W1	Learning Area	SCIENCE	Grade Level	7
	Quarter	FOURTH	Date	

I. LESSON TITLE	LOCATION OF THE PHILIPPINES WITH RESPECT TO THE CONTINENTS AND OCEANS OF THE WORLD.
II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)	Demonstrate how places on Earth may be located using a coordinate system. (S7ES-IVa-1)
III. CONTENT/CORE CONTENT	Unit 4 Module 1: Earth and Space

IV. LEARNING PHASES AND LEARNING ACTIVITIES

I. Introduction (Time Frame: ___Day 1_____)

To locate exact places on the earth, one must look at the intersecting lines latitude and longitude. The combination of these lines form a grid. The point where lines of latitude and longitude meet or intersect is called coordinate. But, what is the difference between these two terms? Lines of latitude measure north-south of the equator. They are all parallel to each other, thus, they are referred to as parallels. Longitude is the measurement east or west of the prime meridian and are called meridians.

Equator is an imaginary line drawn around the earth equally distant from both poles, dividing the earth into northern and southern hemisphere and marked as 0° latitude. Prime meridian is the earth's zero of longitude, which by convention passes through Greenwich, England.

How do captains of the ships locate their specific destination?

_____
_____
_____

D. Development (Time Frame: __Day 2_____)

Another way to locate places is to identify the landmasses and bodies of water surrounded in a certain country. Philippines is said to be an archipelago country. Why do you think so?

Figure 1.1 maps-philippines.com

Direction: Locate the position of the Philippines on the map and answer the questions below. Write your answer on the space provided below the question.

1. What are the landmasses surrounding the Philippines?

_____

2. What are the bodies of water surrounding the Philippine Archipelago?

_____

3. Why is Philippines considered as an archipelago?

_____

IV. LEARNING PHASES AND LEARNING ACTIVITIES

E. Engagement (Time Frame: ___Day 3_____)

Maps are two-dimensional or three-dimensional representations of a particular area. Globe is a three-dimensional model that is subdivided with imaginary lines called latitude (horizontal) and longitude (vertical). The combination of these lines forms a grid. The point where lines of latitude and longitude meet or intersect is called coordinate. The coordinates of Manila, Philippines is 14^0 N, 120^0 E.

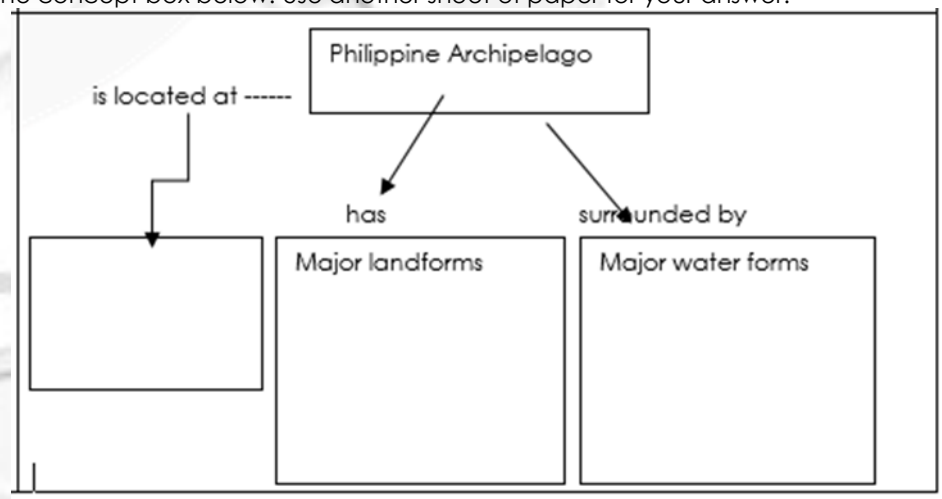
Learning Task 1

Direction: Using a map, give the coordinates of the capital of the neighboring countries of the Philippines e.g. Tokyo, Japan.

1. Hanoi, Vietnam: _____
2. Jakarta, Indonesia: _____
3. Kuala Lumpur, Malaysia: _____
4. Bangkok, Thailand: _____
5. Beijing, China: _____

A. Assimilation (Time Frame: ___Day 4_____)

Direction: Complete the concept box below. Use another sheet of paper for your answer.



IV. LEARNING PHASES AND LEARNING ACTIVITIES

V. ASSESSMENT (Time Frame: __Day 5_____)

(Learning Activity Sheets for Enrichment, Remediation, or Assessment to be given on Weeks 3 and 6)

Direction: Choose the letter of the correct answer. Use another sheet of paper for your answer.

1. Coordinates are _____.
   A. a degree only
   B. a cardinal direction only
   C. two degrees only
   D. two sets of degrees *and* cardinal directions
2. Which of the following shows the appropriate writing of coordinates?
   A. 25° N, 145° E
   B. 30° W, 150° E
   C. 40° S, 120° S
   D. none of the above
3. On a globe, the Prime Meridian is the_____.
   A. horizontal, center line
   B. vertical, center line
   C. 180 degree line
   D. 15 degree line
4. Lines of latitude and longitude are measured in _____.
   A. only north and south
   B. degrees of a circle
   C. only east and west
   D. degrees of a compass
5. How many parts does the equator divide the earth into?
   A. 2
   B. 4
   C. 6
   D. 8

VI. REFLECTION (Time Frame: _Day 5_____)

- Communicate your personal assessment as indicated in the Learner's Assessment Card.

Personal Assessment on Learner's Level of Performance

Using the symbols below, choose one which best describes your experience in working on each given task. Draw it in the column for Level of Performance (LP). Be guided by the descriptions below:

☆ - I was able to do/perform the task without any difficulty. The task helped me in understanding the target content/ lesson.

✓ - I was able to do/perform the task. It was quite challenging, but it still helped me in understanding the target content/lesson.

ʔ – I was not able to do/perform the task. It was extremely difficult. I need additional enrichment activities to be able to do/perform this task.

Learning Task	LP	Learning Task	LP	Learning Task	LP	Learning Task	LP
Number 1		Number 3		Number 5		Number 7	
Number 2		Number 4		Number 6		Number 8	

VII. REFERENCES

References

TEXT BOOKS:
Josefina Ma. Ferriols-Pavico., et al. *Exploring Life Through Science Series The New Grade 7 k to 12 Curriculum Compliant*. Phoenix Publishing House, Inc., 2012

INTERNET WEBSITES FOR INFORMATION AND IMAGES
maps-philippines.com
https://www.britannica.com
https://www.education.com/worksheet/article/latitude-and-longitude/
https://en.wikipedia.org/wiki/Geographic_coordinate_system
https://www.google.com/search?q=WHAT+IS+LATITUDE+AND+LONGITUDE+AND+HOW+TO+USE+IT%3F&rlz
www.google.com/search?q=LOCATION+OF+THE+PHILIPPINES+WITH+RESPECT+TO+THE+CONTINENTS+AND+OCEANS+OF+THE+WORLD+activity
http://christophercanrwell.com/wp-content/uploads/2015/08/Reality-as-a- prerequisite-of-Liberty.jpgThe library publishing house, Inc. World of Science for critical thinkers, Florante L. Alfonso et, al.
https://www.slideshare.net/AbbieMahinay/location-of-the-philippines-with-respect-to-landmasses-and-bodies-of-water
guideyourtrips.blogspot.com
pinterest.ph
en.wikipedi.org
theculturetrip.com
lonelyplanet.com
britannica.com
researchgate.com
travelthroughparadise.com
peac.org.ph
casinofilipino.com
traveler.buyunique.com

Prepared by:	Aiza G. Caberte	**Checked by:**	Maricon C. Tasarra, Jocelyn B. Reyes

W2	Learning Area	SCIENCE	Grade Level	7
	Quarter	FOURTH	Date	

I. LESSON TITLE	WAYS OF USING EARTH'S RESOURCES SUSTAINABLY
II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)	Cite and explain ways of using Earth's resources sustainably. (S7ES-IVa-1)
III. CONTENT/CORE CONTENT	Unit 4 Module 1: Earth and Space

IV. LEARNING PHASES AND LEARNING ACTIVITIES

I. Introduction (Time Frame: ___Day 1_____)

Conservation is the act of protecting Earth's natural resources for current and future generations. The Philippines is endowed for having rich in natural resources. But as Filipinos, are we protecting and conserving our natural resources?

