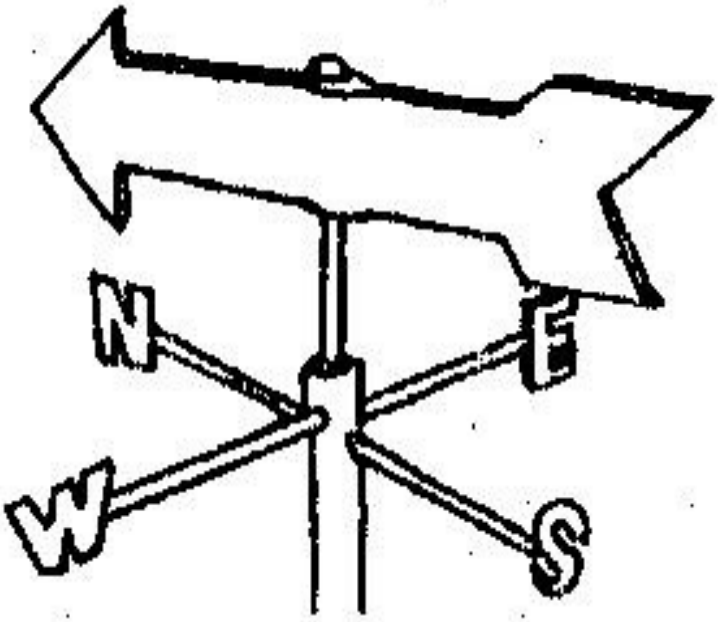
4

Module 55

Science and Health

WIND SPEED AND DIRECTION



A DepEd-BEAM Distance Learning Program supported by the Australian Agency for International Development

To the Learner

Wind is moving air. Meteorologist study wind speed and direction to know the weather using weather instruments like wind vane and anemometer.

Do you notice that there are times when the air is still while at other times it is moving? Do you notice that the wind moves in one direction at one time and the next time, it moves in another direction? How many directions does the wind blow? Let us investigate in this module.

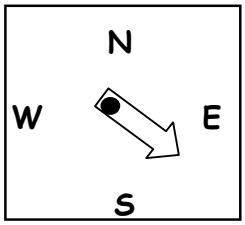
Let's Learn This

Measure and record wind speed and direction for a week using improvised instruments.

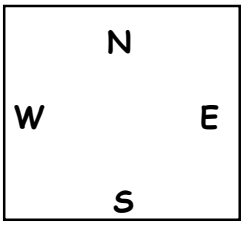
Let's Try This

Draw an arrowhead of a vane to its proper direction. The first one is done for you.

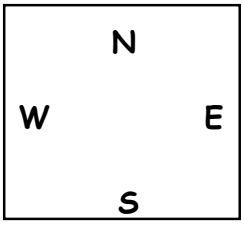
1. Southeast



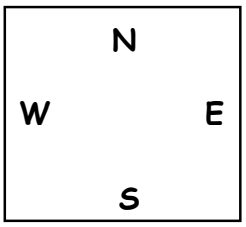
2. North



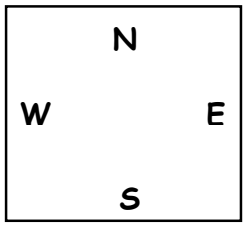
3. Northwest



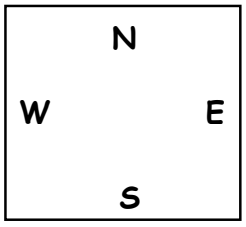
4. West



5. Northeast

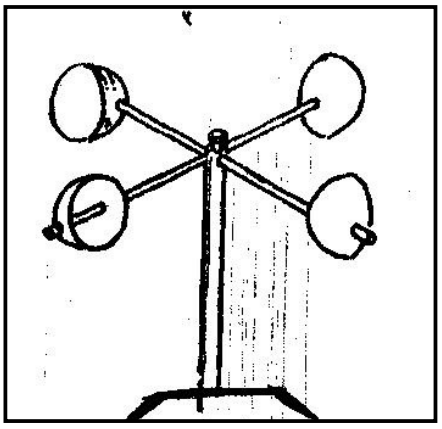


6. East



Let's Study This

Meteorology is the study of all changes in the atmosphere that affects weather. Someone who studies the weather is called a meteorologist. Meteorologist studies weather elements using instruments to help predict weather.



One of the elements is wind speed. Wind speed is measured using an anemometer. It is commonly made up of several cups attached to spokes on a rotating shaft, which turns as the wind blows. Wind speed is usually stated in kilometers per hour.

