



MATATAG

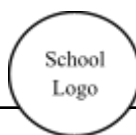
Bansang Makabata



Batang Makabansa



BAGONG PILIPINAS



School
Logo

Name of School:		Quarter:	4th Quarter
Grade Level & Section:	Grade 7	Week:	Week 7 Day 4
Subject:	SCIENCE	Date and Time:	
Topic:		Teacher:	

I. CONTENT, STANDARDS AND LEARNING COMPETENCIES		ANNOTATIONS
A. CONTENT STANDARD S	The learners learn that: 1. The Earth's revolution, rotation, and tilt explain the patterns of day and night and the seasons.	
B. PERFORMANCE STANDARD S	By the end of the quarter, learners will use reliable scientific information to identify and explain how solar energy influences the atmosphere and weather systems of the Earth. They will also use such information to appreciate and describe the dominant processes that affect the climate of the Philippines.	
C. LEARNING COMPETENCIES	Make a physical model or use drawings to demonstrate how the tilt of the Earth relative to its orbit around the Sun affects the intensity of sunlight absorbed by different areas of Earth over a year. Explain, using models, how the tilt of the Earth affects the changes in the length of daytime at different times of the year. Lesson Objectives: 1. Illustrate the position and movement of the Earth around the Sun. 2. Relate the tilt of the Earth to the length of daytime, nighttime, and seasons. 3. Illustrate the position of the Sun and Earth at different seasons of the year. 4. Relate the length of daytime to the amount of energy received.	

	5. Relate the position of the Earth in its orbit to the height (altitude) of the Sun in the sky. 6. Relate the height (altitude) of the Sun in the sky to the amount of energy received. 7. Relate the latitude of an area to the amount of energy it receives.	
I. CONTENT		
The Tilt of the Earth and Its Effect on Earth's Season		
II. LEARNING RESOURCES		
A. REFERENCES		
B. OTHER LEARNING RESOURCES	• Pavico, Josefna et.al (2013). Exploring Life Through Science. Phoenix Publishing Inc. • Pepito, Leah Joy Desamparado-Walan, (2020). Science – Grade 7 Learner's Module First Edition. DepEd – Instructional Materials Council Secretariat (DepEd-IMCS). Pasig City • Education, S. (n.d.). Earth, Moon, and Sun system. Flickr. https://www.flickr.com/photos/121935927@N06/13598100735/in/photostream/ • დედამინა მზის გარშემო.gif - Wikimedia Commons. (2016, September 30). https://commons.wikimedia.org/wiki/File:%E1%83%93%E1%83%94%E1%83%93%E1%83%90%E1%83%9B%E1%83%98%E1%83%AC%E1%83%90_%E1%83%9B%E1%83%96%E1%83%98%E1%83%A1_%E1%83%92%E1%83%90%E1%83%A0%E1%83%A8%E1%83%94%E1%83%9B%E1%83%9D.gif • Rotation. (n.d.). https://education.nationalgeographic.org/resource/rotation/ • P. K. (2020, September 1). EARTH'S ROTATION & REVOLUTION Why Do We Have Seasons? The Dr Binocs Show Peekaboo Kidz. YouTube. https://www.youtube.com/watch?v=6SzjlsuyTdk	

	• Earth-lighting-winter-solstice HU cropped.png - Wikimedia Commons. (2012, September 16). https://commons.wikimedia.org/wiki/File:Earth-lighting-winter-solstice_HU_cropped.png#/media/File:Earth-lighting-summer-solstice_EN_-_corrected.png • Seasons illustration.jpg - Wikimedia Commons. (2008, July 15). https://commons.wikimedia.org/wiki/File:Seasons_illustration.jpg • Why Do We Have Seasons? (n.d.). https://d3tt741pwxqwm0.cloudfront.net/WGBH/npls13/npls13_int_seasons/index.html • Season simulator Earth's rotation and tilt Earth geological and climatic history Cosmology and astronomy Science Khan Academy. (n.d.). Khan Academy. https://www.khanacademy.org/science/cosmology-and-astronomy/earth-history-topic/earth-title-topic/pi/season-simulator • Werrell, B. (2023, August 15). The Reasons for the Seasons: Questions, Answers and Activities for Kids. https://www.connectionsacademy.com/support/resources/article/reasons-seasons-questions-answers-activities-kids/ • Orbital relations of the Solstice, Equinox & Intervening Seasons.svg - Wikimedia Commons. (2011, November 3). https://commons.wikimedia.org/wiki/File:Orbital_relations_of_the_Solstice,_Equinox_%26_Intervening_Seasons.svg
--	---