Shuttershock.com

How does the use of solar and wind energy over other energy sources help our environment?

_____

D. Development (Time Frame: __Day 2_____)

Natural Resources may be living or non-living. Their value may be tangible, such as the price of an ounce of gold, or intangible, like psychological value of being able to visit pristine natural areas. Some natural resources must be used wisely, but some must be preserved to maintain their value. We use Earth's resources for many purposes, including recreation and natural beauty. For natural resources to continue to be available, they need to be protected. We also need to conserve natural resources so they will last longer. When we practice conservation, we make sure resources will be available in the future both for ourselves and for other organisms.

Direction: Using these five fingers. Write your own ways on conserving, protecting and sustaining natural resources. Use another sheet of paper for your answer.

http://www.nationalcenterdvtraumamh.org/wp-content/uploads/2012/01/FingerholdPracticefor-ManagingEmotions-Stress-Final.pd

IV. LEARNING PHASES AND LEARNING ACTIVITIES

E. Engagement (Time Frame: ___Day 3_____)

https://www.freepressjournal.in/cmcm/waste-segregation-actviolations-bmc-prepares-new-by-laws

Direction: Study the picture above and answer the following questions. Write your answer on the space provided below the question.

1. What does the picture show?

_____

2. How does it help in protecting the environment?

_____

3. How can you protect the environment as a student?

_____

A. Assimilation (Time Frame: _____)

Direction: List down at least 5 human activities that harm the natural resources and give some ways to avoid and prevent it. Use another sheet of paper for your answer.

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

IV. LEARNING PHASES AND LEARNING ACTIVITIES

V. ASSESSMENT (Time Frame: _____)

(Learning Activity Sheets for Enrichment, Remediation, or Assessment to be given on Weeks 3 and 6)

Direction: Choose the letter of the correct answer. Use another sheet of paper for your answer.

1. These are materials or substances such as minerals, forest, water and fertile land that occur in nature and can be used for economic gain.
   A. Natural resources C. Non renewable resources
   B. Renewable resources D. Minerals
2. In which way can we protect our environment?
   A. Littering C. recycling
   B. Polluting D. contaminating
3. Which of these is the primary cause of land pollution?
   A. Improper garbage disposal C. Recycling materials
   B. Planting of trees D. Waste segregation
4. Your community is rich in metallic materials. Which of the following should the community undertake in order to conserve such precious mineral deposits?
   A. Use all of them to earn money.
   B. Put up tunnels to harvest all metallic minerals.
   C. Formulate laws and ordinances to regulate the mining of minerals.
   D. Use dynamites to clear out the area and reveal the mineral deposits.
5. We depend on energy for many of our daily activities. Which of the following statements show conservation of energy?
   I. Switch off the lights when not in use.
   II. Recycle materials like paper and glass container.
   III. Turn off electrical appliances when they are not in use.
   A. I and II only C. I, and III only
   B. I only D. I, II, III

VI. REFLECTION (Time Frame: __Day 5_____)

- Communicate your personal assessment as indicated in the Learner's Assessment Card.

Personal Assessment on Learner's Level of Performance

Using the symbols below, choose one which best describes your experience in working on each given task. Draw it in the column for Level of Performance (LP). Be guided by the descriptions below:

☆ - I was able to do/perform the task without any difficulty. The task helped me in understanding the target content/ lesson.

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Learning Task	LP	Learning Task	LP	Learning Task	LP	Learning Task	LP
Number 1		Number 3		Number 5		Number 7	
Number 2		Number 4		Number 6		Number 8	

VII. REFERENCES

Prepared by:	Aiza G. Caberte	**Checked by:**	Maricon C. Tasarra, Jocelyn B. Reyes

W3	Learning Area	Science	Grade Level	Seven
	Quarter	Fourth	Date	

I. LESSON TITLE	Interaction in the Atmosphere : The Greenhouse Effect and Global Warming
II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)	Discuss how energy from the Sun interacts with the layers of the atmosphere. (S7ES-IVd5)
III. CONTENT/CORE CONTENT	Unit 4: Module 1: Solar Energy and Atmosphere

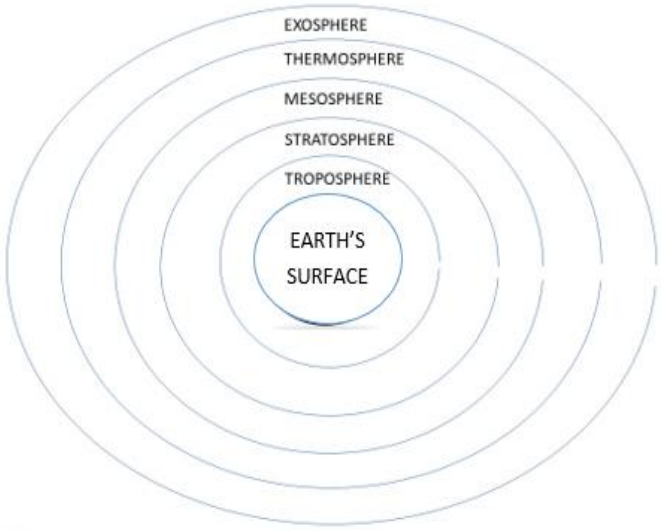
IV. LEARNING PHASES AND LEARNING ACTIVITIES

I. Introduction (Time Frame: DAY 1)

What happens when a person is in the middle of sleep and suddenly feels the cold air? Automatically, that person will get a blanket to cover the body and to feel warm In our world, there is also a blanket-like structure that protects us from extreme heat and temperatures. That blanket is what we call the ATMOSPHERE.
Are you ready? Let the discovery begin!!!!

CAN YOU PAINT WITH THE COLORS OF THE WIND?

Color the earth's atmosphere to distinguish its layers.



LEGEND:
- EXOSPHERE
- THERMOSPHERE
- MESOSPHERE
- STRATOSPHERE
- TROPOSPHERE

1. According to the activity, describe the earth's atmosphere.

_____

2. What do you think is the main function of the atmosphere?

_____

D. Development (Time Frame: DAY 2)

➢ **LAYERS OF THE ATMOSPHERE**

1. There is a massive blanket that is surrounding the earth and it is called the **ATMOSPHERE.** It is made up of different gases mostly nitrogen and oxygen which interact with the other types of gases such as argon, helium, carbon dioxide, neon, water vapor and dust. The atmosphere is divided into five layers namely:

A. **Troposphere** - layer of the atmosphere nearest the earth
- The troposphere goes from 0 km to 16 km.
- All weather develops in the troposphere.

B. **Stratosphere** - the second layer of the atmosphere
- The stratosphere goes from 16 km to 50 km.
- The protective ozone layer is found in this layer that protects us from the ultraviolet radiation of the sun.

C. **Mesosphere** - the third layer of the atmosphere
- The mesosphere goes from 50 km to 90 km.
- Meteors burn up in this layer.
- Radio waves are reflected to earth in the mesosphere.

