



## What Is This Module About?

Did you know that the Philippines has about 22 typhoons every year? What parts of the country are often visited by typhoons? How much do you know about typhoons?

In this module, you will learn how typhoons or storms are formed and how they move. You will also learn what the PAGASA typhoon warning signals stand for. Furthermore, you will learn why the Philippines is often visited by typhoons, and which areas are commonly affected by typhoons. All this information is helpful because it will broaden your scientific understanding of a common natural phenomenon.

This module is divided into two lessons:

Lesson 1 – *How Do Typhoons Occur and Move?*

Lesson 2 – *Why Is the Philippines Often Visited by Typhoons?*

After studying this module, you can read another one entitled ***Preparing For Typhoons***. This discusses what you need to do to be ready when a typhoon comes to your area.



## What Will You Learn From This Module?

After studying this module, you should be able to:

- ◆ define what a typhoon is;
- ◆ identify the different parts of a typhoon;
- ◆ explain how typhoons occur and move;
- ◆ describe the PAGASA public storm (typhoon) warning signals;
- ◆ explain why the Philippines is often visited by typhoons; and
- ◆ identify areas in the Philippines commonly affected by typhoons.



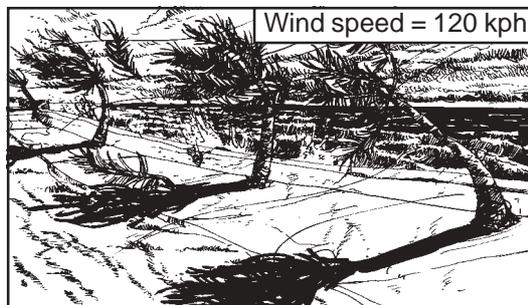
## Let's See What You Already Know

Before studying this module, take this test first to find out what you already know about the topic. Write the letter of the correct answer in the space before each number.

- \_\_\_\_\_ 1. Look at the picture. What storm signal corresponds to the typhoon shown below?



- a. Storm Signal Number 1                      c. Storm Signal Number 3  
b. Storm Signal Number 2                      d. Storm Signal Number 4
- \_\_\_\_\_ 2. Here is another picture. What is the appropriate storm signal for it?



- a. Storm Signal Number 1                      c. Storm Signal Number 3  
b. Storm Signal Number 2                      d. Storm Signal Number 4
- \_\_\_\_\_ 3. Which government agency gives weather reports?
- a. PHIVOLCS  
b. PAGASA  
c. DSWD  
d. Disaster Coordinating Council

- \_\_\_\_\_ 4. Which of the following can occur when there is a typhoon bring?
- a. big rising waves
  - b. dangerous winds
  - c. flashfloods
  - d. all of the above
- \_\_\_\_\_ 5. If Storm Signal No. 4 is raised, the speed of the wind is at least:
- a. 85 kph
  - b. 100 kph
  - c. 120 kph
  - d. 186 kph
- \_\_\_\_\_ 6. Which part of a typhoon is very calm?
- a. head
  - b. tail
  - c. eye wall
  - d. eye
- \_\_\_\_\_ 7. Where are typhoons mostly formed?
- a. high pressure areas
  - b. areas with low altitudes
  - c. rain forest
  - d. tropical seas
- \_\_\_\_\_ 8. What is the part of the typhoon that surrounds the eye?
- a. tail
  - b. head
  - c. eye wall
  - d. core

- \_\_\_\_\_ 9. Which of the following places is a typhoon area?
- a. Batanes
  - b. Cagayan de Oro
  - c. Bacolod
  - d. Davao
- \_\_\_\_\_ 10. What does PAGASA stand for?
- a. Philippine Atmospheric, Geophysical and Astronomical Services Administration
  - b. Philippine Atmospheric, Geothermal and Astronomical Services Administration
  - c. Philippine Atmospheric, Geophysical and Astronomical Services Agency
  - d. Philippine Atmospheric, Geophysical and Astral Services Administration

Well, how was it? Do you think you fared well? Compare your answers with those in the *Answer Key* on page 28.

If all your answers are correct, very good! This shows that you already know much about the topics in this module. You may still study the module to review what you already know. Who knows, you might learn a few more new things as well.

If you got a low score, don't feel bad. This means that this module is for you. It will help you understand important concepts that you can apply in your daily life. If you study this module carefully, you will learn the answers to all the items in the test and a lot more! Are you ready?

You may now go to the next page to begin Lesson 1.

## How Do Typhoons Occur and Move?

Typhoons are one of the most destructive natural calamities that often hit our country experiences. A typhoon is a vast (very big) mass of moist (slightly wet) air moving very fast in circles. It is formed in the warm seas. It brings heavy rains, dangerous winds, flashfloods and big rising waves. A typhoon can destroy lives, crops and properties.

In this lesson, you will learn how typhoons are formed in the tropical seas and how they move over land. You will learn about the two different parts of a typhoon: the eye and the eye wall. You will also learn about the PAGASA public storm warning signals.

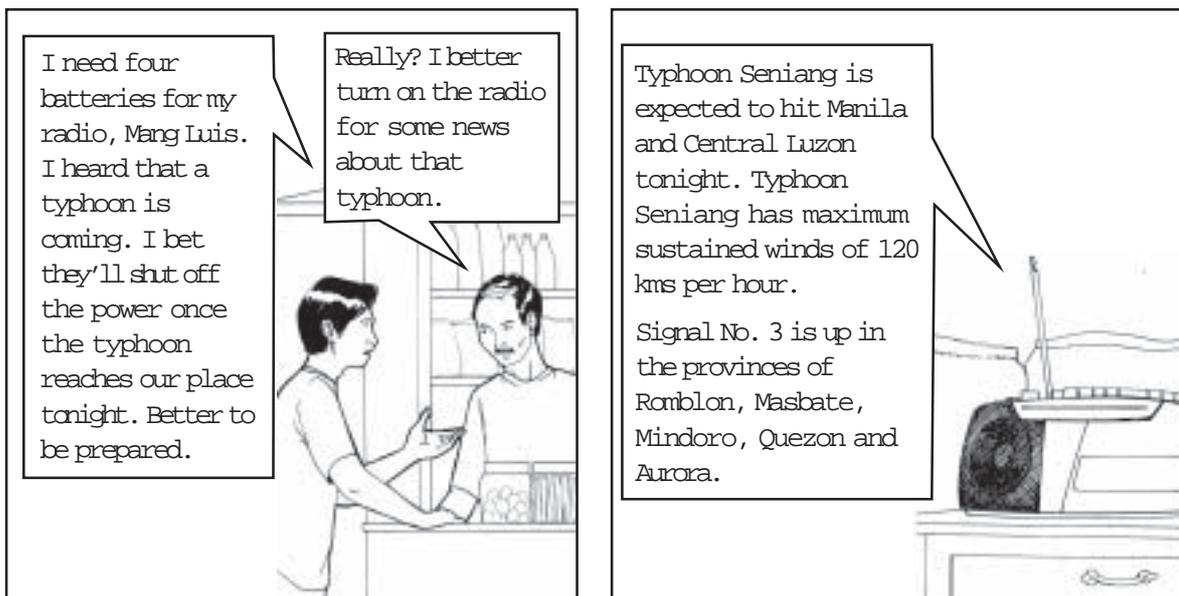
If you see any word you do not understand while reading the module, you may turn to the *Glossary* on page 31 to find its meaning.



