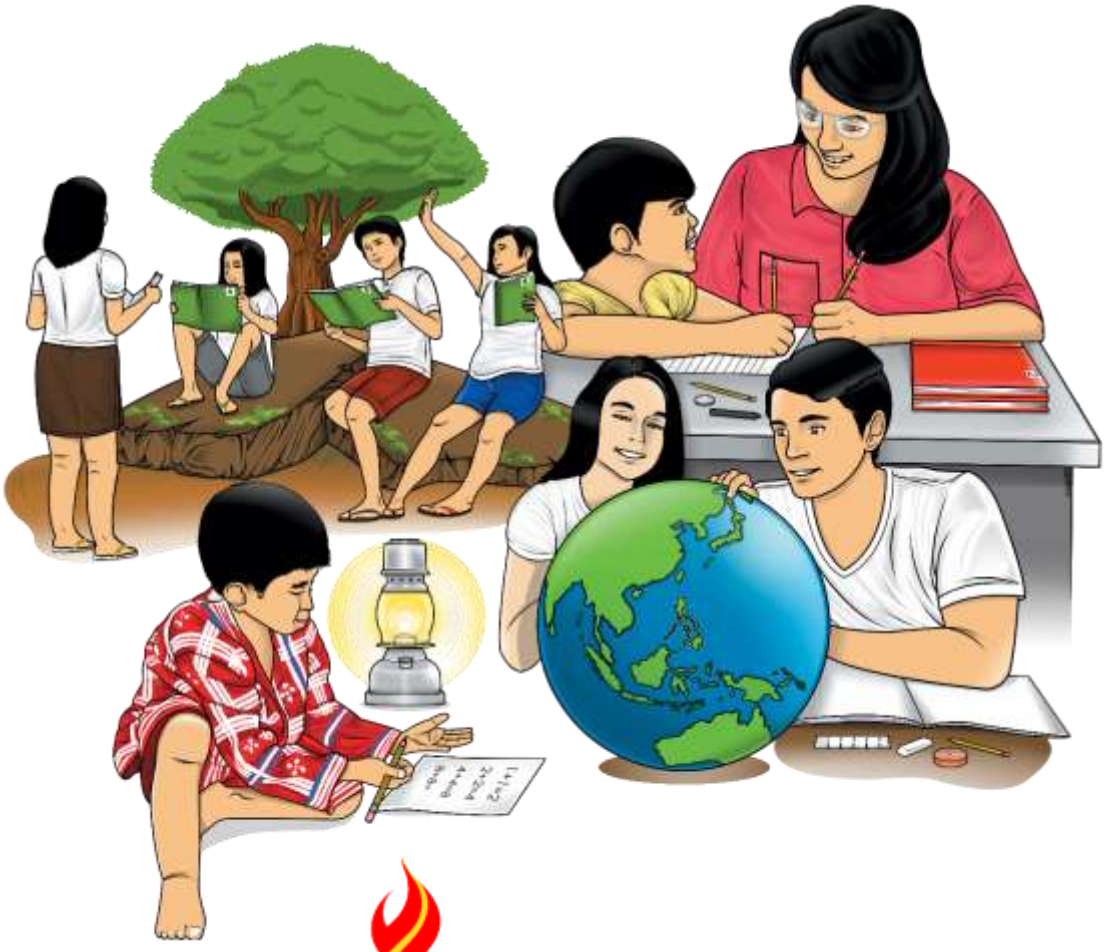
DEPARTMENT OF EDUCATION

Science

Quarter 4 – Module 3:
The Importance of Water Cycle



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Secretary: Leonor Magtolis Briones
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Development Team of the Module

Writer: Michimelda G. Halili

Editors: Noel V. Ibis, Christian M. Espiritu

Reviewer: Chozara P. Duroy

Illustrator: Jotham D. Balonzo

Layout Artists: Jogene Alilly C. San Juan, Jacqueline E. Libut

Management Team: Gilbert T. Sadsad
Francisco B. Bulalacao Jr.
Grace U. Rabelas
Ma. Leilani R. Lorico
Emma T. Soriano
Ellen G. De la Cruz
Amy B. Dumail

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Department of Education – Region V

Office Address: Regional Center Site, Rawis, Legazpi City 4500
Telefax: (033) 336-2816, (033) 509-7653
E-mail Address: region5@deped.gov.ph

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Science

Quarter 4 – Module 3:
"The Importance of Water Cycle"

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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.

