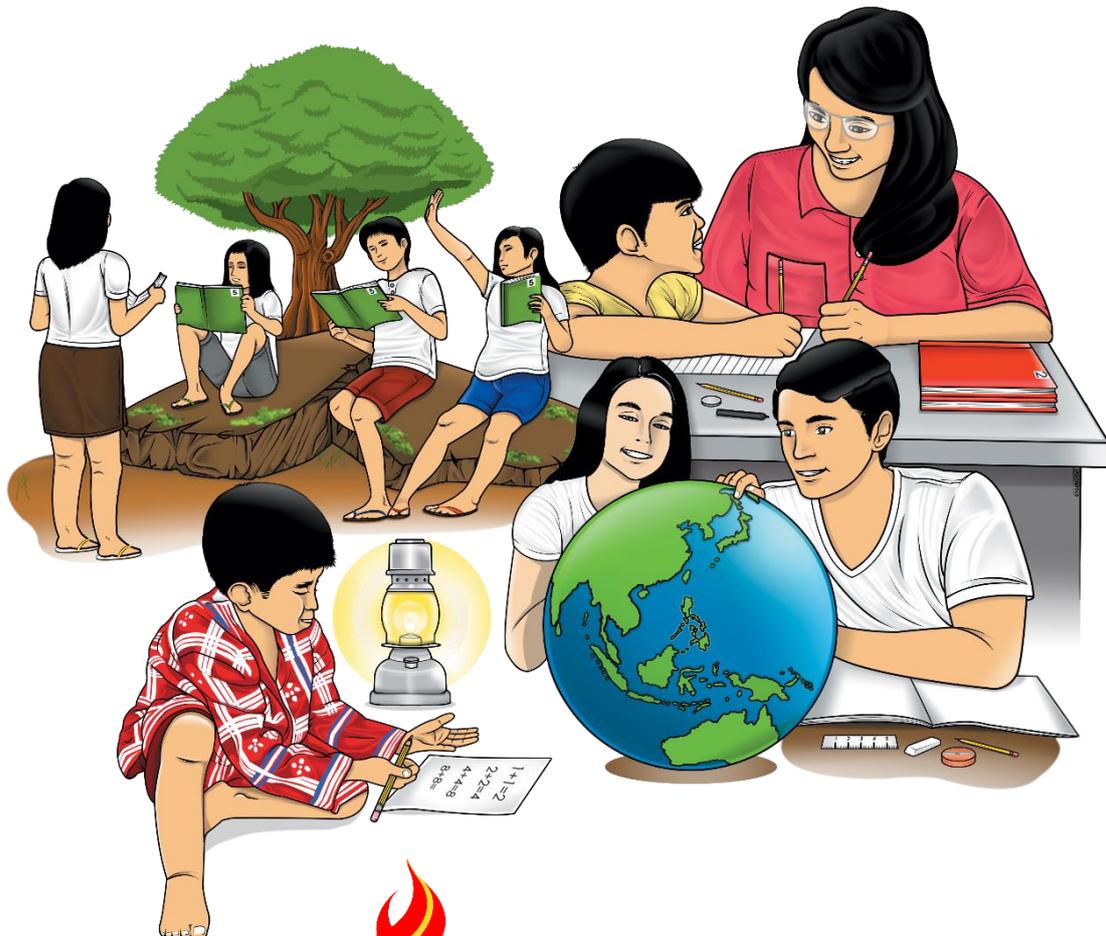


# Science

## Quarter 2 – Module 4:

### Understanding Typhoons



**Science – Grade 8**  
**Alternative Delivery Mode**  
**Quarter 2 – Module 4: Understanding Typhoons**  
**First Edition, 2020**

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**Science**  
**Quarter 2 – Module 4:**  
**Understanding Typhoons**

## **Introductory Message**

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.

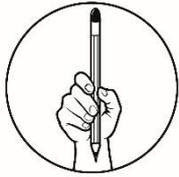


## ***What I Need to Know***

This module was designed and written with you in mind. It is here to help you master the nature of typhoons. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

After going through this module, you are expected to:

Explain how typhoon develops and how it is affected by landforms and bodies of water. (*MELC Week 4-5*)



## ***What I Know***

**Directions:** Choose the letter of the correct answer. Write your answers on a separate sheet of paper.

1. Where do typhoons form?
  - A. Lakes
  - B. Oceans
  - C. Rivers
  - D. Streams
  
2. Which weather disturbance develops in the northwest Pacific Ocean?
  - A. Blizzard
  - B. Tornado
  - C. Tropical Cyclone
  - D. Tsunami
  
3. What is the other term for tropical cyclone?
  - A. Earthquake
  - B. Tsunami
  - C. Typhoon
  - D. Wildfire
  
4. What Public Storm Warning Signal (PSWS) has a wind speed of 160 kph?
  - A. 1
  - B. 2
  - C. 3
  - D. 4
  
5. Where do typhoons that hit the Philippines mostly originate?
  - A. Indian Ocean
  - B. Pacific Ocean
  - C. South China Sea
  - D. West Philippine Sea
  
6. What does ITCZ mean?
  - A. Intertropical Convergence Zone
  - B. Intratropical Converging Zone
  - C. Intertropical Converging Zone
  - D. Intratropical Convergence Zone
  
7. Which tropical cyclone has a wind speed greater than 200 kph?
  - A. Super typhoon
  - B. Typhoon
  - C. Tropical storm
  - D. Tropical depression

8. How would you describe the condition within the typhoon's eye?
- A. Calm
  - B. Intense
  - C. Sunny
  - D. Violent
9. Which agency takes charge of giving information about incoming typhoon?
- A. Department of Environment and Natural Resources (DENR)
  - B. Philippine Institute of Volcanology and Seismology (PHIVOLCS)
  - C. National Disaster Risk Reduction and Management Council (NDRRMC)
  - D. Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)
10. What will you do if a typhoon will hit your place?
- A. store bread and milk
  - B. hide in a room without windows
  - C. watch TV and share on Facebook
  - D. leave the area and proceed to the evacuation center
11. What causes tropical cyclone to spin?
- A. rotation of the earth
  - B. revolution of the earth
  - C. gravitational pull of the sun
  - D. gravitational pull of the moon
12. What is the cyclonic circulation of tropical cyclone if it is located in the southern hemisphere?
- A. Clockwise
  - B. Upward rotation
  - C. Counterclockwise
  - D. Downward rotation
13. Which statement tells about storm surge?
- A. It is a rise in sea level due to global warming.
  - B. It is the rising of the sea level due to the friction between surface water and wind.
  - C. It is a destructive wave due to underwater earthquake that occurs along the seacoast.
  - D. It is an abnormal rise of sea water due to tropical cyclone that occurs along the coast.
14. Which item should NOT be included in an emergency kit?
- A. cellphone
  - B. pocketknife
  - C. beauty product
  - D. transistor radio

15. Which statement does NOT describe the windward side of a mountain?
- A. It has abundant life forms.
  - B. It receives a lot of precipitation.
  - C. It has lots of vegetation due to abundance of precipitation.
  - D. It has less vegetation because the moist in the air is accumulated in the leeward side.