### Let's Read

Read the dialogue below. Find out how a typhoon is formed.

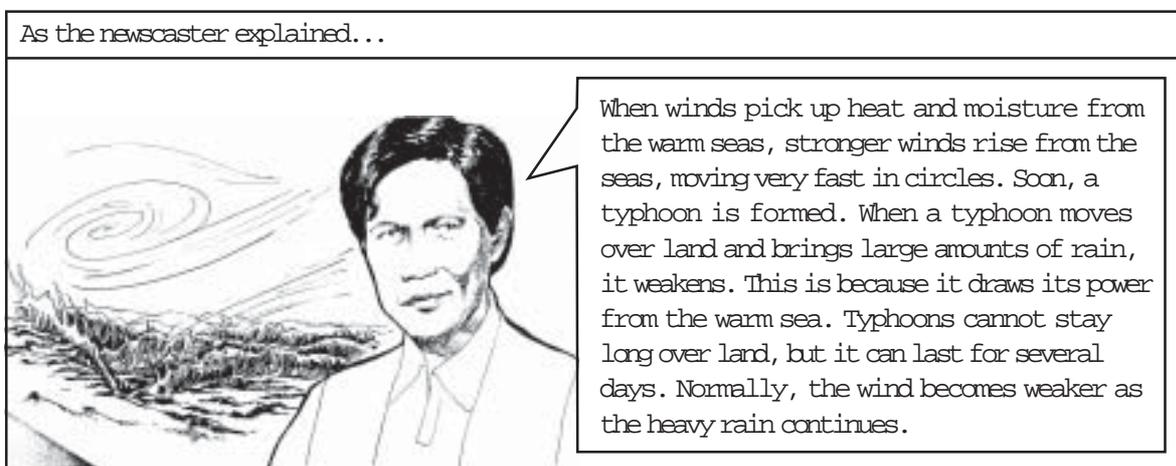
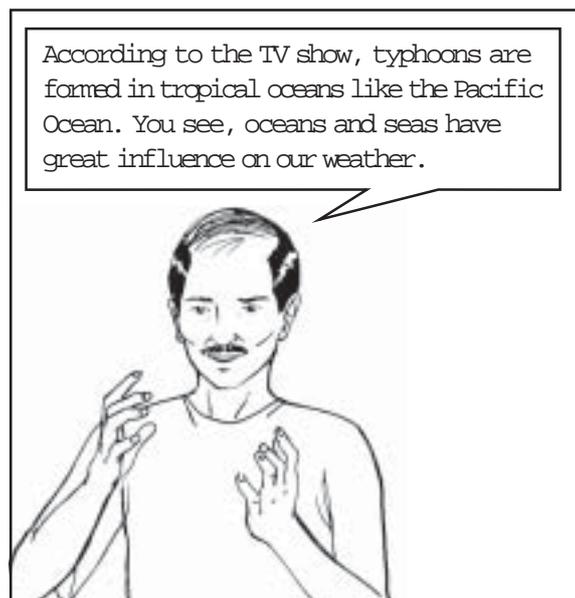
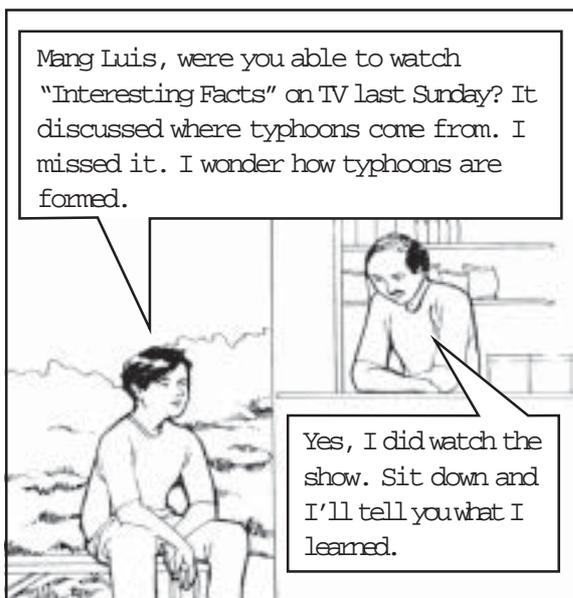
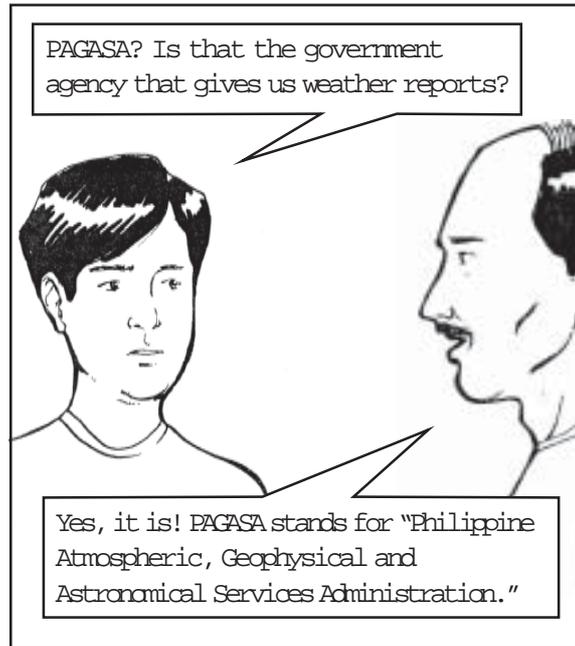
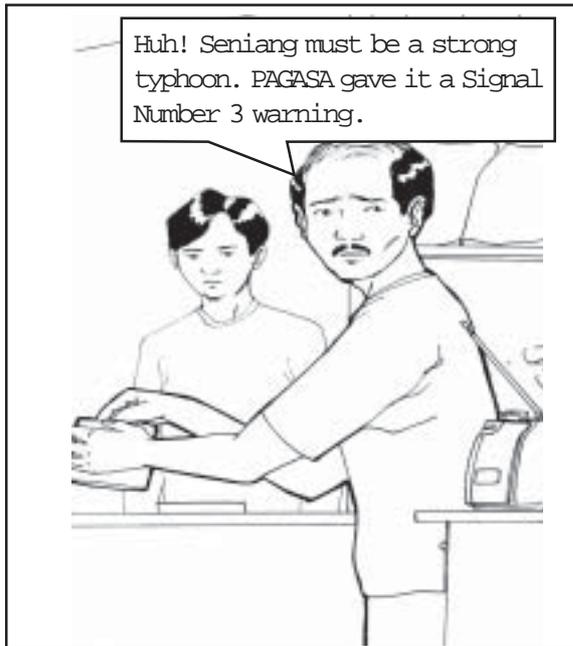
#### Learning Inside a Sari-Sari Store