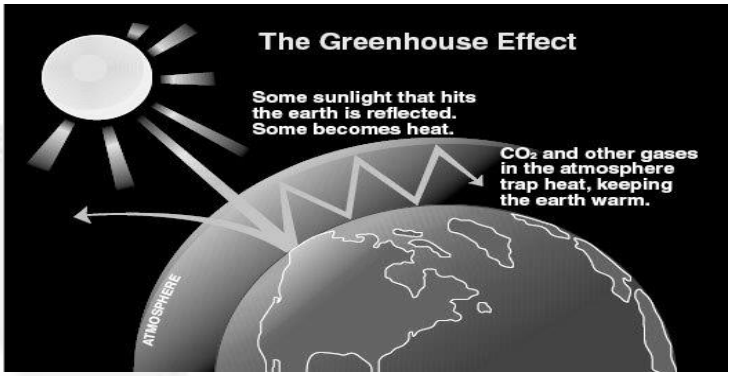
IV. LEARNING PHASES AND LEARNING ACTIVITIES

D. **Thermosphere** - the fourth layer of the atmosphere
- The thermosphere goes from 90 km to 300 km.
- Curtains of light called auroras occur in this layer.
- The ionosphere is found in the thermosphere. This is the component of the thermosphere that makes the auroras.

E. **Exosphere** - the last layer of the atmosphere
- The exosphere is the outermost layer of the atmosphere.
- Satellites orbit earth in the exosphere.

➢ **THE GREENHOUSE EFFECT AND GLOBAL WARMING**

Source:https://search.creativecommons.org/photos/971c8913-4c20-4375-bda7-d4d04e8f91b4



Source:https://www.google.com/search?q=what+is+a+greenhouse+effect+and+how+does+it+work

Observe the figures above, does a greenhouse retain or release heat?

WORDS TO REMEMBER:
1. **GREENHOUSE** - it is a plant house used by farmers or plant keepers to protect the plants from excessive cold or heat and pests.
2. **GREENHOUSE EFFECT** - occurs when greenhouse gases and other particles trap heat and radiate it back to our planet.
3. **GREENHOUSE GASES** - these are heat-trapping gases that are produced by air pollution due to human activities. These are carbon dioxide, water vapor, methane, and chlorofluorocarbons.
4. **GLOBAL WARMING** - It is the sudden increase in the overall temperature of the earth due to excessive trapping of heat by greenhouse gases.

A **greenhouse** captures heat from the sun and the glass wall traps it keeping the plants inside the greenhouse warm. The **greenhouse effect** is a natural process that works the same way. Gases in the atmosphere like carbon dioxide trap heat that warms the Earth's surface. These gases that trap heat are called **greenhouse gases**. Too much of greenhouse gases, however are produced by human activities. These includes carbon dioxide, methane, and chlorofluorocarbons that trap more and more heat causing the earth to warm up. This may lead to **global warming**. The greenhouse effect was first discovered by **Joseph Fourier in 1924.**

E. Engagement (Time Frame: DAY 3):

Learning Task 1: Complete the table below.

The Layers of the Atmosphere

Name (Layer of the Atmosphere)	Arrangement as to ordinal number sequence (Point of Reference: Earth Surface)	Characteristic/Description	Altitude

IV. LEARNING PHASES AND LEARNING ACTIVITIES

Guide Questions:

1. What are the layers of the atmosphere?

_____

2. Do you think, living organisms can live without the atmosphere?

_____

Learning Task 2. Answer the following questions briefly.

1. What is a greenhouse? How does it work?

_____

2. What do we mean by greenhouse effect?

_____

3. What will happen if greenhouse gases absorb too much heat and radiate it back to earth?

_____

A. Assimilation (Time Frame: DAY 4):

List down 4 activities in your localities that you think can produce more greenhouse gases and can contribute to global warming.

ACTIVITIES	POSSIBLE SOLUTION

V. ASSESSMENT (Time Frame: DAY 5)

(Learning Activity Sheets for Enrichment, Remediation, or Assessment to be given on Weeks 3 and 6)

Identify the following by choosing the appropriate answer on the box below. Write your answer on the space before each number.

Global warming	Greenhouse effect	Atmosphere
Greenhouse	Climate change	Greenhouse gases

_____1. This process keeps the Earth's surface warm.
_____2. These include carbon dioxide, water vapor, methane and chlorofluorocarbons.
_____3. It is used by farmer to protect plants from excessive cold or heat and pests.
_____4. It occurs when gases like carbon dioxide accumulate In the atmosphere making the earth much warmer that may cause sudden shift in climatic conditions.
_____5. It is a massive blanket surrounding the Earth

VI. REFLECTION (Time Frame: DAY 5)

- Communicate your personal assessment as indicated in the Learner's Assessment Card.

Personal Assessment on Learner's Level of Performance

Using the symbols below, choose one which best describes your experience in working on each given task. Draw it in the column for Level of Performance (LP). Be guided by the descriptions below:

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Learning Task	LP	Learning Task	LP	Learning Task	LP	Learning Task	LP
Number 1		Number 3		Number 5		Number 7	
Number 2		Number 4		Number 6		Number 8	

IV. LEARNING PHASES AND LEARNING ACTIVITIES	
VII. REFERENCES	**BOOKS** 1. Science 7 Learner's Manual 2. Grade 7 Teacher's Guide **INTERNET** 1. https://quizizz.com/admin/quiz/5df14e5fe988eb001bbfccc4/unit-3-earths-atmosphere-multiple-choice 2. http://apps.usd.edu/esci/exams/atmosph.html 3. https://www.sanfoundry.com/environment-management-questions-answers-greenhouse-effects/ 4. https://sciencing.com/greenhouse-gases-bad-earth-23688.html 5. https://www.toppr.com/ask/question/short-answer-type-questionswhat-is-atmosphere-write-about-its-different/

Prepared by:	Ms. Catherine D. Chavez	**Checked by:**	MARIFE A. SIOSON ANTONIO A. PETILOS JOCELYN B. REYES

CLMD

W3	Learning Area	Science	Grade Level	Seven
	Quarter	Fourth	Date	

I. LESSON TITLE	Interactions in the Atmosphere: The Sea and Land Breeze, the ITCZ and the Philippine Monsoons
II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)	Account for the occurrence of land and sea breezes, monsoons, and intertropical convergence zone. (S7ES-IVf-7)
III. CONTENT/CORE CONTENT	Quarter 4: Module 4: Solar Energy and the atmosphere

IV. LEARNING PHASES AND LEARNING ACTIVITIES

I. Introduction (Time Frame: Day 1)

For this lesson, my challenge for you is to solve the mystery and find out what is the reason why we have different weather disturbances in our country. Are you ready? Good luck on another journey, our brave, young scientist! Solve the mystery word by guessing the hidden words of the number codes. (Coding example 1=A, B=2…)

2-18-5-5-26-5-19

9-20-3-6

13-15-14-19-15-15-14-19

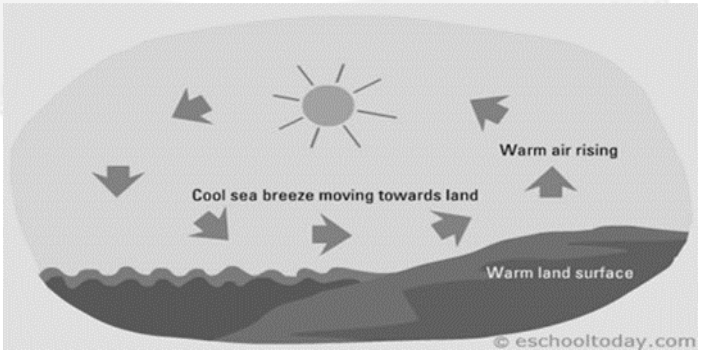
Why do weather patterns in our country vary from time to time?

