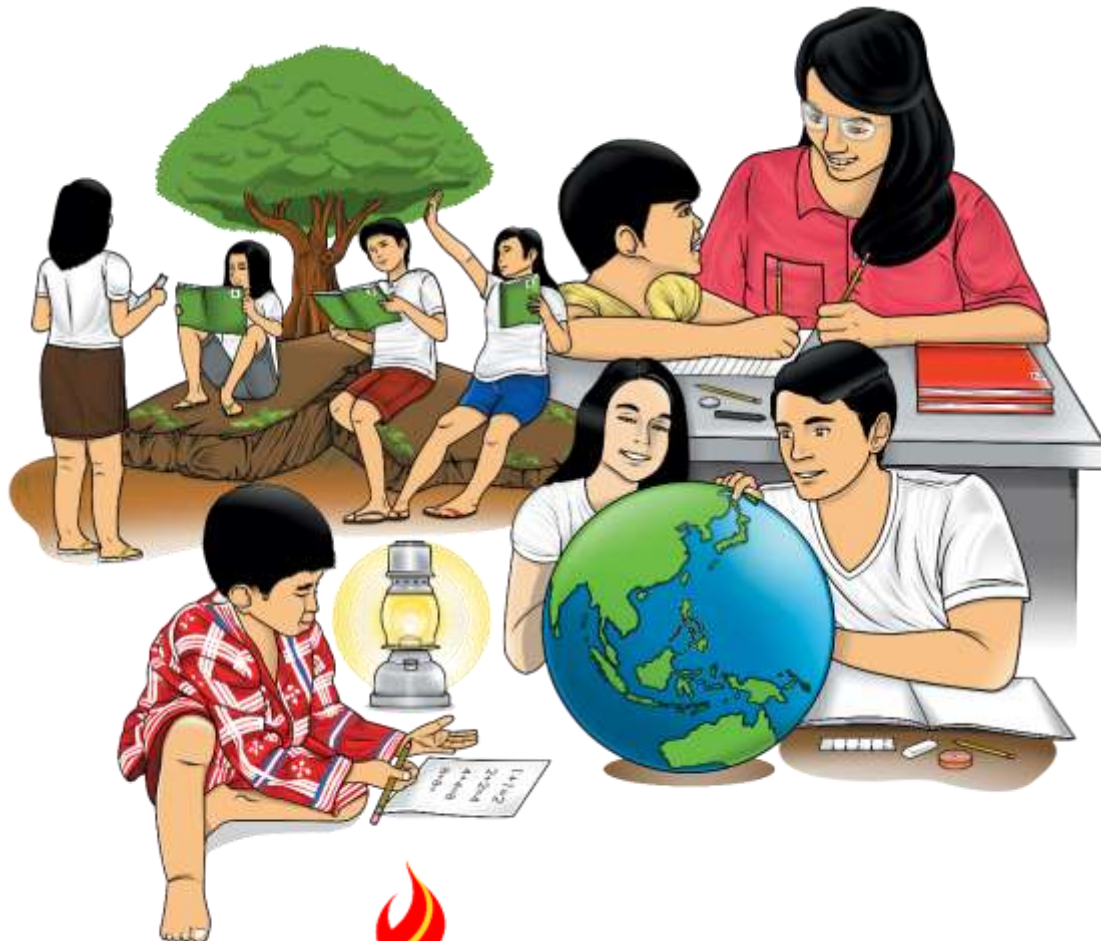


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# Science

## Quarter 4 - Module 2: Mission Possible: Saving Planet Earth



**Science Grade 7**  
**Alternative Delivery Mode (ADM)**  
**Quarter 4 – Module 2: Mission Possible: Saving Planet Earth**  
**First Edition, 2020**

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# Science

## Quarter 4 – Module 2: Mission Possible: Saving Planet Earth

## **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***

Earth, so far, is the only planet known to support life. It is our home. With Earth's position in the solar system, it has an optimal balance of temperature that is neither too hot nor too cold, and where abundant water that is essential for the survival of all living things, does not freeze or boil. Hence, Earth is just right for life to exist.

Because of the Philippine geographic and geologic locations in the planet, our country is gifted with abundant water, fertile soil, diverse flora and fauna, rocks and minerals, crude oil, fossil fuels and geothermal power. These are collectively known as natural resources on which living things depend for survival. These resources are not man-made but exist in nature.

This module provides you with scientific knowledge about the different types of natural resources and their examples. You will also learn and become involved on how you can help conserve and protect our natural resources.

### **Most Essential Learning Competency:**

- Cite and explain ways of using Earth's resources sustainably.  
**(S7ES-IVc-4)**

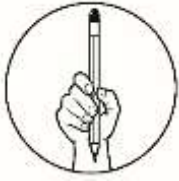
This module is divided into two lessons:

Lesson 1 – Earth's Natural Resources

Lesson 2 – Sustainable Use of Natural Resources

After going through this module, you are expected to:

1. describe Earth's natural resources;
2. differentiate renewable from nonrenewable resources;
3. explain why Philippines is rich in natural resources;
4. determine which human practices in using natural resources are sustainable and not sustainable; and
5. suggest ways on how to use the natural resources sustainably.



## ***What I Know***

**Directions:** Read the following questions carefully. Choose and write the letter of the correct answer on a separate sheet of paper.

1. Our environment has many bodies of water and landforms. The things that we take and use from the environment to survive are called \_\_\_\_\_.
    - A. raw materials
    - B. chemical energy
    - C. natural resources
    - D. rocks and minerals
  2. Resources that can be replaced after using them again and again are called \_\_\_\_\_.
    - A. nonrenewable
    - B. recyclable
    - C. renewable
    - D. reusable
  3. The following natural resources can be replaced easily, **EXCEPT**
    - A. animals
    - B. coal
    - C. plants
    - D. water
  4. Which of the following resources takes a very long time to replace?
    - A. Crops
    - B. Oil
    - C. Trees
    - D. Water
  5. What do you call the resources that require long years before they can be replenished?
    - A. Nonrenewable
    - B. Recyclable
    - C. Renewable
    - D. Reusable
  6. Which of the following is correctly matched?
    - A. Coal: Renewable
    - B. Cotton: Nonrenewable
    - C. Aluminum: Renewable
    - D. Minerals: Nonrenewable
1. Which of the following can serve as an alternative source of energy to fossil fuels?
- |               |                |           |           |
|---------------|----------------|-----------|-----------|
| I. Geothermal | II. Hydropower | III. Wind | IV. Solar |
|---------------|----------------|-----------|-----------|
- A. I and II only
  - B. I and III only
  - C. I, II and IV only
  - D. I, II, III, IV