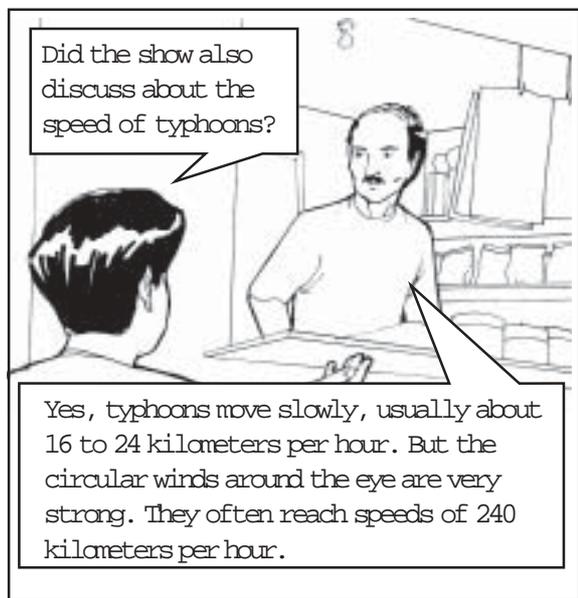
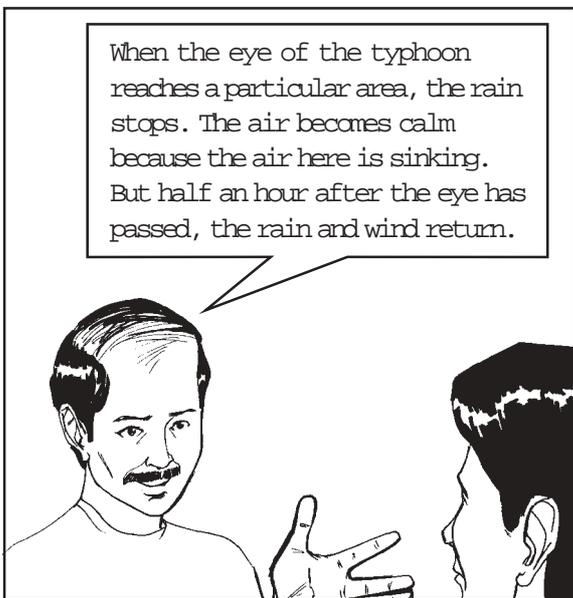
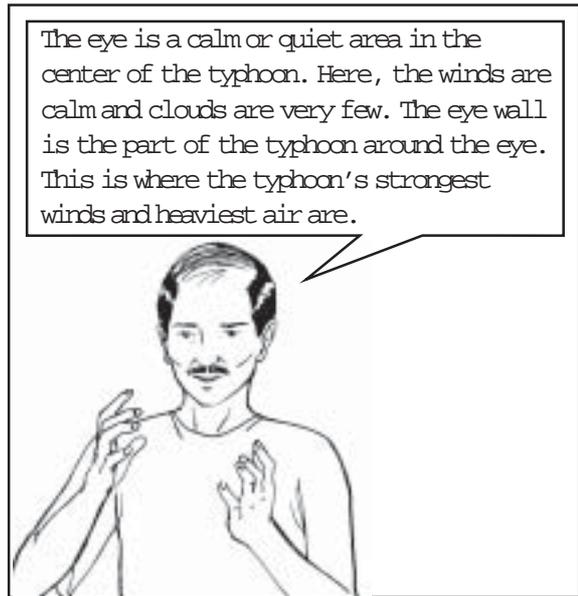
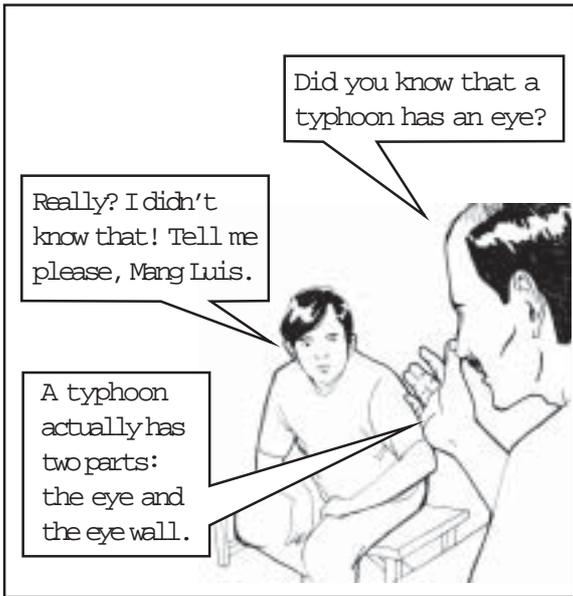


I need four batteries for my radio, Mang Luis. I heard that a typhoon is coming. I bet they'll shut off the power once the typhoon reaches our place tonight. Better to be prepared.

Really? I better turn on the radio for some news about that typhoon.

Typhoon Seniang is expected to hit Manila and Central Luzon tonight. Typhoon Seniang has maximum sustained winds of 120 kms per hour. Signal No. 3 is up in the provinces of Romblon, Masbate, Mindoro, Quezon and Aurora.







## Let's Think About This

Based on what you have read, answer the following questions.

1. What did Alex learn from Mang Luis?

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2. In your own words, explain how typhoons are formed.

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3. What happens when the eye of the typhoon reaches your place?

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4. Describe the wind and rain inside the eye wall.

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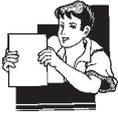
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Compare your answers with those in the *Answer Key* on pages 28–29.

Having learned the two different parts of a typhoon and how a typhoon is formed, let us now look into its movement and speed.



## Let's Learn

Can you see the wind? Can you feel it? How can you measure the wind? There are a number of ways of measuring the direction and speed of surface wind. The simplest way is through observation.

The weather is said to be fine if the speed of the wind is one kilometer per hour (1 kph). If the wind raises dust and paper, and moves small branches of trees, it is said to have a speed of 20 to 28 kph.

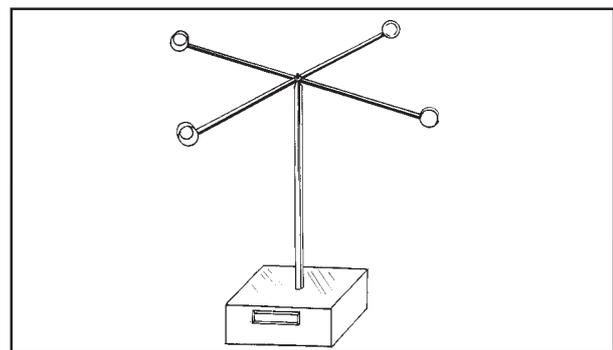
Winds that have a speed of 30 kph and above cause a storm. A *storm* or *typhoon* is a vast mass of moist air moving very fast in circles. It is formed in the warm seas, and is often accompanied by heavy rains. A storm can uproot big trees, and it can damage many crops, houses, posts and other structures. The term “storm” is only used in countries in the Western Pacific area and the China Sea, which include the Philippines. Storms occurring over the North Atlantic Ocean are called *hurricanes*, while storms over the Indian Ocean are referred to as *tropical cyclones*.

