SCIENCE

Structuring Competencies in a Definitive Budget of Work

Grade	**EIGHT**
Science Discipline/Component	**Earth and Space**
Grade Level Standard	At the end of Grade 8, learners can describe the factors that affect the motion of an object based on the Laws of Motion. They can differentiate the concept of work as used in science and in layman's language. They know the factors that affect the transfer of energy, such as temperature difference, and the type (solid, liquid, or gas) of the medium. **Learners can explain how active faults generate earthquakes and how tropical cyclones originate from warm ocean waters. They recognize other members of the solar system.** Learners can explain the behaviour of matter in terms of the particles it is made of. They recognize that ingredients in food and medical products are made up of these particles and are absorbed by the body in the form of ions. Learners recognize reproduction as a process of cell division resulting in growth of organisms. They have delved deeper into the process of digestion as studied in the lower grades, giving emphasis on proper nutrition for overall wellness. They can participate in activities that protect and conserve economically important species used for food.
Domain	**Geology -** As a result of being located along the Ring of Fire, the Philippines is prone to earthquakes. Using models, learners will explain how quakes are generated by faults. They will try to identify faults in the community and differentiate active faults from inactive ones. **Meteorology** - Being located beside the Pacific Ocean, the Philippines is prone to typhoons. In Grade 5, the effects of typhoons were tackled. Here, learners will explain how typhoons develop, how typhoons are affected by landforms and bodies of water, and why typhoons follow certain paths as they move within the Philippine Area of Responsibility. **Astronomy** - Learners will complete their survey of the Solar System by describing the characteristics of asteroids, comets, and other members of the Solar System.

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Performance Standard	The learners shall be able to: 1. participate in decision making on where to build structures based on knowledge of the location of active faults in the community; 2. make an emergency plan and prepare an emergency kit for use at home and in school; 3. demonstrate precautionary measures before, during, and after a typhoon, including following advisories, storm signals, and calls for evacuation given by government agencies in charge; and 4. discuss whether or not beliefs and practices about comets and meteors have scientific basis .			
Content Standard	The learners demonstrate an understanding of the: 1. relationship between faults and earthquakes; 2. formation of typhoons and their movement within the PAR; 3. characteristics of comets, meteors, and asteroids.			
CONTENT	**LEARNING COMPETENCIES**	**CODE**	**NO. OF DAY/S TAUGHT**	**REMARKS**
1. Earthquakes and Faults 1.1 Active and inactive faults 1.2 How movements along faults generate earthquakes 1.3 How earthquakes generate tsunamis	**1. Using models or illustrations, explain how movements along faults generate earthquakes**	**S8ES-IIa14**		
	1.1. Define fault.	S8ES-IIa14 .1.1	1	
	1.2. Explain how faults are formed.	S8ES-IIa14 .1.2		
	1.3. Costruct fault models.	S8ES-IIa14 .1.3	1	
	1.4. Differentiate the three types of faults.	S8ES-IIa14 .1.4	1	
	1.5. Relate the types of stress associated with each type of fault.	S8ES-IIa14.1.5	1	

1.4 Earthquake focus and epicenter	1.6. Describe the effects of bending of rocks along faults.	S8ES-IIa14.1 .6	1	
	1.7. Simulate how movements along faults generate earthquakes using models.	S8ES-IIa14.1.7		
1.5 Earthquake intensity and	**2. Differentiate the:**	**S8ES-IIa15**		
1.6 Earthquake preparedness	2.1. Differentiate epicenter from focus.	S8ES-IIa15.2.1	1	
1.7 How earthquake waves provide information about the interior of the Earth	2.2. Distinguish between magnitude and intensity.	S8ES-IIa15.2.2		
	2.3. Identify the effects of earthquake to humans and properties.	S8ES-IIa15.2.3	1	
	2.4. Discuss the scale adapted in the Philippines to describe the intesity and magnitude of an earthquake.	S8ES-IIa15.2.4	1	
	2.5. Differentiate active and inactive faults.	S8ES-IIa15.2.5	1	
	2.6. Using a map, locate active and inactive faults in the Philippines.	S8ES-IIa15.2.6	1	
	Suggested Performance Task: Using the PHIVOLCS app, determine whether there are nearby faults in their area and share their findings in the class through presentation.		1	
	3. Demonstrate how underwater earthquakes generate tsunamis	**S8ES-IIb16**		

