

# Department of Education

# Grade 8

## Understanding Typhoons

### Second Quarter - Week 5



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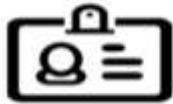
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## EXPECTATIONS

After going through this module, you are expected to:

1. Track the path taken by a tropical cyclone /typhoon given its coordinates.
2. Determine whether a tropical cyclone is within or outside the PAR.
3. Illustrate instruments used in tracking a tropical cyclone.
4. Describe how tropical cyclone is tracked and discuss why is there a need for PAGASA to regularly monitor tropical cyclones near the PAR



## PRE-TEST

Encircle the letter of the correct answer.

1. Winds in a typhoon \_\_\_ around a center called \_\_\_\_\_.  
A. drop, rotation      B. drop, target      C. rotate, eye      D. rotate, target
2. What is the generic term for an intense circulating weather system over the tropical seas and oceans?  
A. tropical storm      B. tropical depression      C. tropical Cyclone      D. typhoon
3. Which of the following is not caused by a typhoon?  
A. heavy rain      C. shaking of the ground  
B. large ocean waves      D. very strong winds
4. Which of the following agencies provides timely weather forecast?  
A. DOST      B. PAGASA      C. PHILVOCS      D. NDRMMC
5. What is the difference between typhoons and hurricanes?  
A. amount of rain      C. strength of wind  
B. place of origin      D. wind speed



## LOOKING BACK

**Directions:** Read the descriptions below. Choose the correct answer inside the box. Write your answers on the space provided.

**Coriolis Effect/Force**

**Eye of a tropical cyclone**

**Eyewall**

**Meteorology**

**PAGASA**

**PAR**

**Rain bands**

**Tropical Depression**

**Tropical Storm**

**Typhoon**

- \_\_\_\_\_ 1. Weather disturbance that brings strong wind, heavy rains and flood.
- \_\_\_\_\_ 2. Typhoon category with a wind speed less than 62 km/hour
- \_\_\_\_\_ 3. Field of science that deals with weather and climate phenomena.
- \_\_\_\_\_ 4. Government agency that is in-charge to provide utilization of scientific knowledge as an effective instrument to insure safety.
- \_\_\_\_\_ 5. A phenomenon that resulted in the deflection of path of wind which effect is the counterclockwise direction of a tropical cyclone in the Northern Hemisphere and clockwise direction in the Southern Hemisphere.



## BRIEF INTRODUCTION

Every year the Philippines is hit by typhoons. No part of the country is spared. All provinces have been visited by a typhoon at one time or another. In recent years, the Philippines had been overwhelmed by powerful tropical cyclones. Who could forget the terrible flood brought by Tropical Storm Ondoy in 2009?

Or the people swept out to sea during Tropical Storm Sendong in 2011? Or the poor community of New Bataan buried in mud spawned by Typhoon Pablo in 2012? How about Super typhoon Yolanda in 2013 wherein almost 6,000 people were lost or died on the morning of November 8? This Super typhoon category was the first to be known and recorded with the most updated technology and one of which the different countries in the Pacific Region and the rest of the world monitored with anticipation.

According to the Philippine Atmospheric, Geophysical, and Astronomical Services Administration (**PAGASA**), about 20 tropical cyclones enter the Philippine Area of Responsibility each year. We have to be knowledgeable about tropical cyclones if we want to prevent the loss of more lives. (*adapted from DepEd LM*)

## Weather Instruments Used in Weather Forecasting

The different instruments used for weather forecasting are anemometer, barometer (mercury and aneroid), thermometer, sling psychrometer, hygrometer, rain gauge, and radiosonde.

The **anemometer** is used for measuring wind speed and direction. A **barometer** is a device used to measure atmospheric pressure. There are two main types of barometers: mercury and aneroid. The **barograph** is a recording

barometer. The **thermometer** is used for recording the minimum and maximum temperatures during the day. The sling **psychrometer** and **hygrometer** are used to measure atmospheric humidity. A **hygrograph** on the other hand, records the relative humidity and the **rain gauge** measures the amount of rain. Lastly, a **radiosonde**, is an airborne instrument used for measuring pressure, temperature and relative humidity.



