JANUARY
Makugihon

FEBRUARY
Mahigugmaon

MARCH
Matinabangon

APRIL
Matinahuron

MAY
Mahapsay og Malimpyo

JUNE
Maabtik og Musunod sa Dhaklong Orus

JULY
Maantigo og Maabilidad

AUGUST
Maginhunahunaon para sa Uban

SEPTEMBER
Madaginoton

OCTOBER
Matinud-anon

NOVEMBER
Masaligan

DECEMBER
Maalampuon

Republic of the Philippines
Department of Education
Regional Office IX, Zamboanga Peninsula

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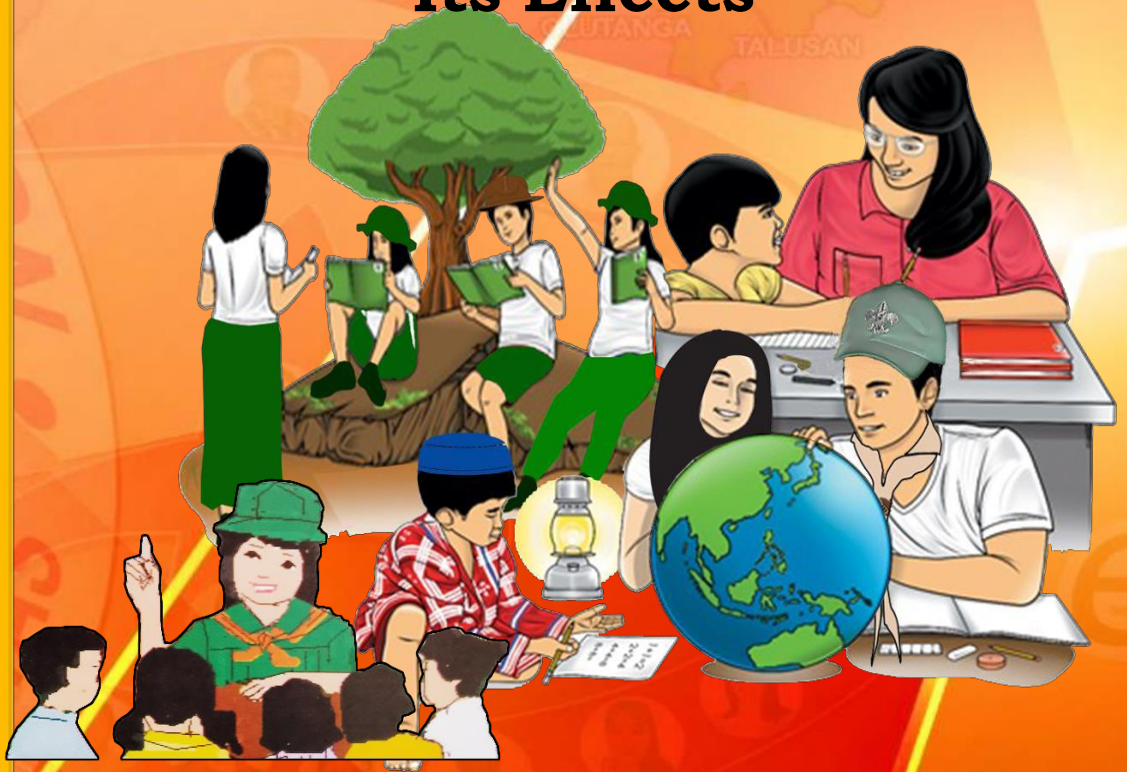
Zest for Progres
Zeal of Partnership

Science

Quarter 4 - Module 4
Earth's Motion and Its Effects



Name of Learner: _____

Grade & Section: _____

Name of School: _____

What I Need to Know

The stars at night appear to move very slowly. It is because the Earth is constantly moving. This movement causes the day to turn night and summer to become winter.

This module was made and written to help you know and understand the earth's motion and its effects. After going through the module, you are expected to:

1. Differentiate rotation and revolution
2. Describe the effects of the earth's motions.

What's In

Hey kid! Can you still recall your lesson? Let us try!

SCORE
10

ACTIVITY 1: "Treasure Hunt"

Directions: Find the correct answer from the treasure box. Write your answer on the space provided before each number.

