

Photo Description



A clear plastic rain gauge is mounted on a wooden post and shows measurement markings in inches, with a white collection cup at the bottom. The gauge contains a small amount of water, demonstrating how rain is collected and measured to track precipitation amounts. In the background, a wooden fence and green trees are visible, showing this is an outdoor location where weather data can be gathered.

Scientific Phenomena

Anchoring Phenomenon: Using a rain gauge to measure and record precipitation.

Why This Happens: Water from rain falls from clouds and collects in the gauge's container. The clear tube allows us to see how much water accumulated, and the numbered markings let us measure the exact amount in inches or centimeters. This data helps scientists and meteorologists track weather patterns, predict future weather, and understand how much water is returning to Earth from the water cycle. Rain gauges work because gravity pulls the falling rainwater downward into the collection container, where it stays until we measure and record it.

Core Science Concepts

- * **Precipitation** — Water that falls from clouds to Earth's surface in the form of rain, snow, sleet, or hail.
- * **Measurement and Data Collection** — Scientists use tools like rain gauges to collect accurate, precise data about weather; recording this data over time helps identify patterns.
- * **The Water Cycle** — Water evaporates from oceans, lakes, and land; rises into the atmosphere; forms clouds; and returns to Earth as precipitation.
- * **Weather Patterns** — By measuring rainfall over weeks and months, we can observe patterns in when and how much it rains in our location.

Pedagogical Tip:

Position the rain gauge on a post or stake away from buildings, trees, and structures that could block rain or cause water to drip into it from other sources. Have students record measurements at the same time each day (e.g., 8:00 AM) to maintain consistency. This develops both scientific thinking and responsibility. Consider creating a classroom weather station with multiple tools (thermometer, wind vane, barometer) so students see how precipitation connects to other weather variables.

UDL Suggestions:

Multiple Means of Representation: Provide rain gauge measurement templates with large numbers and visual icons (& for rain) so all students can record data. Create a digital spreadsheet or paper chart where students can see their measurements displayed as a bar graph or line graph—visual representations help students with different learning styles understand patterns. **Multiple Means of Action & Expression:** Allow students to report their findings through drawings, written journals, or verbal discussions rather than only written reports. **Multiple Means of Engagement:** Connect rainfall measurement to student interests (e.g., "How much rain would fill a swimming pool?" or "Does more rain help plants grow?").

Discussion Questions

- * How would we know how much rain fell during a storm if we didn't have a rain gauge? (Bloom's: Understand | DOK: 1)
- * Why do you think scientists measure rainfall in the same spot every day instead of just measuring it once? (Bloom's: Analyze | DOK: 2)
- * If it rained 2 inches last week and 1 inch this week, what could we predict about next week's rainfall, and why might our prediction be wrong? (Bloom's: Evaluate | DOK: 3)
- * How does the amount of rain we collect in our gauge help us understand the water cycle? (Bloom's: Synthesize | DOK: 3)

Extension Activities

1. Build a Homemade Rain Gauge — Students create their own rain gauges using clear plastic bottles, rulers, and waterproof tape. They place their gauges in different locations (sunny spot vs. shaded area, open lawn vs. under a tree) and compare measurements to explore how location affects rainfall collection. Discuss why some locations might collect different amounts.
2. Create a Rainfall Graph — Over 4–6 weeks, students record daily rainfall measurements and create a line graph or bar graph showing the data. They analyze their graphs to answer questions: "Which week had the most rain? On how many days did it rain? What was the average rainfall?" This connects measurement to mathematics and data literacy.
3. Investigate Water Cycle Stations — Set up four stations representing evaporation (sunny window with water cups), condensation (cool mirror held over warm water), precipitation (rain gauge collecting water or a spray bottle), and collection (basin or bucket). Students move through stations and draw or write how each stage connects to their rain gauge measurements, reinforcing the complete water cycle.

NGSS Connections

Performance Expectation: 5-ESS2-1: Develop a model to describe ways the geosphere, biosphere, hydrosphere, and atmosphere interact.

Disciplinary Core Ideas:

- 5-ESS2.A — Earth's systems, including the interaction of water with the atmosphere (precipitation)
- 5-ESS3.A — Weather and climate patterns are important factors that affect organisms

Crosscutting Concepts:

- Patterns — Weather patterns (including rainfall) repeat and can be measured over time
- Systems and System Models — A rain gauge is a tool within a larger weather system

Science Vocabulary

- * Precipitation: Water that falls from clouds to Earth's surface, such as rain, snow, or hail.
- * Gauge: A tool used to measure something; a rain gauge measures how much water has fallen.
- * Accumulate: To gather or pile up over time (like water collecting in the gauge).
- * Data: Information collected through observation and measurement that scientists use to learn about the world.
- * Weather Pattern: A repeated trend in weather conditions that happens regularly or predictably.

* Evaporation: The process where water changes from a liquid into a gas and rises into the atmosphere.

External Resources

Children's Books:

- Rain by Manya Stojic (Illustrates rainfall and its impact on African ecosystems)
- Come On, Rain! by Karen Hesse (A poetic story celebrating a rainstorm in a neighborhood)
- Water Dance by Thomas Locker (Explores the water cycle through beautiful illustrations and verse)

YouTube Videos:

- "The Water Cycle for Kids," Crash Course Kids (3:49 minutes) — https://www.youtube.com/watch?v=CBq66wjy_5Q — A clear, animated explanation of how water moves through evaporation, condensation, and precipitation.
- "How to Use a Rain Gauge," National Geographic Kids (2:15 minutes) — https://www.youtube.com/watch?v=Q_7I5tFTKIY — Step-by-step instruction on setting up and reading a rain gauge correctly.