Look at the picture. What do you think it is? Write your answer below.

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This instrument is called an *anemometer*. It is a device for measuring the speed of surface winds.

The anemometer is a device that counts its own rotations. The speed of rotation depends on the speed of the wind that passes through it.



## Let's Read

### PAGASA Typhoon Signals

After a discussion with Mang Luis about typhoons the other week, Alex decided to ask a question in a science-oriented radio program.

We have a phone-in question about typhoons from Alex Madrona.

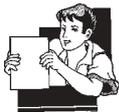
What are the different typhoon warning signals given by PAGASA?

Typhoon Signal Number 1 means that we experience winds of 30 to 60 kph and showers.

Typhoon Signal Number 2 is up when winds blow at 61 to 100 kph. Branches of trees are broken by the winds, causing a little damage to structures.

Typhoon Signal Number 3 is up when the winds blow at 100 to 185 kph. Trees can be blown down. The damage this kind of typhoon causes is great.

Typhoon Signal Number 4 is up when the winds blow at 186 kph and above. The damage this kind of typhoon can cause is very great.



## Let's Learn

You learned from the previous section that there are four typhoon (storm) signal numbers. Let's discuss this further.

### The Philippine Storm Warning Signals

Signal No.	Wind Speed (kph)
1	30 – 60
2	61 – 100
3	101 – 185
4	186 above

Below are additional descriptions for each signal.

### **Typhoon Signal Number 1**

- ◆ May be accompanied by rain showers.
- ◆ People are advised to listen to radio announcements about the weather from PAGASA every six hours.
- ◆ Business is open as usual. Schools and offices are also open.

### **Typhoon Signal Number 2**

- ◆ Branches of trees are broken and there is damage to structures.
- ◆ Everyone is advised to listen to radio announcements about the weather from PAGASA.
- ◆ Classes in elementary and high school may be suspended.
- ◆ At home, light housing materials like roofs and windows should be tied or attached well so that the winds will not blow them away.

### **Typhoon Signal Number 3**

- ◆ Trees may be completely uprooted.
- ◆ People are advised to move to stronger or more stable buildings. If their homes are stable enough, they should stay home and not go out.
- ◆ People should leave low places, especially those near rivers.
- ◆ Electric power may be cut off.
- ◆ Overall damage to farms and factories may be severe.
- ◆ It is dangerous to travel by plane or ship.

### **Typhoon Signal Number 4**

- ◆ This is a strong typhoon that causes very great damage.
- ◆ Offices and schools are closed.

Now that you have learned about the four typhoon warning signals, can you differentiate these signals? When was the last time your area experienced a storm? Can you recall what signal was raised? What did you observe about the weather at that time?

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The last time your area experienced a storm, you may have noticed several things. First of all, PAGASA may have raised the storm warning level in your area. You might have experienced strong winds and rain, and you probably did not leave your home. If the storm was very strong, trees might have been toppled by the wind, and there might have been other damages as well.

## Let's See What You Have Learned

Matching Type. Write the letter of the correct answer inside the box.

- |   |   |
|---|---|
| <input type="checkbox"/> 1. Winds             | a. Storms occurring over the North Atlantic Ocean |
| <input type="checkbox"/> 2. PAGASA            | b. How fast the wind is                           |
| <input type="checkbox"/> 3. Hurricane         | c. It brings out strong winds and heavy rains.    |
| <input type="checkbox"/> 4. Typhoon           | d. Blue skies and little or no rain               |
| <input type="checkbox"/> 5. Signal No. 4      | e. Air in motion                                  |
| <input type="checkbox"/> 6. Anemometer        | f. Business may be carried out as usual.          |
| <input type="checkbox"/> 7. Speed of the wind | g. Measure of wind is 1kph                        |
| <input type="checkbox"/> 8. Signal No. 1      | h. Measures the speed of surface winds            |
| <input type="checkbox"/> 9. Fine weather      | i. Work and classes are suspended.                |
| <input type="checkbox"/> 10. Eye              | j. Forecasts weather conditions                   |

Compare your answers with those in the *Answer Key* on page 29.



## Let's Remember

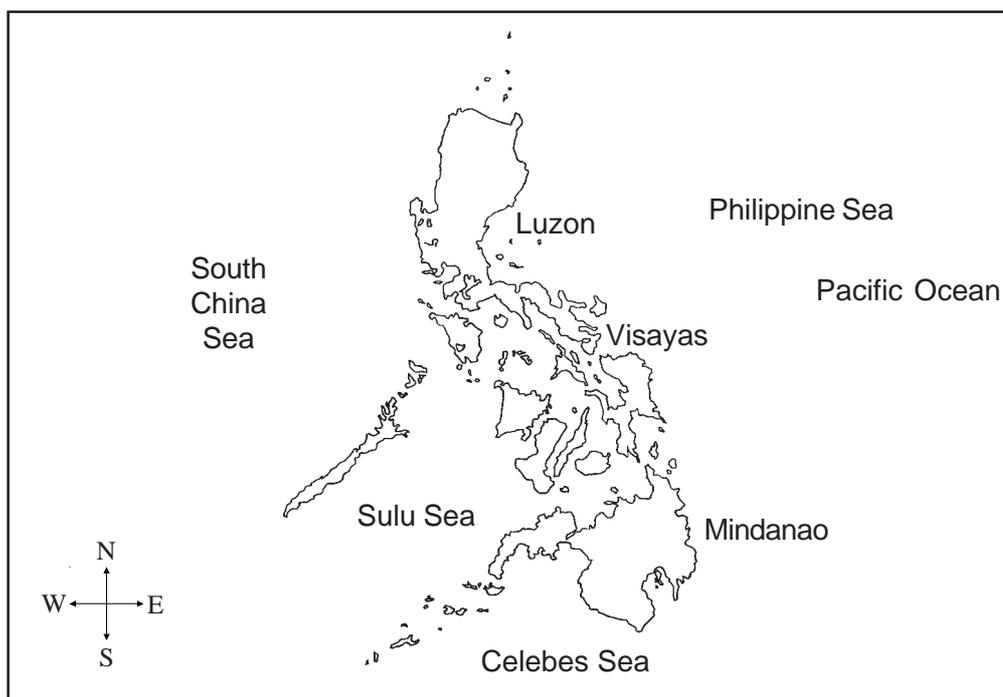
- ◆ The typhoon is one of the most destructive and life-threatening natural calamities in the Philippines. It is a very big mass of whirling moist air formed in warm seas. It brings heavy rains, strong winds, coastal floods and dangerous waves. Typhoons are also known as storms, hurricanes, and tropical cyclones.
- ◆ A typhoon has two parts: the eye and the eye wall. The eye is the calm area in the center of the typhoon where winds are still (not moving) and clouds are very few. The eye wall is the part of the typhoon that surrounds the calm eye. It brings the strongest winds and the heaviest air.
- ◆ Typhoons are formed when the wind picks up heat and moisture from warm seas. Stronger winds rise up from the sea moving in circles or in circular motions. Typhoons weaken when they move over land because they draw energy from the warm sea. But typhoons can last for several days.
- ◆ There are two ways of measuring the speed of wind: by observation and by using an anemometer. An anemometer is a device that counts its own rotations. Its speed of rotation depends on the speed of the wind that passes through it.
- ◆ There are four typhoon warning signals given by PAGASA.

