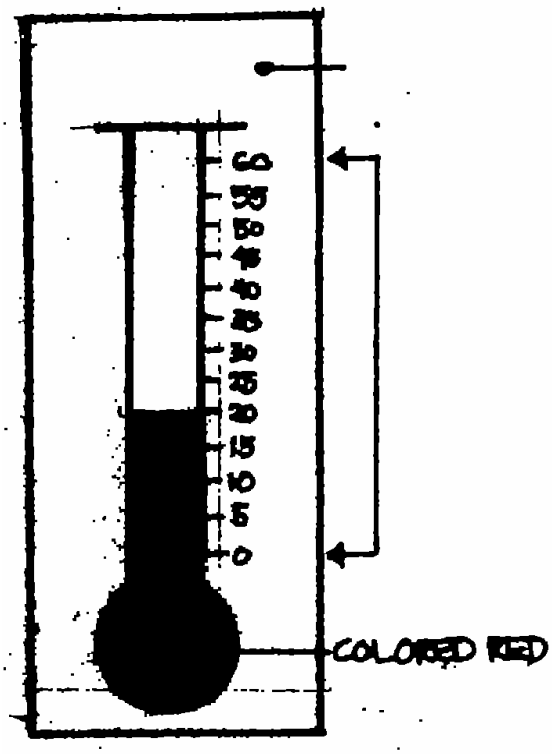
4

Module 54

Science and Health

AIR TEMPERATURE READING



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

To the Learner

Temperature is one of the elements of weather. In this module you will do activities to build your understanding on the basic concept of Air Temperature. It aims to answer the following questions:

a. What is Air Temperature?
b. What is the instrument to be used in measuring it?
c. How are we going to read the instrument?
d. Is Air Temperature the same in all places?
e. Will Air Temperature stays the same in a day?

Through the activities, your skills in measuring, observing, comparing and recording will be enhanced.

Let's Learn This

Measure and record air temperature for one week using a laboratory thermometer.

Let's Try This

Go to a sunny place. After a few minutes, go to a shady place like under the tree or under a kiosk.

Questions:

1. Which place is colder? Which place is warmer/hotter?

_____
_____
_____

2. Why do you think one place is colder than the other?

_____
_____
_____

3. What word describes the hotness or coldness of air?

_____

_____

_____

Let's Study This

WHAT IS TEMPERATURE?

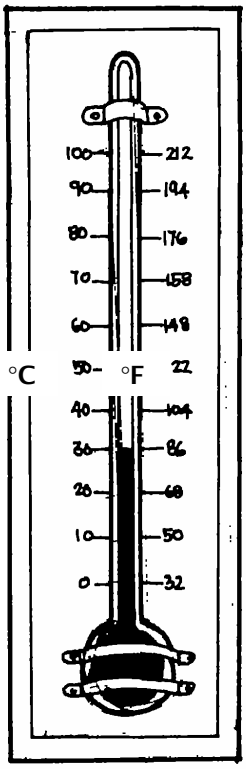
You observed that sometimes the air gets warm and at other times, it gets cold. The degree of hotness and coldness of air is called air temperature.

Temperature Changes During The Day

It changes from time to time and from place to place.

An area gets hot when it is heated by the sun and gets cool when the heat leaves the area. The coldest time of the 24-hour day is just before sunrise, after the Earth has been losing heat all night.

Temperature affects the weather conditions. During warm weather, the temperature rises. We say the temperature is high. During cooler days, the temperature sinks or drops. We say the temperature is low. The average air temperature is 19-32 °C. A temperature reading below 19 °C means, it is cold. A temperature reading above 32 °C means, it is warm.



Air temperature is measured by a device called air thermometer. It is expressed in degree Celsius (˚C) or degrees Fahrenheit (˚F). A thermometer is a narrow glass tube containing mercury or colored alcohol. As the temperature increases, the mercury or alcohol expands and its level in the tube rises. The number corresponding to the liquid's level is the temperature reading. The highest point in the centigrade scale is 100˚C and the lowest is 0˚. The highest point in the Fahrenheit scale is 212˚F and the lowest is 32˚F.

Let's Remember This

Sometimes the air is hot. At other times it is cold.

The degree of hotness or coldness of air is called the **air temperature**.

An **air thermometer** is used to measure air temperature.

Now you'll learn how to measure air temperature.

You will first be using an air thermometer model.

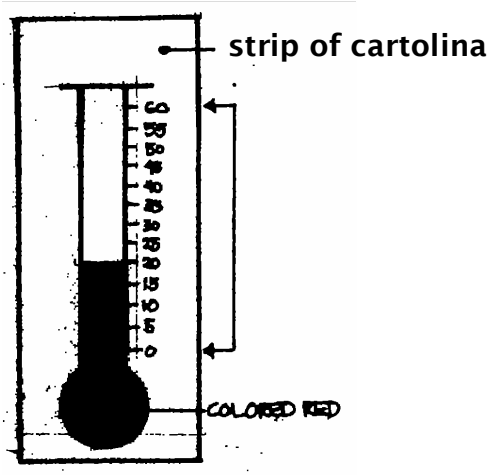
Let's Do This

Option 1

- You will need:
  Strips of cartolina
  Red crayon

- Do these:

1. **Make a cut in the upper center of the cartolina. Use a cutter.**
2. **Draw 13 small lines with equal distances below the right corner of the cut.**
3. **Copy the numbers as shown.**
4. **Cut a smaller strip of cartolina with a circular shape bottom which would fit the cut of the first cartolina as shown in the illustration.**
5. **Cut it so that its tip will reach the bottom of the 1st cartolina.**



6. **Color the bottom part of the 2nd strip with red as shown in the illustration.**

7. **Fit it in the first strip of cartolina by inserting it into the cut in the upper portion of the 2nd cartolina.**

- **Now try using your improvised thermometer.**

1. Move the red strip up and down with your partner. Do it five times. From your improvised thermometer.

2. Take a reading

3. Record your readings in your notebook.

First Reading	_____
Second Reading	_____
Third Reading	_____
Fourth Reading	_____
Fifth Reading	_____

4. Answer these questions in your notebook.

a) What was your highest reading?
b) What was your lowest reading?

Option 2

Make a Thermometer

What Do you need?

1. Tap water
2. Rubbing alcohol (**do not drink this**)
3. Clear, narrow-necked plastic bottle (11-ounce water bottles work well)
4. Food coloring
5. Clear plastic drinking straw
6. Modeling clay

(This option must be tried first, before recommending the activity.)

What to Do?

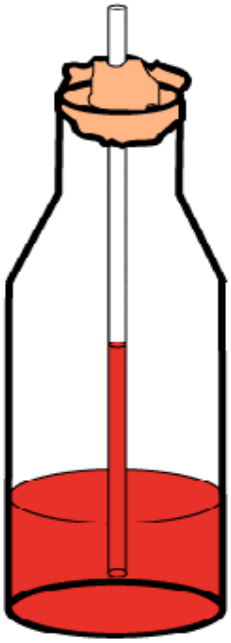
1 Pour equal parts of tap water and rubbing alcohol into the bottle, filling about 1/8 to a 1/4 of the bottle.

2 Add a couple of drops of food coloring and mix.

3 Put the straw in the bottle, but don't let the straw touch the bottom (**DO NOT DRINK THE MIXTURE**).

4 Use the modeling clay to seal the neck of the bottle, so the straw stays in place.

5 Now hold your hands on the bottle and watch what happens to the mixture in the bottle. Or for better result, place the bottle in a cup of hot water and observe. Place it in cold water and observe.



Congratulations!!! You just made a thermometer. Just like any thermometer, the mixture expanded when it was warmed. This made the liquid no longer fit in the bottom of the bottle. As the alcohol expanded the colored mixture moved up through the straw. If the bottle were to get very hot, the liquid would have come through the top of the straw.

You can watch your thermometer and see how the liquid changes throughout the day.
What happens if your thermometer is in shadow or in sunlight?
What happens when it gets colder?
How does wind affect the thermometer?

Of course, in order to accurately read the temperature, you will need to buy a real thermometer that is carefully calibrated for temperature changes. This one is to see how a thermometer works -- just for fun.

After you're done with your thermometer, dispose of the liquid properly and rinse the bottle well. Cut it in half, or have a parent cut it in half, so the bottle can't be reused. Then recycle the plastic.

The used bottle could have some left over alcohol in it, and you don't want anyone to reuse the bottle for drinking water. So, it's best to recycle the bottle.

Let's Do More

- Place an air thermometer on the wall inside the house.
- Copy the table below in your notebook.

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
8:00 am							
12:00 noon							
4:00 pm							

- Take temperature readings at 8:00 am, 12:00 noon and 4:00 pm for one week.
- Record your readings in your notebook.

1. What was the highest temperature recorded? the lowest temperature? What times of the day?

2. At what day was the highest temperature recorded? the lowest temperature?

3. What was the day like when the temperature was highest? was it sunny, rainy, cloudy, etc.? Compare it with the day with the lowest temperature?

4. Are there changes in the temperature readings?

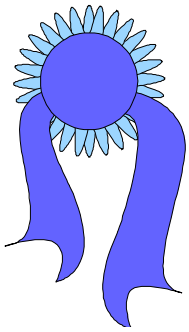
5. What do these changes in the temperature mean?

Let's Remember This

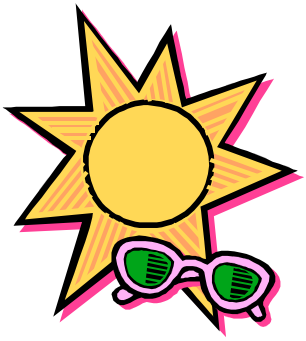
I learned that:

- ☑ Temperature is the degree of hotness or coldness of air.
- ☑ Temperature is measured by an air thermometer.
- ☑ When measuring air temperature, take note of the height of the liquid inside the air thermometer.
- ☑ Air temperature changes from time to time.

Congratulations for working diligently with this module. Try to share your experiences with your classmate and discuss with your teacher or elder brother or sister at home.



My Score:



Answer Key

Let's Try This

Let's Do This

(Answer may vary. Let your teacher check your answer)

Let's Do More

(Answer may vary. Let your teacher check your answer)

Let's Test Ourselves