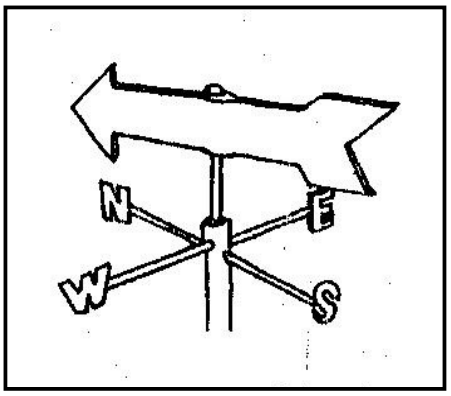
But in using a modified anemometer, a modified Beaufort wind scale will be easier to describe the wind speed.

Modified Beaufort Wind Scale

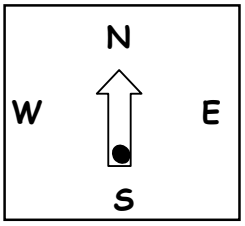
Term	Description
Calm	Smoke goes straight up; anemometer does not turn
Light	Wind is felt on face; anemometer turns; hear the leaves rustle
Moderate	Raises dust; flags starts to flap
Strong	Large branches move; umbrellas turn inside out
Gale	High waves; breaks twigs and small branches of threes minor structural damage may occur

Another weather element is the wind direction which is determined using a wind vane. It has an arrowhead and tail attached to a spoke. As the wind blows, the arrowhead points toward the direction of the wind.

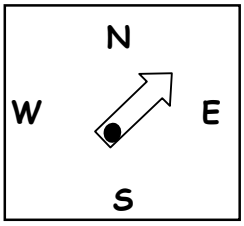
The direction could be north, south, east, west, northeast, northwest, southeast, or southwest.



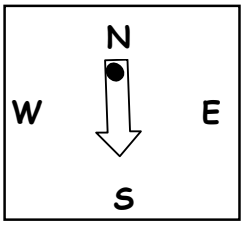
North



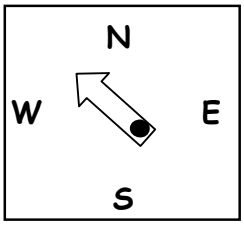
Northeast



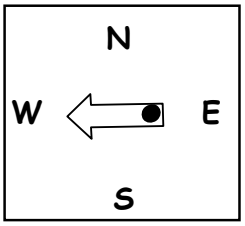
South



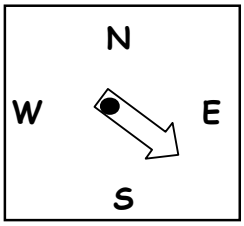
Northwest



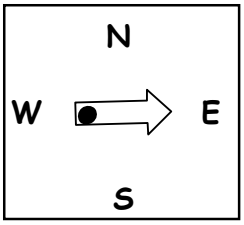
West



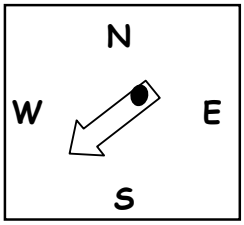
Southeast



East



Southwest



Let's Do This

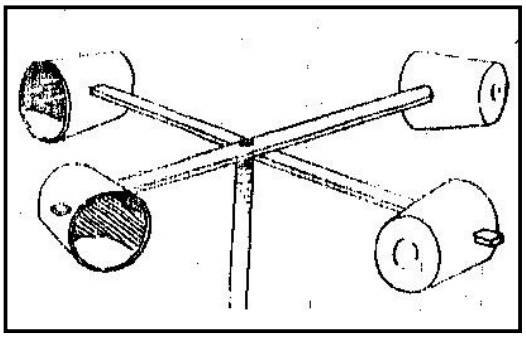
ACTIVITY 1

- Study the model of an improvised anemometer.
- Prepare the following materials:

4 plastic cups, 2 pieces of wood of equal size, nails, knife, scissor.

1. Bore hole on the cups enough to fit the wood on it with a knife or scissor.
2. Attach the cups to each piece of wood. Make sure the paper cup points to one direction.
3. Nail the two pieces of wood together in the middle into a bigger wood or pole. Bore hole bigger than the nail hole so that the wood can turn easily.
4. Implant the wood or pole on the ground.
5. Color one cup so that you can count the number of turns your cups will make in a minute.
6. Place your improvised anemometer in an open space.
7. Observe how it works.
8. Record your data in your notebook similar to the table below.