### The Philippine Storm Warning Signals

Signal No.	Wind Speed (kph)
1	30 – 60
2	61 – 100
3	101 – 185
4	186 above

# Why Is the Philippines Often Visited by Typhoons?

The Philippines is often visited by typhoons. Close to 22 typhoons visit it yearly. Have you ever wondered why this is so? You will learn the answer to this question in this lesson. You will also learn which areas in the country are often visited by typhoons.



In the previous lesson, we learned that typhoons are formed in warm seas and then they move on to land. If you locate the Philippines on the world map, you will see that large bodies of water surround the archipelago. Do you know the oceans that surround the Philippines? Take a look at the map above. What do you see? The Philippines is bounded on the east by the Pacific Ocean and the Philippine Sea. It is bounded on the south by Celebes Sea and on the west by South China Sea.

The Philippines is situated near the Western North Pacific Basin. This basin is one of the six areas in the world where most of the typhoons are formed. In most cases, the typhoons that are formed in this area pass along the Philippine territory. This explains why the Philippines often experiences an average of 20 to 22 typhoons yearly. It is said that the Philippines lies along the Pacific typhoon belt.



## Let's Try This

Northern Luzon is one of the areas in the Philippines that are frequently visited by typhoons. There are four other typhoon areas in the country. The following drawings show residents of these areas. Read carefully how they describe their place and write down the answers in the space provided.

1.

My province is called the typhoon islands of the Philippines. It is located north of mainland Luzon where the Pacific Ocean and the China Sea meet. Because the islands are frequently visited by typhoons, our houses have stone walls and cogon roofs. What province do I come from?



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2.

I work in Metro Manila but my family lives in Bulacan. I also have relatives in Bataan. When a typhoon hits Metro Manila, both Bulacan and Bataan are also affected. These three places are interconnected; they are part of one region. Do you know which region they belong to?



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3.

Our region is surrounded by bodies of water and it is also called the gateway to the Pacific. Because of this topography, our place is often hit by typhoons. What region is it? (To give you one more hint, our place is famous as the location of Mayon Volcano.)



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4.

Samar and Leyte are two of the provinces in our region that are often visited by typhoons. Do you know what region we belong to?



Compare your answers with those in the *Answer Key* on page 29.



## Let's Study and Analyze

Study the table below.

### 25 MOST DISASTROUS TYPHOONS IN THE PHILIPPINES (from 1947-1997, over a 50-year period)

Name *	Period of Occurrence	Highest Wind Speed
1. SENING (Joan)	Oct. 11 - 15, 1970	275
2. ROSING (Angela)	Oct. 30 - 04 Nov. 1995	260
3. ANDING (Irma)	Nov. 21 - 27, 1981	260
4. SISANG (Nina)	Nov. 23 - 27, 1987	240
5. SALING (Dot)	Oct. 15 - 20, 1985	240
6. HERMING (Bet)	Aug. 07 - 14, 1987	240
7. AMY	Dec. 06 - 19, 1951	240
8. UNDANG (Agnes)	Nov. 03 - 06, 1984	230
9. RUPING (Mike)	Nov. 10 - 14, 1990	220
10. YOLING (Pay)	Nov. 17 - 20, 1970	200
11. NITANG (Ike)	Aug. 31 - 04 Sept. 1984	220
12. GADING (Peggy)	Jul. 06 - 10, 1986	220
13. TRIX	Oct. 16 - 23, 1952	215
14. UNSANG (Ruby)	Oct. 21 - 26, 1988	215
15. ARING (Bet)	Nov. 02 - 07, 1980	210
16. KADING (Rita)	Oct. 25 - 27, 1978	185
17. DINANG (Lee)	Dec. 23 - 28, 1981	175
18. MONANG (Lola)	Dec. 02 - 07, 1993	170
19. DIDANG (Olga)	May 12 - 27, 1976	150
20. WELING (Nancy)	Oct. 11 - 15, 1982	130
21. BEBENG (Vera)	Jul. 12 - 16, 1983	120
22. BISING (Nelson)	Mar. 22 - 29, 1982	100
23. TITANG (Kate)	Oct. 16 - 23, 1970	095
24. OPENG (Vera)	Nov. 18 - 24, 1973	090
25. URING (Thelma)	Nov. 01 - 06, 1991	075

#### Legend:

\* The CAPITALIZED names are the local or Philippine names of the typhoons while the names in parentheses ( ) are the international names.

UD – Undetermined

B – billion pesos

The data in the table above shows the 25 most disastrous typhoons in the Philippines from 1947 to 1997. Did you notice how big the amount of damage a typhoon can bring? Which do you think was the most damaging typhoon on the list? Why do you say so?

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Review the names of the typhoons. Do you remember when one of these typhoons hit your area?

Based on the data given in the table, below is the summary of the most frequently visited areas of typhoons in the Philippines:

- ◆ Batanes and Northern Luzon (Very frequent, 50-60%)
- ◆ Central Luzon (Frequent, 30-40%)
- ◆ Bicol Region (Frequent, 30-40%)
- ◆ Eastern Visayas (Frequent, 30-40%)
- ◆ Central Visayas (Less frequent, 10-20%)
- ◆ Western Visayas (Less frequent, 10-20%)
- ◆ Northeastern Mindanao (Less frequent, 10-20%)
- ◆ Rest of Mindanao (Rare, less than 10%)

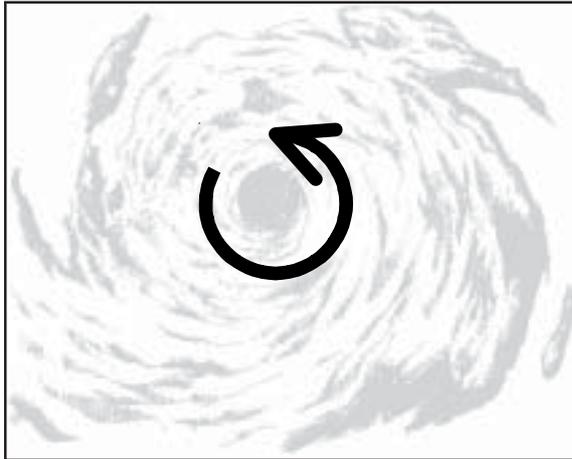
Batanes is known as the typhoon islands of the Philippines. It is located north of mainland Luzon where the Pacific Ocean and China Sea meet. Batanes is isolated from the rest of the country and its weather is very unpredictable. Because the island is frequently visited by typhoons, most of the houses here have stone walls and thatch or cogon roofs.

