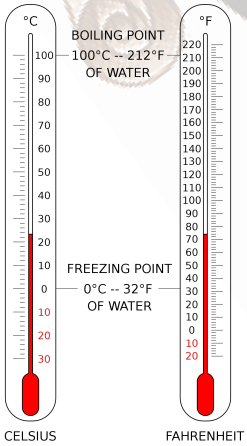
D3. Thermometers

Thermometers & Weather Data

Thermometers are special tools used to measure temperature. Temperature tells us how hot or cold something is. When we talk about the weather, we often hear about the temperature outside. Let's learn more about thermometers and how they help collect weather data.



What is a Thermometer?

A thermometer is a long, thin tube filled with a special liquid, usually mercury or colored alcohol. The liquid inside the thermometer expands, or gets bigger, when it's hot and contracts, or gets smaller, when it's cold. As the liquid expands or contracts, it moves up or down inside the tube, and we can see the temperature on a scale marked on the side.

Types of Thermometers

There are different types of thermometers used to measure temperature. Some common types include:

Mercury Thermometers

These thermometers use mercury as the liquid inside. They are usually found in older weather stations and medical clinics. However, some countries have stopped using mercury thermometers because mercury is toxic.

Digital Thermometers

These thermometers show the temperature on a digital display. They are easy to read and are commonly used at home and in schools.

Infrared Thermometers

These thermometers use infrared technology to measure temperature without touching the object. They are often used to check the temperature of food, people's foreheads, or even the weather.

Outdoor Thermometers

These thermometers are designed to be placed outside and are often used to measure the temperature in gardens or on porches.

How Thermometers Help Collect Weather Data

Weather stations use thermometers to collect weather data. Meteorologists, who are scientists that study the weather, place thermometers in weather stations to measure the temperature of the air. By collecting temperature data from many places, meteorologists can create weather forecasts and understand weather patterns.

Why Temperature is Important in Weather Data
Temperature is an essential part of weather data. It helps meteorologists understand the type of weather we can expect. For example:

Hot Temperatures
When it's hot outside, we can expect sunny and warm weather. Hot temperatures are common in the summer, and we might want to wear light clothes and drink lots of water to stay cool.

Cold Temperatures
When it's cold outside, we can expect chilly weather. Cold temperatures are common in the winter, and we might want to wear warm clothes and stay inside where it's cozy.

Changes in Temperature
Temperature data also helps us know if the weather is changing. A sudden drop in temperature might mean rain or snow is on the way, while a rise in temperature might mean the weather will become sunny and warmer.

Temperature and Seasons
Temperature data helps us know which season it is. In the summer, temperatures are hot, and in the winter, temperatures are cold. Spring and fall have temperatures in between.

Measuring Temperature at Home
You can also measure the temperature at home using a thermometer. You might have seen a thermometer in your house to check your body temperature when you feel sick. It's important to know if you have a fever, as it helps your parents or doctors take care of you and give you the right medicine.

Now that you know more about thermometers and how they help collect weather data, you can pay attention to the temperature outside and understand how it affects the weather around you.

1. What do thermometers measure?
    A) Wind speed.
    B) Temperature.
    C) Humidity.
    D) Rainfall.

2. How does a thermometer work?
    A) It has a long tube filled with a special liquid that expands or contracts based on temperature.
    B) It has cups that spin when the wind blows.
    C) It collects rainwater to measure rainfall.
    D) It points in the direction the wind is blowing.

3. Why is mercury no longer used in some thermometers?
    A) Because it is too expensive.
    B) Because it is toxic.
    C) Because it is difficult to find.
    D) Because it is too heavy.

4. Which type of thermometer uses infrared technology?
    A) Mercury thermometers.
    B) Digital thermometers.
    C) Outdoor thermometers.
    D) Infrared thermometers.

5. Where are outdoor thermometers commonly placed?
    A) Inside the house.
    B) In weather stations.
    C) Outside, in gardens or on porches.
    D) Near the beach.

6. Who uses thermometers to collect weather data?
    A) Farmers.
    B) Meteorologists.
    C) Astronauts.
    D) Teachers.

7. How can meteorologists use temperature data to create weather forecasts?
    A) To know which season it is.
    B) To check their body temperature.
    C) To understand the type of weather we can expect.
    D) To measure the temperature of food.

8. What can sudden drops in temperature indicate?
    A) Rain or snow is on the way.
    B) It will be a hot and sunny day.

C) The temperature will stay the same.
D) The weather will become stormy.

9. What does hot temperature often mean?
A) Rainy weather.
B) Chilly weather.
C) Sunny and warm weather.
D) Cold and snowy weather.

10. Why is measuring body temperature important?
A) To understand the type of weather we can expect.
B) To check our temperature during hot days.
C) To check our temperature when we feel sick and might have a fever.
D) To measure the temperature of the air.

ANSWERS & EXPLANATIONS

1. B) Temperature.
    - The passage states that thermometers measure temperature.

2. A) It has a long tube filled with a special liquid that expands or contracts based on temperature.
    - The passage explains how a thermometer works, mentioning the long tube filled with a special liquid that expands or contracts based on temperature.

3. B) Because it is toxic.
    - The passage explains that mercury is no longer used in some thermometers because it is toxic.

4. D) Infrared thermometers.
    - The passage specifies that infrared thermometers use infrared technology.

5. C) Outside, in gardens or on porches.
    - The passage mentions that outdoor thermometers are commonly placed outside, in gardens or on porches.

6. B) Meteorologists.
    - The passage states that meteorologists use thermometers to collect weather data.

7. C) To understand the type of weather we can expect.
    - The passage explains that meteorologists use temperature data to understand the type of weather we can expect.

8. A) Rain or snow is on the way.
    - The passage mentions that sudden drops in temperature might mean rain or snow is on the way.

9. C) Sunny and warm weather.
    - The passage states that hot temperatures often mean sunny and warm weather.

10. C) To check our temperature when we feel sick and might have a fever.
    - The passage explains that measuring body temperature is important to check if we have a fever when we feel sick.