Thank you.

What I Need to Know

This module gives you information on the importance of water cycle in the environment. You will be given enough activities to master all the learning objectives in this module. Enjoy all the exercises allotted for you. Have a wonderful experience and enjoy the moment as you explore this module just for you.

The module will focus on:

- **Lesson 1** – The Importance of Water Cycle (S4ES-IVc-3)

After going through this module, you are expected to be able to:

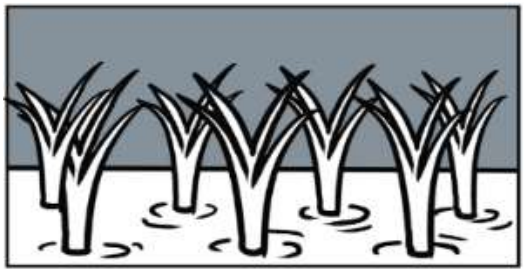
1. explain the processes of the water cycle; and
2. describe the importance of the water cycle.

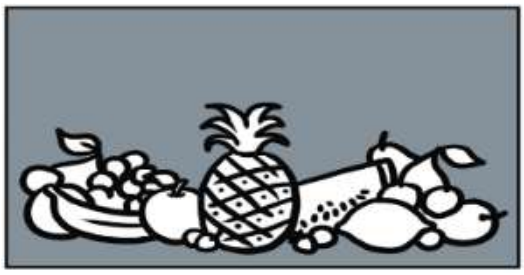
What I Know

A. Directions: Choose the phrases from the box that describe the pictures shown below. Write your answer in your science notebook.

improved hygiene practices	increased water storage
healthy animal growth	increased crop yield
healthy plant growth	

1. 

2. 

3. 

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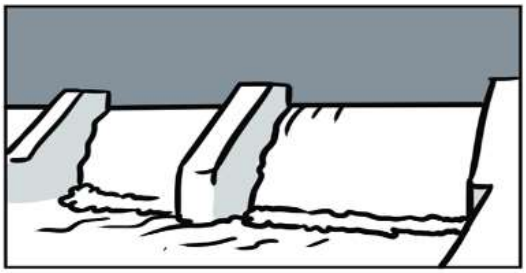
5. 

Illustrated by: Jotham D. Balonzo

B. Directions: Write **True** in the space provided if the statement is correct and write **False** if it is not. Do it in your science notebook.

_____1. Snow is a precipitate.
_____2. Clouds are signs of weather.
_____3. Water vapor gathers in the hydrosphere.
_____4. Hydrosphere is the water part of the Earth.
_____5. Evaporation happens when water is heated.
_____6. Plants and animals are not part of the water cycle.
_____7. Plants can still survive even in the absence of water cycle.
_____8.The water sphere or hydrosphere covers three-fourths of the Earth's surface.
_____9.In the presence of water cycle, there could be a decrease in crop yield.
_____10. Water cycle is a continuous movement of water between the Earth's surface and atmosphere.

How well did you perform the activity?

11 – 15 6 – 10 0 - 5

Lesson 1 The Importance of Water Cycle

In the previous lesson, you have learned the different sources and uses of water. You have also learned the importance of water in our daily life activities.

We all know that water is a very important resource in our day to day lives. But before water reaches your homes to be used for many purposes, do you really know the processes behind it? This is the question that you are going to answer as you perform the activities and learn from this module.

What's In

Directions: Draw a happy face (☺) if the sentence is correct and sad face (☹) if it is not. Do it in your science notebook.