## Lesson

# 1

## How Typhoons Develop?

Being in the tropics, the Philippines is visited by typhoons almost every year. These typhoons are also referred to as **tropical cyclones**. Some of these typhoons leave minimal damages but a number have already been listed in history as devastating. Not a single part of our country is exempted from these forces of nature.

A lot of individuals mostly use the word “typhoon” and are seemingly unaware of the term “tropical cyclone.” In this module, you will understand that a typhoon is just one category of a tropical cyclone.

According to Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA), there were 13 tropical cyclones that entered the Philippine Area of Responsibility (PAR) in 2019.

Do you know that the Philippines is prone to tropical cyclones? It is because of its geographical location which generally produce heavy rains, flooding of large areas, strong winds which result in heavy casualties to human life, and destructions to crops and properties. That is why, it is very important to have sufficient knowledge on tropical cyclones for our benefit. The picture below shows how typhoon can greatly affect our lives.



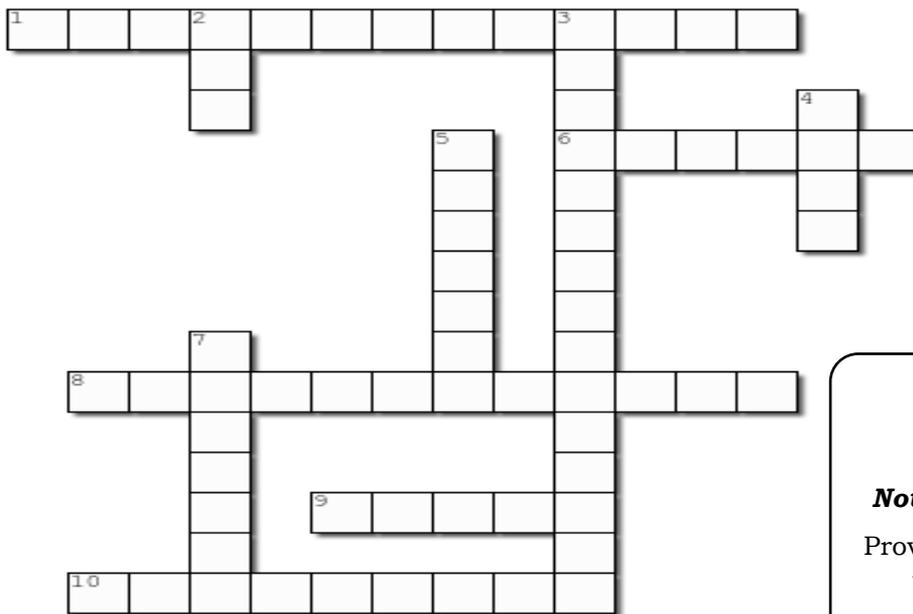
<https://www.thenational.ae/world/asia/the-10-deadliest-typhoons-in-the-philippines-1.287593>



## What's In

### Activity 1. Decode Them Right

**Directions:** Complete the crossword puzzle below by writing one letter in each box. Words are inter-crossed in vertical (down) and horizontal (across) positions. Clues are given below the puzzle.



#### **Note to the Teacher**

Provide extra copies of this activity for students' use.

Created using the Crossword Maker on the TeacherCorner.net

#### **Across**

1. It is a tropical cyclone category that has a wind speed of 68 to 88 kph.
6. The national agency dedicated to provide flood and typhoon warnings, public weather forecasts, and advisories.
8. It is a bag containing equipment, supplies, and medication needed.
9. The term used in the Philippines that is equivalent to typhoon.
10. It is a violent wind that has a circular movement in the West Atlantic Ocean.

#### **Down**

2. Philippine Area of Responsibility
3. It is a system of thunderstorm that moves in a circular motion.
4. Public Storm Warning Signal
5. It is a tropical cyclone category that has a wind speed of 118 to 220 kph.
7. It is a localized condition over a particular place.



## What's New

When a weather disturbance enters the Philippine Area of Responsibility (PAR), PAGASA, the national agency dedicated to providing flood and typhoon warnings, public weather forecasts and advisories, begins to monitor it. Do you know which area is covered by the PAR? Do the following activities to find out.

### Activity 2. Let's Plot The PAR

**A. Directions:** Plot the following points (Table 1) on the map (Figure 1). Connect the plotted points to identify the regions within the PAR.

**Table 1.** Lat-Long Position of PAR

Points	Latitude, Longitude
a	5°N, 115°E
b	15°N, 115°E
c	21°N, 120°E
d	25°N, 120°E
e	25°N, 135°E
f	5°N, 135°E