2. Fossil fuels such as coal, oil, and natural gas are formed from the remains of dead plants and animals that existed millions of years ago. Which of the following statements is **TRUE** about fossil fuels?
- A. Fossil fuels are renewable resources because it takes only a short time to create them.
  - B. Fossil fuels are nonrenewable resources because it takes a very long time to produce them.
  - C. Fossil fuels are renewable resources because we can replace them easily by killing animals and plants.
  - D. Fossil fuels are nonrenewable resources because we can replace them through scientific experiments in laboratories.
3. The Maria Cristina Falls in Iligan City generates energy from the flow of water. What do you call this energy resource?
- A. Biomass
  - B. Geothermal
  - C. Hydropower
  - D. Solar
10. All of the following are considered as land resources, **EXCEPT**
- A. corals
  - B. crops
  - C. metals
  - D. trees
11. Which of the following is **TRUE** about natural resources?
- A. Natural resources are created by humans.
  - B. Natural resources are used by humans only.
  - C. Natural resources are produced through scientific experiments.
  - D. Natural resources exist in nature and sustain the needs of all living things.
12. Philippines is listed as the fifth mineral-rich country in the world, third in gold reserves, fourth in copper and fifth in nickel. Why do you think our country is rich in mineral resources?
- A. We have advanced equipment used in mining these minerals.
  - B. We have extensive mining activities all throughout the country.
  - C. We are situated in the Pacific Ring of Fire where many active volcanoes are present.
  - D. We have a tropical climate characterized by abundant rainfall, high temperature and high humidity.
13. Soil is formed from rocks as well as materials coming from dead plants and animals. Temperature, rainfall, chemical changes and biological actions also influence the formation of soil, therefore it takes thousands of years for soil to form. Which of the statements below **CORRECTLY** describes soil?
- A. Soil is important for plants.
  - B. Soil is a renewable resource.
  - C. Soil can be replenished easily.
  - D. Soil is a nonrenewable resource.

14. Philippines is home of different species of plants and animals. Do you agree that our latitude position in the globe can influence the high diversity of life forms?
- A. No, the diversity of life forms in the country does not depend on its position in the globe.
  - B. No, the latitude position of our country does not affect the high diversity of life forms at all.
  - C. Yes, the Philippines is one lucky country with thick forests, bodies of water, fertile soil, and many landforms.
  - D. Yes, the Philippines receives year-round sunshine and abundant rainfall that are needed by plants and animals to grow and reproduce.
15. Lance was tasked to discuss in their class the different geologic structures in the country and the presence of minerals. He was asked by one of his classmates if there is a relationship between the geologic structures and the presence of minerals. Lance answered yes. Do you think his answer is correct?
- A. No, the presence of mineral resources in the country does not depend on the different geologic structures present.
  - B. Yes, the rich mineral resources can be attributed to the presence of many active volcanoes and trenches in the country.
  - C. Yes, the presence of mineral resources tells us that our country experiences frequent geologic events such as earthquakes.
  - D. No, there is no known scientific investigations showing the association of geologic structures and the presence of minerals in the country.



## Lesson

# 1

## Earth's Natural Resources



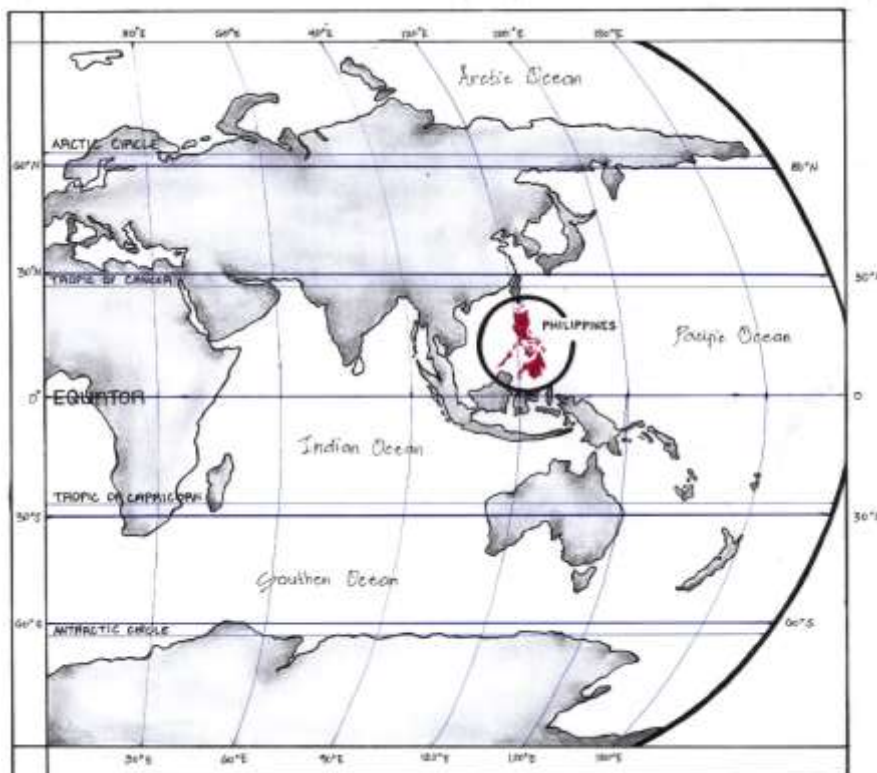
### What's In

The location of a certain place can be described using the latitude and longitude. Study the map below. Describe the location of the Philippines in the map with respect to its latitude and longitude. Write your answer on a separate sheet of paper.

Based on the map, Philippines is located at \_\_\_\_\_.

Places near the equator receive greater amount of heat from the sun. The closer the place to the equator, the warmer the climate is and the closer the place to the poles, the colder the climate. Countries located near the equator experience sunshine all year round and receive abundant rainfall.

How do you think our location affects the varied life forms?



*Illustrated by Maffie Campos*

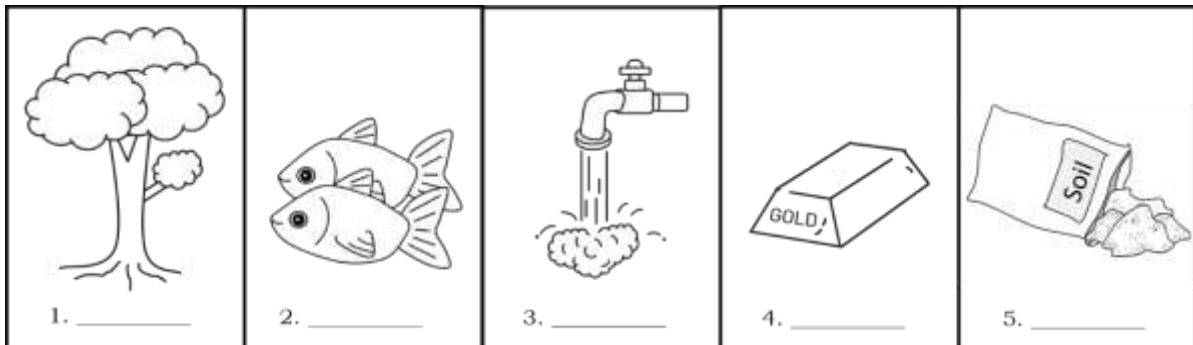
*Figure 1. Philippines in the World Map*



## What's New

### Activity 1. Where do I belong?

*Directions:* Study the given pictures below. Write **R** if these things can be **replaced easily** or **NR** if **not replaced easily** when used. Write your answer on a separate sheet of paper.