Summer	**doldrums**	**Wet Season**
atmosphere	**Northern Hemisphere**	
monsoons	**Southern Hemisphere**	
Latitude	**Climate**	**Equator**

_____ 1. The season of abundance sunlight.
_____ 2. An imaginary line dividing the earth into two halves
_____ 3. The season when the country experiences storms.
_____ 4. They are called winds at the equator.
_____ 5. The average of all weather conditions prevailing in a particular area over a long period.

_____ 6. The distance measured in degrees from the equator to the North or South pole.
_____ 7. Seasonal winds that our country experiences.
_____ 8. The blanket of air surrounding Earth.
_____ 9. Places found above the equator.
_____ 10. Places found below the equator.

What's New

Hey kid! Welcome to the next activities.

ACTIVITY 2: Let us do these!

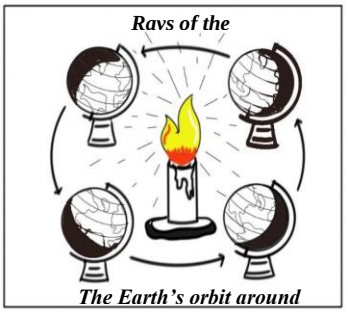
Materials: Globe, pen cap, candle, match, table
Note: In case you don't have a Globe, you can use a ***ball****.*

Activity 2.1


The Earth's Rotation

1. Get a globe and place it on the table.
2. Rotate the globe or ball from west to east.
3. As the globe or ball moves, drop a pen cap on the north polar region.
4. Observe what happens to the pen cap.
   - ***In what direction does the pen cap fall?***
     Answer: _____.
   - **Why do you think the pen cap fell in that direction?**
     Answer: _____.

Activity 2.2



1. Position a lighting candle at the center of the table. This will represent the sun.
2. Position the globe in four specific directions.
   - ***What part of the globe receives direct or vertical rays of the sun (lighting candle)?***
     Answer:
     _____
   - ***Do you think the rays of the sunlight are the same in all parts of the Earth?***
     Answer:
     _____

What is It

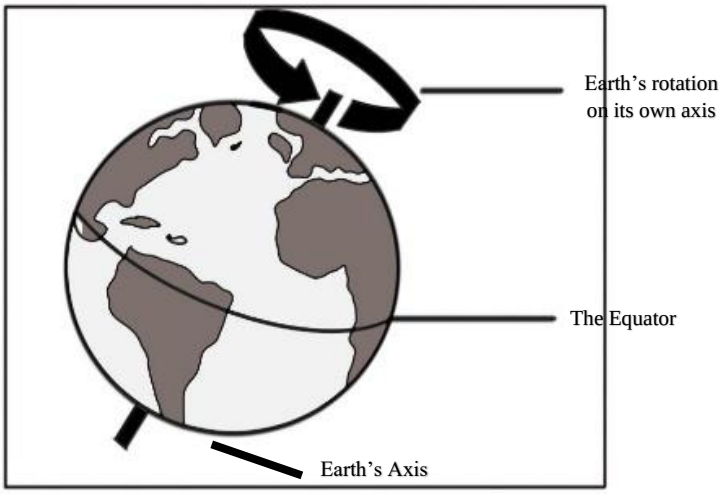
In addition to your learning, here is the brief explanation about the Earth's motion and description of their effects.

The first activity above is an example of Earth's Rotation.

Activity 2.1 "What's New"

The Earth is constantly moving. The Earth rotates every twenty-four hours. **Rotation** is when planet spins around once. The Earth rotates counterclockwise. It is not the Sun's movement that causes days, but rather the Earth turning around in front of the Sun. The Earth's axis is the point at which it rotates around and tilted at 23 .5 degrees.

In the activity above, as the globe rotates, the pen cap moved sideward instead of directly toward the tabletop. The globe rotation caused the pen cap to fall sideward. It falls sideward because the object where it fell is moving. If the pen cap represents the wind, what will be the effect of the Earth's Rotation on its direction? If the Earth is not rotating on its axis, would the wind's direction be the same?