**Source:** Campo et al. *Science-Grade 8 Learner's Module* (Philippines: FEP Printing Corporation, 2016), 140.

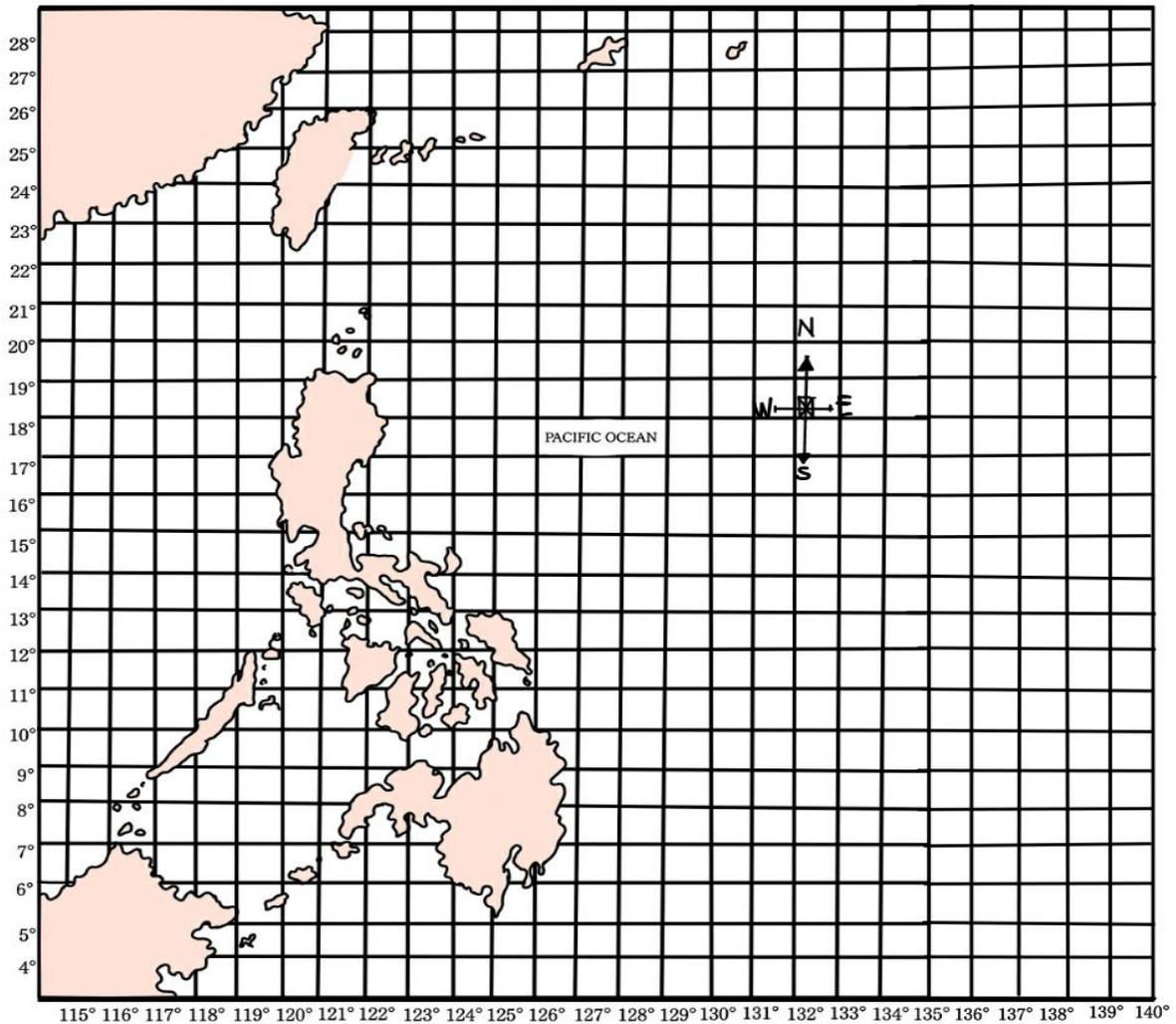


Figure 1. Map of the Philippines and its vicinity

**Source:** Campo et al. *Science-Grade 8 Learner's Module* (Philippines: FEP Printing Corporation, 2016), 141.

Illustrated by: Rosa Mia L. Pontillo



**Note to the Teacher**

Provide extra copies of this activity for students' use.

**B. Directions:** Answer the following questions with **Yes** or **No**. Write your answers on a separate sheet of paper.

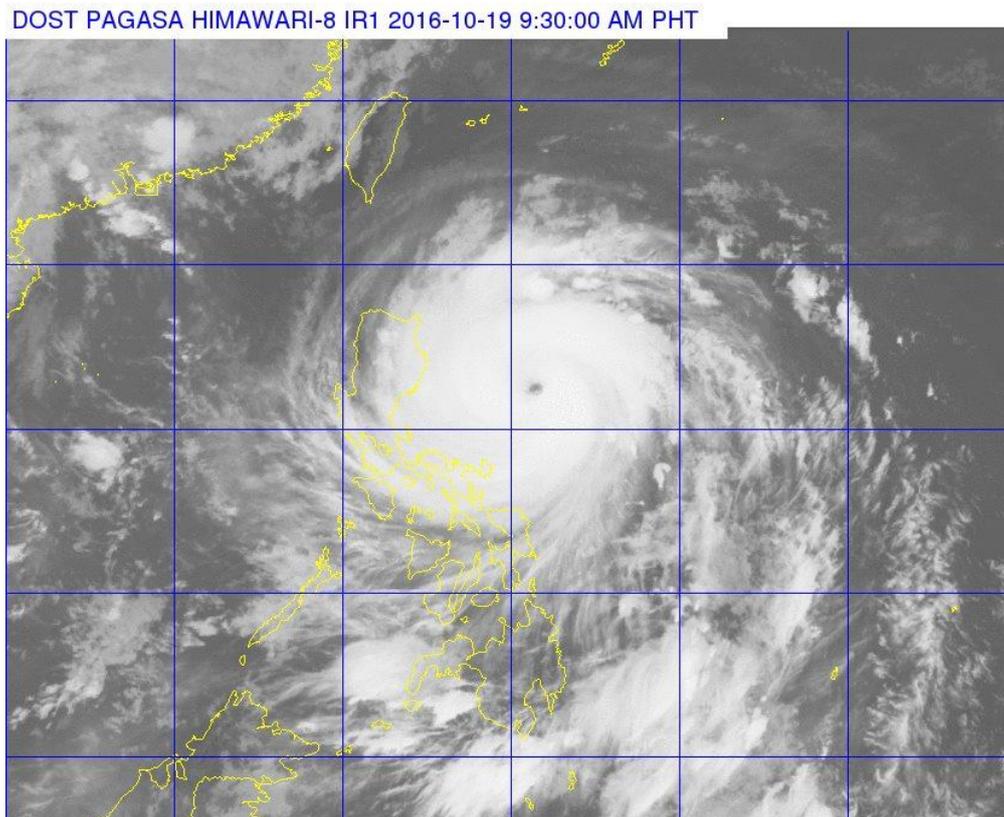
**Questions:**

1. If the typhoon is located at 17 °N, 138 °E, is it within PAR? \_\_\_\_\_
2. If the typhoon is at 19 °N, 115 °E, is it within PAR? \_\_\_\_\_
3. If the typhoon is at 18 °N, 125 °E location, is it within PAR? \_\_\_\_\_
4. If the typhoon is located at 8 °N, 130 °E, is it within PAR? \_\_\_\_\_



## ***What is It***

We already know what to expect when a typhoon comes. We get many rains and strong winds. You may not have noticed it, but the winds in every typhoon move in an exceedingly circular direction. Take a look at Figure 2.



*Figure 2. Super typhoon Yolanda as seen from above. At the middle is the “eye” of the typhoon*

*(Image by DOST PAGASA <https://tinyurl.com/yxjkwfyp>)*

The picture (figure 2) shows a satellite image of super typhoon Yolanda that hit the Philippines on November 8, 2013. Do you see the clouds in a spiral arrangement? They are being blown by winds in a **counterclockwise** direction.

The tropical depression, tropical storm, severe tropical storm, typhoon, and super typhoon are categories of tropical cyclones (see Table 2). In simple term, a tropical cyclone is a system of thunderstorms moving in a circular direction. As the winds strengthen or weaken, the category is upgraded or downgraded accordingly.

**Table 2.** Classification of Tropical Cyclone with its Corresponding Wind Speed

<b>Tropical Cyclone Category</b>	<b>Maximum sustained winds in kilometer per hour (kph)</b>
Tropical Depression (TD)	up to 61
Tropical Storm (TS)	62 to 88
Severe Tropical Storm (STS)	89 to 117
Typhoon (TY)	118 to 220
Super Typhoon (STY)	exceeding 220

**Source:** <http://bagong.pagasa.dost.gov.ph/information/about-tropical-cyclone>

The term “**typhoon**” is common in the northwestern part of the Pacific. Within the northeastern part of the Pacific Ocean and also in the northern part of the Atlantic Ocean, the equivalent term of typhoon is “**hurricane**.” In the Philippines, we call all categories of tropical cyclone as “**bagyo**,” may it be a tropical depression, tropical storm, severe tropical storm, typhoon or super typhoon. When a tropical cyclone enters the PAR, the PAGASA will announce Public Storm Warning Signals (PSWS). The lifting or assigning of a PSWS in a certain place usually happens before the corresponding atmospheric conditions exist over the locality. This is because the aim of the signal is to warn the people of the approaching danger that the tropical cyclone may bring. It is important to remember that the appropriate interval of the range of the wind speeds for every signal is only valid when PAGASA puts to effect the signal number for the first time.