*Illustrated by Elvina Taran*



## What is It

### Defining Natural Resources

If we look around, we can see how lucky we are. We are blessed with bodies of water such as rivers, lakes, and oceans and different land forms like hills, valleys and mountains. Our country is also home to many kinds of animals and plants. The air, water, plants, animals, soil, rocks and minerals are collectively called natural resources. *Natural resources* are the things that we can find in our environment that we use to meet our needs. These resources are not made by humans or any scientific experiments inside the laboratories but they exist in nature. There are two types of natural resources: *renewable and nonrenewable* resources.

### Types of Natural Resources

*Renewable resources* are materials that can be *replaced easily* or *have the potential to be replaced over time*. On the other hand, *nonrenewable resources* are natural resources that are *in limited supply* or *once consumed, cannot be replaced*.

Can you think of examples of renewable and nonrenewable resources? The foods that we eat come from plants and animals. When we consume the plants around us, these plants can be replaced by planting them again after each harvest. We also eat animals. But animals grow and reproduce new ones. The young animals that are born replenish the animals that were consumed. Therefore, plants and animals are renewable resources because they can be replaced after some time. Meanwhile, coal, oil,

and natural gas are examples of nonrenewable resources because they will eventually run out.

### Are we lucky in the Philippines?

Philippines is considered rich in natural resources. Because of our tropical climate, the Philippines receives an abundant rainfall and lots of sunshine. This is one of the reasons why we have many different kinds of plants and animals.

Based on the records of the *Philippine Atmospheric, Geophysical and Astronomical Services Administration* or PAGASA, on average our country experiences about 20 typhoons in a year. Although rain and typhoons may result to some serious problems like flooding and landslides, we cannot deny the fact that water is essential to life. We need water for domestic, irrigation, and industrial purposes among others. *Watershed* is a catchment area that drains the water into streams, rivers, lakes, and springs. Some of the watersheds in the Philippines are Mt. Apo in Davao-Cotabato, La Mesa Dam in Metro Manila, and Angat Dam in Bulacan. These watersheds supply the water needed by the communities and the varied life forms in that area. A severe drought may cause rivers and deep wells to dry up but, when rain comes, the water is replaced. Water in this case is also a renewable resource.

On the other hand, too much rain can cause floods which can wash away the top soil where plants grow. Can top soil be replaced easily? How are soils formed? Soils are formed from rocks that were broken down by *physical and chemical weathering* along with the materials from dead plants and animals. Generally, it takes thousands of years for soils to form, so when soils are washed away, it takes a very long time to replace them. Hence, soil is a nonrenewable resource.

### Philippines' Rich Resources

Aside from the fertile and arable lands in the Philippines, our country is recognized as the fifth mineral-rich country in the world, third in gold reserves, fourth in copper, and fifth in nickel. Why do you think our country is rich in mineral resources?

Our location in the *Pacific Ring of Fire* as shown in Figure 2 accounts for this bounty. It is called Ring of Fire because there is a continuing movement of very hot *magma* or molten materials under the ground. The countries included in the Pacific Ring of Fire is home to approximately 75% of the world's active volcanoes. The heat within the Earth causes rocks and other materials to melt forming magma. When magma rises during volcanic eruptions, some of the magma does not reach the surface of the Earth but instead slowly cools and hardens forming different kinds of igneous rocks. With favorable



Illustrated by Maffie Campos

Figure 2. Philippines in the Pacific Ring of Fire

temperature and pressure conditions, the rocks containing metals melt and redeposit, eventually forming minerals. Metallic mineral deposits like copper, gold, silver, lead, and zinc are usually mined from deep within the roots of extinct volcanoes or those volcanoes with no record of eruption for the last 10,000 years and are not expected to erupt again in the future.

Metals have many uses. For instance, copper is used for making electrical wires. Iron is used in making steel bars for buildings and construction of roads. The milk cans are created from tin. Stainless cooking wares are made out of mixture of nickel and copper. Gold is usually used in making pieces of jewelry. Although metals are nonrenewable resources, people use them without limits because of the economic gain brought by these metals.

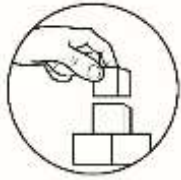
Moreover, our geological conditions also provide us with high potential for renewable energy resources. The table below lists the different renewable energy resources.

*Table 1. Renewable Energies and their Sources*

<b>Renewable Energy</b>	<b>Source</b>
Solar Energy	energy from the sun
Geothermal Energy	harnessed from heat within the Earth
Hydropower	derived from fast-flowing water
Wind Energy	generated from wind
Biomass	energy from decomposition of organic wastes

These renewable energy resources serve as the alternative resources for the commonly used nonrenewable energy resources such as coal, crude oil, natural gas, and other fossil fuels. These are formed from the geologic deposits of decayed plants and animals that existed millions of years ago. Coal, crude oil, natural gas, and other fossil fuels are nonrenewable because it will take millions of years for dead plants and animals to turn into fossil fuels.

Much of the energy we use today are generated from these nonrenewable energy resources. Based on the 2017 Philippines' energy statistics, approximately 88% of our energy consumption is taken from nonrenewable energy resources while only 12% of the energy consumption accounted for renewable energy resources. Oil and coal were listed as the primary sources of energy in the country. The nonrenewable energy resources are exhaustible and once consumed entirely, it will take millions of years to replenish them. With the high potential for cheap and clean energy from renewable resources, it is important that these alternative energy resources be explored to supply our energy needs before it becomes too late.



## What's More

### Activity 2. Renewable or Nonrenewable.

*Directions:* Welcome to The Earth Shop, your everything store! It sells various products and everything that you need. Today, the shop is giving *free coupon* which you can use to take home the item of your choice. But to get the free coupon, you need to segregate the products made from **renewable** and **nonrenewable resources**. Put the renewable products in the *bag* and the nonrenewable products in the *cart*. Write your answer on a separate sheet of paper. Enjoy shopping!



Renewable



Nonrenewable



Image credit: Canva



## What I Have Learned

**Directions:** Read the paragraph carefully and identify the correct word that fit in the blank in each sentence. Choose your answer from the words inside the box. Write your answer on a separate sheet of paper.