## ACTIVITIES

### LESSON 1 Tracking a Typhoon (adopted from DepEd LM)

Now you know where tropical cyclones start to form, why they form in warm ocean water, and in what direction they generally move. Can you now explain why the Philippines is prone to typhoons?

In the following activity, you will try your hand in tracking a tropical cyclone as it enters and leaves the PAR.

#### Activity 1 Plotting the PAR

Objective:

After performing this activity, you should be able to:

1. Read a map
2. Given the latitude and longitude of a tropical cyclone, tell if it has entered the Philippine Area of Responsibility, and
3. Explain what is meant when a typhoon has entered the Philippine Area of Responsibility.

Materials Needed:

Map of the Philippines and vicinity, pencil, ruler

Procedure:

1. Plot the following points on the map below (Figure 2).

Figure 1

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

2. Connect the plotted points.  
Figure2.

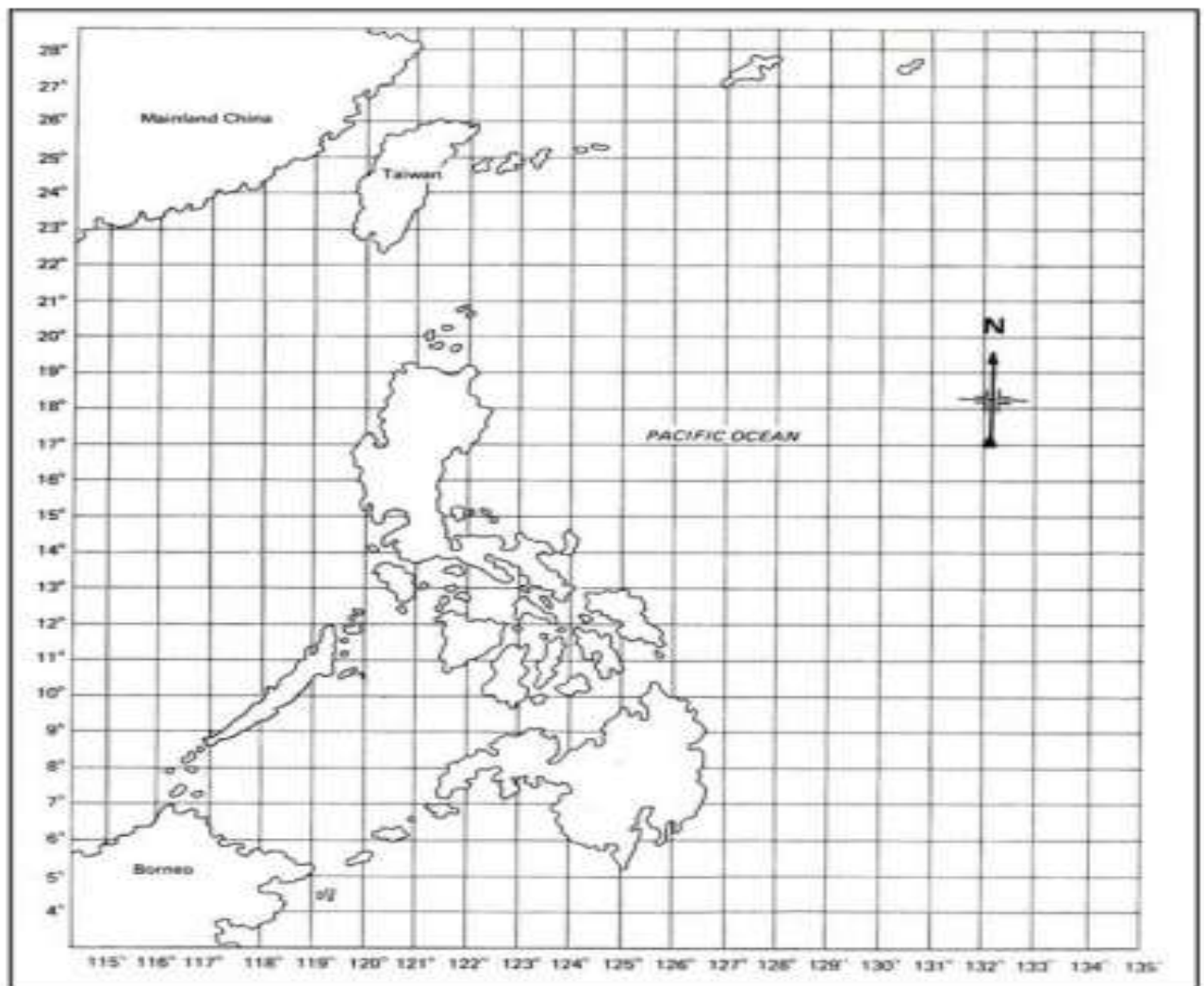


Figure 2. Map of the Philippines and vicinity

**The region within the plotted points is the Philippine Area of Responsibility or PAR.** It is the job of **PAGASA** to monitor all tropical cyclones that enters this area.

3. Answer the following guide questions. Use the Vicinity Map you had made.  
(adapted from DepEd LM)

Q1. If a typhoon is located at 15°N, 138°E, is it within the PAR? \_\_\_\_\_

Q2. How about if the typhoon is at 19°N, 117°E, is it inside the PAR? \_\_\_\_\_

Q3. A typhoon is at 17 °N, 135 °E, is it within PAR? \_\_\_\_\_