**Table 3.** Revised Public Storm Warning Signals

<b>PSWS</b>	<b>Lead Time (hrs)</b>	<b>Wind Speed (kph)</b>	<b>Impacts of the Wind</b>
1	36	30 - 60	no damage to very light damage
2	24	61 - 120	light to moderate damage
3	18	121 - 170	moderate to heavy damage
4	12	171 - 220	heavy to very heavy damage
5	12	more than 220	very heavy to widespread damage

**Source** <http://bagong.pagasa.dost.gov.ph/learning-tools/public-storm-warning-signal>

A tropical cyclone is a natural phenomenon that nobody can stop. We can only prepare for its arrival through the communications coming from PAGASA. Weather forecasts on television, on newspapers and over the radio may assist in the dissemination of these information for the public to know. It is important as well, to have a sufficient knowledge about these weather conditions for us to be ready and be safe should one hit our place. What should we do in times of grave danger like this? Read some tips on the next page.

**Table 4.** What to Do During a Typhoon

PSWS 1	PSWS 2	PSWS 3	PSWS 4	PSWS 5
<p>1. Listen to your radio for more information about weather disturbance.</p> <p>2. Check the ability of the house to withstand strong winds and strengthen it if necessary.</p> <p>3. The people are advised to monitor the latest severe weather Bulletin issued by PAGASA every six hours. In the meantime, business may be carried out as usual except when flood occurs.</p>	<p>1. Special attention should be given to the latest position, the direction, and speed movement as the cyclone may intensify and move towards the locality.</p> <p>2. The general public, especially people travelling by sea and air are cautioned to avoid unnecessary risks.</p> <p>3. Protect properties before signals are upgraded.</p> <p>4. Board up windows or put storm shutters in place and securely fasten it. Stay at home.</p>	<p>1. Keep your radio on and listen to the latest news about typhoon.</p> <p>2. Everybody is advised to stay in safe and strong houses.</p> <p>3. Evacuate from low-lying areas to higher grounds.</p> <p>4. Stay away from coasts and riverbanks.</p> <p>5. Watch out for the passage of the "EYE" of the typhoon.</p>	<p>1. Stay in safe houses or evacuation centers</p> <p>2. All travels and outdoor activities should be cancelled.</p> <p>3. Keep listening to your radio to the latest news about the typhoon.</p>	<p>1. Stay in safe houses or evacuation centers</p> <p>2. All travels and outdoor activities should be cancelled.</p>

Source: <http://mmda.gov.ph/20.faq/288-disaster-awareness-faq.html>

Tropical cyclone is considered as one of the most destructive natural disasters that affects the lives of many people and causes tremendous loss of properties.

Listed below are the effects of tropical cyclone that can leave a significant mark on the lives of people.

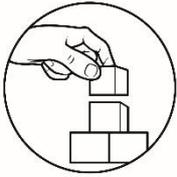
1. **Strong winds** (squalls). The surface wind increases in magnitude and is maintained over a time interval of several minutes to half an hour. The increase in wind speed may occur abruptly or slowly. These changes in near landfall can lead to loss of lives and large damage to properties.

2. **Tornadoes.** These are produced by tropical cyclone characterized by a violent and destructive whirling wind accompanied by a funnel-shaped cloud. A weak tornado has a wind speed of about 64-116 kph.
3. **Rainfall and Flooding.** Rainfall associated with tropical cyclone is both beneficial and harmful. Rains contribute to the water needs of the areas traversed by the tropical cyclone. The rains are harmful when the amount is way too large as to cause flooding.
4. **Storm surge.** This is an abnormal rise of water due to tropical cyclone and it is an oceanic event. These devastating surges occur along coasts with low-lying terrain.

Source:<http://bagong.pagasa.dost.gov.ph/information/about-tropical-cyclone>

After an emergency, we may need to survive on our own for several days. We should have our own emergency kit that will last us for at least 72 hours. An emergency kit is a collection of basic items that a household should have in the event of an emergency like a typhoon. Most of the things included in the kit are inexpensive and easy to find and could save your life. Make sure your emergency kit has the following items:

- water (one gallon per person per day for at least three days, for drinking and sanitation)
- food (at least a three-day supply of non-perishable food)
- cellular phone with charger and power bank
- transistor radio and batteries
- whistle (to signal for help)
- flashlight and batteries
- waterproof bag
- personal hygiene items
- important documents
- 15-meter rope
- extra clothes
- pocketknife
- first aid kit
- matches
- blanket
- money
- lighter
- watch

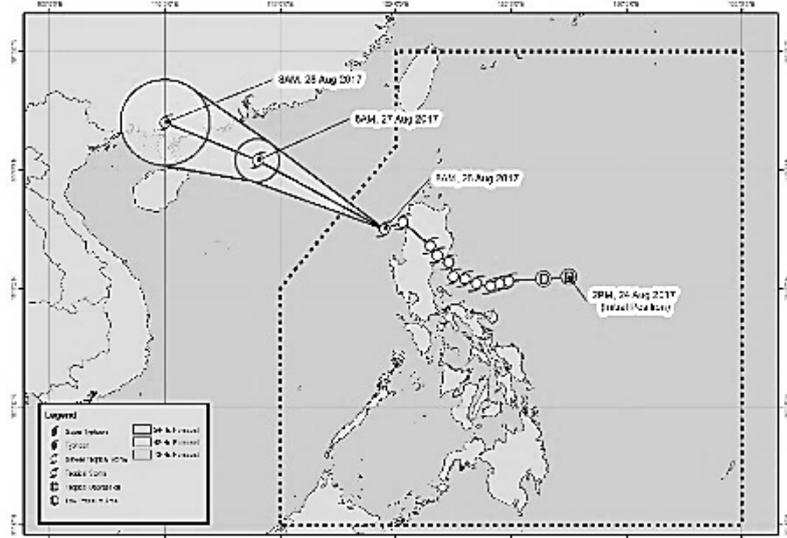


## What's More

### Activity 3. Track My Trail

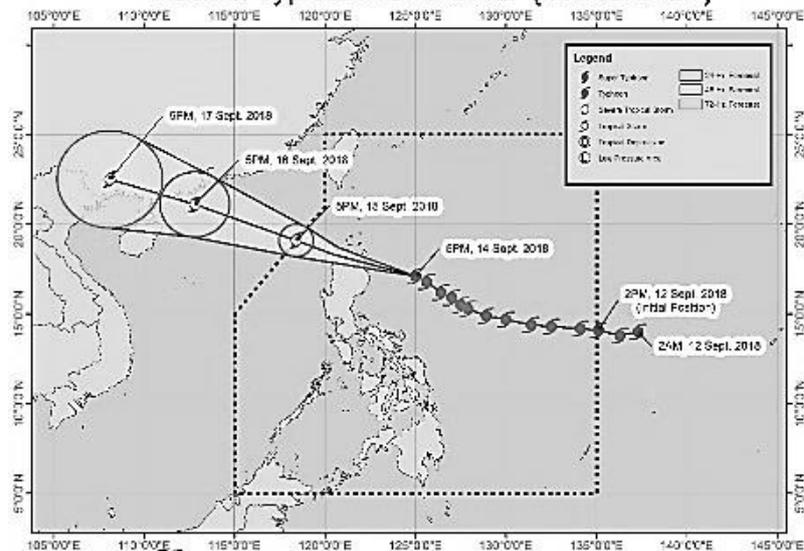
**Directions:** Shown below are the paths of 3 tropical cyclones that entered PAR. Tropical Storm Jolina in August 2017, Typhoon Ompong in September 2018, and Tropical Storm Jenny in August 2019 respectively. The tracks were plotted by PAGASA. Study the map and answer the questions. Write your answers on a separate sheet of paper.