_____1. Water is a renewable resource which we can use daily.

_____2. Freshwater in rivers, lakes and springs is not for recreation.

_____3. Water is a great help for plants, animals, and man to survive.

_____4. Groundwater is an important component in many industrial processes.

_____5. Seawater is used for drinking, cleaning, washing, bathing, and other household uses.

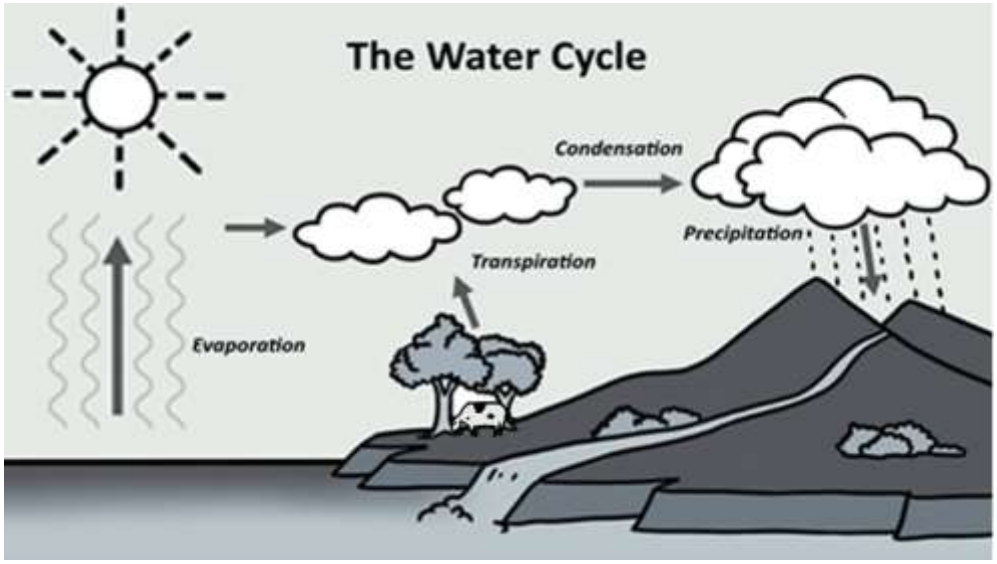
What's New

Note to Parent/Guardian: Guide your children while they are doing the various activities in this module.

To the Learner:

Activity 1: "How Important Am I in the Environment?"

Directions: Study the illustration below and answer the questions that following your science notebook.



Illustrated by: Jotham D. Balonzo

Guide Questions:

1. What is the illustration about?
2. What are the processes involved in the water cycle? List and try to describe them. You may think about the changes that happen to water as it transforms into different states of matter (solid, liquid and gas).
3. What do you think is the role of the Sun in the water cycle?
4. What do you think is water cycle as shown? Describe it by using your answers in questions No.2 and No. 3.

Activity 2: Fill Me Out

Directions: Describe the importance of water cycle to each of the items in the table. Do it in your science notebook.

HUMAN	PLANTS	ANIMALS	ENVIRONMENT

Guide Questions:

1. What do you think will happen if we run out of water?
2. What other things will be affected if there is no water?

What is It

Points to Remember:

- The water part of the Earth is called **hydrosphere or "water sphere".** This covers about three-fourths of its surface.

- **Water cycle** is a continuous process of changing liquid water into water vapor (gas) when heated and turns back to liquid water when cooled above and below the surface of the Earth. Water is transferred from the Earth's surface to the atmosphere through evaporation. Bodies of water, clouds, evaporation, and condensation including living things all play important roles in the water cycle.

- The **Sun** plays a major role in the water cycle. It is the main source of heat that causes evaporation process.

Processes involved in water cycle:

1. **Evaporation** - is the process of changing liquid water into water vapor (gas) and rises into the atmosphere. Roughly 80% of all evaporation comes from oceans while the remaining

20% comes from inland water and plant vegetation. More evaporation happens when the temperature is high and with faster wind speed.

2. **Transpiration** – takes place during evaporation process wherein water particles are released from the leaves of the plants and vegetation. The rate of transpiration gets higher with higher temperatures.

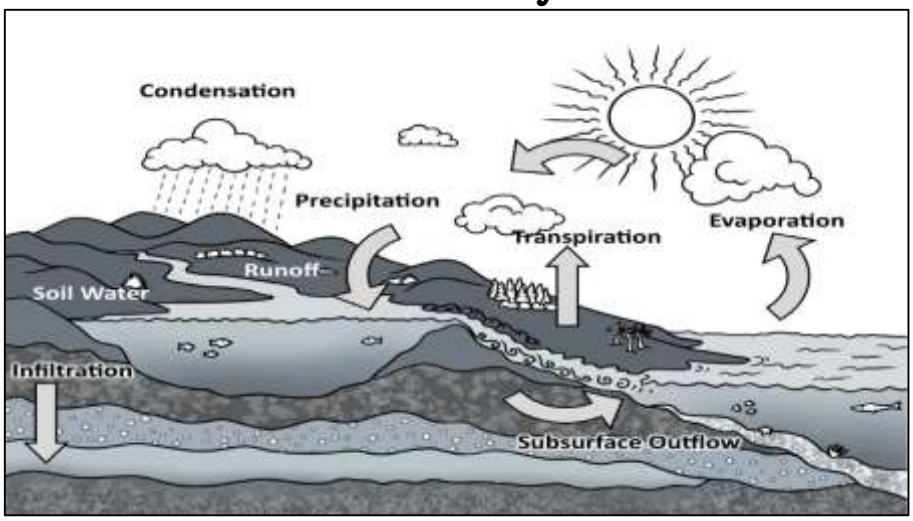
    - **Respiration** - takes place when animals and humans breathe out water particles through their lungs and when they perspire, which evaporates into the atmosphere in lesser amounts. Animals contribute to the water cycle through respiration, perspiration and urination.

