



MATATAG
Bansang Makabata Batang Makabansa

School:		Grade Level:	7
Teacher:		Learning Area:	Science
Teaching Dates and Time:		Quarter:	Fourth
		Week:	Week 1-Day 4

I. CONTENT, STANDARDS AND LEARNING COMPETENCIES		ANNOTATIONS
A. CONTENT STANDARDS	The learners learn that rapid movements along normal, reverse or strike-slip faults cause earthquakes.	
B. PERFORMANCE STANDARDS	By the end of the Quarter, learners will appreciate the value of using systems to analyze and explain natural phenomena and demonstrate their understanding of the dynamics of faults and earthquakes. They are confident in identifying and assessing the earthquake risk for their local communities using authentic and reliable secondary data. They use the country's disaster awareness and risk reduction management plans to identify and explain to others what to do in the event of an earthquake. Learners explain the cause and effects of secondary impacts that some coastal communities may experience should a tsunami be produced by either local or distant earthquake activity. Learners use reliable scientific information to identify and explain how solar energy influences the atmosphere and weather systems of the Earth and use such information to appreciate and explain the dominant processes that influence the climate of the Philippines.	
C. LEARNING COMPETENCIES	Learning Competency: Classify geological faults according to the angle of the fault plane and direction of slip; Learning Competency: use models or illustrations to explain how movements along faults generate earthquakes and	

	identify and explain which types of faults are most likely to occur in the Philippines and explain why	
D. LEARNING OBJECTIVES	Learning Objectives: 1. Describe the Pacific Ring of Fire; 2. Classify the geologic faults according to the angle of the fault plane and the direction of slip; and 3. Acknowledge the relevance of seismic activities with the location of the country. Learning Objectives: 1. Illustrate how movement along faults generates earthquakes; 2. Analyze a map that shows the faults and fault lines in the Philippines; and 3. Recognize locations that are safe during earthquakes in the Philippines.	
I. CONTENT		
Introduction to Earthquakes and Faults		
II. LEARNING RESOURCES		
A. REFERENCES	- Samonte, B. S. et.al. First edition (2019). Science 8 Quarter 2 – Module 1: Earthquakes and Faults, Department of Education Caraga https://www.britannica.com/science/seismicity, accessed: 02/24/2024 - Yanukovich, Y. (2024, January 30). Top countries where earthquakes most often occur. Realting.com. https://realting.com/news/which-countries-are-most-prone-to-earthquakes lifted: 02/24/2024	
B. OTHER LEARNING RESOURCES		
III. TEACHING AND LEARNING PROCEDURE		
BEFORE/PRE-LESSON PROPER		
ACTIVATING PRIOR KNOWLEDGE	Short Review	

	A fault is a fracture in the Earth's crust where tectonic plates move against each other. These movements cause earthquakes and shape the Earth's surface over time. 2.1 Types of Faults There are three main types of faults based on how rocks move: • Normal Fault – The hanging wall moves downward due to tensional forces (plates pulling apart). • Reverse Fault – The hanging wall moves upward due to compressional forces (plates pushing together). • Strike-Slip Fault – The plates move horizontally past each other, with little vertical movement. 2.2 Active and Inactive Faults • Active Faults – Faults that have moved recently and can still cause earthquakes. • Inactive Faults – Faults that have not moved for a long time and are less likely to cause earthquakes. 2.3 Fault Lines in the Philippines The Philippines lies within the Pacific Ring of Fire, making it prone to earthquakes due to numerous faults. Some major fault lines include: • Philippine Fault System – A major fault running through the country, responsible for many strong earthquakes. • Marikina Valley Fault System (West Valley & East Valley Faults) – A fault system near Metro Manila that poses a high earthquake risk. Understanding faults helps us predict potential earthquake risks, improve disaster preparedness, and ensure safer communities.	
LESSON PURPOSE/INTENTION	Lesson Purpose	