Pacific Ring of Fire	Renewable resources	Volcanoes	Solar energy
Natural resources	Hydropower	Minerals	Fossil fuels
Nonrenewable resources	Magma	Volcanoes	

1. \_\_\_\_\_ are the things that we can find in our environment that we use to meet our needs. These resources are not made by humans or any scientific experiments inside the laboratories but instead they exist in nature. Natural resources come in two types. 2. \_\_\_\_\_ are the materials that can be replaced easily when used while 3. \_\_\_\_\_ are natural resources that once consumed, cannot be replaced. The foods that we eat come from plants and animals. When we consume the plants around us, these plants can be replaced by planting them again after each harvest. We also eat animals. But animals grow and reproduce new ones. The young animals that are born replenished the animals that were consumed. Therefore, plants and animals are renewable resources because they can be replaced in a short amount of time.

Aside from the fertile and arable lands in the Philippines, our country is recognized as the fifth mineral-rich country in the world, third in gold reserves, fourth in copper, and fifth in nickel. Our location in the 4. \_\_\_\_\_ accounts for this bounty. It is called Ring of Fire because there is a continuing movement of very hot 5. \_\_\_\_\_ or molten materials under the ground. The countries included in the Pacific Ring of Fire is home to approximately 75% of the world's active 6. \_\_\_\_\_. The heat within the Earth causes rocks and other materials to melt forming magma. When magma rises during volcanic eruptions, some of the magma does not reach the surface of the Earth but instead slowly cools and hardens forming different kinds of igneous rocks. With favorable temperature and pressure conditions, the rocks containing metals melt and redeposit, eventually forming 7. \_\_\_\_\_.

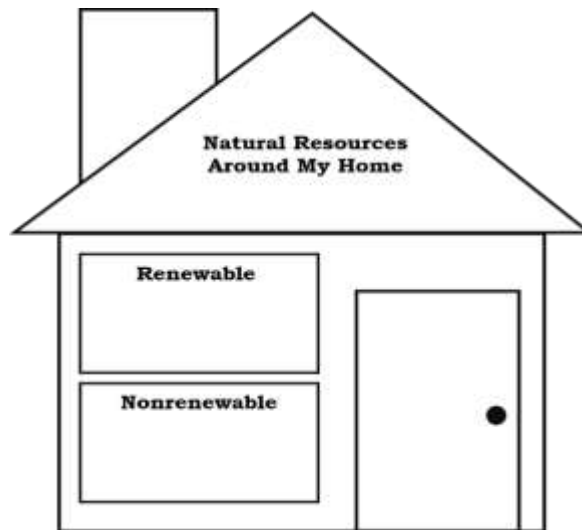
Moreover, our geological conditions also provide us with high potential for renewable energy resources such as 8. \_\_\_\_\_ (energy from the sun), geothermal energy (energy harnessed from heat within the Earth), 9. \_\_\_\_\_ (energy derived from fast-flowing water), wind energy (energy generated from wind), and biomass (energy from decomposition of organic wastes). These renewable energy resources serve as the alternative resources for the commonly used nonrenewable energy resources such as coal, crude oil, natural gas, and other 10. \_\_\_\_\_. These are formed from the geologic deposits of decayed plants and animals that existed millions of years ago. Coal, crude oil, natural gas, and other fossil fuels are nonrenewable because it will take millions of years for dead plants and animals to turn into fossil fuels.





## What I Can Do

**Directions:** Look around your home, backyard or neighborhood. List and categorize the materials that are, or made from renewable and nonrenewable natural resources that you can see. *Do you find these resources important? How do you show your appreciation of their uses?* Write your answers on a separate sheet of paper.



Illustrated by Elvina Taran



## Assessment

**Directions:** Read the following questions carefully. Choose the correct answer from the given choices. Write the letter of your choice on a separate sheet of paper.

1. The leather industry uses skins or hides of cows, goats, and sheep to create leather products such as shoes, bags, and apparels. The raw materials used for these products are examples of \_\_\_\_\_.
  - A. nonrenewable
  - B. recyclable
  - C. renewable
  - D. reusable
2. Which of the following materials can be replenished in a short amount of time after being used?
  - A. Metals
  - B. Crude oil
  - C. Fossil fuels
  - D. Cardboards
3. Water, plants, and animals are some of the things that we gather from our environment to sustain our needs. What is the best description of these things?
  - A. Nature's gift
  - B. Living things
  - C. Nonliving things
  - D. Natural resources

4. Materials or natural resources that take millions of years to be replenished once consumed entirely are called \_\_\_\_\_.
- A. nonrenewable
  - B. recyclable
  - C. renewable
  - D. reusable
5. Which of the following is **NOT** correctly matched?
- A. Paper: Renewable
  - B. Crude oil: Renewable
  - C. Leather bag: Renewable
  - D. Aluminum: Nonrenewable
6. Which pair of materials takes long years before they can be replenished?
- A. Trees and crops
  - B. Plants and animals
  - C. Metals and minerals
  - D. Corals and seashells
7. What do you call the natural resource produced from the remains of decayed plants and animals that have existed millions of years ago?
- A. Biomass
  - B. Fertilizer
  - C. Fossil fuel
  - D. Organic waste
8. Electricity can be produced by generators that are powered by the kinetic energy of flowing water. What kind of energy is being described?
- A. Hydropower
  - B. Geothermal
  - C. Solar energy
  - D. Wind energy
9. Which of the following list includes **ALL** renewable energy resources?
- A. Solar, coal, natural gas
  - B. Crude oil, hydropower, wind
  - C. Hydropower, solar, geothermal
  - D. Natural gas, crude oil, biomass
10. Among the statements given below, which **CORRECTLY** describes fossil fuels?
- I. Coal, oil, and natural gas are fossil fuels.

II. Fossil fuels are nonrenewable resources; hence they cannot be replenished easily.

III. It takes millions of years for the remains of plants and animals to turn into fossil fuels.

IV. Fossil fuels are renewable resources formed from the decomposition of organic waste of animals.
- A. II and IV only
  - B. I, II, and III only
  - C. I, II, and IV only
  - D. I, II, III, and IV