Time	Wind Speed (No. of turns/minute)



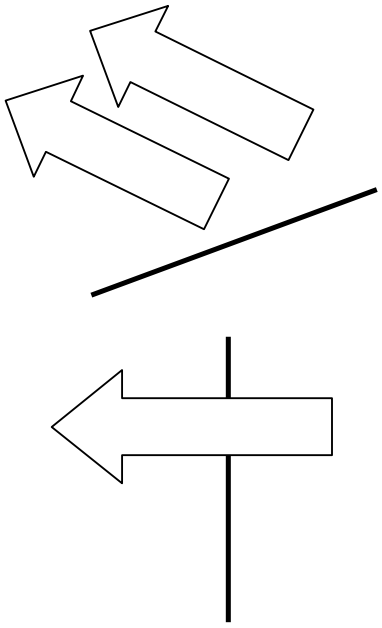
a. How does your improvised anemometer work?
b. What does the speed of the wind show? (calm, light, moderate, strong)

ACTIVITY 2

- Prepare the following materials:

thick cardboard, plastic straw, nail

1. Get a thick cardboard.
2. Cut two arrows of the same size. Be sure to make to make the tails bigger than the arrow heads.
3. Put a plastic straw between the two arrows.
4. Then put the arrows on top of each other.
5. Staple them together.
6. Insert a long and thin nail through the straw.
7. Nail it to a pole in the yard.
8. Observe how it works.

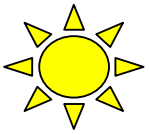


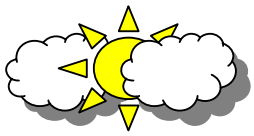
a. How does your improvised wind vane work?
b. What was the direction of the wind?

ACTIVITY 3

- Using your improvised anemometer and wind vane observe the speed and direction of the wind for 5 days.
- Observe also the general weather condition for that day.
- Record your observation on the chart in your notebook.

Weather Condition:

 - Sunny

 Cloudy

 - Windy

 - Rainy

What to Observe	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Wind Speed					
Wind Direction					
Weather Condition					

- Answer the following questions on your notebook.

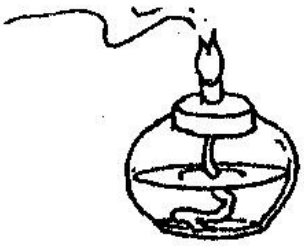
  a. What can you say about wind speed for 5 days?
  b. What can you say about the wind direction for 5 days? Are there changes?
  c. On what weather condition is the wind speed great?

- Print your chart on a manila paper.
- Show your findings to your teacher.

Let's Do More

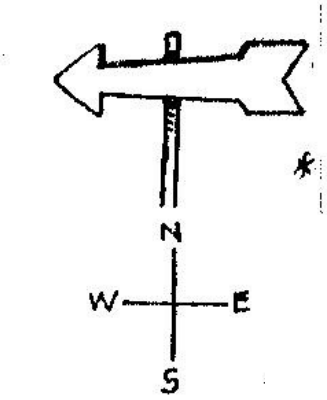
A. Study the illustrations.
Read the directions and draw on your notebook.

1. Look at the smoke coming out from the lighted lamp. Draw an arrow to show the direction from where the wind is blowing.

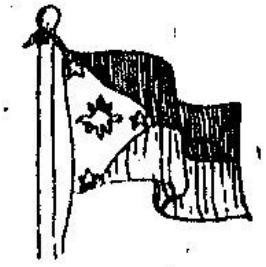


2. Look at the tree. Describe the speed of the wind. Is it slow? Moderate? Strong? Draw an arrow to show from where the wind is blowing.

3. Here is a picture of a wind vane. From what direction is the wind blowing.



4. Look at the flag. What kind of wind do you think is blowing?



5. The weather report below shows the weather condition for the day. Read it carefully and fill in the blanks that follow.

WEATHER REPORT

Metro Manila: Fair Weather condition with brief rain showers and thunderstorm in the afternoon and early evening.

Rest of the Country: Northern and Western Luzon will have occasional rain showers and thunderstorm. Other parts of the country will have fair weather with light winds blowing from the northeast.

Temperature Range: 23-31 ℃

a. The weather condition in Metro Manila is _____.
b. The wind is blowing from _____ direction.
c. The speed of the wind is _____.
d. The general weather condition for the day is _____.
e. The highest temperature reading is _____.

Let's Remember This

- The speed and direction of the wind changes during the day.
- An Anemometer is used to determine the speed of the wind.
- The wind may be calm, light, moderate, strong or gale as described in the Beaufort Wind Scale.
- A wind vane is used to determine the direction of the wind.
- The arrowhead of the vane points the direction from where the wind is coming from.

Let's Test Ourselves

A. Study the three weather reports below.
Record in your notebook the wind speed and direction using the table below.

Day	Wind Speed	Wind Direction
1		
2		
3		

DAY 1

WEATHER NEWS

Metro Manila will continue to have sunny and cloudy periods. Northern Luzon and the whole of Mindanao will experience cloudy skies with scattered rain showers and isolated thunderstorms. The rest of the country will be sunny and partly cloudy with isolated rain showers. Range of temperature 23-32 ˚C. Low tide: 2:30 AM; High tide: 6:08 PM; Sunrise: 6:24; Sunset: 5:56.