	The purpose of this lesson is to help understand the significance of faults in earthquake activity and how their classification as active or inactive affects earthquake risks. Additionally, will learn about the major fault lines in the Philippines, their locations, and their potential impact on communities. Through this lesson, students will: 1. Differentiate between active and inactive faults and explain their characteristics. 2. Identify major fault lines in the Philippines and analyze why the country is prone to earthquakes. 3. Understand how movement along faults affects landscapes, infrastructure, and human lives. 4. Recognize the importance of fault mapping and earthquake preparedness in reducing risks. 5. Develop awareness of disaster resilience measures to protect lives and property from earthquake-related hazards. By understanding faults and their locations, will be better equipped to make informed decisions about earthquake preparedness, risk assessment, and community safety.					
LESSON LANGUAGE PRACTICE	Instructions: Match the terms in Column A with the correct descriptions in Column B. Write the letter of your answer on your answer sheet. <table><tr><th>Column A (Terms)</th><th>Column B (Descriptions)</th></tr><tr><td>1. Inactive Fault</td><td>A. A major fault system in the Philippines that extends from Luzon to Mindanao.</td></tr></table>	Column A (Terms)	Column B (Descriptions)	1. Inactive Fault	A. A major fault system in the Philippines that extends from Luzon to Mindanao.	Answer: 1. E 2. A 3. C 4. B 5. D
Column A (Terms)	Column B (Descriptions)					
1. Inactive Fault	A. A major fault system in the Philippines that extends from Luzon to Mindanao.					

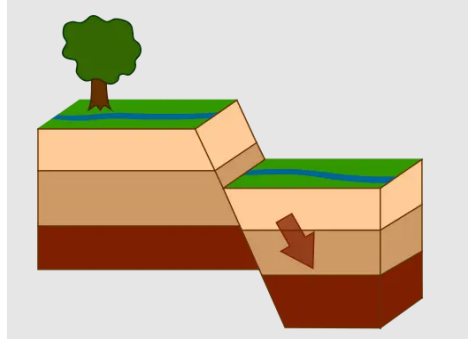
	2. Philippine Fault System	B. Large pieces of the Earth's crust that move and interact at fault lines.
	3. Marikina Valley Fault System	C. A fault system near Metro Manila, composed of the East Valley and West Valley Faults.
	4. Tectonic Plates	D. The release of energy in the form of earthquakes due to movement along faults.
	5. Seismic Activity	E. A fault that has not shown movement for a long time and is less likely to produce earthquakes.

DURING/LESSON PROPER

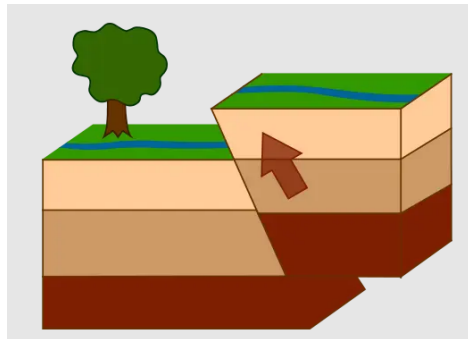
READING THE KEY IDEA/STEM	Causes of Earthquake The primary cause of an earthquake is faults on the crust of the earth. "A Fault is a break or fracture b/w two blocks of rocks in response to stress." • This movement may occur rapidly, in the form of an earthquake or may occur slowly, in the form of creep. • Earth scientists use the angle of the fault with respect to the surface (known as the dip) and the direction of slip along the fault to classify faults. Classification of Faults	
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Normal fault:

a dip-slip fault in which the block above the fault has moved downward relative to the block below.

**Thrust (reverse) fault:**

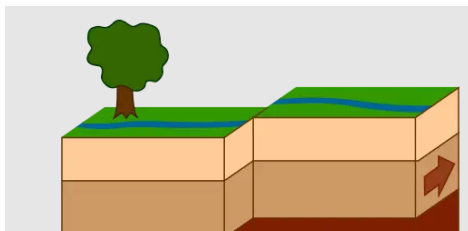
a dip-slip fault in which the upper block, above the fault plane, moves up and over the lower block.

