

# Project Guide: Measuring Weather

## Common Core Standard:

SC.5.E.7.3 - Recognize how weather can be measured using instruments such as thermometers, barometers, anemometers, and rain gauges.

## Lesson:

Students will design and use simple weather instruments to measure various weather conditions, including temperature, air pressure, wind speed, and rainfall.

## Objective:

By the end of the project, students will:

1. Construct and use basic weather instruments.
2. Record and analyze weather data using their instruments.
3. Understand the importance of weather measurement and its role in daily life.

## Materials:

- **For Rain Gauge:** Plastic cups, rulers, permanent markers, tape
- **For Anemometer:** Paper cups, straws, pins, pencils with erasers, cardboard
- **For Barometer:** Glass jar, rubber balloon, rubber band, straw, index card
- **For Thermometer:** Store-bought thermometer or temperature chart for reference
- Weather Data Recording Sheets
- Chart paper and markers

## Safety Precautions:

1. Supervise students when using sharp objects such as scissors or pins during instrument construction.
2. Ensure students remain in a safe, supervised area when conducting outdoor weather observations.
3. Use non-toxic, child-safe materials for the construction of weather instruments.
4. Reinforce proper handling of thermometers to avoid breakage, and do not use mercury-based thermometers.

## Procedures:

1. **Introduction (10 minutes):**
  - Begin with a discussion: *“Why do we need to measure the weather?”*
  - Introduce the four key weather instruments: thermometer, barometer, anemometer, and rain gauge.
2. **Constructing Weather Instruments (30 minutes):**
  - **Rain Gauge:**
    - Use a clear plastic cup and mark increments in millimeters using a ruler and marker.
    - Secure the cup outdoors with tape to measure rainfall over time.
  - **Anemometer:**
    - Attach 4 paper cups to the ends of two crossed straws.
    - Fix the straws onto a pencil eraser with a pin, ensuring it rotates freely to measure wind speed.

- **Barometer:**
  - Stretch a rubber balloon over the mouth of a jar and secure it with a rubber band.
  - Tape a straw to the top of the balloon, pointing outward, and place an index card behind the straw to observe pressure changes.
- 3. **Data Collection (15 minutes):**
  - Take students outdoors to use their instruments or simulate weather conditions indoors.
  - Record data on the weather observation sheet, including temperature, rainfall, wind speed, and air pressure.
- 4. **Discussion and Analysis (10 minutes):**
  - Have students share their data and compare findings.
  - Discuss how weather measurements are used in real life, such as predicting storms or planning outdoor activities.

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**Note: Clean-up**

Encourage students to clean their workstations after constructing the instruments. Recycle leftover materials like paper and plastic responsibly. Remind students to store their instruments carefully if they wish to collect weather data over several days.