ScienceCube

Temperature and Humidity Changes Over a Day

You can measure temperature and humidity changes over a set period and explain the reasons based on the data.

Fundamental Concept

1. Temperature and Air Temperature

Temperature	A numerical representation of the degree of coldness or warmth. The higher the number, the higher the temperature..
Air Temperature	The temperature of the air surrounding us. It continuously changes based on time and location..

2. Temperature Changes Based on Location

(1) Temperature by Location

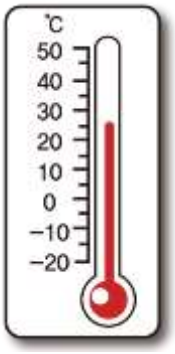
① Indoors: In a classroom, the temperature is higher near the windows where sunlight shines, and lower in areas without sunlight.

② Outdoors: In a building, the temperature in sunny areas is higher than in shaded areas..

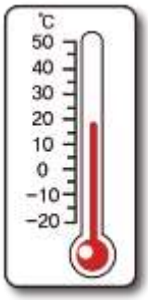
→ The temperature varies by location because the amount of sunlight exposure differs.

(2) Temperature by Measurement Height

On a clear summer afternoon, the temperature near the ground is higher than the temperature measured at a higher elevation.



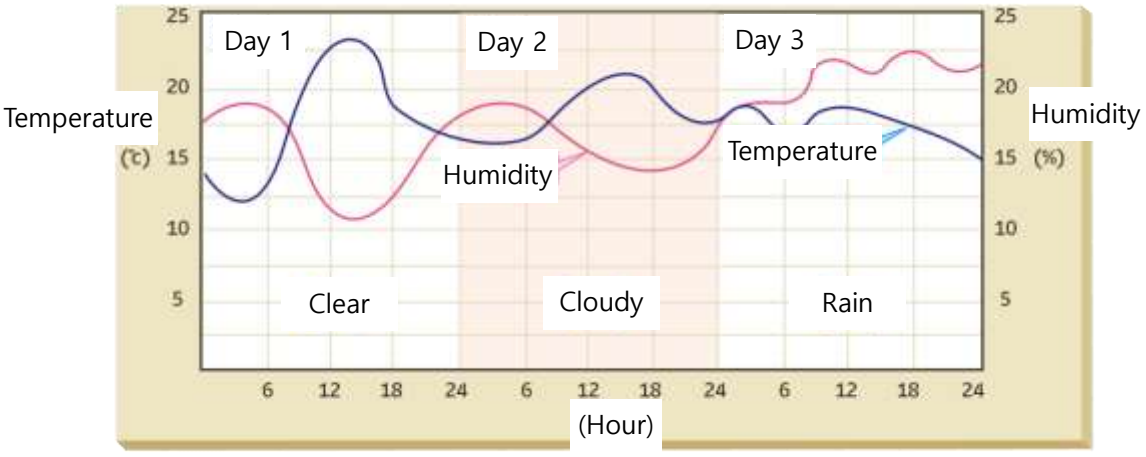
High temperature



Low temperature.

3. Temperature Changes Over Time

(1) Temperature Changes Over Time



① In the morning, the temperature is low, then it gradually rises, peaking at noon, and then drops again in the evening.

② The temperature changes continuously throughout the day..

(2) Representing Temperature

Since the temperature continuously changes throughout the day, both the lowest and highest temperatures of the day are indicated.