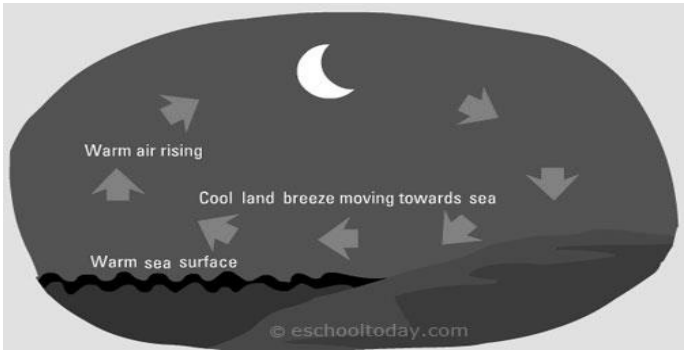
D. Development (Time Frame: Day 2)

Read carefully the concept below. Later you will answer some questions which will help you ponder some ideas about sea and land breeze.

- **THE SEA AND LAND BREEZE**

It is during hot , summer days when sea breezes occur. This is brought about by the unequal heating of land and water. At day time, the land surface heats up faster than the water. Therefore, the air above the land surface becomes warmer than the air above the water or the body of water. Recall that warmer air is lighter than cold air, therefore, warm air over the land rises. As this warm air over the land rises, the cold air over the body of water flows over the land surface to replace the rising warm air. This moving air or wind that blows from the body of water onto the land is called a sea breeze. Land breeze, on the other hand occurs during nighttime. Land surface cools down faster than the water surface. The air above the water stays warmer than the air over the land. The warm air over the water rises and the colder air above the land flows onto the water to replace the warm rising air. This flow of air from the land onto the water is called a land breeze.



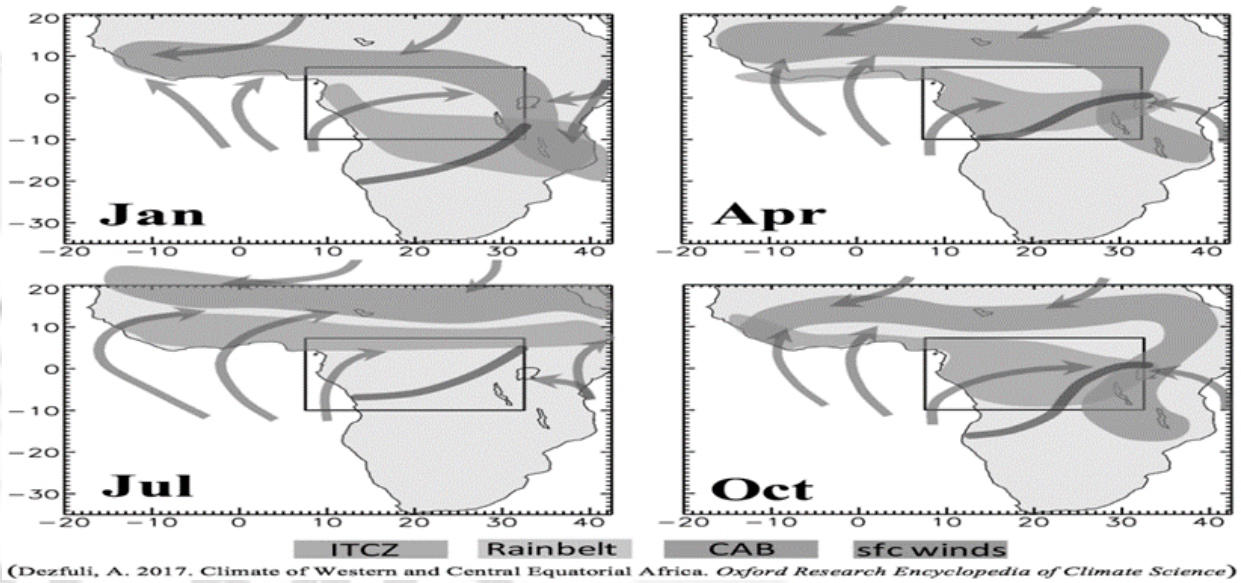


Source: https://www.eschooltoday.com/winds/images/sea-breeze.jpg

IV. LEARNING PHASES AND LEARNING ACTIVITIES

- **THE ITCZ**

The ITCZ, or InterTropical Convergence Zone, is a region of converging trade winds and rising air that circles the earth near the Equator. The rising air produces increased cloudiness, frequent thunderstorms, and heavy rainfall. Our country has been affected by ITCZ as this weather system brought cloudy skies with moderate to heavy rains and thunderstorms. Flooding sometime occur due to the heavy rains brought about by the ITCZ. Landslide because of heavy rains also occurred. The ITCZ position varies seasonally, as it follows the sun. It moves north in the Northern Hemisphere summer and south in the Northern Hemisphere winter. This cause the wet and dry seasons in the tropical regions. The figure below shows the seasonal variability of the Intertropical Convergence Zone (ITCZ).



(Dezfuli, A. 2017. Climate of Western and Central Equatorial Africa. *Oxford Research Encyclopedia of Climate Science*)

Source: Wikimedia commons

- **PHILIPPINE MONSOONS**

MONSOON originated from the Arabic word *mawsin* which means season. In this natural phenomenon, there is a seasonal shift or change in direction of the prevailing winds. As a result, these may bring change in season and weather of a certain place.

There are two types of monsoon, namely, the southwest and northeast monsoons.

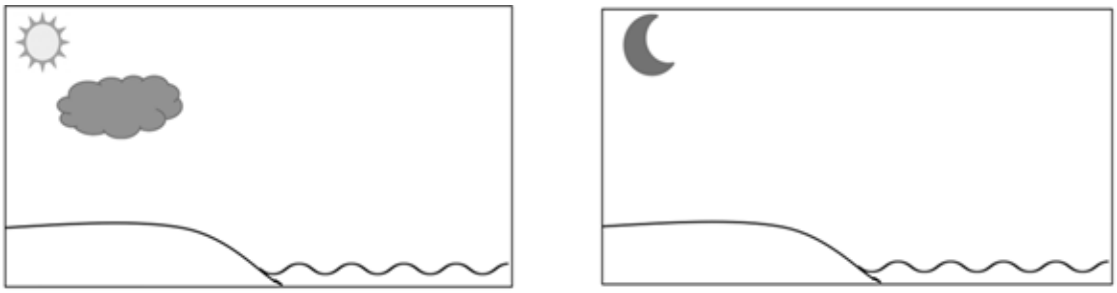
The **southwest monsoon** or commonly known as ***Habagat*** gives us warm and humid trade winds that can cause heavy rains In the Philippine this happens from June to October.

The **northeast monsoon** or commonly known as ***Amihan*** gives cold and dry weather that can cause light rains and cold weather. . Cool and dry northeast wind coming from Siberia and China blows down to Southeast Asia. In the Philippines this happens from December to February.

E. Engagement (Time Frame: Day 3)

L**earning Task 1. Illustrating Land Breeze and Sea Breeze**

Using the diagram below, draw the movement of wind using arrows to show land breeze and sea breeze.



IV. LEARNING PHASES AND LEARNING ACTIVITIES

Learning Task 2: Explaining Sea and Land Breeze

In this part, answer the questions carefully. This will help you in finding clues to solve the mysteries of sea and land breeze and how both can make the wind transfer from one place to another. Be ready to be amazed, my young scientists!

1. What is the sea breeze?

2. What is Land breeze?

3. What is the relationship of the sea and land breeze to the temperature of an area?

A. Assimilation (Time Frame: Day 4)

Reflect on the images below. In your own view, how do weather disturbances affect the lives of the Filipino people?