DAY 2

Metro Manila will be partly cloudy with light winds blowing from the northeast. Extreme northern and eastern Luzon including the eastern section of Mindanao will experience cloudy skies with scattered rain showers. Sunrise comes at 6:24, Sunset at 5:56.

DAY 3

Metro Manila will experience cloudy skies with light winds blowing from the northeast. Extreme northern and eastern Luzon, eastern Visayas and Mindanao will have cloudy skies with scattered rain showers while the rest of the country will have partly cloudy skies with isolated rain showers. Sunrise comes at 6:03 and sunset at 5:58 P.M.

Answer the questions on your notebook.

1. Is there a change in the wind speed from day to day?
2. What are these changes in wind speed?
3. What is the weather condition on Day 1? Day 2? Day 3?
4. From what direction is the wind blowing on Day 1? Day 2? Day 3?
5. Is there a change in the wind direction in three days?
6. How does wind effect the weather conditions?

B.

1. What is the use of a wind vane?

2. What is the use of an anemometer?

3. How would a wind vane and an anemometer help us?

Congratulations for trying your best in accomplishing this module, try to share what you have learned with your classmates and friends.

Science Fact File

Wind speed is one of the factors that affect weather condition. Other factors include air temperature, air pressure, humidity and clouds.

Wind speed is identified using a Beaufort Wind Scale developed by Sir Francis Beaufort in 1806.

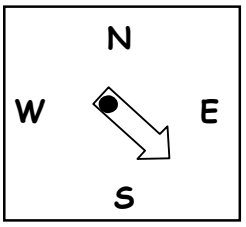
Generally wind blows from a cooler area to a warmer area. That is why blowing wind is fresh and cool.

In the evening, the wind blows from land to sea. This is called land breeze.

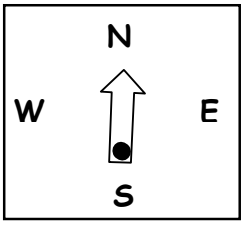
At daytime, wind blows from sea to land. This is called sea breeze.

Let's Try This

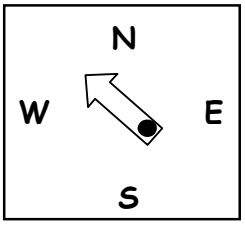
1. Southeast



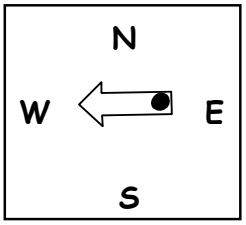
2. North



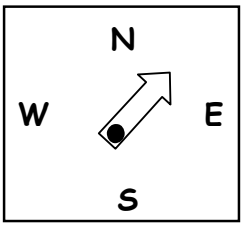
3. Northwest



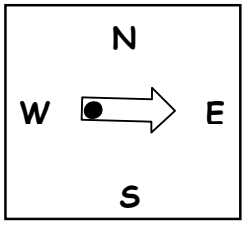
4. West



5. Northeast



6. East



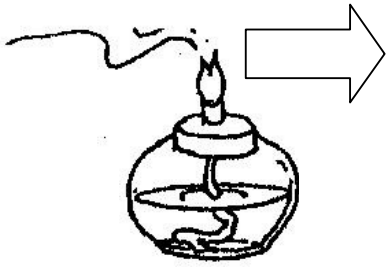
Let's Do This

ACTIVITY 1 a. The cups turn as the wind blows.
b. (calm, light, moderate, strong)

ACTIVITY 2 a. The arrow turns and points to where the wind comes from
b. (North, South, East, West, NE, NW, SE, SW)

ACTIVITY 3 (Answers depends on the pupil's observations)

Let's Do More

1. 

moderate

2.

3. West
4. Moderate
5. a. fair weather with brief rain shower & thunderstorm
   b. Northeast
   c. Light
   d. Fair
   e. 31°C

Let's Test Ourselves

A.

Day	Wind Speed	Wind Direction
1	calm	
2	light	northeast
3	light	northeast

1. There is a change in the wind speed for two days.
2. From calm to light speed.
3. Day 1 is sunny and cloudy
   Day 2 is partly cloudy
   Day 3 is partly cloudy
4. Day 1 no direction
   Day 2 northeast
   Day 3 northeast
5. Yes
6. A sunny weather will have a calm wind while a cloudy weather may have light wind.

B.

1. A wind vane is used to determine the direction of the wind.
2. An anemometer is used to determine the speed of the wind.
3. They help us in determining the direction and speed of the wind, which tell the kind of weather for the day.