11. Mikaela was playing in their backyard when she saw pieces of paper cups, soda cans, popsicle sticks, and an old leather shoe scattered in one corner. Which of the following materials were made from renewable resources?
- Paper cups, soda cans and old leather shoe
  - Soda cans, popsicle sticks and old leather shoe
  - Paper cups, popsicle sticks and old leather shoe
  - Paper cups, soda cans, popsicle sticks, and old leather shoe
12. Which of the following is the best reason why Philippines is rich in natural resources?
- Philippines is surrounded by many bodies of water.
  - Philippines is a large archipelago with many endemic plants and animals.
  - Philippines is a home of many species of animals living in the thick forests.
  - Philippines is near the equator where there is sunshine all year round and rainfall is abundant.
13. Plants and animals are renewable resources because they can be replaced easily. If coal, crude oil, and natural gas are formed from decayed plants and animals, why are they considered as nonrenewable resources?
- It will take a very long time to produce them.
  - We need to import them from other countries.
  - Coal, crude oil, and natural gas are very expensive.
  - Extracting them from the depths of the Earth is very dangerous.
14. Teacher Elvs asked Zac if the Philippines' location in the Pacific Ring of Fire has a relationship to its rich mineral deposits. Zac answered yes. Do you think his answer is correct?
- No, the rich mineral deposits in our country is not influenced by our position in the Pacific Ring of Fire.
  - No, the rich mineral deposits in our country is because the Philippines is located near the equator.
  - Yes, countries which are part of the Pacific Ring of Fire have rich mineral deposits because of the presence of many active volcanoes.
  - Yes, countries which are part of the Pacific Ring of Fire have many underground caves where people can mine the mineral deposits.
15. Is it correct to say that our position near the equator is the reason why we have high diversity of plants and animals in the country?
- No, although we are located near the equator, this does not mean that we always have lots of sunshine and abundant rainfall for plants and animals to grow and reproduce.
  - Yes, places near the equator have tropical climate, hence we experience lots of sunshine and abundant rainfall giving the varied life forms their essential needs to grow and reproduce.
  - No, although we are located near the equator, this does not guarantee the right temperature needed by plants and animals to grow and reproduce.
  - Yes, places near the equator have very cold climate giving plants and animals the right temperature needed by plants and animals to grow and reproduce



## Additional Activities

**Directions:** You were chosen as one of the delegates to join the Virtual Conference on Environment and Natural Resources. During the session, it was discussed that Filipino fisherfolks and farmers who are responsible for producing our food are among the poorest sectors in our country despite the abundant seas and forests in the Philippines. At the end of the session, participants were asked with this question: **How can we extend our support to our farmers and fisherfolk?** Create a **poster** showing the things that we can do to help alleviate our farmers and fisherfolk from poverty.

### Rubric for Poster Making

	<b>Excellent</b> (5 points)	<b>Strong</b> (4 points)	<b>Fair</b> (3 points)	<b>Needs Improvement</b> (2 points)
<b>Relevance</b>	All graphics in the poster is related to the theme which makes it easier to understand.	Most of the graphics are related to the theme which help understand the theme.	Some of the graphics are not related to the theme which result to some degree of confusion in the poster.	All the graphics are not related to the theme which result to confusion in the poster.
<b>Attractiveness</b>	The poster is exceptionally attractive in terms of design, layout, and neatness.	The poster is attractive in terms of design, layout, and neatness.	The poster is acceptably attractive though some parts are a bit messy.	The poster is very messy and poorly designed. It is not attractive.



## What I Know

**Directions:** Read the following questions carefully. Choose the best answer from the given choices. Write the letter of your choice on a separate sheet of paper.

1. When travelling for very short distances, which of the following is the best way to conserve resources?
  - A. Driving a car
  - B. Using a bicycle
  - C. Riding a public vehicle
  - D. Asking free lift from others

2. The following natural resources should require strict conservation, **EXCEPT**
  - A. coal
  - B. metals
  - C. natural gas
  - D. solar energy
  
3. The manner of using natural resources without being completely used up or destroyed to maintain ecological balance is referred to as \_\_\_\_\_.
  - A. availability
  - B. biodiversity
  - C. productivity
  - D. sustainability
  
4. Which of the following human activities will result to negative impacts on the environment?
  - A. Burning fossil fuels
  - B. Reusing paper bags
  - C. Recycling plastic bottles
  - D. Using food waste as organic fertilizers
  
5. What would likely happen if we use fossil fuels more rapidly than they are formed?
  - A. The supply of fossil fuels will stay the same.
  - B. The supply of fossil fuels will eventually run out.
  - C. The supply of fossil fuels will increase in later time.
  - D. The supply of fossil fuels will replenish more quickly.
  
6. What is meant by conserving natural resources?
  - A. Wasting them
  - B. Destroying them
  - C. Consuming them
  - D. Using them wisely
  
7. What do you call the process of planting trees in areas that have been depleted?
  - A. Deforestation
  - B. Industrialization
  - C. Reforestation
  - D. Vegetation
  
8. What are you practicing if you are using our natural resource wisely?
  - A. Conservation
  - B. Deforestation
  - C. Regulation
  - D. Restoration
  
9. Which of the following **DOEST NOT** help promote conservation of natural resources?
  - A. Reusing
  - B. Recycling
  - C. Composting
  - D. Throwing away

10. We get our essential needs from the environment for us to survive. In order for these natural resources to be available for the future generations, we need to protect and conserve them. Which of the following is the right thing to do?
- A. Use the resources more frequently.
  - B. Look and explore for more resources.
  - C. Conserve and use the resources only when most needed.
  - D. Consume the resources more often because they are free anyway.
11. While walking around your neighborhood you saw pieces of cardboards scattered in an abandoned area. What should be the best thing to do so you can help conserve our natural resources?
- A. Burn the cardboards.
  - B. Don't touch the cardboards, they must be dirty.
  - C. Leave the cardboards and let others throw them away.
  - D. Collect the cardboards, recycle, and innovate into creative crafts.
12. You are invited by one of your friends to join in the Earth Savers Club. Their goal is to protect and preserve our environment. If you plan to join the club, which of the following activities should you support?
- A. Burning of industrial wastes
  - B. Clean up drives and tree planting
  - C. Hunting and selling endangered birds
  - D. Converting forest land to residential areas
13. Which of the following situations show conservation of natural resources?
- A. Jay dumps their garbage in rivers.
  - B. Jess turns on the light bulb for the whole day.
  - C. Ella makes creative plant pots from plastic bottles.
  - D. Tom turns on electrical appliances even when not in use.
14. Your community is recognized as a breeding ground of an endangered bird because of the presence of an abundant food source. However, a number of people in your community cut too many trees for lumber, paper, and building of houses. Do you think their actions are justifiable?
- A. Yes, the main livelihood of the people is cutting trees.
  - B. Yes, we need more supplies of paper for schools and offices.
  - C. No, cutting the trees will destroy the habitat and reduce the food source.
  - D. No, instead of cutting the trees they should hunt and sell threatened animals.
15. A new factory is built near your neighborhood. The owner ordered his employees to throw the plastics and other wastes in the canals and waterways. Do their actions help protect our environment?
- A. Yes, the plastics will decay eventually.
  - B. Yes, the wastes will be washed away anyway.
  - C. No, the plastics and other wastes should be burned.
  - D. No, plastics clog waterways and provide breeding places for disease-carrying organisms.