Central Luzon is often visited by typhoons coming from the Pacific Ocean. The Bicol region, which is known as the gateway to the Pacific, is also visited by typhoons because bodies of water surround it.

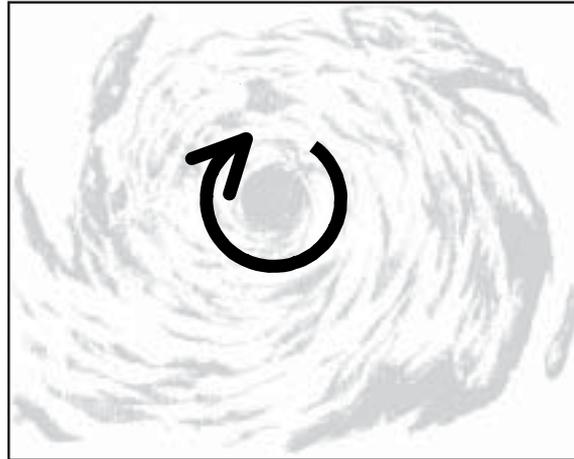
The Eastern Visayas region (particularly Samar and Leyte) is also frequently visited by typhoons because bodies of water surround it.

Do you wonder why Mindanao, except for its northeastern part, is rarely visited by storms?

Since the earth rotates, this produces a force called the Coriolis Force. This refers to the deflection of an object due to the rotation of the earth. The Coriolis effect is the reason why typhoons rotate counterclockwise in the northern hemisphere and clockwise in the southern hemisphere.



Typhoons (called hurricanes) rotate counterclockwise in the northern hemisphere.



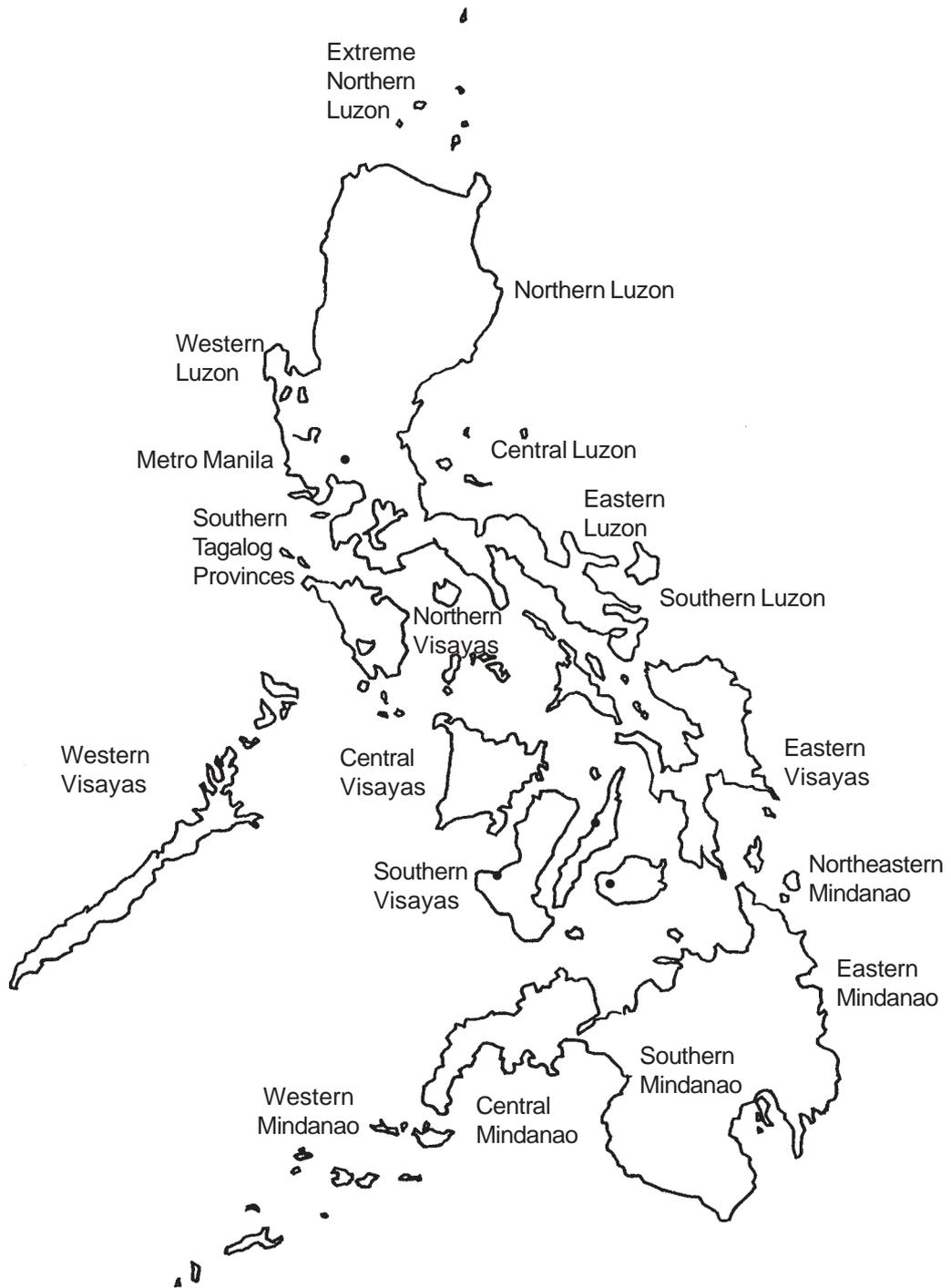
Typhoons (called storms) rotate clockwise in the southern hemisphere.

On a map of the world, Mindanao is located between 5 degrees to 9 degrees north. Due to earth's Coriolis Force (which makes typhoons in the Philippines rotate clockwise), when storms develop on the east of Mindanao, the island is spared. It is only when the storms develop on the north of Mindanao that the rest of Mindanao is hit.



### Let's Try This

Look at the map on the next page. Can you locate where Northern Luzon is? Do you also know where Central Luzon, the Bicol Region and Eastern Visayas are? Try to locate these on the map. What about where you live? Can you point its location on the map?