Q4. Typhoon X was located at exactly 10°N and 122 °E. Is it within PAR?

If it is within PAR what major island will it probably be felt? \_\_\_\_\_

Q5. Explain what is meant when a typhoon has entered the Philippine Area of Responsibility.

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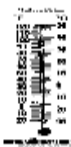

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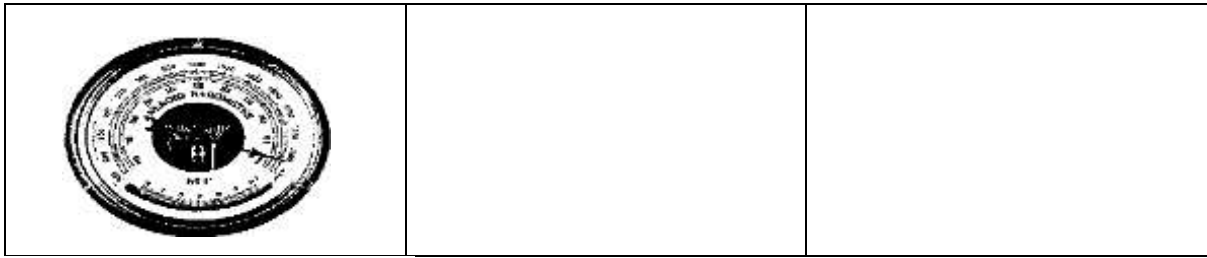
### Activity 2

**DIRECTIONS:** Identify the weather instruments below. Choose the correct answer inside the box.

measures temperature, air pressure,  
wind speed and direction  
measures amount of rain  
measures air pressure  
measures humidity  
measures wind speed and direction  
measures temperature

Radiosondes  
Rain gauge  
Barometer  
Hygrometer  
Anemometer  
Thermometer  
Sling psychrometer

Instruments	Name	Functions
		
		
		
		



### REMEMBER

**PAR** (Philippine Area of Responsibility) is the smallest and innermost monitoring domain, whose boundary is closest to the Philippine Islands. The exact dimensions of this domain are the area of the western North Pacific bounded by imaginary lines connecting the coordinates, **5°N 115°E, 15°N 115°E, 21°N 120°E, 25°N 135°E and 5°N 135°E**. **The western boundary** of the PAR is closer to the coastline of the country than the eastern boundary. **The eastern PAR boundary** is several hundred kilometers away from the nearest coastline in the eastern part of the country and completely encloses the East Philippine Sea. **Tropical cyclones** inside the PAR warrants the issuance of Severe Weather Bulletin.