## Lesson

# 2

# Sustainable Use of Natural Resources

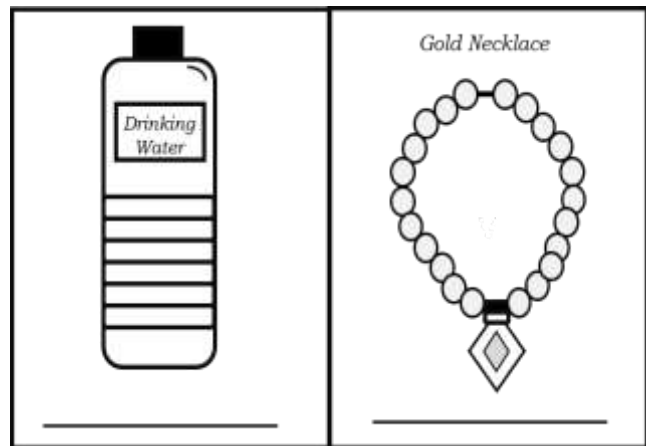


## What's In

In the previous lesson, you learned that natural resources are the things that we harness from the environment to supply our needs. You also learned that these natural resources can be *renewable* or those that can be replenished easily after being used or *nonrenewable* or those that take a very long time to be replaced once consumed.

Examine the pictures in Figure 3. Which of these materials are renewable? Nonrenewable?

Because we don't have an unlimited supply of these resources, it is necessary that we use these resources in a manner that we allow them to recover and keep in abundant supply. We should make sure that the earth's resources are not consumed completely or destroyed. *How can you help protect and conserve the natural resources of the earth?*



Illustrated by Elvina Taran

Figure 3. Drinking water and gold necklace



## What's New

### Activity 1: Am I an Earth Hero?

**Directions:** Read the following statements below. Write **YES** if the item statement reflects yourself and **NO** if does not. There is no right or wrong answer, only an honest answer. Write your answers on a separate sheet of paper.

- \_\_\_\_\_ 1. I reuse paper bags.
- \_\_\_\_\_ 2. I watch television all day.
- \_\_\_\_\_ 3. I throw my trash anywhere.
- \_\_\_\_\_ 4. I ride even in short distances.
- \_\_\_\_\_ 5. I keep candy wraps in my bag.
- \_\_\_\_\_ 6. I burn used papers and plastics.
- \_\_\_\_\_ 7. I recycle my notebooks and papers.
- \_\_\_\_\_ 8. I turn off the light when I'm not using it.
- \_\_\_\_\_ 9. I walk or cycle when I go to places near me.
- \_\_\_\_\_ 10. I leave the water running while brushing my teeth.

## Activity 2: Cause-Effect

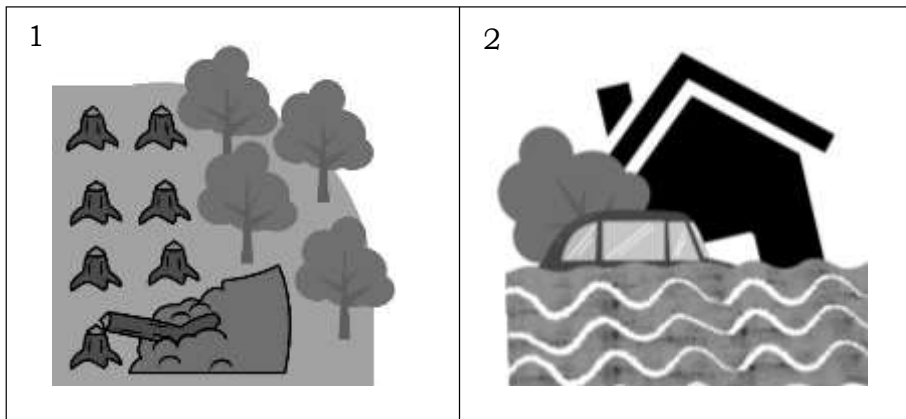


Image credit: Canva

Can you tell what problems are shown in each picture? How are the two scenarios related? Which portrays the cause? effect? Can you think of other things that humans do that harm the planet?



### ***What is It***

#### **What is Sustainability?**

Earth provides us with all the resources that we need including the plants and animals that we consume as food, abundant water that is essential for life, fertile and arable lands, precious minerals, and fossil fuels. However, some of these resources are only available in limited supply. These resources are being depleted faster than they can be replaced and it will take millions of years to form these resources.

The first picture in Activity 2 shows us that even renewable resources such as trees can be exhausted by irresponsible human practices such as too much logging of trees in the forest. We can easily denude the forests if we cut down trees faster than we can plant new ones to replace them. But if we allow the forest to recover before we start logging the trees again, our forests will be here for a long time and can provide our needs. This is what sustainability is all about. Sustainability is the practice of using the earth's resources in a responsible manner that will allow the resources to be available for the present and future generations. *How can one use the resources sustainably?*

## Sustainable Use of Natural Resources

The following practices promote sustainable use of natural resources:



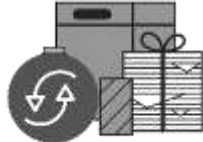

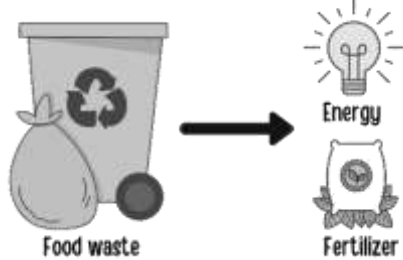

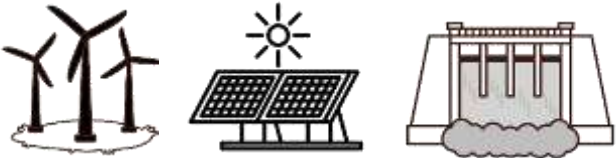
1. Practice the <b>5Rs</b>		
 <p><b>Refuse</b></p> <p>Say NO to single-use plastics such as straws. Whenever you order a drink, make it a habit to politely say “No straw, please”.</p>	 <p><b>Reduce</b></p> <p>Reduce the amount of general waste you create. Instead of buying bottled water, use your reusable water container or bottle.</p>	 <p><b>Reuse</b></p> <p>Practice using something again. You can remove gift wrappers carefully so that you can use it again. Don't throw your old books, they can be used by other people.</p>
 <p><b>Recycle</b></p> <p>Turn materials in the same or different form that would otherwise be discarded as waste. For example, your old notebooks can be recycled for your paper mâché projects.</p>	 <p><b>Recover</b></p> <p>Convert waste into energy resources. Organic matter such as animal or food waste are broken down by microorganisms (anaerobic digestion) to produce biogas and biofertilizer.</p>	
 <p>2. <b>Save Energy</b> - conserve energy by turning off the lights and other appliances when not in use.</p>	 <p>3. <b>Renewable Energy Resources</b> - using wind, solar power, and other renewable energy resources instead of burning fossil fuel.</p>	

Image credit: Canva

Can you think of other ways that show sustainable use of natural resources?

As our population grows, the number of people using the earth's resources also increases. This puts a huge strain on the planet's ability to replenish the consumed resources. However, it is not only the growing population that will deplete the natural resources. Most of the time, it is how humans use the resources that exhaust the earth. Food waste, overfishing, clearing of forests, too much use of single-use or disposable plastic bags and packaging are among the unsustainable lifestyle practices that we do everyday.