### Other Forecast Areas

Extreme Northern Luzon	Batanes Group, Babuyan Islar Kalinga, Apayao
Eastern Luzon	Cagayan Valley Provinces (Ca Aurora, Nueva Viscaya), Quez (Camarines Norte, Camarines Catanduanes), Polillo Island
Western Luzon	Ilocos Norte, Ilocos Sur, Abra, Zambales, Bataan, Tarlac, Pal
Southern Tagalog Provinces	Cavite, Laguna, Batangas, Ma Quezon Provinces
Metro Manila	Manila, Quezon City, Pasay C Mandaluyong City, Pasig City, San Juan, Muntinlupa, Paraña Pateros, Taguig
Northern Visayas	Masbate, Romblon, Mindoro, S Capiz, Northern Antique
Southern Visayas	Bohol, Leyte Provinces, Cebu, Southern Antique
Northeastern Mindanao	Surigao del Norte, Surigao del Misamis Oriental, Camiguin Isl
Southern Mindanao	Sultan Kudarat, South Cotaba del Sur



### Let's Talk About This

Have you experienced a typhoon hitting your place or locality? Which of the Philippine forecast areas does your place or locality belong to?

Think of the strongest typhoon that has ever hit your locality. Try recalling the typhoon's name and describe how strong it was. Write down your answers below. You may also discuss your experience with your friends and family.

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## Let's Study and Analyze

Do you wonder why typhoons have names, and who give them names?

Typhoons are named to provide ease of communication between forecasters and the people regarding forecasts, watches and warnings. Since the storms can last a week or even longer, and more than one typhoon can be occurring in the same territory at the same time, names can reduce the confusion about which storm is being described.

A single typhoon has two names: an international name and a local name. (Remember what you have studied in the table on page 16.) These names are usually names of women. There are also a few men's names, names of flowers, animals, birds, trees, or even foods, while some are descriptive adjectives.

The typhoons' international names are contributed by all the nations and territories that are members of the Western North Pacific Ocean's Typhoon Committee, of which the Philippines is a member. Go back to page 16 (25 Most Disastrous Typhoons in the Philippines) and review the international names of the typhoons.

On the other hand, the typhoon's local names are given by PAGASA.

On the next page are the new names of typhoons occurring within the Philippine Area of Responsibility (PAR). The first typhoon of the year starts with the name beginning with letter A, as for example *Auring* under the first column for the year 2001. The next typhoons that occur within the year have names starting with B, C, D, E, F, and so on, alphabetically sequenced. If the number of typhoons occurring within the year exceeds 25, an auxiliary list is used, the first ten of which are shown under each group.

Thus, in the year 2003, the first typhoon to occur will be called Amang, and the second will be Batibot. (See the third column.) In the year 2004, the first typhoon will be Ambo, followed by Biday, Cosme, and so on. (Refer to the fourth column.) Can you find these names in the table?

### New Names of Typhoons in the Philippines

Years	2001 2005 2009 2013	2002 2006 2010 2014
Names of Typhoons	Auring Barok Crising Darna Emong Feria Gorio Huaning Isang Jolina Kiko Labuyo Maring Nanang Ondoy Pabling Quedan Roleta Sibak Talahib Ibbeng Vinta Wilma Yaning Zuma	Agaton Basyang Caloy Dagul Espada Florita Gloria Hambalos Inday Juan Kaka Lagalag Milenyo Neneng Ompong Paeng Quadro Rapido Sibasib Tagabanwa Usman Venus Wisik Yayang Zeny

**Auxilliar**



## Let's Try This

What do you notice about the local names of typhoons? Are majority of them names of females? Can you see some names that are not names of people? Do you also see descriptive names?

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If there would be 26 typhoons in year 2001, what would be the name of the 26<sup>th</sup> typhoon?

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Compare your answers with those in the *Answer Key* on page 29.



## Let's See What You Have Learned

Fill in the blanks with the correct answers.

- 1–2. Give at least two provinces that can be found in Central Luzon.  
\_\_\_\_\_ and \_\_\_\_\_
3. When a place is surrounded by \_\_\_\_\_, it is often visited by typhoons.
- 4–5. Give the two most frequently visited areas of typhoons in the Philippines. About 50% to 60% of the total number of typhoons hit these places. \_\_\_\_\_ and \_\_\_\_\_
6. \_\_\_\_\_ is known as the gateway to the Pacific. This part of the country is often hit by typhoons because bodies of water surround it.
- 7–8. Eastern Visayas is also a typhoon area of the country. Name the two provinces in Eastern Visayas that are often centers of typhoons in the area. \_\_\_\_\_ and \_\_\_\_\_
9. The Philippines is situated near the Western North Pacific Basin. Because of this location, the Philippines lies along the Pacific \_\_\_\_\_, so it is frequently visited by typhoons.
10. Because of the \_\_\_\_\_ Force, Mindanao is rarely hit by typhoons.

Compare your answers with those in the *Answer Key* on pages 29–30.



## Let's Remember

- ◆ The Philippines is surrounded by huge bodies of water: the Pacific Ocean (east) and China Sea (west). It is situated near the Western North Pacific Basin where most of the typhoons are formed. An average of 20 to 22 typhoons pass along the Philippine territory yearly.
- ◆ The typhoon areas in the Philippines are Batanes, the Northern and Central parts of Luzon, Bicol Region, and Eastern Visayas (particularly Samar and Leyte).
- ◆ Typhoons are named to provide ease of communication between forecasters and the people regarding forecasts, watches and warnings. Typhoons have both international and local names.
- ◆ The Coriolis Force is the deflection of an object due to the rotation of the earth. The Coriolis Effect is the reason why typhoons (called hurricanes) rotate counterclockwise in the Northern hemisphere, and clockwise in the Southern hemisphere (where they are called storms). It is also the reason why Mindanao is rarely hit by typhoons.



## Let's Sum Up

- ◆ A typhoon is a very large mass of whirling moist air formed in warm seas. It brings heavy rains, strong winds, coastal flooding and dangerous waves. A typhoon can destroy lives and damage crops and property.
- ◆ Typhoons are also known as storms, tropical cyclones and hurricanes.
- ◆ A typhoon has two parts: the eye and eye wall.
- ◆ Typhoons are formed in warm seas when the wind picks up heat and moisture.
- ◆ There are two ways of measuring the speed of wind: by observation and by using an anemometer. An anemometer is a device for measuring the speed of surface wind.

- ◆ The PAGASA Typhoon Warning Signals are as follows:

Signal No.	Wind Speed (kph)	T
1	30 – 60	
2	61 – 100	
3	101 – 185	
4	186 and above	

- ◆ The Philippines is surrounded by huge bodies of water: the Pacific Ocean (east) and China Sea (west). It is situated near the Western North Pacific Basin where most of the typhoons are formed. An average of 20 to 22 typhoons pass along the Philippine territory yearly.
- ◆ The typhoon areas in the Philippines are Batanes, the Northern and Central parts of Luzon, Bicol Region, and Eastern Visayas, (particularly Samar and Leyte).
- ◆ Typhoons are named to provide ease of communication between forecasters and the people regarding forecasts, watches, and warnings. Typhoons have both international and local names.
- ◆ The Coriolis Force is the deflection of an object due to the rotation of the earth. The Coriolis Effect is the reason why typhoons (called hurricanes) rotate counterclockwise in the Northern hemisphere, and clockwise in the Southern hemisphere (where they are called storms). It is also the reason why Mindanao is rarely hit by typhoons.