**Strike-slip fault:****> A left-lateral strike-slip fault:**

It is one on which the displacement of the far block is to the left when viewed from either side.

> A right-lateral strike-slip fault:

It is one on which the displacement of the far block is to the right when viewed from either side.



**DEVELOPING and DEEPENING
UNDERSTANDING OF THE KEY
IDEA/STEM**

SUB-TOPIC 2: Faults

2.1 Types of Faults

2.2 Active and Inactive Faults

2.3 Fault Lines in the Philippines

1. Explication

Match the Faults

Direction. Identify the fault being described by the statements by placing them near the picture.

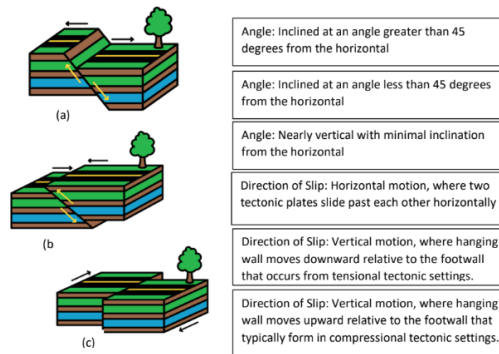


Illustration adapted from Nina Santos from Sketchify Education, colors edited by Loreza M. Argente using Canva

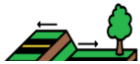
2. Worked Example

Gallery walk: Ask the students to do the activity: A walk to the different faults. The teacher will prepare 4 stations containing information on the different types of plates. Give the students a copy of the worksheet, and have them fill out the table as they go around the stations.

STATION 1

Type of fault: Normal fault

Fault Plane Angle: Inclined at an angle less than 45 degrees from the horizontal



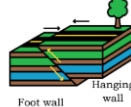
STATION 2

Type of fault: Reverse Faults (Thrust Faults)

Fault Plane Angle: Inclined at an angle greater than 45 degrees from the horizontal.

Direction of Slip: Vertical motion where the hanging wall moves upward relative to the footwall. Reverse faults typically form in compressional tectonic settings, such as convergent plate boundaries.

Generation of Seismic Activity: Reverse faults form in areas undergoing compressional tectonic stress, where the Earth's crust is being pushed together. As the hanging wall moves upward relative to the footwall, compressional stress builds up along the fault plane. When the accumulated stress exceeds the strength of the rocks, they break along the fault, releasing stored energy as seismic waves.



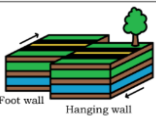
STATION 3

Type of fault: Strike-Slip Faults

Fault Plane Angle: Nearly vertical, with minimal inclination from the horizontal.

Direction of Slip: Horizontal motion where the movement is predominantly lateral along the fault plane. Strike-slip faults are common in transform plate boundaries, where two tectonic plates slide past each other horizontally.

Generation of Seismic Activity: Strike-slip faults form in areas undergoing lateral tectonic stress, where the Earth's crust is moving horizontally past each other. Stress builds up along the fault plane due to the friction between the moving plates. When the frictional resistance



The learners will analyze the pictures and match them with the corresponding descriptions to be posted by the teacher.

This activity will check what the learners know and what they can do by analyzing figures. Make sure to relate the previously learned earthquakes to the movement of the plates. Identify the hanging wall and the foot wall in each figure.

(use the student worksheet provided)

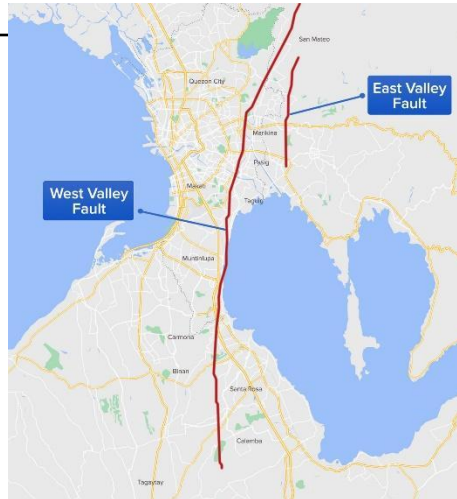
The stations can be set up ahead of time in a laboratory. If a laboratory or an extra room is not available, this can also be done inside the classroom. If the number of students makes it impossible to set-up 3 stations and doing so will create chaotic environment, the material will be passed on instead of the students.