Track of Tropical Storm "JOLINA" (PAKHAR)



Philippine Atmospheric Geophysical and Astronomical Services Administration

Track of Typhoon "OMPONG" (MANGKHUT)



Philippine Atmospheric Geophysical and Astronomical Services Administration

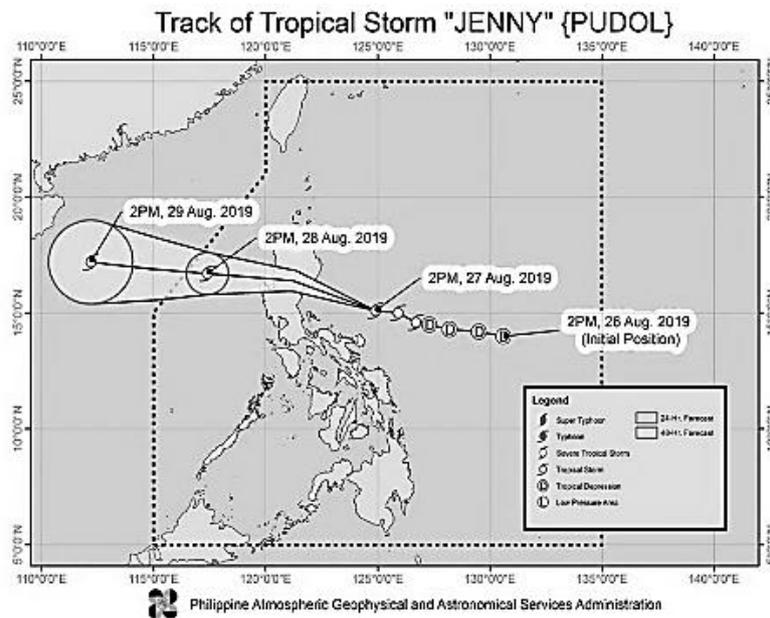


Figure 2. Paths of Selected Tropical Cyclones that have Entered PAR in the Past Years

**Questions:**

1. Where did the 3 tropical cyclones form?  
\_\_\_\_\_
2. In what direction did the tropical cyclones move?  
\_\_\_\_\_
3. Which is the strongest among the three tropical cyclones?  
\_\_\_\_\_
4. What factor/s contributed to the strength of the typhoon?  
\_\_\_\_\_
5. Why is the Philippines prone to tropical cyclone?  
\_\_\_\_\_

Rubric

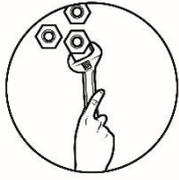
4 points	3 points	2 points	1 point
Main idea is clear and well-supported with 2 detailed information.	Main idea is clear and supported with 1 detailed information.	Main idea is clear but not supported with detailed information.	Main idea is not clear.



## ***What I Have Learned***

**Directions:** Fill in the blanks with the correct terms to complete the statements.  
Write your answers on a separate sheet of paper.

1. \_\_\_\_\_ are classified as hurricane and typhoon depending on the area where they are currently located.
2. Hurricane develops in the \_\_\_\_\_ of the Pacific Ocean.
3. There are 5 categories of tropical cyclones namely tropical depression, tropical storm, severe tropical storm, \_\_\_\_\_, and super typhoon.
4. \_\_\_\_\_ is a national agency assigned to give warning signal over locality who will be affected by a tropical cyclone.
5. \_\_\_\_\_ may include but not limited to water, food, cellular phone with charger and power bank, transistor radio and batteries, whistle, flashlight personal hygiene items, and important documents.



## What I Can Do

### Activity 4. What's the Link

**Directions:** Study carefully the picture shown below. With what you see, write your thoughts about the effects of a typhoon to the community. Check on the rubric to guide you in crafting. Use a separate sheet of paper for your essay.



*Figure 3. Effects of Typhoon to the Community.*

Source: [https://www.google.com/search?q=effects+of+typhoon+in+the+philippines&rlz=1C1CHBD\\_enPH903PH903&sssr=AleKk02a7f77PDmnSXLze00LTdJ3gsSCPw:1598930148209&source=lnms&tbn=isch&sa=X&ved=2ahUKEwiAkoT8\\_sbrAhWPvpQKHaseBvoQ\\_AUoAXoECA4QAw&biw=1366&bih=657#imgcr=7M0Q0NTHbNRFDM](https://www.google.com/search?q=effects+of+typhoon+in+the+philippines&rlz=1C1CHBD_enPH903PH903&sssr=AleKk02a7f77PDmnSXLze00LTdJ3gsSCPw:1598930148209&source=lnms&tbn=isch&sa=X&ved=2ahUKEwiAkoT8_sbrAhWPvpQKHaseBvoQ_AUoAXoECA4QAw&biw=1366&bih=657#imgcr=7M0Q0NTHbNRFDM)

#### Rubric

4 points	3 points	2 points	1 point
Very informative, well-organized and the main idea is related to the picture.	Somewhat informative, organized and the main idea is somehow related to the picture.	Some information is new but poorly organized and the main idea is not related to the picture.	No new information is presented, poorly organized and main idea is far from the picture depicted.



## ***Additional Activity***

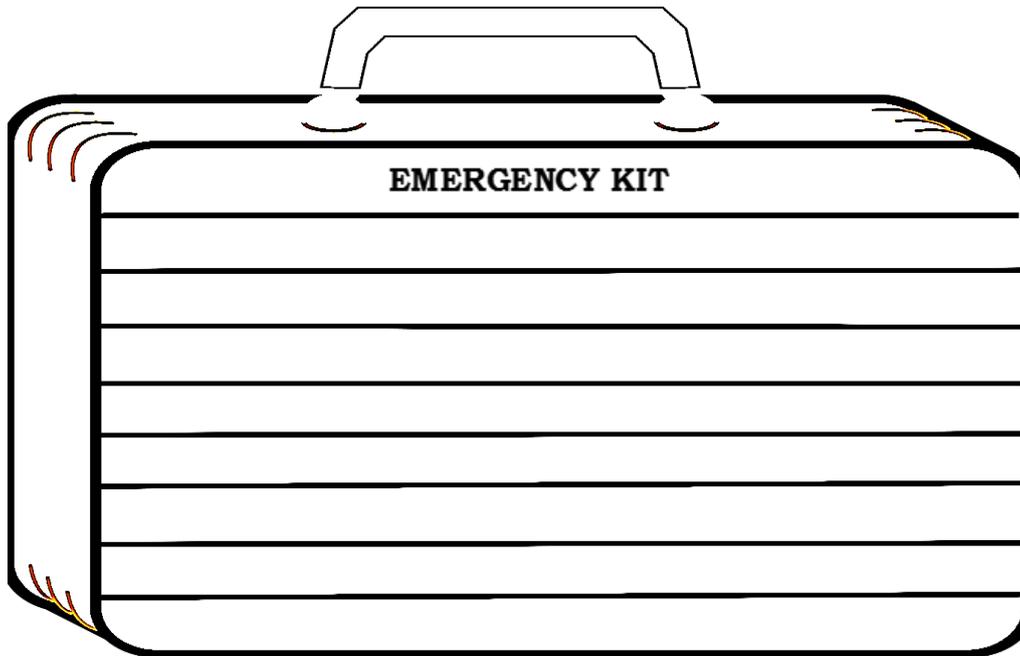
### **Activity 5. Fill Your Emergency Kit**