Source:https://search.creativecommons.org/photos/35b8d97c-567a-4091-9ce5-7d685ea3b38a

Source:https://search.creativecommons.org/photos/54f8ac18-98e3-4489-9ece-0c2c747a0ac3

Guide questions:

1. What are the two seasons in the Philippines?
2. What does ITCZ stand for? What is it?
3. How does ITCZ affect our weather?

IV. LEARNING PHASES AND LEARNING ACTIVITIES

V. ASSESSMENT (Time Frame: Day 5)

(Learning Activity Sheets for Enrichment, Remediation, or Assessment to be given on Weeks 3 and 6)

Let us see if you solved the mystery about sea and land breeze. In this activity, you will arrange the following in chronological order to show the correct process of land and sea breeze. Number it from 1-4. Good luck!

SEA BREEZE

_____ ▪ As the warm air over the land is rising, the cooler air over the ocean goes over the land surface to replace the rising warm air.
_____ ▪ During the day, the land surface heats up faster than the water surface.
_____ ▪ The air above the land is warmer than the air above the ocean. Now, recall that warmer air is lighter than cooler air.
_____ ▪ As a result, warm air rises.

LAND BREEZE

_____ • The air on land quickly cools while the air on the water keeps its warmth.
_____ • The cool breeze from the land is called a land breeze.
_____ • The air on the water becomes warmer, less dense and begins to rise.
_____ • Cold and denser air over the land begins to transfer to the water surface to replace the warmer rising air.

Let us test if you already understand the lesson about Philippine monsoons. Fill in the blanks to complete the statements below. Good luck!

1. Monsoon originated from the Arabic word _____which means season.
2. _____occurs when there is a sudden seasonal shift in the direction of prevailing winds.
3. Southwest monsoon is locally known as _____.
4. *Amihan* is a local name for _____.
5. Cumulus clouds and heavy rain are effects of _____monsoon.

VI. REFLECTION (Time Frame: DAY 5)

- Communicate your personal assessment as indicated in the Learner's Assessment Card.

Personal Assessment on Learner's Level of Performance

Using the symbols below, choose one which best describes your experience in working on each given task. Draw it in the column for Level of Performance (LP). Be guided by the descriptions below:

☆ - I was able to do/perform the task without any difficulty. The task helped me in understanding the target content/ lesson.

✓ - I was able to do/perform the task. It was quite challenging, but it still helped me in understanding the target content/lesson.

? – I was not able to do/perform the task. It was extremely difficult. I need additional enrichment activities to be able to do/perform this task.

Learning Task	LP	Learning Task	LP	Learning Task	LP	Learning Task	LP
Number 1		Number 3		Number 5		Number 7	
Number 2		Number 4		Number 6		Number 8	

VII. REFERENCES

BOOKS
1. Science 7 Learner's Manual
2. Grade 7 Teacher's Guide

INTERNET:
1. https://www.skybrary.aero/index.php/Inter_Tropical_Convergence_Zone_(ITCZ)
2. https://www.gmanetwork.com/news/scitech/weather/540017/habagat-season-over-amihan-season-to-begin-in-coming-weeks/story/
3. https://quizizz.com/admin/quiz/56952e281b94895f6244391c/monsoons

Prepared by:	Ms. Catherine D. Chavez	**Checked by:**	MARIFE A. SIOSON ANTONIO A. PETILOS JOCELYN B. REYES

W5	Learning Area	SCIENCE	Grade Level	7
	Quarter	FOURTH	Date	

I. LESSON TITLE	SEASONS
II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)	Using models, relate: 1. the tilt of the Earth to the length of daytime 2. the length of daytime to the amount of energy received 3. the position of the Earth in its orbit to the height of the Sun in the sky
III. CONTENT/CORE CONTENT	The relationship of the Seasons and the Position of the Sun in the sky

IV. LEARNING PHASES AND LEARNING ACTIVITIES

I. Introduction (Time Frame: **Day 1)**

In your previous lesson, you have learned about the land breeze and sea breeze. This time prepare yourselves for a new discovery. May this lesson challenge you to find out the mystery of the Earth.

Each planet in the solar system rotates on its axis. Some planets have axes that are almost completely perpendicular, or straight up-and-down just like Mercury, it is tilted just 2 degrees with respect to the plane of its orbit around the Sun. . The Earth' s axis is not perpendicular. It has an axial tilt of about 23.5 degrees. Because of this, the solar energy reaching different parts of the Earth is not the constant. Sometimes the axis points toward the sun and sometimes away from the sun. This brings a seasonal variation in the intensity of sunlight reaching the Earth's surface and the number of hours of daylight. When the north pole is pointed towards the sun, the Northern Hemisphere experiences longer days and shorter nights.

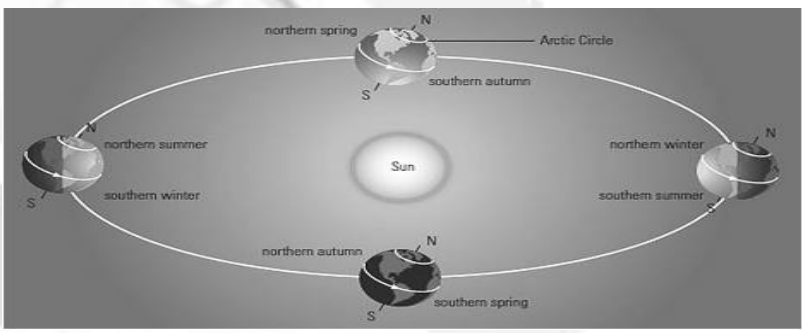


Figure 1. Shows the tilt of the Earth to the length of daytime.
https://socratic.org/questions/how-does-axis-tilt-affect-day-length

Study the picture and answer the questions that follow.

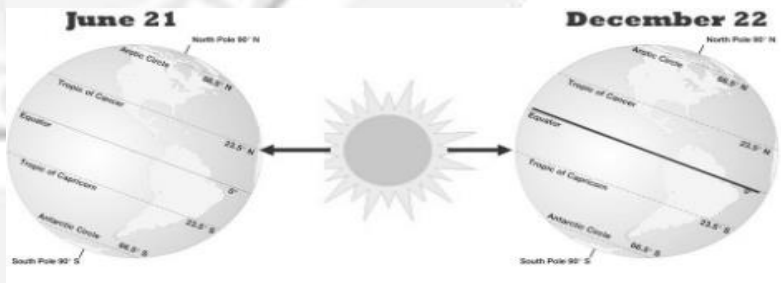


Figure 1 Where the length of direct rays fall in June and December?
https://slideplayer.com/slide/9907485/

1. In June, which hemisphere receive direct rays from the Sun?_____
2. In December, which hemisphere receives direct from rays from the Sun?_____

IV. LEARNING PHASES AND LEARNING ACTIVITIES

D. Development (Time Frame: **Day 2**)

How is the length of the daytime affects the amount of energy received by the earth?

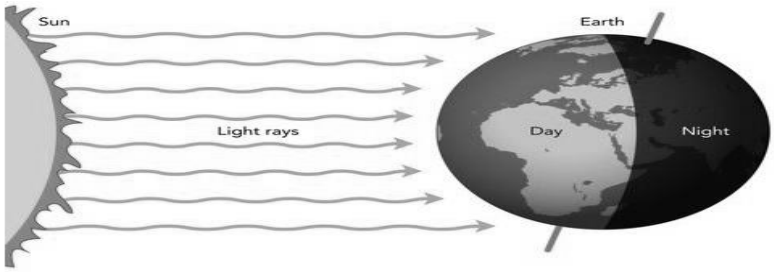


Figure 2. The Earth spins on its axis once each day.
http://www.derekscope.co.uk/the-solar-system-20th/day-and-night/

The amount of energy received by the earth and the length of daytime are related to each other. The shorter the length of daytime, the shorter will be the exposure of the earth to the sun. Thus, the lesser the amount of energy received. When daytime is longer, the higher the amount of energy received by the Earth.