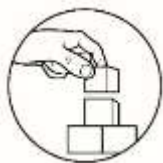
There are many ways that we can do to maintain sustainability of our resources. Reforestation is the practice of planting new trees in denuded forests. This will keep the forests standing to provide us with lumber, food, and water. Forests also temporarily hold water to prevent floods and store carbon dioxide to reduce global warming.

Our modern lives need constant source of energy for electricity, transportation, communication, and industries. We need fuels for our cars, and electricity to power our homes and the machines that produce goods that we consume. However, we have depended too much on *nonrenewable energy sources* that are in limited supply. Fossil fuels such as coal, natural gas, and petroleum are nonrenewable energy sources that also pollute our air and land and contribute to global warming.

Fortunately, there are alternative energy sources that are a lot cleaner and renewable. These are also easily harnessed from the environment such as the sun's heat, wind power, flowing water, and heat from the earth. They do not emit air pollutants and carbon dioxide, the culprit of global warming. Moreover, they are abundantly available in our country because of our geographic location on earth. Hence, we must tap the rich renewable energy sources of the country for a clean environment and sustainable future.

Too much consumption of goods also generates a lot of wastes. If we are not responsible in managing our wastes, they end up in our bodies of water, cause floods, harm the fish, and potentially cause human health problems. Waste management such as the practice of 5Rs (reduce, recycle, reuse, refuse, and recover) can help reduce the demands for new resources in manufacturing goods and lessen the amount of waste materials that pile up on our planet.

Without the earth and its resources, humans will definitely not survive. The earth has a recycling system that continues to provide materials that we need. It has also a cleansing system that gets rid and recycles the waste materials of the earth. But this amazing ability of the earth has limits. Hence, we need to make sure that the earth's resources are used in a sustainable manner and our wastes do not overwhelm the planet's ability to cleanse itself. For our sake and those of our children in the future, we need to take care of our only home-the Earth.



## ***What's More***

### **Activity 2: Sustainable or Not Sustainable**

**Directions:** Read and analyze the situations carefully. Write **S** if the situation demonstrates *sustainable* use of natural resources and **NS** if it is *not sustainable*. Write your answers on a separate sheet of paper.

- \_\_\_\_\_ 1. Burning of plastics to reduce wastes.
- \_\_\_\_\_ 2. Using buckets of water instead of showers.
- \_\_\_\_\_ 3. Overhunting in the wildlife is not controlled.
- \_\_\_\_\_ 4. Planting new and young trees in depleted lands.
- \_\_\_\_\_ 5. Using organic waste materials as fertilizer for soil.
- \_\_\_\_\_ 6. Clearing of forest for lumber and construction of houses.



- \_\_\_\_\_ 7. Rice fields are turned into residential and commercial centers.
- \_\_\_\_\_ 8. Extensive and uncontrolled mining is allowed to boost economy.
- \_\_\_\_\_ 9. Paper cups and cardboards are recycled into creative crafts and sold.
- \_\_\_\_\_ 10. Exploring geothermal energy resource as an alternative to fossil fuels.



## ***What I Have Learned***

### **Activity 3: Conservation Counts!**

**Directions:** Read the paragraph below. Choose the word that best fit the sentences to complete the paragraph. Write your answers on a separate sheet of paper.

Wasting	Destruction	Carbon Dioxide	Conserving	Sustainable
Wisely	Recycling	Sustainability	Global Warming	Reforestation

We need to use our natural resources responsibly. 1. \_\_\_\_\_ is the practice of using these resources 2. \_\_\_\_\_ without 3. \_\_\_\_\_ them or using them up completely so that these resources will be able to support the needs of the present and future generations. There are many ways each of us can help to ensure that we have 4. \_\_\_\_\_ natural resources. Reducing waste, reusing materials instead of throwing them away, 5. \_\_\_\_\_, composting, and 6. \_\_\_\_\_ are some of the many ways that we need to practice.

However, as human population grows, our needs also increase. Forests have been cleared and transformed for urban use. Trees are also cut down for lumber and to build houses which resulted to the 7. \_\_\_\_\_ of habitats of animals. Deforestation also leads to soil erosion. To make this sustainable, new seedlings should be planted in deforested areas and reduce the number of trees being cut down. 8. \_\_\_\_\_ is the practice of planting new trees in areas that have been depleted.

Burning of fossil fuels contributes to air pollution and produce 9. \_\_\_\_\_ and other greenhouse gases which can trap heat in our atmosphere contributing to 10. \_\_\_\_\_ and climate change. Pollution in bodies of water is also widespread. Instead of throwing plastics and other wastes in rivers, recycling these materials and creating arts and crafts will make them sustainable. Organic wastes can be used for composting and eventually be added to soil to help plants grow.



## What I Can Do

### Activity 4: I Can Make a Difference

**Directions:** Write the things you can do to help use the Earth's resources sustainably and make a difference. Write your answers on a separate sheet of paper.



**I can make a difference** \_\_\_\_\_

Water \_\_\_\_\_.



**I can make a difference** \_\_\_\_\_

Forest \_\_\_\_\_.



**I can make a difference** \_\_\_\_\_

Energy \_\_\_\_\_.



**I can make a difference** \_\_\_\_\_

Gadgets \_\_\_\_\_.



**I can make a difference** \_\_\_\_\_

Food \_\_\_\_\_.

*Illustrated by Elvina Taran*

### Rubrics

	Excellent (5 points)	Strong (4 points)	Fair (3 points)	Needs Improvement (2 points)
<b>Content</b>	Ideas are clear with accurate information supported by specific and relevant examples.	Ideas are clear with accurate information but not supported with specific and relevant examples.	Ideas are somewhat clear but some information are incorrect and with irrelevant examples.	Ideas are not clear and missing with specific and relevant examples.
<b>Presentation</b>	All ideas are compelling and presented in an organized and logical manner.	Ideas mostly make sense and are presented in an organized	Some ideas don't make sense and are not presented in an	Ideas lacks direction and are not presented in an organized

		and logical manner.	organized and logical manner.	and logical manner.
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## **Assessment**

**Directions:** Read the following questions carefully. Choose the correct answer from the given choices. Write the letter of your choice on a separate sheet of paper.