	3.1. Define tsunami.	S8ES-IIb16.3.1	1	
	3.2. Discuss how tsunamis are generated.	S8ES-IIb16.3.2		
	3.3. Simulate the occurrence of tsunami.	S8ES-IIb16.3.3	1	
	3.4. Infer why tsunami does not always	S8ES-IIb16.3.4	1	
	3.5. Describe the impacts of tsunami to humans, infrastructure and livestock.	S8ES-IIb16.3.5		
	3.6. Locate places in the Philippines prone to tsunami.	S8ES-IIb16.3.6		
	3.7. Use the map of the Philippines to locate the trenches, volcanoes and faults in the Philippines.	S8ES-IIb16.3.7	1	
	4. Explain how earthquake waves provide information about the interior of the earth.	**S8ES-IIc17**		
	4.1. Identify the layers of the Earth and their characteristics.	S8ES-IIc17.4.1	1	
	4.2. Describe the behavior of seismic waves.	S8ES-IIc17.4.2	1	
	4.3. Compare and contrast P wave and S wave in terms of their speed and behavior.	S8ES-IIc17.4.3		
	4.4. Explain how seismic waves are used to describe the interior of the Earth.	S8ES-IIc17.4.4	1	

	Suggested Performance Task: Design an emergency plan and prepare an emergency kit for use at home and in school.		1	
	Summative Assessment for Competencies a-c		1	
2. Understanding Typhoons 2.1 How typhoons develop 2.2 Why the Philippines is prone to typhoons 2.3 How landforms and bodies of water affect typhoons within the Philippine Area of Responsibility (PAR)	**5. Explain how typhoons develop**	**S8ES-IId18**		
	5.1. Characterize a typhoon.	S8ES-IId18.5.1	1	
	5.2. Differentiate a typhoon, cyclone and	S8ES-IId18.5.2		
	5.3. Classify tropical cyclones according to their wind speed.	S8ES-IId18.5.3	1	
	5.4. Construct a model of tropical cyclone.	S8ES-IId18.5.4	1	
	6. Infer why the Philippines is prone to typhoons.	**S8ES-IId19**		
	6.1. Define Philippine Area of Responsibility (PAR).	S8ES-IId19.6.1	1	
	6.2. Plot the PAR in a map.	S8ES-IId19.6.2		
	6.3. Discuss the conditions that lead to formation of typhoon.	S8ES-IId19.6.3	1	
	6.4. Relate the presence of bodies of water to the frequency of typhoons in the Phiippines.	S8ES-IId19.6.4	1	
	7. Explain how landmasses and bodies of water affect typhoons.	**S8ES-IIe20**		

	7.1. Identify the parts of a tropical cyclone.	S8ES-IIe20.7.1	1	
	7.2. Describe the wind speed and air pressure in the different parts of a typhoon.	S8ES-IIe20.7.2		
	7.3. Describe the effects of the eye and eyewall of the typhoon as it passes through an area.	S8ES-IIe20.7.3	1	
	7.4. Explain how landmasses and bodies of water affect the typhoon.	S8ES-IIe20.7.4	1	
	8. Trace the path of typhoons that enter the Philippine Area of Responsibility (PAR) using a map and tracking data.	**S8ES-IIf-21**		
	8.1. Track the path taken by a tropical cyclone given its coordinates.	S8ES-IIf-21.8.1	1	
	8.2. Determine whether a tropical cyclone is within or outside the PAR	S8ES-IIf-21.8.2	1	
	8.3. Discuss why is there a need for PAG ASA to regularly monitor tropical cyclones near the PAR	S8ES-IIf-21.8.3	1	

	Suggested Performance Task: Design a safety plan to reduce the risks of typhoons and explain through role playing the precautionary measures before, during and after the occurrence of typhoon.		1	
	Summative Test for Competencies d-f		1	
3. Other members of the Solar System 3.1 Comets 3.2 Meteors 3.3 Asteroids	**9. Compare and contrast comets, meteors, and asteroids**	**S8ES-IIg22**		
	9.1. Characterize comets, meteors and	S8ES-IIg22.9.1	1	
	9.2. Simulate the impacts of asteroids and comets on Earth.	S8ES-IIg22.9.2	1	
	9.3. Present observations on simulating the impacts of asteroids and comets using drawing/ illustrations.	S8ES-IIg22.9.3	1	
	10. Predict the appearance of comets based on recorded data of previous appearances.	**S8ES-IIh23**	1	
	10.1. Name some comets that were once visible on Earth.	S8ES-IIh23.10.1	1	
	10.2. Identify and describe the parts of a co	S8ES-IIh23.10.2		
	10.3. Predict the next possible appearance of comets based on recorded dates of their previous appearances.	S8ES-IIh23.10.3	1	

	11. Explain the regular occurrence of meteor showers.	**S8ES-IIi-j24**		
	11.1. Describe the changes that happens to a fragment from a comet or asteroid as it enters the Earth's atmosphere.	S8ES-IIi-j24.11.1	1	
	11.2. Differentiate meteoroid, meteor and meteorite.	S8ES-IIi-j24.11.2	1	
	11.3. Represent the relationship among meteoroid, meteor and meteorite using a diagram.	S8ES-IIi-j24.11.3		
	Suggested Performance Task: Provide scientific evidences to support one's stand on a debate about superstitions on comets, asteroids and meteors.		1	
	Summative Assessment for Competencies g-j		1	
	Quarterly Summative Test		1	
		TOTAL	**45**	