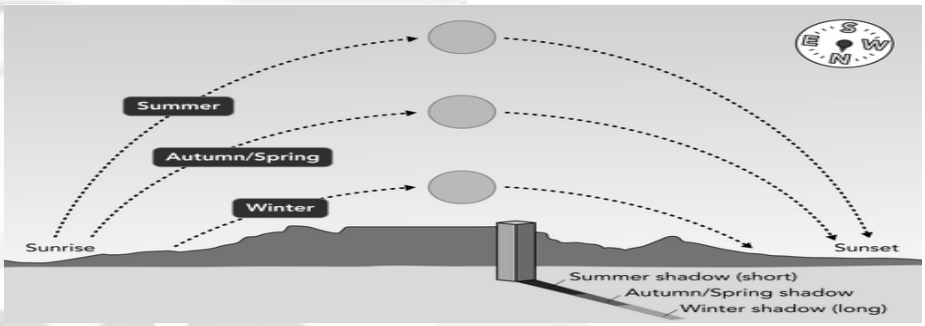


Figure 3. Path of the Sun during summer and winter..
https://intl.siyavula.com/read/science/grade-7/relationship-of-the-sun-to-the-earth/18-relationship-of-the-sun-to-the-earth

Figure 3 shows the apparent path of the Sun across the sky in winter and summer. The sun appears to move across the sky as the Earth rotates and orbits the Sun. The Sun's path across the sky affects the length of daytime experienced and amount of daylight received by the Earth along a certain latitude during a given season. As the Sun travels higher in the sky it takes more time to travel from sunrise to sunset. Therefore, daytime is longer in summer than in winter. The change in the length of daytime during the year also occurs because of the tilt of the Earth's rotation axis in space.

Learning Task 1.
Picture Analysis
Look at the picture below and answer the questions that follows. Write your answer on another sheet of paper.

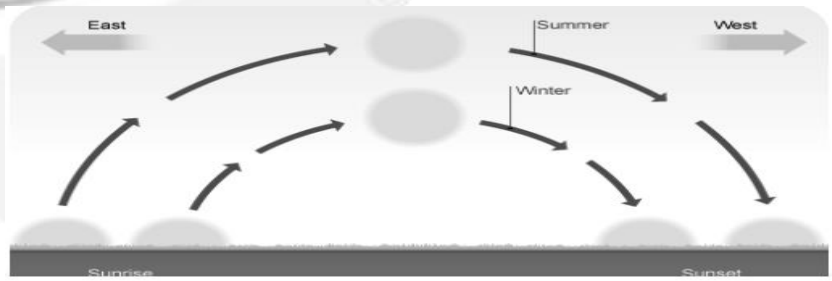


Figure 1. sun movement diagram https://www.pinterest.ph/pin/498773727468658373/

1. In which direction would you have to look to see the Sun rising? East or West_____
2. In which direction would you look to see the Sun setting? East or West?_____
3. When will the sun take longer time to set in the West? During summer or winter? Why?_____

E. Engagement (Time Frame: **Day 3 and 4**)

Learning Task 2

Study the table below. It shows the times of sunrise and sunset on the eleventh day of each month.

Table 1. Sunrise and sunset in Manila on selected days of 2020

Day	Sunrise	Sunset	Length of daytime
Jan 11, 202	6: 23 AM	5:43PM	11h 19m
Feb 11, 2020	6:21 AM	5:58 PM	11h 36m
Mar 11, 2020	6:06 AM	6:05 PM	11h 59m
Apr 11, 2020	5:44 AM	6:09 PM	12h 23 m
May 11, 2020	5:29 AM	6:15 PM	12h 45m
June 11, 2020	5:26 AM	6:25 PM	12h 58m
July 11, 2020	5:33 AM	6:29 PM	12h 55m
Aug 11, 2020	5:41 AM	6:20 PM	12h 38m
Sep 11, 2020	5:44 AM	6:00 PM	12h 15m
Oct 11, 2020	5:46 AM	5:38 PM	11h 51m
Nov 11, 2020	5:55 AM	5:24 PM	11h 29m
Dec 11, 2020	6:10 AM	5:27 PM	11h 16m

Science Grade 7 Learner's Material first edition,2013 p.266

https://www.timeanddate.com/sun/philippines/manila?month=11&year=2020

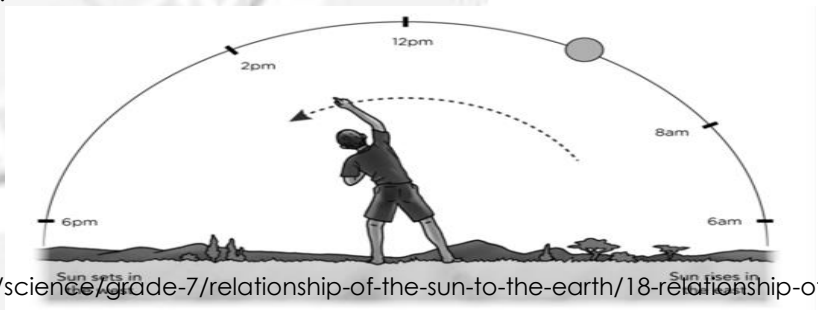
Using the table above, answer the following questions. Write your answer on a separate sheet of paper.

1. Compare the times of sunset from January, 2020 to December , 2020. What do you notice?_____
2. Compare the times of sunrise from January, 2020 to December , 2020. What do you notice?_____
3. Compare the time of sunrise on June 11, 2020 with that on December 11, 2020. On which day did the Sun rise earlier?_____
4. Compare the time of sunset on June 11, 2020 with that on December 11, 2020. On which day did the Sunset later?_____
5. When was daytime the shortest?_____
6.When was daytime the longest?_____

f you follow the path of the Sun during the day you will see that it rises in the east and sets in the west.. Why do you think it looks as though the Sun moves across the sky during the day?

Learning Task 3

Let's do a self activity to find out!



https://intl.siyavula.com/read/science/grade-7/relationship-of-the-sun-to-the-earth/18-relationship-of-the-sun-to-the-earth

Materials:

- yellow round balloon or ball which can be hung from the ceiling
- string for hanging the ball or balloon

Procedure:

1. Hang up the balloon or ball from the ceiling using the string close to one of the corners in your room. Make sure that the balloon/ball is high up and visible from the back of a room. The balloon/ball represents the Sun.
2. Stand up in your room and face the balloon/ball.
3. Now slowly turn on the spot in a clockwise direction keeping your head still, completing two or three turns.
4. Repeat the activity but this time turn in a counterclockwise direction.

Questions: Write your answer on another sheet of paper.

1. As you turned clockwise, in what direction did the hanging balloon/ball appear to move?_____
2. As you turned counterclockwise, in what direction did the hanging balloon/ball appear to move?_____
3. Did the hanging balloon/ball actually moved?_____
4. Why do you think we see the Sun moves across the sky?____

IV. LEARNING PHASES AND LEARNING ACTIVITIES

A. Assimilation (Time Frame: **Day 5**)

You have learned how the tilting of the Earth and its revolution or movement around the sun cause changes in the season. What do you think will happen to the seasons in the Philippines

1. if the Earth's tilt changed?
2. if the earth was not tilted on its axis?

V. ASSESSMENT (Time Frame: **Day 5**)

(Learning Activity Sheets for Enrichment, Remediation, or Assessment to be given on Weeks 3 and 6)

1. The earth spins on its

A. Axis B. Invert C. Revolution D. Bounce

2. The Earth's axis is tilted _____ degrees.

A. 23.5 B. 25.3 C. 30.2 D. 24

2. Rotation of the earth is what causes_____

A. The seasons B. Day and night C. The tides D .A full moon

5. What happens when the area in which you live tilts away from the sun?

A. Days will be longer than nights.
B. Nights will be longer than days.
C. The length of days and nights will be the same.
D. There will be alternating longer days and longer nights.