### CHECK YOUR UNDERSTANDING

Answer the following questions briefly.

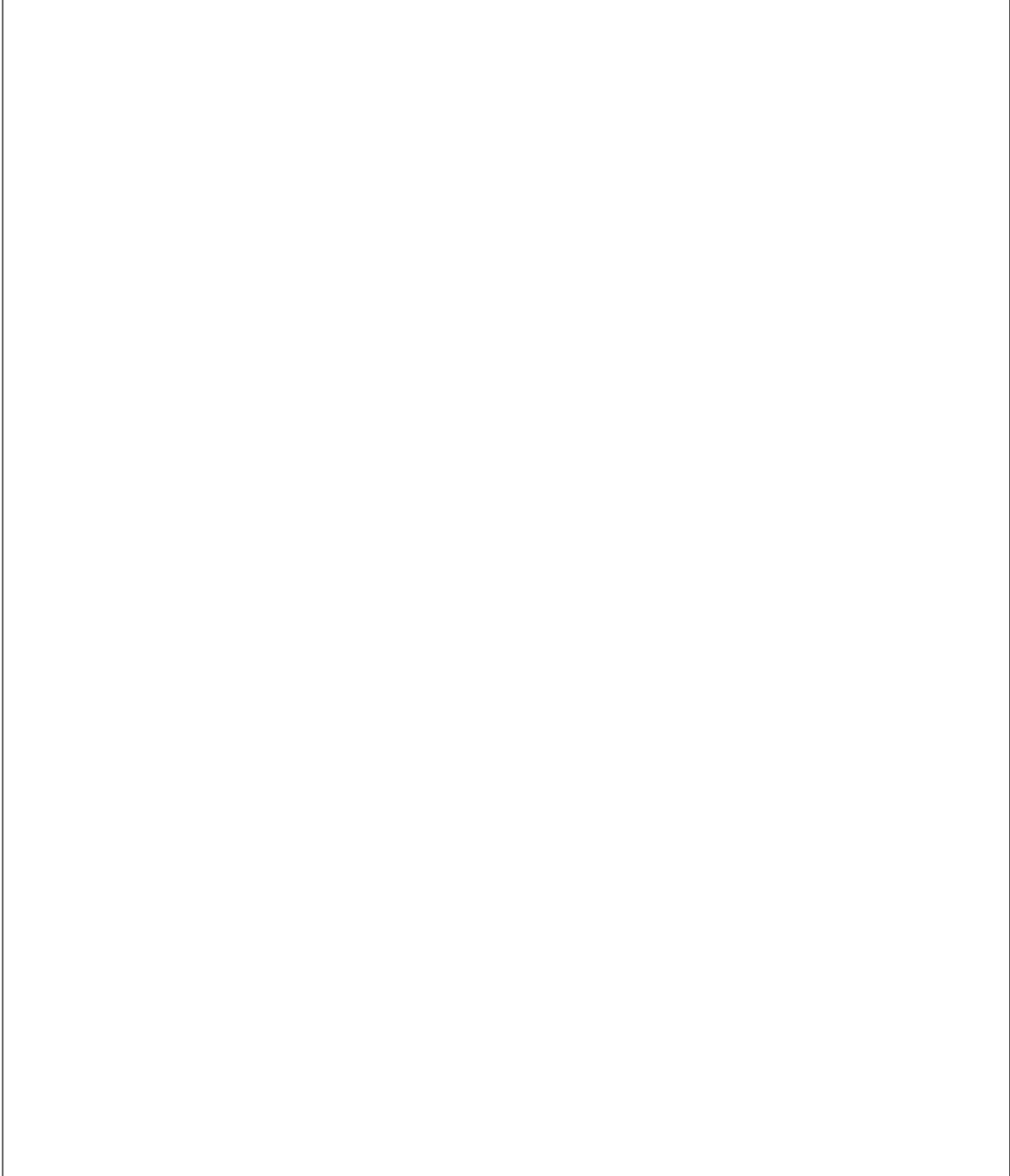
1. What is the meaning of PAR? \_\_\_\_\_  
\_\_\_\_\_
2. What government agency takes charge of giving information about the incoming typhoon? \_\_\_\_\_  
\_\_\_\_\_
3. Enumerate the weather instruments and what it measures  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. Categorize Typhoon Rolly to its signal and range.  
\_\_\_\_\_  
\_\_\_\_\_
5. Discuss the damage caused by typhoon Rolly?  
\_\_\_\_\_  
\_\_\_\_\_