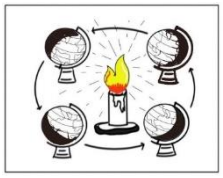
The world's winds do not move up and down. One reason is that the Earth's rotation causes the winds moving from the poles toward the equator to be deflected or turns sideward. This wind behavior is due to **Coriolis Effect.** The second reason is the unequal heating of land and water.

The second activity above explained the Earth's Revolution.

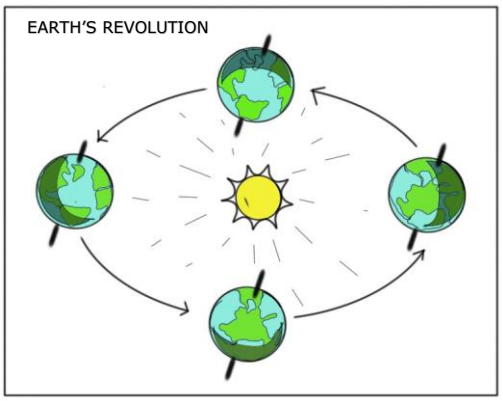
"Revolution" is another type of Earth's Motion. It is when one object completes a circular path around another object. The Earth revolves around the sun in 365.24. The Earth takes 365.24, this is why a year is 365 days long. It follows a path called **orbit** in an **elliptical** shape.

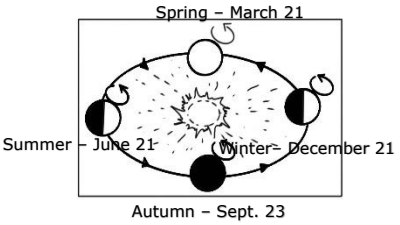
Look at the illustration of the Earth in space at different days of the year. Notice how the Earth's axis remains parallel as it revolves around the sun. The axis points to the same direction in space. It always points to north star, **Polaris**. Take note of the earth's position on June 21 or 22. On these

dates, the northern hemisphere experiences the shortest day. This date is called the **summer solstice**. The northern hemisphere receives more direct rays of the sun while the southern hemisphere receives less. On December 21 or 22, the northern hemisphere experiences the shortest day while the southern hemisphere experiences the longest day. This date is called the **winter solstice**. The southern hemisphere receives more direct rays of the sun this time.



Activity 2.2 "What's New"





The Earth at Different seasons of the year

In addition, this movement cause the seasons. The temperate countries experience four seasons. These are summer, autumn, winter and spring.

What's More

You have come a long way in your module! Now answer the following activities. Good luck!

SCORE
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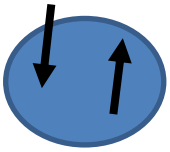
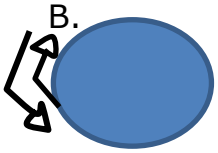
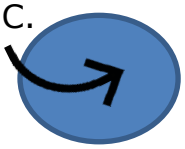
Activity: 3

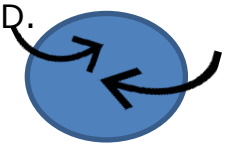
Encircle the letter of the correct answer.

1. If the Earth was not rotating on its axis, how would the winds from the poles blow?

A. 

B. 

C. 

D. 

2. Which of the following causes the winds to blow sideward?
   A. Unequal heating of land and water
   B. The earth's rotation on its axis
   C. The different bodies of water
   D. Both a and b.

3. What is the significance of the Coriolis Effect?
   A. The winds move from the poles toward the equator to blowing sideward (right side)
   B. The trade winds meet together in the intertropical convergence zone.
   C. The winds would blow toward the poles.
   D. Both A and B.

4. What is the exact inclination on its axis of the earth as it revolves around the sun?
   A. 24 ½ degrees C. 23.5 degrees
   B. 365 degrees D. 365.24 degrees

5. Why does the Philippines have only two seasons?
   A. Because it is on temperature zone C. because of its latitude
   B. Because of many mountains D. because it has seas.

6. Why do other countries in the temperate zone experience four seasons?
   A. Because of Earth's Inclination C. Because of the Earth's Rotation
   B. Because of the Earth's revolution D. Both a and b.