III. TEACHING AND LEARNING PROCEDURE

BEFORE/PRE-LESSON PROPER

ACTIVATING PRIOR KNOWLEDGE	Directions: Answer the following questions based on what you have learned about the tilt of the Earth and the seasons. Write your answers in complete sentences. 1. Explain how the tilt of the Earth affects the seasons. 2. What season occurs in the Northern Hemisphere when the North Pole is tilted toward the Sun? 3. What is the significance of the equinoxes?	ANSWER 1. The Earth is tilted at an angle of 23.5 degrees on its axis. As it orbits the Sun, different parts of the Earth receive varying amounts of sunlight, causing the seasons. When a hemisphere is tilted toward the Sun, it experiences summer, and
-----------------------------------	---	---

	4. If the Earth were not tilted, how would the seasons be affected? 5. Describe what happens during the Winter Solstice.	when it is tilted away, it experiences winter. 2. Summer occurs in the Northern Hemisphere when the North Pole is tilted toward the Sun. 3. The equinoxes occur twice a year, in March and September when day and night are nearly equal. They mark the beginning of spring and autumn. 4. If the Earth were not tilted, there would be no seasons. Every place on Earth would experience nearly the same weather throughout the year. 5. During the Winter Solstice, which occurs around December 21-22, the Northern Hemisphere is tilted farthest from the Sun. This results in the shortest day and longest night of the year.
LESSON PURPOSE/INTENTION	Lesson Purpose Understand the relationship between the Earth's tilt and the changing seasons. Explain why different parts of the Earth experience varying amounts of sunlight throughout the year. Recognize key events such as solstices and equinoxes and their significance. Describe how the length of daylight and temperature change with each season.	

	Think critically about what would happen if the Earth were not tilted.	
LESSON LANGUAGE PRACTICE	Arctic Circle – A latitude 66.5° North where, during the Winter Solstice, there is 24 hours of darkness, and during the Summer Solstice, there is 24 hours of daylight. Antarctic Circle – A latitude 66.5° South where, during the Summer Solstice, there is 24 hours of daylight, and during the Winter Solstice, there is 24 hours of darkness. Daylight Hours – The number of hours in a day when the Sun is visible; varies depending on the Earth's tilt and revolution. Climate Zones – The Tropical, Temperate, and Polar regions of Earth, determined by the amount of sunlight and heat received due to latitude. Solar Energy Distribution – How sunlight is spread across Earth's surface, affecting temperature, climate, and weather patterns based on the Earth's tilt and position in orbit. Orbital Path – The elliptical route that Earth follows around the Sun, influencing the length of seasons. Inclination – The angle at which the Earth is tilted relative to its orbit around the Sun (23.5°). Perihelion – The point in Earth's orbit when it is closest to the Sun (around January 3). Aphelion – The point in Earth's orbit when it is farthest from the Sun (around July 4). Solar Declination – The latitude where the Sun is directly overhead at noon, changing throughout the year due to Earth's tilt and revolution.	

DURING/LESSON PROPER

READING THE KEY IDEA/STEM

Activity: "Day and Night Experiment"

- **Show a flashlight and a globe.**
- Ask a student to shine the flashlight on the globe while another rotates it.
- Discuss how light affects different parts of the Earth at different times.
- **Ask:** "What do you think causes seasons? Does it depend on how far the Earth is from the Sun?"
- **Introduce the lesson topic:** The Tilt of the Earth and Seasons.

The Tilt of the Earth and Seasons: A Simple Explanation

The Earth experiences different **seasons** because of its **tilt** and **movement around the Sun**. Let's break it down step by step.

1. The Earth's Tilt

- The Earth is tilted **23.5 degrees** on its axis.
- This tilt does not change as the Earth moves around the Sun.

2. The Earth's Revolution Around the Sun

- The Earth takes **one year (365 ¼ days)** to complete a full orbit around the Sun.
- Because of the tilt, different parts of the Earth get **different amounts of sunlight** at different times of the year.