6. Discuss the damage caused by typhoon Ulysses?

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7. Cut and paste pictures of typhoon Ulysses as a proof / evidence destruction.







## POST TEST

**DIRECTIONS:** Item 1 to 5, analyze the given figure. Encircle the letter of the correct answer.

1. What are the coordinates informing us that the tropical cyclone is entering the PAR?

- A. 15°N, 135°E
- B. 15°N, 138.5°E
- C. 7°N, 135°E
- D. 15°N, 139°E

2. What are the coordinates informing us that the tropical cyclone is exiting the PAR?

- A. 19°N, 100°E
- B. 19°N, 118°E
- C. A. 19°N, 118°E
- D. A. 19°N, 118°E

3. On what day did tropical cyclone Ompong enter the PAR?

- A. Sept. 15, 2018
- B. Sept. 12, 2018
- C. Sept. 17, 2018
- D. Sept. 14, 2018

4. On what day did tropical cyclone Ompong leave the PAR?

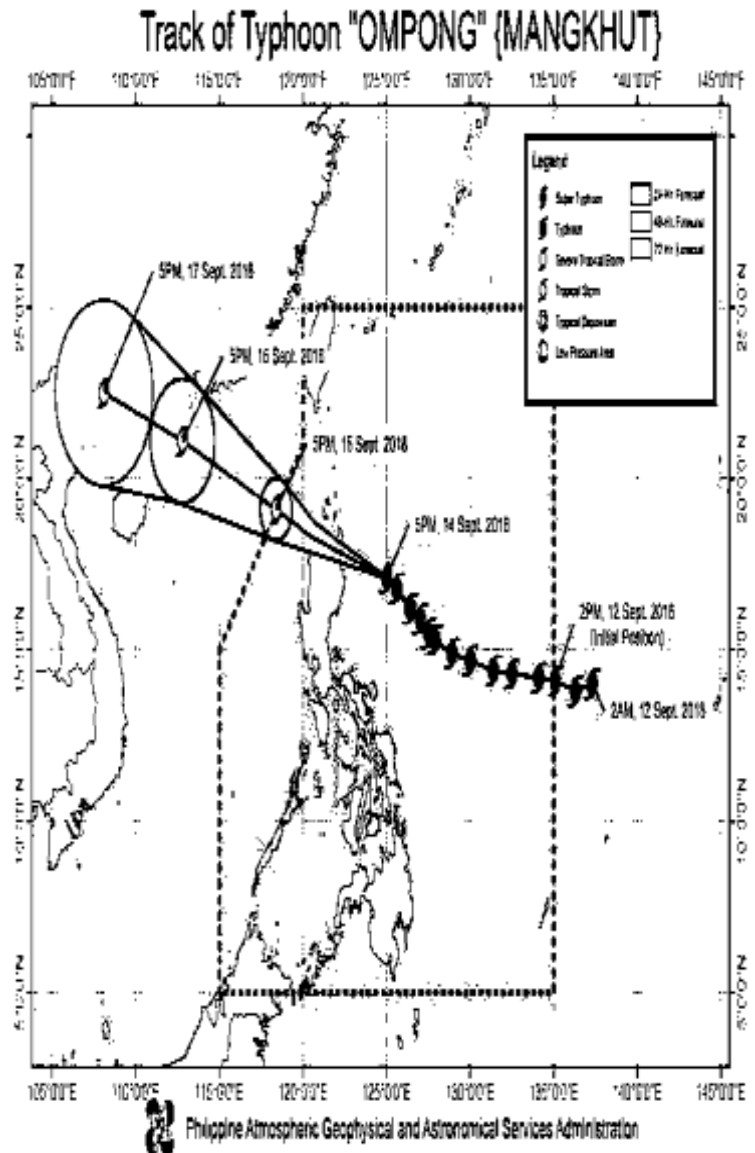
- A. September 16, 2018
- B. September 15, 2018
- C. September 17, 2018
- D. September 14, 2018