**Directions:** List down the different things that should be included in an emergency kit. Choose from among the listed materials below. Write your answers on the lines of the bag.

water  
beauty products  
transistor radio  
pocketknife  
books

flashlight  
first aid kit  
blanket  
comforter  
electric fan

extra batteries  
whistle  
food  
family pictures  
clothes



Source: <https://pixabay.com/vectors/suitcase-bag-travel-baggage-306879/#>



#### ***Note to the Teacher***

Provide extra copies of this activity for students' use.

**Lesson****2****How Landforms and Bodies of Water Affect Typhoons within the Philippine Area of Responsibility (PAR)?**

In Grade 7, you have learned concepts that helped you understand about why the wind blows, why monsoons occur, and what is Intertropical Convergence Zone (ITCZ). All of these are associated with understanding the concept of typhoon. In this lesson, we begin by asking, how do landforms and bodies of water affect typhoon?

***What's In***

In the previous lesson, you have learned the different categories of tropical cyclone like super typhoon, typhoon, severe tropical storm, tropical storm, and tropical depression. Let us see how far you have learned by doing the activity below.

**Activity 1. Mix and Match**

**Directions:** Match the definition in column A to the words in column B. Choose the letter of the correct answer. Write your answers on a separate sheet of paper.

**Column A**

1. A rapidly rotating storm system characterized by low pressure-center, strong winds, and spiral arrangement of thunderstorm.
2. A term referring to tropical cyclone in the northwestern part of the Pacific Ocean.
3. It refers to a tropical cyclone that arrives over land.
4. A term referring to tropical cyclone in the northeastern part of the Pacific Ocean and Northern part of Atlantic.
5. A box or bag containing the equipment, supplies, and medications needed during emergencies.

**Column B**

- A. landfall
- B. typhoon
- C. emergency kit
- D. hurricane
- E. PAGASA
- F. bagyo
- G. tropical cyclone



## What's New

Bodies of water like the oceans have a great influence on the weather of continental masses. How do landforms and bodies of water affect the formation of typhoons? Do the activity below to find out.

### Activity 2. Fill Me Up

**Directions:** Fill in the correct processes of how landforms and bodies of water affect typhoon. Choose the letter of the correct processes by writing the letter. Write your answers on a separate sheet of paper.

#### Landform

- A. Air cools as it continues to rise.
- B. Humidity condenses into heavy rain.
- C. Warm, humid air travels into the land.

#### Body of Water

- D. Humid air is rising making the clouds of the storm.
- E. Winds flow outward above the storm, allowing the air below to rise.
- F. Light winds outside typhoon steer it and let it grow.

Source: <https://www.slideserve.com/willem/typhoons>

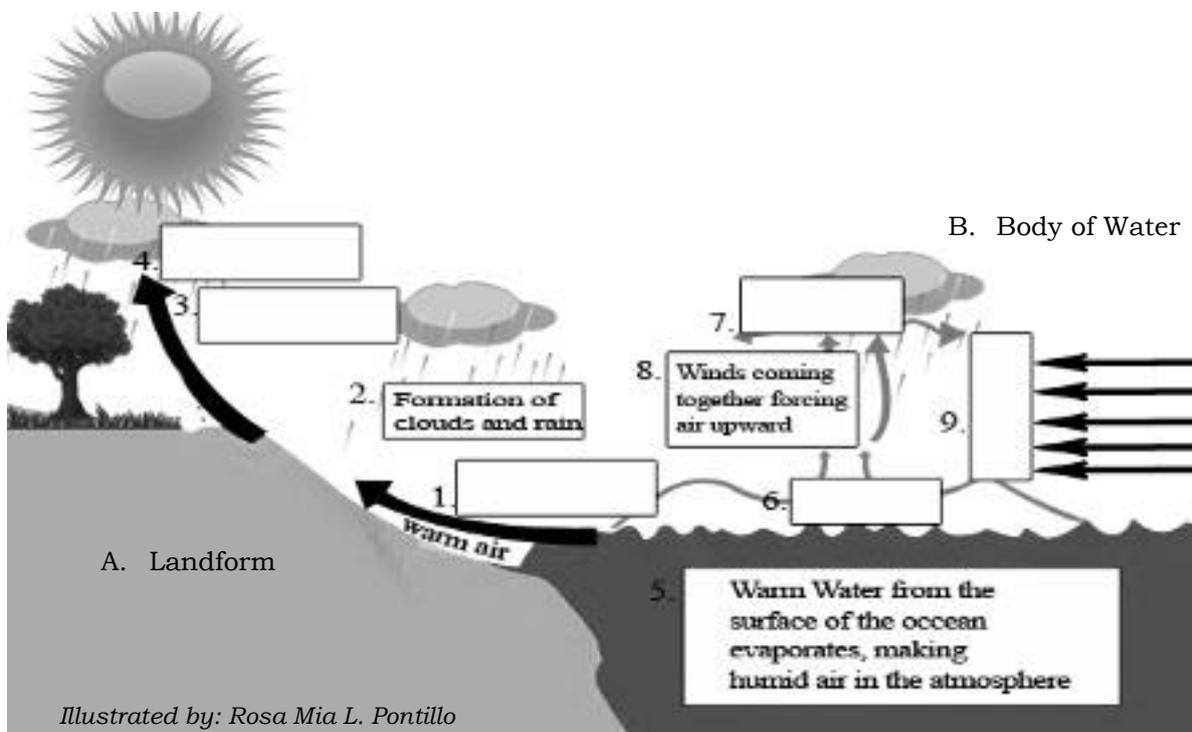


Figure 1. (A) Landform and (B) Body of Water Affect the Formation of Tropical Cyclone



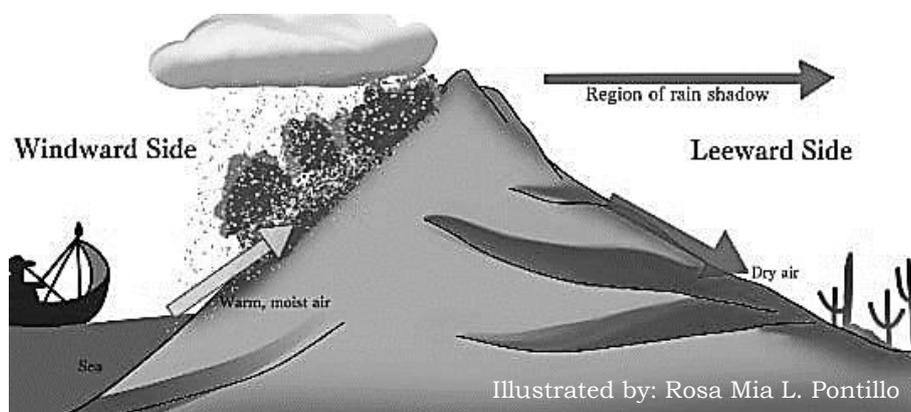
## ***What is It***

A tropical cyclone can only form over oceans of the world except in the South Atlantic Ocean and the Southeastern Pacific due to its lower air temperature. Oceans in the tropics, and landforms in nearby countries can affect the formation of typhoons.