3. **Condensation** - is the process of changing water vapor (gas) into tiny droplets of liquid water in the form of clouds in the atmosphere. Condensation can be high in the atmosphere or at ground level. Water vapor condenses around tiny particles called cloud condensation nuclei (CCN). The cloud condensation nuclei can sometimes be specks of dust, salt, or pollutants. As tiny water droplets combine with each other, clouds develop, and precipitation may occur.

4. **Precipitation** - is the process by which the tiny condensed water droplets falls back into the Earth's surface in the form of rain, hail, snow and sleet.

Although there is a continuous cycle of water, you might wonder if there will come a time when we will run out of water. Did you know that 97% of the water found in our surrounding is salty? Thus only 3% of this water is fresh or potable. This very small amount of freshwater is 67% locked in the form of ice mainly found in Greenland and Antarctic. Therefore, only about 1% of freshwater is found in rivers, lakes, ponds, and in the atmosphere in the form of **water vapor.**

The Water Cycle



Illustrated by: Jotham D. Balonzo

Water cycle is important because it transforms salty water into fresh water during precipitation process. It is also known as **hydrologic cycle** describes how water evaporates from the surface of the Earth, rises into the atmosphere, cools and condenses into clouds, and falls again to the Earth's surface as precipitation in the form of rain, snow, hail or sleet. The water falling on land collects in rivers and lakes, soil, and porous layers of rock, and much of it flows back into the oceans, where it will once more evaporates. The cycling of water in and out of the atmosphere is a significant aspect of the weather patterns on Earth.

Importance of Water Cycle	
Human	• Continuous water supply for human consumption and industrial use • Improves health and hygiene practices
Animal	• Healthy animal growth • Continuous supply of fresh water
Plants	• Healthy plant growth • Increase production or yield crops • Continuous supply of fresh water
Environment	• Purifies water by eliminating pollutants • Distributes water all over the Earth's surface • Continuous supply of fresh water • Increase water storage as ground water

What's More

A. Directions: Choose from the box below the processes in the water cycle being described in each statement. Write your answer in your science notebook.

transpiration	respiration
evaporation	condensation
precipitation	

_____1. The process by which plants release water from their leaves.

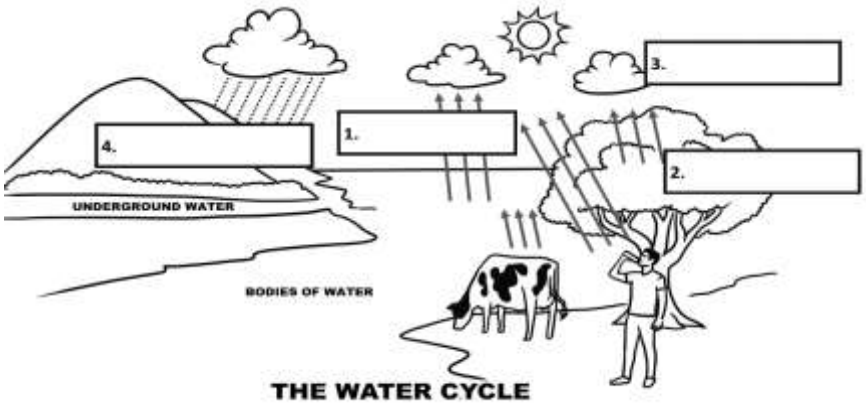
_____2.The process by which the condensed water vapor falls back into the Earth's surface in the form of rain, hail, snow and sleet.

_____3. The process of changing water vapor (gas) into tiny droplets of liquid water in the atmosphere.

_____4. The process of changing liquid water into water vapor (gas), which comes from bodies of water and living things.

_____5. The process by which human and animals breathe out water particles through their lungs and when they perspire.

B. Directions: Using the diagram below, identify and explain the processes involved in the water cycle. Write it in your science notebook.



