

Making a Rain Gauge

4th Grade

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References:

- CPS Curriculum guide
- WOW website: <http://wow.osu.edu/experiments/weather/raingauge.html>
- <http://www.windmill.co.uk/monitor23.html>
- <http://earthobservatory.nasa.gov/Study/Rain/>
- <http://www.uri.edu/ce/healthylandscapes/raingauge.htm>

Benchmarks:

SLC/GLI #: ES4

Objectives:

This lesson is intended to continue our series on measuring different aspects of weather. In this lesson, the students will make their own rain gauge that they will use to hopefully measure some rainfall in the coming weeks. We'll discuss the importance of rain in the earth's water cycle, and why it is important to measure the rain.

Materials:

- 2-liter plastic bottles
- Marbles or rocks
- Duct tape
- Small-width colored tape
- Scissors
- Ruler

Initial Demonstration:

No demonstration, just discussion of rain and its importance and how we measure it.

Target Observations:

- Rain can be measured with a rain gauge by measuring how many inches of rain is caught in the container – this is the same amount that fell onto the surrounding ground and either percolated or ran off.

Procedure:

Making a Rain Gauge:

- 1.) Cut the top off of the plastic bottle at the point where the diameter of the bottle starts to decrease when moving from the bottom of the bottle to the top.
- 2.) Keep the top portion of the bottle that was just cut off. Cover all the cut edges with duct tape to cover sharp edges.
- 3.) On the bottom part of the bottle use a ruler to make a scale of horizontal colored lines from two inches above the bottom to two inches from the top, separated by $\frac{1}{2}$ inch.
- 4.) Place the marbles or rocks in the bottom portion of the bottle to steady the base.
- 5.) Add water to the bottle up to the first line of the scale. Turn the top portion of the bottle upside down and place inside the opening of the bottom portion of the bottle to form a funneled lid. The rain gauge is now ready for use.
- 6.) Take the rain gauge outside and monitor the change of the water level when it rains.

Target Observations:

- Their rain gauge has evenly spaced marks on it that will be used to measure the amount of rainfall
- There is also an initial amount of water that starts in the bottom of the rain gauge; this shouldn't be counted when determining the amount of rain that has fallen.

Target Revised Model:

- Students should understand that precipitation is a measurable aspect of weather.
- Students should be able to describe the importance of rain in the earth's water cycle.
- Students should be able to accurately measure the amount of rainfall using their rain gauges.

Summary:

The objectives of this lesson were to teach students that precipitation is a measurable aspect of weather. This is accomplished using a rain gauge to show that rain is measured by observing the number of inches that is received during a storm. Students made themselves a rain gauge out of a 2-liter bottle, and should be able to use it to measure the amount of precipitation. They should also be able to summarize the importance of rain to the earth's water cycle and understand why it's important to record how much rainfall a certain area receives.