3. How the Tilt Affects Seasons

As the Earth moves around the Sun, different parts of the planet **tilt toward or away from the Sun**, which creates the **four seasons**:

A. Summer

- Happens when a hemisphere is **tilted toward the Sun**.
- Days are **longer**, and temperatures are **warmer**.

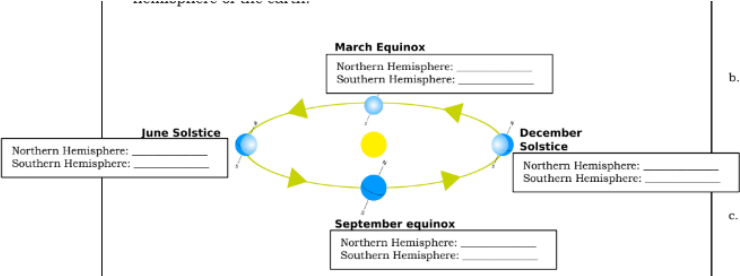
B. Winter

- Happens when a hemisphere is **tilted away from the Sun**.
- Days are **shorter**, and temperatures are **colder**.

C. Spring and Autumn (Fall)

- These happen when the Earth is **not tilted toward or away** from the Sun.
- The weather is **moderate**, and day and night are almost equal.

4. Special Events: Solstices and Equinoxes

	• Summer Solstice (June 21-22): Longest day in the Northern Hemisphere. • Winter Solstice (December 21-22): Shortest day in the Northern Hemisphere. • Spring Equinox (March 20-21) and Autumn Equinox (September 22-23): Equal day and night. 5. What If the Earth Had No Tilt? • There would be no seasons. • Every place would have nearly the same weather all year. • There would be no changes in daylight hours during the year. Worked Example Instruct the learners to watch the video https://www.youtube.com/watch?v=WhxPVb7I7Cs and answer the following questions. a. What causes day and night? b. Why are there seasons? c. Why do the seasons change? d. What is the difference between an equinox and a solstice?	The teacher must remind the learners to use the concept map and other resources provided to answer the questions.
DEVELOPING and DEEPENING UNDERSTANDING OF THE KEY IDEA/STEM	3. Lesson Activity Ask the learners to analyze the illustration and identify the season in each hemisphere of the earth.  The diagram illustrates Earth's orbit around the Sun. The Sun is at the center, represented by a yellow circle. Earth is shown at four positions in its elliptical orbit, each with a box for identifying the season in the Northern and Southern Hemispheres. The positions are labeled: June Solstice (left), September equinox (bottom), December Solstice (right), and March Equinox (top). Arrows indicate the direction of Earth's orbit. Labels 'b.' and 'c.' are placed near the March Equinox and December Solstice positions respectively.	Answers: a. The earth makes one complete rotation approximately once every 24 hours. As one side of the earth rotates toward the sun, that side experiences daylight. The side facing away from the sun experiences darkness or night. b. Earth's axis is tilted 23.50 in the same direction, so the parts of

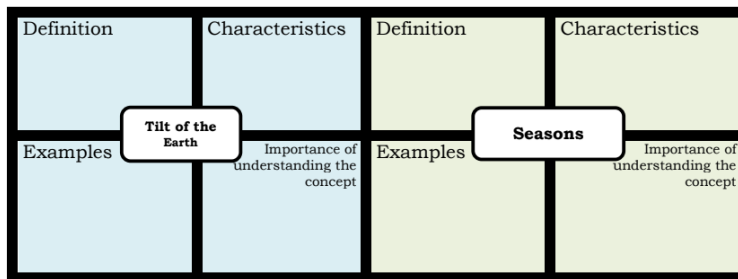
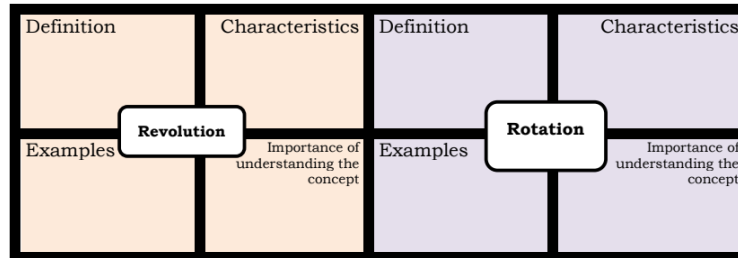
	Orbital relations of the Solstice, Equinox & Intervening Seasons.svg - Wikimedia Commons. (2011, November 3). https://commons.wikimedia.org/wiki/File:Orbital_relations_of_the_Solstice,_Equinox_%26_Intervening_Seasons	Earth that receive more direct sunlight and have more daylight hours change throughout the year. This causes seasons or times of the year with patterns of weather and daylight, which vary depending on where you live. c. The seasons change due to the tilt of the Earth's axis as it orbits around the Sun. Throughout the year, different parts of the Earth receive varying amounts of sunlight because of this tilt. When a particular hemisphere is tilted towards the Sun, it receives more direct sunlight, leading to warmer temperatures and summer. When that hemisphere is tilted away from the Sun, it receives less direct sunlight, resulting in cooler temperatures and winter. The changing angle of sunlight and the varying duration of daylight hours throughout the year contribute to the cycle of seasons. d. Equinoxes are characterized by equal lengths of day and night, while solstices are characterized by the longest or shortest days of the year.
--	---	---