THE WATER CYCLE

Illustrated by: Jotham D. Balonzo

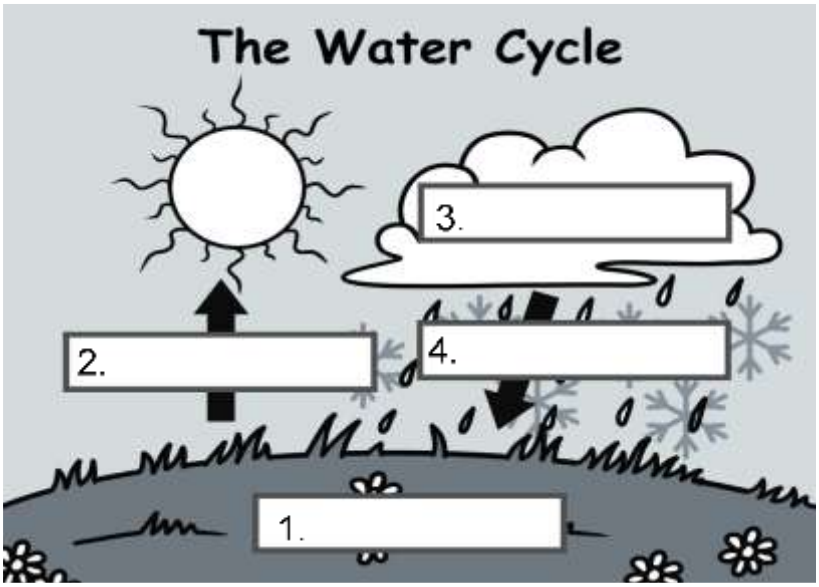
C. Directions: Complete the table by choosing the phrases inside the box that best describes the importance of water cycle.

• plants growing healthy • lack of water supply • abundant supply of water • low market prices of vegetables and fruits	• healthy people • low quality products • growing population of animals

HUMAN	PLANTS	ANIMALS	ENVIRONMENT

What I Have Learned

Directions: Complete the diagram of a water cycle below with the correct word. Write your answers in your science notebook.



Illustrated by: Jotham D. Balonzo

Superb! You did well in these exercises.

What I Can Do

Directions: In your science notebook, briefly explain what you think or understand about each situation which relates to the processes in the water cycle.

1. Your father is a salt maker. He goes to work at the beach everyday especially during summer. During rainy season, he stops working. Why could he not make salt during rainy days?

2. You live in the community where most of the people earn a living through farming vegetables and fruits. One day, you noticed that some of the plants are withered and wilted. Why?

What an extra special work! Keep on going as you are nearing the finish line.

Assessment

A. Directions: Briefly explain the processes involved in the water cycle. Write your answer in your science notebook.

1. Evaporation – _____
2. Condensation – _____
3. Precipitation – _____
4. Transpiration – _____
5. Respiration – _____

B. Directions Put a check mark (✓) if it shows importance of water cycle and cross mark (x) if it shows effects of the absence of water cycle.