7. The axis remains parallel as it revolves around the sun and points to the same direction in space. It always points to north star called _____.
   A. Polaris B. Canopus C. Arcturus D. Sirius

8. The earth rotates on its axis in a/an _____.
   A. East-to-west direction C. South-to-west direction
   B. West-to-east direction D. North-to-south direction

9. What solstice occurs when the northern hemisphere experiences the shortest day?
   A. Summer solstice C. Autumn solstice
   B. Winter solstice D. Spring solstice

10. Why does summer warmer than winter?
   A. Because of the annual date
   B. Because the sun's rays shine more directly than winter
   C. Because nights are longer than days
   D. Because of solstices

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Activity 4: Put a check (√) if the statement is right and (X) if it's not.

_____1. The part of the sun experiences day while the part away from the sun experiences night.
_____2. Temperate zone are countries located near from the equator.
_____3. The Earth axis is tilted that's why it experiences unequal periods of light and darkness at different time of the year.
_____4. Rotation is when the planet spins twice.
_____5. The Earths tilting on its axis and its revolution around the sun cause the occurrence of the four seasons in temperate zone.
_____6. When the northern hemisphere experiences the shortest day, this date is called winter solstice.
_____7. The areas near the equator experience moderate climate and they do not have snowy winter.
_____8. The world's winds move up and down.
_____9. The Earth's rotation causes the winds moving from the poles toward the equator to be deflected or turns sideward.
_____10. Earth's revolution causes the four seasons.

Activity 5: Identify if the STAR describes rotation or revolution. Color the Star **YELLOW** if it describes rotation, and if it describes revolution, color the Star **RED.**

SCORE
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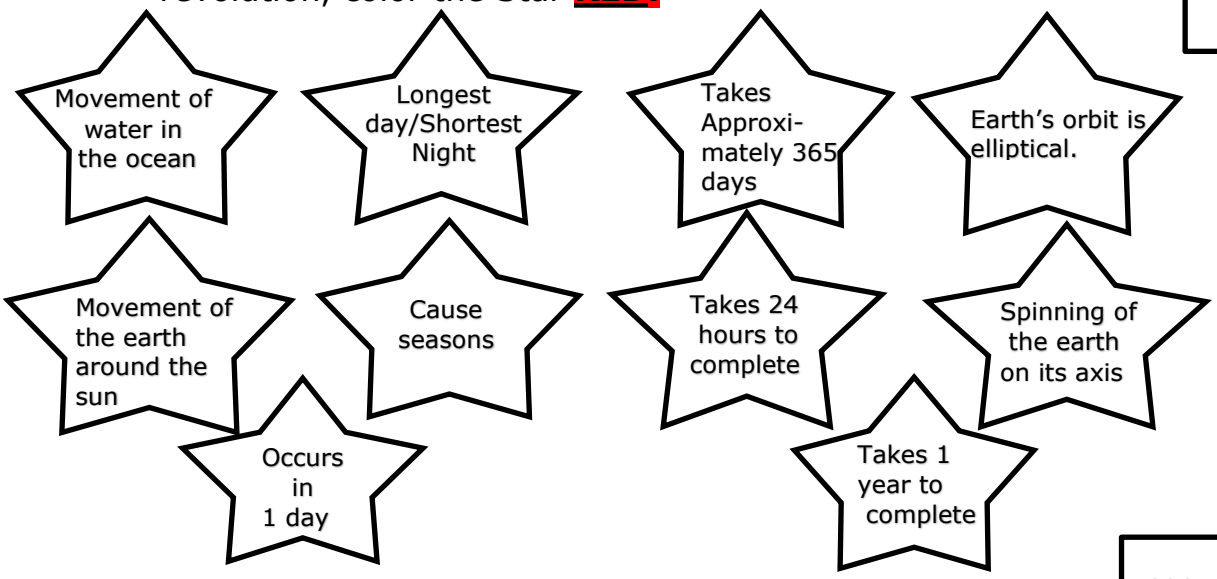
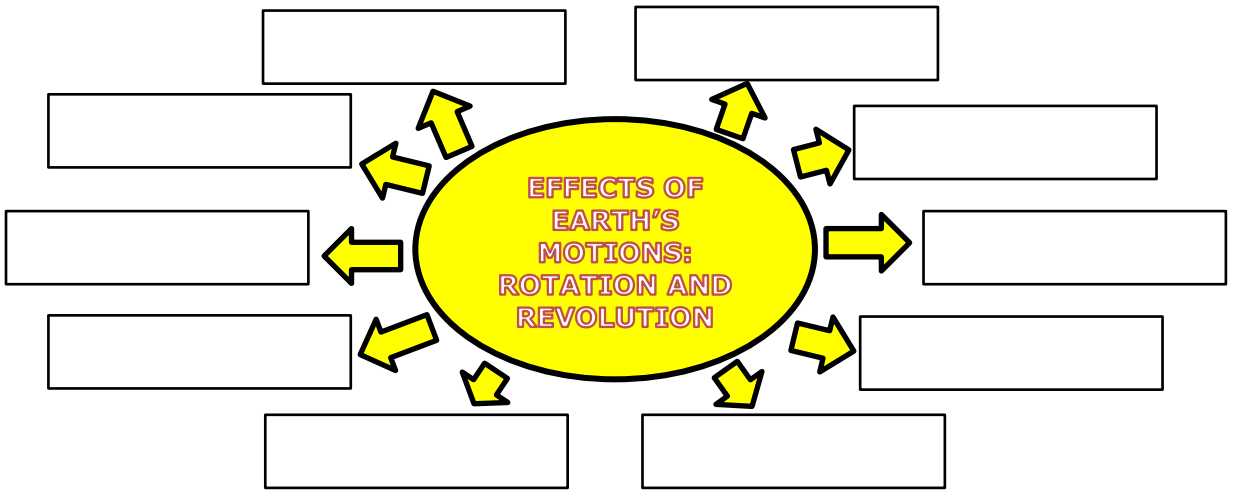