These classifications provide insights into the tectonic forces and

3. Lesson Activity

Are You in a Safe Location?

Let the learners analyze the Philippine East and West Valley Fault lines and answer the processing questions.



Processing Questions:
Which locations does the West Valley Fault passed through? How about the East Valley Fault?
Considering your location, do you think you are safe?

Image retrieved at:

https://www.lamudi.com.ph/journal/wp-content/uploads/2022/07/Marikina-Valley-Fault_Easy-Resize.com_.jpg
lifted on

movements within the Earth's crust at different plate boundaries and geological settings.

Guide the discussion to identify geologic features that can form in each fault. For example, valleys are formed in normal faults.

Highlight the relevance of understanding fault types in earthquake preparedness and mitigation efforts.

A printed copy of the map may aid the presentation of the lesson.

Discuss that the Philippine Fault Zone (PFZ) is a transform boundary formed by the movement of the Philippine Sea Plate and the Eurasian Plate.

The Marikina Valley Fault System (MVFS) is the most active fault line in the Philippines.

Discuss the active and inactive faults.

Active faults are structures where we expect displacement to occur. Because a shallow earthquake is a mechanism that causes displacement across a fault, they must all occur on active faults. Inactive faults are features that we can recognize but do not produce earthquakes.

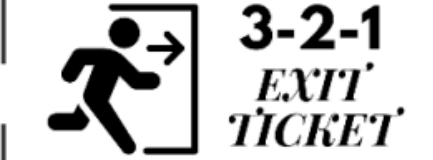
MAKING GENERALIZATIONS AND ABSTRACTIONS

• **Learners' Takeaways**

Ask the learners the following questions:

1. What are the 3 types of faults? Classify them according to angle and direction of movement?
2. How are faults related to the generation of earthquakes?
3. How does understanding the fault, fault lines, and its location help you in keeping you and your family safe?

Reflection on Learning

		
3	2	1
The thing/s that I learned...	The thing/s that I wanted to explore further...	The question/s that I still have...

3-2-1 Exit Ticket

Allow the learners to reflect on their learning by answering the 3-2-1 exit.

3 - The things that I learned.

2 – The things that I wanted to explore further.

1 – The question/s that I still have.

After 5 minutes, ask some learners to share their answers with the class.

Asking these questions will help you check what the learners understood and what further concepts need clarification.

EVALUATING LEARNING	Instructions: Read each question carefully and choose the best answer from the given options. Write the letter of your chosen answer on your answer sheet. 1. Which of the following is an example of an active fault in the Philippines? A. Philippine Fault System B. Marikina Valley Fault System C. Both A and B D. None of the above 2. Which fault system runs through Metro Manila and poses a major earthquake risk? A. Philippine Fault System B. Marikina Valley Fault System C. East Mindanao Fault D. Western Luzon Fault 3. What is the main cause of movement along faults? A. Volcanic eruptions B. Weather changes C. Tectonic plate movement D. Human activities 4. Which region in the Philippines is at high risk due to the presence of major fault lines? A. Mindanao B. Luzon C. Visayas D. All of the above 5. Why is it important to study faults and fault lines? A. To predict the exact time and place of earthquakes B. To understand earthquake risks and improve disaster preparedness C. To stop earthquakes from occurring D. To eliminate all fault lines	Answer: 1. C. Both A and B 2. B. Marikina Valley Fault System 3. C. Tectonic plate movement 4. D. All of the above 5. B. To understand earthquake risks and improve disaster preparedness
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ADDITIONAL ACTIVITIES FOR APPLICATION OR REMEDIATION (IF APPLICABLE)		
REMARKS		
REFLECTION		

Prepared by:

Subject Teacher

Reviewed by:

Master Teacher/Head Teacher