### **Landforms**

Landforms affect wind directions, and therefore disrupt the spin of a typhoon. Typhoon weakens because of lack of water to supply the needed moisture in the air. When this happens, the air temperature drops; as the water vapor cools, fog forms, and rain may fall on the windward side of the mountain. When the same atmosphere descends on the other side of the mountain, it brings a minimal amount of water vapor. A “rain shadow” or dry climate develops on the leeward side of the mountain.

Figure 2 shows the windward side which has more vegetation compared on the leeward side. This is because of the amount of precipitation the windward side receives. When air goes up into the mountain, it loses its moisture and only dry air proceeds to the leeward side making that side produce less vegetation.

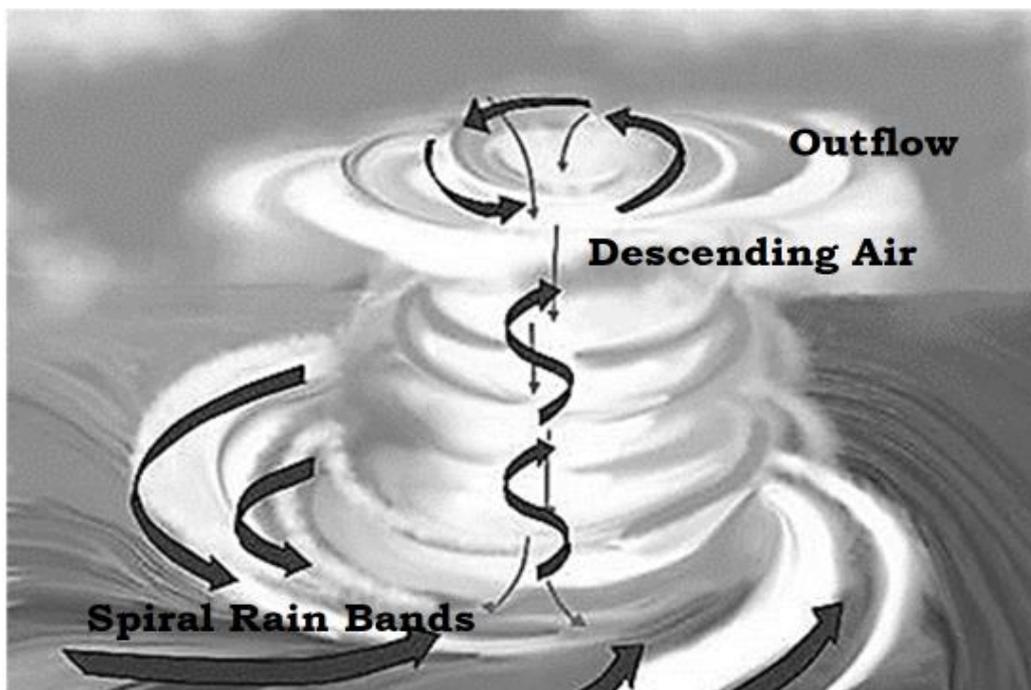


*Figure 2: The Surface Features of a Mountain*

Landforms like tall mountain ranges act as an obstacle to traveling air masses, forcing them to rise over the peaks. A typhoon is likely to dissolve or decrease its wind speed when it passes over a mountain or a mountain range. The cold air on top of a mountain prevents the building up of a typhoon, which needs warmer air.

## Bodies of Water

The bodies of water help in the formation and development of a typhoon. In order for a typhoon to develop, it needs the abundance of warm water, high humidity, optimal location, ocean water with a temperature of 26.5°C, spanning from the surface up to the depth of at least 50 meters (160 ft), and low vertical wind shear. Warm bodies of water are the main factors in the formation of a typhoon. The air in bodies of water is warm due to the evaporation of water. This warm air builds up or increases the wind speed of a typhoon. Typhoon gains energy from warm ocean water and loses it over cold water.

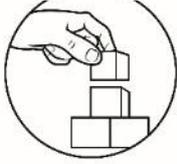


*Figure 3. Spiraling of Water in the Ocean Forming Tropical Cyclone*

Illustrated by: Rosa Mia L. Pontillo

As shown in Figure 3, the warm, moist air over the ocean moves up and away leaving lesser air near the surface. You already learned in Grade 7 that warm air rises, causing an area of lower air pressure. Air from the surroundings with higher air pressure pushes in to the low-pressure area. As the warm air continues to rise, the surrounding air spins in to take its place. As the warmed, moist air rises and cools off, the water in the air condensates and forms clouds. The whole system of clouds and winds spins together and grows.

Do you know that storms that form north of the equator spin counter clockwise and storms south of the equator spin clockwise? This is because of the Earth's rotation on its axis.



## What's More

### Activity 3. What's the Missing Link

**Directions:** Fill in the blanks. Choose the words from the box below. Write your answers on a separate sheet of paper.

26.5 °C	circulation	warm	counterclockwise
37.5 °C	disturb	water	mountain ranges
40.5 °C	cold	weakens	tropical cyclone wind
air	ocean	landforms	

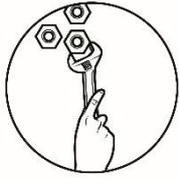
Warm bodies of water, with at least surface temperature of (1), is the main factor in the formation of a (2). The warm air above the surface of the (3) builds and tends to rise up. The surrounding (4) is forced to move in the direction where the air is rising until it creates a cyclonic (5) that results in tropical cyclone. On the other hand, landforms like a (6), act as an obstacle to traveling air masses forcing them to rise over the peaks and tend to affect (7) direction and therefore, (8) the spin of a tropical cyclone. Tropical cyclone (9) or even die out because of lack of (10) supply.



## What I Have Learned

**Directions:** Fill in the blanks with the correct terms to complete the statements. Write your answers on a separate sheet of paper.

1. Landforms like tall \_\_\_\_\_ act as an obstacle to traveling air masses, forcing them to rise over the peaks.
2. A \_\_\_\_\_ is likely to dissolve or decrease its wind speed when it passes over a mountain or a mountain range.
3. Bodies of water like \_\_\_\_\_, is the main factor in the formation of typhoon.
4. The air in bodies of water is \_\_\_\_\_ due to the evaporation of water.
5. Warm air builds up or increases the \_\_\_\_\_ of a tropical cyclone.



## ***What I Can Do***

### **Activity 4. My Windy Reflection**

**Directions:** Write a reflection on a separate sheet of paper about the situation below.

When a typhoon visits your place, it brings a lot of damages depending on its strength. As a student, what can you do to protect yourself and your family from this natural disaster?