Activity 6: Read carefully **EACH** sentence below and choose ten details that describes the *effects* of rotation and revolution. Write it on the boxes to complete the organizer.

SCORE
10

1.It is responsible for daylight and Nighttime.
2.We get seasons.
3. It is responsible for breeding.
4.It is responsible why we see stars.
5.It causes volcanic eruptions and earthquakes.
6.It provides daily weather.
7.It affects the global wind system.
8.It affects the moving objects on earth.
9.It affects the different layers of the Earth.
10.It gives four seasons to the temperate zone.
11.We experience equinoxes.
12. We experience solstices.
13.It affects the climate of a place.
14.It causes wind and water pollution.
15.It causes the Wind to move up and down.
16.It creates low and high pressures areas.



What I Have Learned

Amazing! You reach in this page. Now complete this activity. Come on!

SCORE
10

Activity 7: Directions: Choose the correct answer from the box.

Rotation	**solstice**	**counterclockwise**	**equinox**	**fall**	**spring**
Coriolis effect	**day-night**	**23.5 degrees**	**365 days**		**seasons**
summer	**winter**	**twenty – four hours**		**revolution**	

_____ is when the planet spins around once. The Earth rotates every _____, it rotates in _____ direction. The Earth Axis is tilted to _____. It affects wind movement called _____. It causes _____ and _____ and affects the movement of the ocean.

_____ is when the planet completes a circular path around the Sun. One year with _____ completes one revolution. It movements causes four _____ namely _____, _____,_____, _____ in temperate zone. It also causes _____ which makes day and night of equal length while _____when one hemisphere experience shortest day or longest day of the year.

What I Can Do

You've reached in this page. It means you really understand your lesson. Keep it up! Here is your anotheractivity to answer. Good luck!

SCORE
10

Directions: Draw images of Earth's rotation and revolution on the labelled boxes. Below Each box, write at least three details that describes the effects of each Earth's motion.

Rubric

	5	4	3	2
Accuracy	Draw accurately to what is required.	Draw with few missing components/details.	Draw with missing components/details.	Draw with no accuracy at all.
Correct answer	All answers are correct. No error.	There were one – two errors.	There are more than three wrong answers.	Only one or two answers are correct
Neatness	The illustration is exceptionally neat.	The illustration is neat.	The illustration is neat but some parts are not.	The illustration is messy.