## What Have You Learned?

1. Write three sentences to describe typhoons.

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2. How do typhoons move on land?

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3. Why is the Philippines frequently visited by typhoons?

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4. Discuss the four typhoon warning signals of PAGASA.

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5. Explain why Batanes is known as the typhoon islands in the Philippines.

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Check your answers against those in the *Answer Key* on page 30.

How did you do? If you got all the correct answers, very good! That means you understood the topics in this module. You can now move on to the next BNFE A&E module, namely ***Preparing For Typhoons***.

If you had some mistakes, don't worry. Just review the parts of the module that you did not understand.



## Answer Key

### A. Let's See What You Already Know (pages 2–4)

1. **d** – Signal No. 4 has a wind speed of 186 kph and above.
2. **c** – Signal No. 3 has a wind speed of 101 up to 185 kph.
3. **b** – PAGASA is the government agency that gives weather forecasts.
4. **d** – all of the above. A typhoon brings heavy rains, dangerous winds, flashfloods and big rising waves.
5. **d** – Signal No. 4 has a wind speed of 186 kph and above.
6. **d** – The eye is the part of the typhoon which is very calm.
7. **d** – Most typhoons are formed in tropical seas.
8. **c** – The eye wall surrounds the eye.
9. **a** – The Batanes group of islands is known as the typhoon islands of the Philippines.
10. **a** – PAGASA stands for Philippine Atmospheric, Geophysical and Astronomical Services Administration.

### B. Lesson 1

*Let's Think About This (page 8)*

1. The things that Alex learned from Mang Luis were:
  - (a) PAGASA is Philippine Atmospheric, Geophysical and Astronomical Services Administration. It gives us weather reports and forecasts.
  - (b) Typhoons are formed in tropical seas when the wind picks up heat and moisture. Stronger winds rise from the sea, moving very fast in circles.
  - (c) A typhoon has two parts: the eye and eye wall. The eye is the calm area of the typhoon while the eye wall surrounds the eye.
  - (d) Typhoons move slowly, usually about 16 to 24 kph. But the circular winds surrounding the center are very strong and often reach a speed of 240 kph.

2. Typhoons are formed when winds pick up heat and moisture from the tropical seas. Stronger winds rise up from the sea in circular motion or in circles moving very fast.
3. When the eye reaches a particular area, the rain stops and the air becomes calm.
4. Inside the eye wall, the winds are strongest and the air is heaviest.

*Let's See What You Have Learned (page 12)*

- |      |       |
|------|-------|
| 1. e | 6. h  |
| 2. j | 7. b  |
| 3. a | 8. f  |
| 4. c | 9. g  |
| 5. i | 10. d |

### **C. Lesson 2**

*Let's Try This (pages 15–16)*

1. Batanes
2. Central Luzon
3. Bicol
4. Eastern Visayas

*Let's Try This (page 24)*

1. Yes, the majority of names are names of females. Some are not names of people, like Falcon and Milenyo. There are also some descriptive names on the list, such as Pogi, Sikat and Sigla.
2. Looking at the table on page 23, we can easily find the name of the 26<sup>th</sup> typhoon in 2001. Just find the column of the year 2001, and then count from the top of the list of names. You will see that the 26<sup>th</sup> typhoon will be named Alamid.

*Let's See What You Have Learned (page 24)*

- 1– 2. The Central Luzon provinces are: Zambales, Tarlac, Bataan, Nueva Ecija, Pampanga, Bulacan. (Any two of these are correct.)
3. bodies of water

4. Batanes
5. Northern Luzon
6. Bicol Region
7. Samar
8. Leyte
9. typhoon belt
10. Coriolis

#### **D. What Have You Learned?** *(pages 26–27)*

1. Describe typhoons.
  - a. Typhoons bring heavy rains and strong winds.
  - b. Typhoons cause floods and coastal waves.
  - c. Typhoons destroy lives, and damage crops and properties.
2. Typhoons move slowly on land, usually at about 16 to 24 kph. But the circular winds around the center are very strong. They often reach a speed of about 240 kph.
3. The Philippines is frequently visited by typhoons because:
  - a. Large bodies of water surround it.
  - b. The Philippines is situated along the Pacific typhoon belt.
  - c. The Philippines is located near the Western North Pacific Basin. Most of the typhoons formed in this basin pass along the Philippine territory.
4. The PAGASA typhoon warning signals are:
  - a. Signal No. 1 with a speed of 30 to 60 kph
  - b. Signal No. 2 with a speed of 61 to 100 kph
  - c. Signal No. 3 with a speed of 101 to 185 kph
  - d. Signal No. 4 with a speed of 186 kph and above
5. Batanes is known as the typhoon islands of the Philippines because it has the most number of typhoons in a year. Batanes' weather is unpredictable because the island is located north of Luzon where the Pacific Ocean and China Sea meet. Oceans and seas have a great influence on the weather.



## Glossary

**Air** The mixture of gases that surround the earth; atmosphere

**Anemometer** An instrument for measuring the speed of wind

**Eye** The relatively calm center of a storm or cyclone where the sky may be clear or just partly cloudy.

**Eye Wall** This is the area where the strongest winds and rains of a storm can be found. Also called the “wall cloud.”

**Flood** A great flow of water over what is usually dry land

**Frequent** Happening often; common

**Hurricanes** Storms occurring over the North Atlantic Ocean

**PAGASA** (Philippine Atmospheric, Geophysical and Astronomical Services Administration) Government agency that monitors the weather

**PAR (Philippine Area of Responsibility)** The area in which any weather disturbance will likely affect weather in the Philippines. This area is bounded by imaginary lines on the surface of the earth that make equal oblique angles with all meridians joining the following points: 25°N 120°E, 5°N 135°E, 5°N 115°E, 15°N 115°E, and 21°N 120°E. Tropical cyclone bulletins are issued by every six or twelve hours for all tropical cyclones within this area.

**Storm** A disturbed state of the earth’s atmosphere, which means destructive or otherwise unpleasant weather, usually with rain. Storm is the term used by territories in the western Pacific area and the China Sea.

**Topography** The physical appearance of the natural features of an area of land, especially the shape of its surface

**Tropical** Referring to an area that is warm and hot

**Tropical cyclone** Storm over the Indian Ocean

**Typhoon** A vast (very big) mass of moist (slightly wet) air moving very fast in circles. It is formed in the warm seas. It brings heavy rains, dangerous winds, flashfloods and big rising waves. A typhoon can destroy lives, crops and properties.

**Typhoon/Public Storm Warning Signals** The tropical cyclone warning signals used by the Philippine weather bureau.

**Weather** Refers to the conditions of the atmosphere including heat or cold, wetness or dryness, calm or storm, clearness or cloudiness.



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