5. What is the category of tropical cyclone Ompong?

- A. Typhoon
- B. Tropical Depression
- C. Severe Tropical Storm
- D. Tropical Storm

6. Which of the following weather instruments is used to measure the amount of rainfall?

- A. radiosonde
- B. thermometer
- C. rain gauge
- D. barometer



7. If a typhoon is located  $134^{\circ}$  E,  $10^{\circ}$  N, is it \_\_\_\_\_.  
 A. approaching PAR C. within PAR  
 B. leaving PAR D. near PAR
8. What does the acronym PAR stands for?  
 A. Philippine Area of Responsibility C. Philippine Agricultural Responders  
 B. Philippine Area of Response D. Philippine Acquired Responsibility
9. Which of the following best describes why PAGASA must monitor tropical cyclones near the PAR?  
 1. to prevent loss of lives  
 2. to prepare the community for preemptive evacuation if necessary  
 3. to secure agricultural products  
 4. to bring down large tarpaulin billboards in major highways or roads  
 A. 1 and 2 B. 3 and 4 C. 1, 2 and 3 D. 1, 2, 3 and 4
10. A tropical cyclone is given a Philippine Name once it enters the PAR.  
 A. Yes B. No C. Cannot be determined D. Both A&

#### REFERENCE:

##### Books

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 Campo, Pia C., et al. *Science Grade 8 Learners' Module*, First Edition, 2013. Vibal Publishing House, Inc. 2013

##### Websites

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<https://www.propofs.com/quiz-school/story.php?title=mjmwzm3naxix8>  
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<https://study.com/academy/practice/typhoon-facts-quiz>  
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[www.hirricanescience.org/forecast](http://www.hirricanescience.org/forecast)

#### ANSWER KEY

##### PRE- TEST

- 1 C
- 2 C
- 3 C
- 4 B
- 5 B

##### Looking back

- 1 Typhoon
- 2 Tropical Depression
- 3 Meteorology
- 4 PAGASA
- 5 Coriolis Effect/Force

Lesson 1

##### Activity 1



(5 points) for The image of PAR after plotting the coordinates

##### Guide Questions

- 1 No
- 2 No
- 3 Yes
4. Yes, near Visayas Region
5. A typhoon is inside PAR if it enters the set of boundary of  $5^{\circ}$ N  $115^{\circ}$ E,  $15^{\circ}$ N  $115^{\circ}$ E,  $21^{\circ}$ N  $120^{\circ}$ E,  $25^{\circ}$ N  $135^{\circ}$ E and  $5^{\circ}$ N  $135^{\circ}$ E.

##### Activity 2

- 1 Hygrometer / measures humidity
- 2 Anemometer / measures wind speed and direction
- 3 Thermometer / measures temperature
- 4 Rain gauge / measures the amount of rainfall
5. Barometer / measures air pressure

##### Check your Understanding

1. Philippine Area of Responsibility
2. PAGASA, PAGASA is the acronym of Philippine Atmospheric, Geophysical, and Astronomical Services Administration
3. Radiosondes, Rain gauge, Barometer, Hygrometer, Anemometer, Thermometer, Sling psychrometer
4. Ulysses is categorized as "Typhoon"
5. answers may include  
 \* flood, landslides, damaged to crops  
 damaged to infrastructures ex.  
 Houses, buildings, dikes, bridges  
 Cut off electricity, damaged cell sites

##### Post Test

- |     |       |
|-----|-------|
| 1 A | 6. C  |
| 2 B | 7. D  |
| 3 B | 8. A  |
| 4 A | 9. D  |
| 5 A | 10. D |