"Earth's Rotation"	"Earth's Revolution"

"Describe the effects of this Earth's Motion"
1.
2.
3.

"Describe the effects of this Earth's Motion"
1.
2.
3.

Assessment

SCORE
10

Hey kid! You are about to end this fun module. But, take this assessment to assess if you understand your lesson. Good luck!

SET A

Direction: Match column A to column B.

Column A	**Column B**
1. When planet spins once	A. Coriolis Effect
2. Completes a circular path	B. Counterclockwise
3. Day and night in equal length	C. Equinox
4. Longest day or shortest day of the year	D. Polaris
5. Earth's direction of rotation	E. Revolution
6. Wind deflected and turn sideward	F. Rotation
7.North star where Earth's axis always points	G. Seasons
8. One rotation completes.	H. Solstice
9. One revolution takes.	I. 24 hours
10. Cause by earth's movement in temperate zone	J. 365 ¼ days

SET B

SCORE
10

"SCRAMBLED LETTERS"

Direction: Arrange the scrambled letters to form word that will complete the statement below.

1. The Earth rotates in a (retnouckwseilocc)_____.

2. A (iontarot)_____ is when the planet spins once.

3. The position of the Earth gives equal day ang night is called _____ (noixuqe).

4. When the object completes a circular path around another subject is called (itruloveon)_____.

5. One revolution completes (¼ 653 ysda)_____.

6. The four _____ (onsesas) can be experienced on the temperate zone.

7. One rotation completes (42 ourhs)_____.

8. Earth's axis always point to the North Star named (arislop) _____.

9. Earth rotation causes the wind to be deflected and are called as (riocolis ffecte)_____.

10. As the Earth revolves around the sun, it experiences shortest/longest day/night this is called (ecitslos)_____.

References

Book:

Helen E. Caintic, Juanita M. Cruz, Danilo Gutierrez, Victoria S. Ziganay, (Copyright 2001 Revised Edition 2001 DIWA SCHOLASTIC PRESS INC.) Into the Future: SCIENCE AND HEALTH- Textbook AND Teachers Manual for Science and Health for Grade

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ANSWER KEY

Assessment:
SET A
1.F
2.E
3.C
4.H
5.B
6.A
7.D
8.I
9.J
10.G

SET B
1. counterclockwise
2.rotation
3.equinox
4.revolution
5.365 days
6.seasons
7.24 hours
8. Polaris
9.Coriolis effect
10. solstice

Activity 4:
1. √
2. X
3. √
4.X
5.√
6.X
7.√
8.X
9.√
10.√

Activity 5:

Yellow:
Movement of the ocean
Occurs 1 day
Takes 24 hrs to complete
Spinning the Earth on its axis

Red:
Movement of the Earth around the Sun
Longest day / shortest night
Cause seasons
Takes approximately 365 days
Takes 1 year to complete
Earth's orbit is elliptical

What Can I do

Movement of the wind
Movement of the ocean
Day and night

Experience equinoxes
Experience 365 days
Experience seasons

(Note: The answer of the pupil may vary. Rubrics must be used by the teacher)

Activity 2:
1.It falls sideward
2. because of the direction of the rotating globe

1. The front part facing the light directly.
2. No, it is not the same because the back portion of the globe did not receive any light.

What's More
Activity3:
1.d
2.d
3.d
4.c
5.c
6.d
7.a
8.b
9.a
10. b

Activity
1. It is responsible for daylight and nighttime
2. We get seasons
4.It is responsible why we see stars.
6. It provides daily weather.
7. It affects the global wind system.
10. It gives four seasons to the temperate zone.
11. we experience equinox.
12. We experience solstice
13. It affects the climate of the place.
14. It creates low and pressure area.

Activity 7:
Rotation, twenty-four hours,counterclockwise,23 .5 degrees,Coriolis effect, day and night

Revolution, 365 days, seasons,summer, winter fall
spring,equinox,solstice.

What's In
Activity 1
1. summer
2. equator
3.wet/rainy seasons
4. doldrums
5. climate
6. latitude
7. monsoons
8. atmosphere
9. Northern Hemisphere
10. Southern Hemisphere