5. How does longer daytime affects the amount of solar energy received by the Earth.

A. The longer the day, the more energy will be received.
B. The longer the day, the less energy will be received.
C. The length of daytime does not affect the amount of energy received.
D. None of the above.

VI. REFLECTION (Time Frame: Day 5)

- Communicate your personal assessment as indicated in the Learner's Assessment Card.

Personal Assessment on Learner's Level of Performance

Using the symbols below, choose one which best describes your experience in working on each given task. Draw it in the column for Level of Performance (LP). Be guided by the descriptions below:

☆ - I was able to do/perform the task without any difficulty. The task helped me in understanding the target content/ lesson.

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Learning Task	LP	Learning Task	LP	Learning Task	LP	Learning Task	LP
Number 1		Number 3		Number 5		Number 7	
Number 2		Number 4		Number 6		Number 8	

VII. REFERENCES

Book:
Alvie J. Asuncion etal. 2013, Grade 7 Learner's Material First edition Published by the Department of Education.

Website:
https://socratic.org/questions/how-does-axis-tilt-affect-day-length
www.astronomy.ohio-state-edu
http://www.derekscope.co.uk/the-solar-system-20th/day-and-night/
https://intl.siyavula.com/read/science/grade-7/relationship-of-the-sun-to-the-earth/18-relationship-of-the-sun-to-the-earth
https://www.timeanddate.com/sun/philippines/manila?month=11&year=2020

Prepared by:	SARA JEAN N. PINTOR	Checked by:	MARICON C. TASARRA JOCELYN B. REYES

W6	Learning Area	SCIENCE	Grade Level	7
	Quarter	FOURTH	Date	

I. LESSON TITLE	SEASONS
II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)	Using models, relate: 1. the height of the Sun in the sky to the amount of energy received 2. the latitude of an area to the amount of energy the area receives 3. tilt of the Earth and the seasons. (S7ES - IVh – 9)
III. CONTENT/CORE CONTENT	The relationship of the Seasons and the position of the Sun in the sky

IV. LEARNING PHASES AND LEARNING ACTIVITIES

I. Introduction (Time Frame: Day 1)

In your previous lesson, you have learned about the relations between Earth's tilt to length of daytime, the length of daytime to the amount of energy received and the position of the Earth in its orbit to the height of the Sun in the sky. For the continuation of the lesson you will learn more about how the amount of energy received by the Earth's surface and the seasons on Earth.

Season is a division of the year marked by changes in weather and the amount of daylight. On Earth, seasons are the results of Earth's orbit around the Sun and Earth's axial tilt relative to the ecliptic plane.

Study the pictures and try to answer the questions that follow.

Figure 1. "beach" https://creativecommons.org/licenses/by-nc-nd/2.0/

Figure 2. "Sakura (cherry blossom) https://creativecommons.org/licenses/by/2.0/

Figure 3. "Fallen Leaves https://creativecommons.org/licenses/by/2.0/

Figure 4. "First Snow"https://creativecommons.org/licenses/by-nc-nd/2.0/

1. What do you think is the season shown in figure 1?_____
2. How about in figure 2_____, figure 3._____and figure 4._____?
3. Name the seasons that occur throughout the year. _____,_____,_____,_____.

D. Development (Time Frame: **Day 2**)

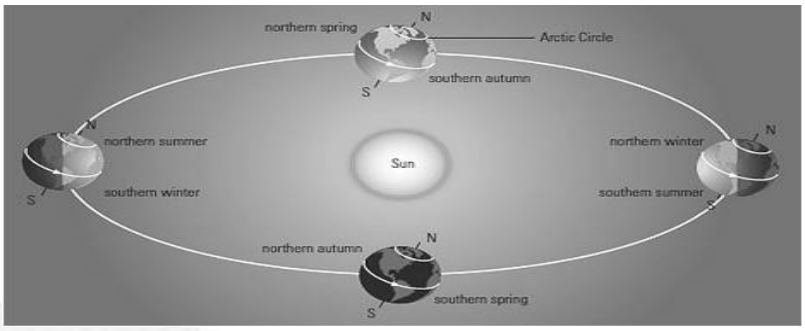
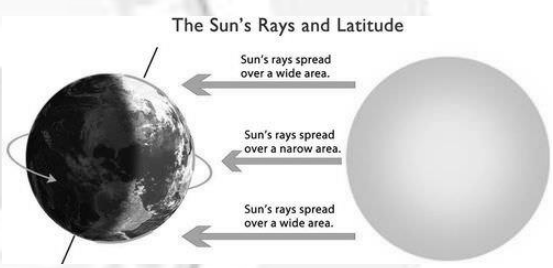


Figure 1. Shows the tilt of the Earth to the length of daytime.
https://socratic.org/questions/how-does-axis-tilt-affect-day-length

You have learned that the Sun appears to move from east to west because of the rotation of the Earth. The position of the Earth's axis relative to the sun changes as it moves around the sun. This results in a change in the observed height of the Sun above the horizon. It is observed that the Sun trace a higher path above the horizon during summer, and a lower path during winter. Thus, the Sun takes a greater amount of time to travel from East to West during summer and takes shorter time during winter. This means that more energy is hitting the Earth during summer than winter.

Direct and Indirect Rays of the Sun

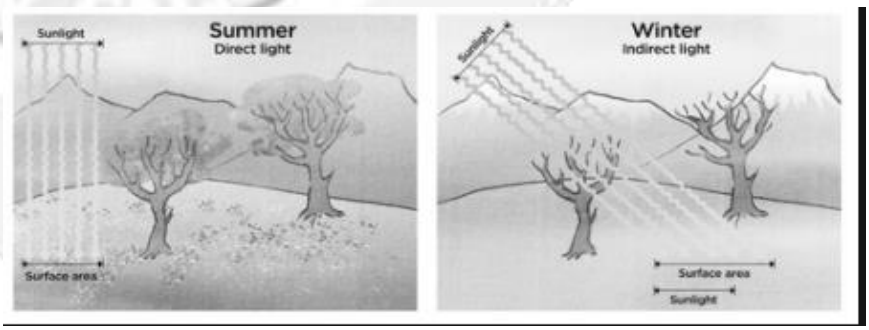
Depending on the time of year, the angle at which the Sun's rays strike the Earth will vary. The Sun's rays strike Earth's surface most directly at the equator which focuses the rays on a small area. The Sun's rays strike the surface at a slant near the poles causing the rays of the sun to scatter over a wider area. The more focused the rays are, the more energy an area receives, and the warmer it is. As a result there are parts of the Earth that receive direct and some receive indirect sunlight as shown in the figure below.



https://www.ck12.org/book/ck-12-earth-science-concepts-for-middle-school/r1/section/7.12/

During summer when the sun is high in the sky , it directly cast its rays on the surface. We call these direct sun rays. Heat is more more concentrated and cover a smaller area which then tends to be warmer.

During winter when the sun is lower in the sky, its rays strike the Earth at an angle. We call these indirect sun rays. They are more diffused and covers a broader surface area. The figure below illustrates direct and indirect sun rays.



Source:https://www.google.com/search?q=direct+and+indirect+rays+of+the+sun&source

The Seasons

We have seasons because Earth's axis is tilted. As the Earth orbits the Sun, its tilted axis always points in the same direction as shown in Figure 1. There are times that the North Pole points to the sun and there are times that it is pointing away from the sun. Throughout the year, different parts of Earth receive the Sun's most direct rays. So, when the North Pole tilts toward the Sun, days grow long, and weather warms. It is summer in the Northern Hemisphere. For part of the year that the Northern Hemisphere leans away from the sun's light. Days grow short, and temperatures drop. This is winter.