___1. increased crop yield

___2. withered plants

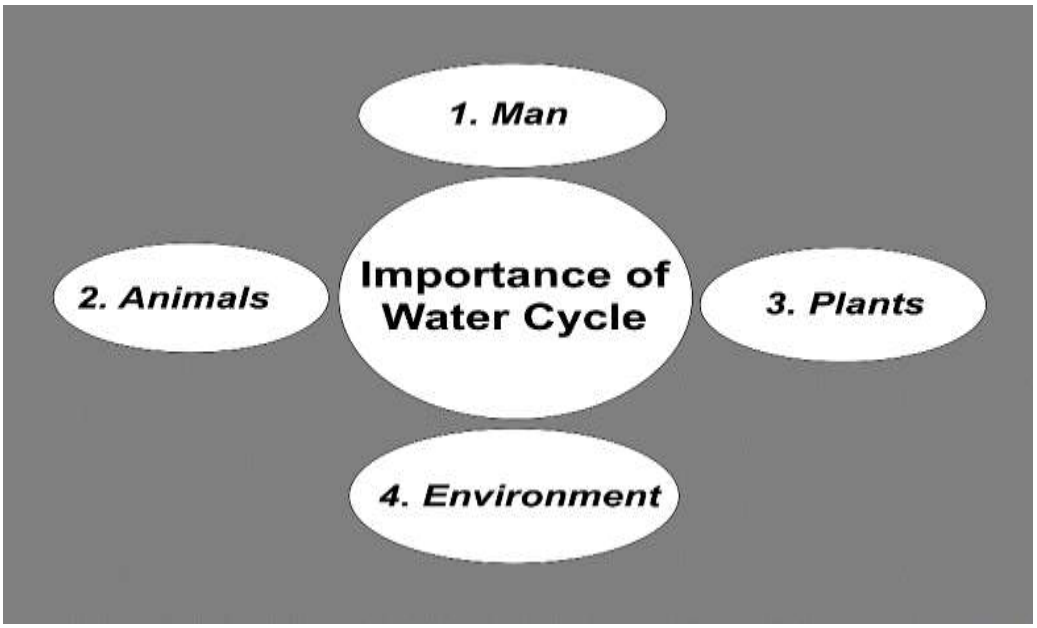
___3. increased water storage

___4. healthy animal and plant growth

___5. water shortage

___6. less sickness in people

C. Directions: Describe the importance of water cycle to **human, plants, animals, and environment** by filling out the concept map below. Do it in your science notebook.



Yahoo! You've made a progress.

Additional Activities

Directions: In your science notebook, draw the water cycle and explain the processes involved using your own words. Give some examples which show the importance of water cycle to man, plants, and animals.

Excellent! You've made it. You are now ready to go to the next module.

Answer Key

What I Know

A.
1. improved hygiene practices
2. healthy plant growth
3. increased crop yield
4. healthy animal growth
5. increased water storage

B.
1. true 6.false
2. true 7. false
3. true 8. true
4. true 9. false
5. true 10. True

What's In

1. 😊 2. 😐 3. 😊 4. 😊 5. 😊

What's New
Activity 1- How Important Am I in the Environment

Guide Questions:
1. water cycle
2. evaporation - the process of changing liquid into gas
condensation - the process of changing water vapor into the liquid
precipitation - the process by which the condensed water vapor falls back on the earth's surface in the form of rain, hail, snow and sleet.
Transpiration – the process by which particles of water are released from the leaves of the plants
3. Sun plays the major role in the water cycle because it is the source of heat and needed in the evaporation process
4. is a continuous process of changing liquid water into water vapor (gas) when heated and back to liquid water when cooled.

Activity 2 Fill Me In

Man	Plants	Animals	Environment
• Healthy people • Less sick	• Healthy growth • High quality products	• Healthy growth • Bigger income	• Abundant supply of water

Guide Questions:
1. Answers may vary
2. Answers may vary

What's More

A.

1. transpiration
2. precipitation
3. condensation
4. evaporation
5. respiration

B.

1. evaporation
2. transpiration
3. condensation
4. precipitation

C.

Man	Plants	Animals	Environment
• Healthy people	• low market prices of vegetables and fruits	• growing population of animals	• Abundant supply of water

What I Have Learned

1. Earth or land and water part
2. evaporation
3. condensation
4. precipitation

What I Can Do

1. Answers may vary.
2. Answers may vary.

Assessment

A.

1. evaporation - the process of changing liquid into gas
2. condensation - the process of changing water vapor into the liquid

3. precipitation - the process by which the condensed water vapor falls back on the earth's surface in the form of rain, hail, snow and sleet.
4. transpiration – the process by which particles of water are released from the leaves of the plants.
5. respiration – the process by which animals and man release particles of water during evaporation in smaller amounts.

B.

1. √ 2. X 3. √ 4. √ 5. X 6. √

C.

1. Man- improved hygiene practices
2. Animals – healthy animal growth
3. Plants – healthy plant growth
4. Environment – increased water storage

Additional Activities

Answers may vary.

References

Abutay, Lelani R., et. al. *Science 4 Learner's Material*, 267-269. Pasig City: Department of Education, 2015.

Abutay, Lelani R., et. al., *Science 4 Teacher's Guide*, 305-309. Pasig City: Department of Education, 2015.

For inquiries or feedback, please write or call:

Department of Education - Bureau of Learning Resources (DepEd-BLR)

Ground Floor, Bonifacio Bldg., DepEd Complex
Meralco Avenue, Pasig City, Philippines 1600

Telefax: (632) 8634-1072; 8634-1054; 8631-4985

Email Address: blr.lrqad@deped.gov.ph * blr.lrpd@deped.gov.ph