- Which of the following practices will help protect our environment?
  - Burning of wastes
  - Reusing paper bags
  - Dumping trash in rivers
  - Using too much fertilizers
- What do you call the practice of using resources wisely without wasting or using them up completely so that the future generations can benefit from them?
  - Availability
  - Biodiversity
  - Productivity
  - Sustainability
- Which of the following natural resources need to be conserved strictly because it will take a very long time to produce and accumulate them?
  - Coal
  - Rice
  - Water
  - Woods
- What is the best example of using resources wisely?
  - Throwing old clothes
  - Burning cardboards and papers
  - Collecting rainwater for cleaning purposes
  - Turning on the electric fan for the whole day
- You are asked by your mother to buy table salt in the store near your house. What is the best thing to do to save energy?
  - Walk
  - Ride a motorcycle
  - Ask your cousin for free lift
  - Wait for a public vehicle outside
- The following practices destroy habitat of animals, **EXCEPT**
  - Planting trees
  - Cutting too many trees for lumber
  - Throwing industrial garbage in rivers
  - Clearing forest to build commercial centers

7. If we use fossil fuels more rapidly than they are produced, what might happen?
- A. The price will get cheaper
  - B. The price will not be affected.
  - C. The supply will be depleted completely.
  - D. The supply will be replaced after a few years.

8. Which of the following promotes sustainable use of resources?

I. Conserving	II. Composting	III. Recycling	IV. Reusing
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- A. II only
  - B. I and III only
  - C. I, III, and IV only
  - D. I, II, III, and IV
9. What does conservation of natural resources mean?
- A. We should waste them.
  - B. We should destroy them.
  - C. We should use them wisely.
  - D. We should use them without limits.
10. Your community is rich in metallic minerals. How can your community conserve these mineral deposits?
- A. Create more tunnels
  - B. Regulate mining by formulating laws
  - C. Use all the mineral deposits to make money
  - D. Hire more miners to gather the mineral deposits
11. Your science project requires you to make something creative but should depict conservation of resources. Which of the following would you likely create?

I. Improvised chair made of old tires
II. Hanging curtain made of recycled plastic bottles
III. Picture frame made from recycled cardboards
IV. Desk organizer made from an illustration board and colored papers you bought from the National Book Store

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

12. Which of the following **DOES NOT** show conservation of natural resources?

- A. Mr. Agustin uses too much chemical fertilizers in his farm.
- D. Elna turns off her car's engine when idling longer than 15 minutes.
- B. Chiara opens the windows instead of turning on the air conditioner.
- C. Mrs. Perez fills a bucket while showering and use it to water her plants.

13. Your school is celebrating the Earth Day in support for the protection and conservation of Earth's natural resources. The following are programs that your school should advocate, **EXCEPT**

- A. River cleanup and tree planting
- B. Conducting a "waste-free lunch"
- C. Frequent use of plastic bags in canteens
- D. Creating art materials from recyclable trash

14. Cleah is studying in a school located near a river. She saw her friends throwing garbage in the river. Although hesitant, Cleah finally decided and told her friends that throwing garbage in the river is definitely wrong. Do you approve Cleah's decision?
- A. Yes, her teachers will be impressed.
  - B. Yes, throwing garbage will pollute the water.
  - C. No, her action will not change the attitude of her friends.
  - D. No, her friends will surely hate her for reprimanding them.
15. Deven is joining his uncle for a hunt in the wild. While looking for their target, his uncle saw a bird with its newly-hatched baby birds and wanted to capture them. Deven recognized that this is an endangered species because he remembered the exact picture shown by his teacher in their science class. He told his uncle not capture the birds and just let the birds stay in their nest. Do you agree with Deven's action?
- A. No, his uncle will surely scold him.
  - B. Yes, endangered species of birds should be protected.
  - C. No, telling his uncle what to do is a sign of disrespect.
  - D. Yes, he should tell his teacher what he did to get plus points in class.



## ***Additional Activities***

**Directions:** Make a waste audit in your home. Record the types and amount of wastes your family generates daily for 3 days. At the end of three days, determine what type of wastes you generate the most and write a short reflection essay on what you can do to reduce your wastes. Refer to the template below for your home waste audit.

### **MY HOME WASTE AUDIT**

<b>Type of Waste</b>	<b>Quantity</b>
<b>Day 1</b>	
<b>Day 2</b>	
<b>Day 3</b>	
<b>Type of wastes my family generates the most:</b>	

**What we can do to reduce our wastes**

**Rubric for Short Reflection Essay**

	Excellent (5 points)	Strong (4 points)	Fair (3 points)	Needs Improvement (2 points)
<b>Depth of Reflection</b>	The reflection demonstrates an in-depth and thorough understanding of the problem.	The reflection demonstrates a comprehensive understanding of the problem.	The reflection demonstrates a general or basic understanding of the problem.	The reflection demonstrates a limited or no understanding of the problem.
<b>Relevance</b>	Ideas are insightful and well supported with clear, detailed, and applicable solutions to the problem.	Ideas are well supported with clear, detailed, and applicable solutions to the problem.	Ideas are supported but some solutions are vaguely expressed and are not applicable to the problem.	Ideas are not supported clearly. Solutions are not applicable to the problem.



# Answer Key

## Lesson 1

<p><b>What I Know</b></p> <p>1. C 2. C 3. B 4. B 5. A 6. D 7. D 8. B 9. C 10. A 11. D 12. C 13. D 14. D 15. B</p>	<p><b>What's New</b></p> <p>1. R 2. R 3. R 4. NR 5. NR</p>	<p><b>What's More</b></p> <p><b>Renewable</b></p> <p>1. Cotton 2. Leather shoes 3. Wooden chair 4. Water 5. Paper</p> <p><b>Nonrenewable</b></p> <p>1. Steel 2. Soda can 3. Crude oil 4. Gold Necklace 5. Petroleum</p>	<p><b>What I Have Learned</b></p> <p>1. Natural resources 2. Renewable resources 3. Nonrenewable resources 4. Pacific Ring of Fire 5. Magma 6. Volcanoes 7. Minerals 8. Solar energy 9. Hydropower 10. Fossil fuels</p>	<p><b>Assessment</b></p> <p>1. C 2. D 3. D 4. A 5. B 6. C 7. C 8. A 9. C 10. B 11. C 12. D 13. A 14. C 15. B</p>
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## Lesson 2

<p><b>What I Know</b></p> <p>1. B 2. D 3. A 4. C 5. A 6. A 7. C 8. D 9. D 10. C 11. D 12. B 13. C 14. A 15. D</p>	<p><b>What's More</b></p> <p>1. NS 2. S 3. NS 4. S 5. S 6. NS 7. NS 8. NS 9. S 10. S</p>	<p><b>What I Learned</b></p> <p>1. Sustainability 2. Wisely 3. Wasting 4. Sustainable 5. Recycling 6. Conserving 7. Destruction 8. Reforestation 9. Carbon dioxide 10. Global warming</p>	<p><b>Assessment</b></p> <p>1. B 2. D 3. A 4. C 5. A 6. A 7. C 8. D 9. C 10. B 11. D 12. A 13. C 14. B 15. B</p>
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## Graphics from Canva

Shopping Bag

Shopping Cart

The Earth Shop

Deforestation

Flash flood

5Rs

Save Energy

Renewable Energy Resources

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