Experiment

Materials Needed

Interface, Science# Program, Stand, Humidity Sensor

Experimental Setup

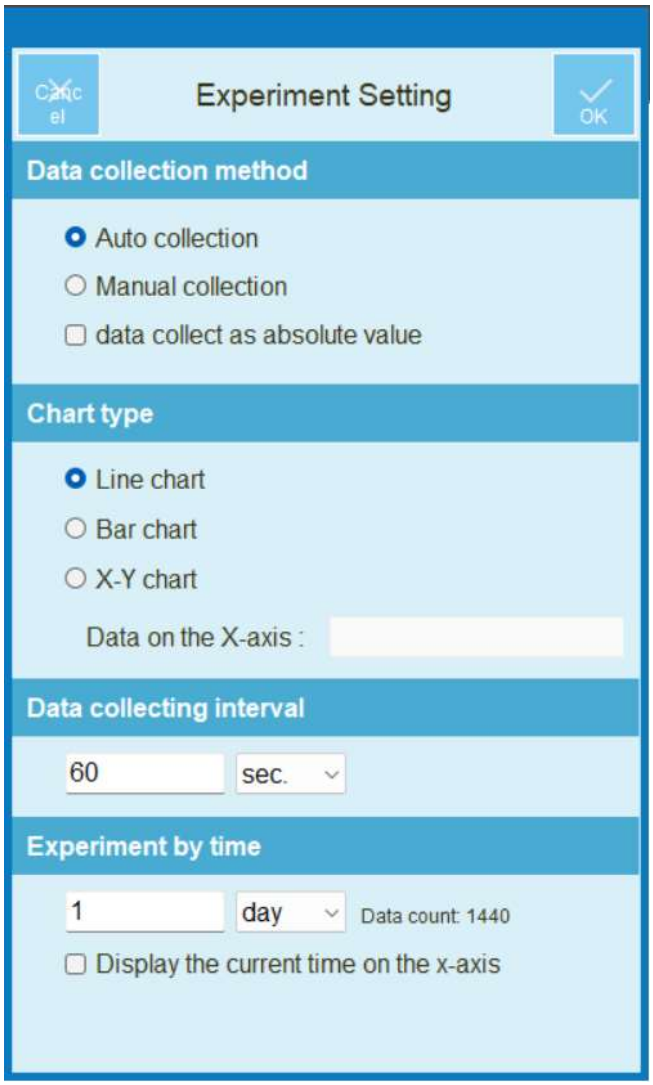
1. Install a clamp on the stand as shown in the diagram, and secure the humidity sensor with the clamp.
2. Move the stand to a location suitable for measuring temperature and humidity..

   (Ensure that there are no artificial factors around that could affect the temperature and humidity measurements..)

Interface Setup

1.  Launch Science#.
2. Connect the humidity sensor to the interface.

3.  Press Setup and configure the experimental environment as follows, or press 
Auto Setup for automatic configuration..



 [Auto Setup]

Data Collection

1.  Press Start to begin data collection.
2. After collecting data for a set period, record and analyze the data..

Data Analysis

Recording Data

1. Display the temperature and humidity changes over a day in a graph.

2. Convert the temperature and humidity graphs into bar graphs to examine temperature and humidity at different times.

3. Record the temperature and humidity measured at each time interval in the following table (record every 2 hours):

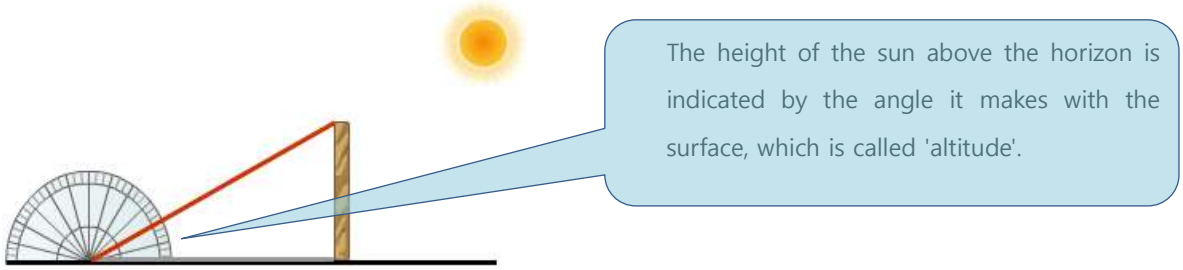
Time												
Temp (℃)												
Humidity (%)												

Applying Data and Extension Activities

1. Explain the temperature changes over the day.

2. The following is an explanation of the solar altitude. Explain the temperature changes

over the day based on the changes in the solar altitude..



3. Based on the experiment results, calculate the daily temperature range.

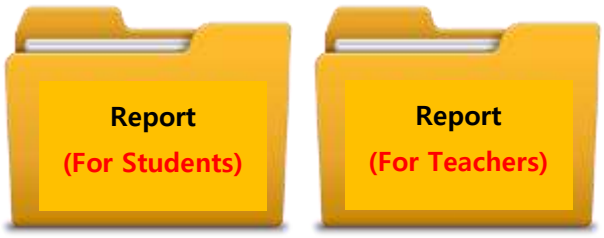
4. Explain the changes in humidity over the day.

5. Explain the relationship between humidity and temperature using the data.

6. Investigate how the changes in temperature and humidity over the day affect our daily lives.

7. Understand the definition of weather elements and find other weather elements that change over the day..

Weather Elements?	Various factors that represent the state of the atmosphere at any given time..


Report
(For Students)
Report
(For Teachers)