AFTER AFTER/POST-LESSON

MAKING GENERALIZATION S AND ABSTRACTIONS

Learners' Takeaways

Ask the learners to complete the fryer model by applying the given variables, such as the definition of the word, characteristics, examples, and importance of the concept.



Reflection on Learning

Instruct the learners to read the statement and assess their skills and knowledge using the emoticons. After the lesson, ask them to draw the appropriate number of emoticons that describe their skills and understanding of the concepts.

The teacher may use online tools or applications to facilitate this activity.

The teacher may ask the learners to share their answers.

	<table border="1"> <tr> <td>☹</td> <td>No, I cannot do it.</td> </tr> <tr> <td>😊😊</td> <td>Yes, I can do it alone.</td> </tr> <tr> <td>😊😊😊😊</td> <td>Yes, I can do it and apply what I have learned.</td> </tr> </table>	☹	No, I cannot do it.	😊😊	Yes, I can do it alone.	😊😊😊😊	Yes, I can do it and apply what I have learned.			
	☹	No, I cannot do it.								
	😊😊	Yes, I can do it alone.								
	😊😊😊😊	Yes, I can do it and apply what I have learned.								
	<table border="1"> <tr> <td>Before the lesson</td> <td>Statements</td> <td>After the lesson</td> </tr> <tr> <td></td> <td>1. I can illustrate the position and movement of the Earth around the Sun.</td> <td></td> </tr> <tr> <td></td> <td>2. I can relate the tilt of the Earth to the length of daytime and nighttime and seasons.</td> <td></td> </tr> </table>	Before the lesson	Statements	After the lesson		1. I can illustrate the position and movement of the Earth around the Sun.				2. I can relate the tilt of the Earth to the length of daytime and nighttime and seasons.
Before the lesson	Statements	After the lesson								
	1. I can illustrate the position and movement of the Earth around the Sun.									
	2. I can relate the tilt of the Earth to the length of daytime and nighttime and seasons.									
EVALUATING LEARNING	Directions: Read each question carefully and choose the correct answer. Encircle the letter of your choice. 1. What causes the Earth to have different seasons? a) The Earth's rotation on its axis b) The Earth's distance from the Sun c) The tilt of the Earth's axis and its revolution around the Sun d) The movement of clouds in the sky 2. How many degrees is the Earth tilted on its axis? a) 15 degrees b) 23.5 degrees c) 45 degrees d) 90 degrees 3. When it is summer in the Northern Hemisphere, what season is it in the Southern Hemisphere? a) Spring b) Fall c) Winter d) Summer 4. What happens during the Winter Solstice in the Northern Hemisphere? a) The Sun is directly above the equator. b) It is the shortest day and longest night of the year. c) Day and night are equal in length. d) The Northern Hemisphere receives the most sunlight.									

	5. What is the name of the two days in a year when day and night are nearly equal? a) Solstices b) Equinoxes c) Lunar eclipses d) Sunspots	
ADDITIONAL ACTIVITIES FOR APPLICATION OR REMEDIATION (IF APPLICABLE)		
REMARKS		
REFLECTION		

Prepared by:

Subject Teacher
Teacher

Reviewed by:

Master Teacher/Head