Many areas in the world are experiencing four different seasons. These seasons are as follow:

- Summer –is the hottest of the four temperate seasons

IV. LEARNING PHASES AND LEARNING ACTIVITIES

- Winter – is the coldest season of the year.
- Spring – It is the season that happen after winter. This is the time when trees bloom.
- Autumn – It is the season that happens after summer that is often called fall because leaves fall from the trees at that time.

Looking at Figure 1 , we can see the following:

December: It is Summer at the south of the equator and winter at the north of the equator. The Sun shines directly on the Southern hemisphere and indirectly on the Northern Hemisphere.

March: It is fall at the south of the equator and spring at north of the equator. The Sun shines equally on the Southern and Northern Hemisphere.

June: It is winter, south of the equator and summer at north of the equator. The Sun shines directly on the Northern Hemisphere and indirectly on the Southern Hemisphere.

September: It is spring at south of the equator an d fall north of the equator. The Sun shines equally on the Southern and Northern Hemisphere.

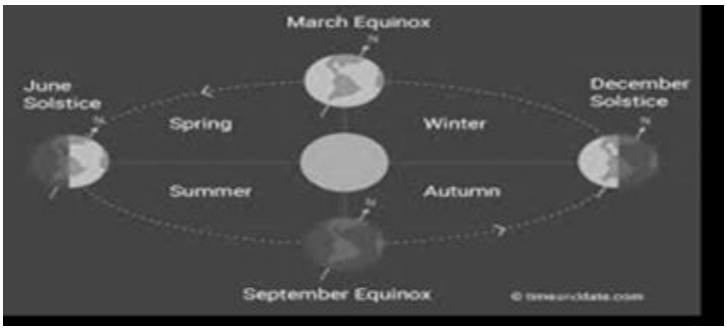


Figure 2. location of the Earth at different times as it revolves around the sun. http://kidsvillenews.com/2016/05/kids/seasons-change-but-why/

In the Philippines, temperature and rainfall are the bases for the seasons. There are two major seasons in our country: the rainy season, from June to November; and the dry season, from December to May. The dry season may be subdivided further into cool dry season, which happens from December to February and the hot dry season, from March to May. The Philippines lies in the tropical region. This region receives strong amount of sunlight all year. This is the reason why there are only two seasons in the Philippines.

Learning Task 1

Answer the questions below. Write your answer on another sheet of paper.

1. Which part of the globe receives heat directly from the sun in the month of June?_____
2. What season do we have during December? _____.
3. What season do we have during March? _____.
4. How about in September?_____.
5. What month can earth receive direct rays from the sun?_____.

E. Engagement (Time Frame: **Day 3**)

Learning Task 2

Fill in the blanks: Find your answer in the box below. Write your answer on a separate sheet of paper.

Winter	seasons	South Pole	North Pole
Summer	23.5 degrees	June	Equator

1. _____ is the traditional division of the year based on distinctive weather condition.
2. The Northern hemisphere experienced summer season during the month of _____.
3. If it is summer in the Northern hemisphere, it is _____ in the southern hemisphere.
4. _____ is being experienced in the Southern hemisphere during the Month of September.
5. The Earth is tilted towards North Pole.

Learning Task 3

Using the illustration below, answer the following questions about the Direct and Indirect rays of the Sun .

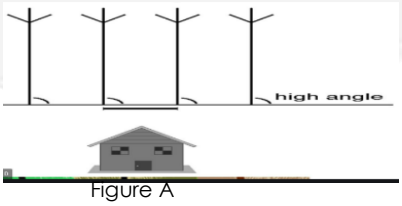


Figure A

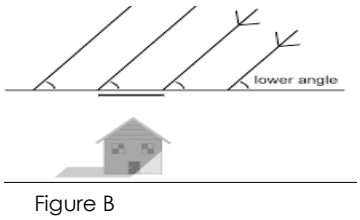


Figure B

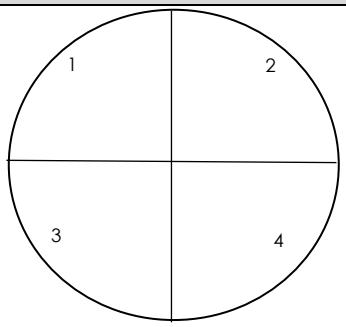
https://www.google.com/search?q=OBLIQUE+RAYS++ACTIVITY+SHEETS&tm

1. Is Figure A direct or indirect rays? _____.
2. Is Figure B direct or indirect rays? _____.
3. Which season is Figure A, summer or winter? _____.
4. Which season is Figure B, summer or winter? _____.
5. What is the temperature of Figure A? _____
6. Which figure is the hottest, Figure A or Figure B? Why?_____
7. What is the importance of season to us? _____.
8. How are we affected by the season? _____.

IV. LEARNING PHASES AND LEARNING ACTIVITIES

A.1 Assimilation (Time Frame: Day 4)

Identify and describe the four seasons. Write one season for every quarter of the circle. In which quarter of the circle can you find the Philippines?



V. ASSESSMENT (Time Frame: _____)

(Learning Activity Sheets for Enrichment, Remediation, or Assessment to be given on Weeks 3 and 6)

1. What are the reasons why seasons occur?
   a. Earth's tilt and rotation
   b. Earth's tilt and revolution
   c. Earth's rotation and revolution.
   d. Earth's tilt and resolution
2. Why is the Equator warmest?
   a. Because it is closest to the sun.
   b. Because no clouds form here.
   c. Because it receives the most direct sunlight
   d. None of the above
3. There are four seasons all over the world
   a. True
   b. False
4. Why is it warmer in the summer than in the winter in a certain place? Because
   a. it is closer to the sun in summer than in winter
   b. the Earth's tilt causes Earth to revolve more slowly
   c. the ocean is warmer in the summer than in winter
   d. Earth's tilt makes the place receive more direct sunlight in summer
5. When the Northern Hemisphere is pointing towards the sun, what season is the Southern Hemisphere?
   a. Winter b. Spring c. Fall d. Summer

VI. REFLECTION (Time Frame: **Day 5**)

- Communicate your personal assessment as indicated in the Learner's Assessment Card.

Personal Assessment on Learner's Level of Performance

Using the symbols below, choose one which best describes your experience in working on each given task. Draw it in the column for Level of Performance (LP). Be guided by the descriptions below:

☆ - I was able to do/perform the task without any difficulty. The task helped me in understanding the target content/ lesson.

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Learning Task	LP	Learning Task	LP	Learning Task	LP	Learning Task	LP
Number 1		Number 3		Number 5		Number 7	
Number 2		Number 4		Number 6		Number 8	

VII. REFERENCES

Book:
Alvie J. Asuncion etal. Grade 7 Learner's Material First edition 2013, published by the Department of education.

Website:
"Summer" by aeFusion is licensed with CC BY-NC-ND 2.0.
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-http://kidsvillenews.com/2016/05/kids/seasons-change-but-why/
-https://www.google.com/search?q=direct+vs+indirect+sun+rays&source=lnms&tbm=isch&sa=X&ved=2ahUKEwjbra2H05XvAhUi7GEKHU8DB8YQ_AUoAXoECCcQAw&biw=1517&bih=730
-https://www.google.com/search?q=OBLIQUE+RAYS++ACTIVITY+SHEETS&tbm=isch&ved=2ahUKEwit9IzktYjqAhVZyZQKHWnLAjsQ2-
https://www.ck12.org/book/ck-12-earth-science-concepts-for-middle-school/r1/section/7.12/

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