### **Rubric**

4 points	3 points	2 points	1 point
Main idea is clear and well-supported with 3-4 detailed information.	Main idea is clear and supported with 1-2 detailed information.	Main idea is clear but not supported with detailed information.	Main idea is not clear.



## ***Assessment***

**Directions:** Choose the letter of the correct answer. Write your answers on a separate sheet of paper.

1. What is the name of the tropical cyclone formed in the northwestern part of the Pacific Ocean?
  - A. Hurricane
  - B. Tornado
  - C. Tsunami
  - D. Typhoon
2. In what year did super typhoon Yolanda hit the Philippines?
  - A. 2011
  - B. 2012
  - C. 2013
  - D. 2014

3. In what direction does a tropical cyclone usually move?
  - A. Northeast
  - B. Northwest
  - C. Southeast
  - D. Southwest
  
4. What is the wind speed of severe tropical storm?
  - A. 62 – 88 kph
  - B. 89 – 117 kph
  - C. 118 – 220 kph
  - D. more than 220
  
5. During a typhoon, Public Storm Warning Signal (PSWS) is issued over the affected area. What is the impact of the wind when PSWS signal is 4?
  - A. No to light damage
  - B. Light to moderate damage
  - C. Moderate to heavy damage
  - D. Heavy to very heavy damage
  
6. What should be done after a typhoon?
  - A. Store sufficient amount of food.
  - B. Always ready with the emergency kit.
  - C. Keep monitoring the typhoon's movement.
  - D. Boil water before drinking as it may be contaminated.
  
7. Tropical cyclones are not formed on which part of the Pacific Ocean?
  - A. Northeastern
  - B. Northwestern
  - C. Southeastern
  - D. Southwestern
  
8. What happens to a typhoon when it makes a landfall?
  - A. gets weaker
  - B. stays longer
  - C. moves faster
  - D. gets stronger
  
9. How do landforms affect typhoon?
  - A. no effect at all
  - B. increase wind direction
  - C. serve as a fuel to travelling air masses making typhoon stronger
  - D. serve as an obstacle for travelling air masses making typhoon weaker

10. Which statement is INCORRECT?
- A. Warm bodies of ocean water are the main source in the formation of typhoon.
  - B. Warm bodies of ocean water build up increasing the wind speed of typhoon.
  - C. Air from surrounding areas with lower air pressure pushes to the high-pressure area.
  - D. Tropical cyclone does not form in the South Atlantic Ocean due to its lower temperature.
11. Which is NOT a factor in the formation of a typhoon?
- A. high humidity
  - B. warm river water
  - C. warm ocean water
  - D. optimal location of typhoon
12. Which set of weather conditions characterizes the eye of tropical cyclone?
- A. light winds, no clouds, no rains, and high temperatures
  - B. heavy winds, no clouds, no rains, and high temperatures
  - C. light winds, large clouds, heavy rains, and low temperatures
  - D. heavy winds, large clouds, heavy rains, and low temperatures
13. Which will occur as results of tropical cyclone?
- A. strong wind, light rainfall, tornado, and tsunami
  - B. strong wind, heavy rainfall, flood, and storm surge
  - C. strong wind, heavy rainfall, storm surge, and earthquake
  - D. strong wind, light rainfall, pyroclastic flow, and earthquake
14. Which best describes leeward side?
- A. Leeward side has abundant life forms.
  - B. Leeward side receives a lot of precipitation.
  - C. Leeward side has plenty of vegetation due to abundance of precipitation.
  - D. Leeward side has less vegetation because moist in the air is accumulated in the windward side.
15. What is the difference among cyclones, hurricanes, and typhoons?
- A. Typhoons are faster than cyclones but slower than hurricanes.
  - B. Cyclones are bigger than hurricanes but smaller than typhoons.
  - C. Hurricanes are stronger than cyclones but weaker than typhoons.
  - D. Cyclones, hurricanes, and typhoons occur in different geographical areas.

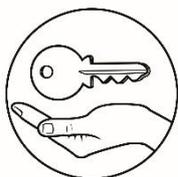


## ***Additional Activity***

### **Activity 5: Draw Me Out**

**Directions:** Draw on a bond paper proper measures to mitigate or lessen the effects of typhoon in a community.

Rubric			
4 points	3 points	2 points	1point
Drawing captures substantial information about the topic.	Drawing includes limited information about the topic.	Drawing has little connection to the topic.	Drawing has no connection to the topic.



# Answer Key

## Lesson 1:

**What I Know**

1. B	9. D
2. C	10. D
3. C	11. A
4. C	12. C
5. B	13. D
6. A	14. C
7. A	15. D
8. A	

**What's In**

1. tropical storm
2. PAR
3. tropical cyclone
4. PWS
5. typhoon
6. PAGASA
7. weather
8. emergency kit
9. bagyo
10. hurricane

**What's New**

Figure 6. Frequency Areas of Typhoons (PAR)

1 No  
2 No  
3 Yes  
4 Yes

**What's More**

1. Pacific Ocean
2. Northwest Direction
3. Ompong
4. Ompong
5. Ocean/bodies of water

**What I have Learned**

1. tropical cyclone
2. northeastern
3. ocean
4. categories
5. PAGASA
6. emergency kit
7. emergency kit

**What I Can Do**

Possible answers but not limited to:

- Cause flashfloods
- Destroys properties
- Loss of lives
- Put down trees
- Loss of electricity
- Health problems
- panic

**Additional Activities**

1. water
2. transistor radio
3. pocket knife
4. flashlight
5. first aid kit
6. blanket
7. extra batteries
8. whistle
9. food
10. clothes

**Lesson 2:**

<p style="text-align: right;"><b>What's In</b></p> <p>1. G 2. B 3. A 4. D 5. C</p>	<p style="text-align: right;"><b>What's New</b></p> <p>1. C 2. A 3. - 4. B 5. - 6. D 7. E 8. - 9. F</p>	<p style="text-align: right;"><b>What's More</b></p> <p>1. 26.5°C 2. tropical cyclone 3. ocean 4. air 5. circulation 6. mountain/ranges 7. wind 8. disturb 9. weakens 10. water</p>
<p><b>What I have Learned</b></p> <ol style="list-style-type: none"> <li>1. mountain range</li> <li>2. tropical cyclone</li> <li>3. warm bodies</li> <li>4. speed</li> </ol>	<p><b>What I Can Do</b></p> <p>Possible answers but not limited to:</p> <ul style="list-style-type: none"> <li>➤ Create information dissemination through pamphlets and brochure</li> <li>➤ Make PowerPoint presentation help explain to family members and relatives</li> <li>➤ Share on Facebook and other social media accounts about the danger of typhoon</li> </ul>	<p><b>Additional Activities</b></p> <p>Possible answers but not limited to:</p> <ul style="list-style-type: none"> <li>➤ Planting of trees</li> <li>➤ Disposing of garbage properly</li> <li>➤ Taking care of nature</li> <li>➤ Less air pollution</li> <li>➤ Less usage of carbon dioxide</li> </ul>

<b>Assessment</b>	
1. D	10. C
2. C	11. B
3. B	12. A
4. B	13. B
5. D	14. D
6. D	15. D
7. C	
8. A	
9. D	

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