



How to Measure Rainfall

Raccoon Creek Explorers Activity #7

Supplies:

- Empty two-liter plastic bottle
- Scissors
- A few handfuls of clean pebbles, gravel, or marbles
- Masking tape
- Water
- Ruler
- Permanent marker
- Paper and pencil

Time: prep 30 minutes - 60 minutes

Vocabulary:

Rain Gauge: a device used for collecting and measuring the amount of rain that falls.

Atmosphere: a layer or a set of layers of gases surrounding a planet, that is held in place by the gravity of the planet.

Atmospheric pressure: the pressure within the atmosphere of Earth.

Water Vapor: gaseous phase of water.

Evaporation: when liquid turns into gas.

Meteorologist: a person who studies the atmosphere, atmospheric phenomena, and atmospheric effects on our weather.

Precipitation: when water released from clouds in the form of rain, freezing rain, sleet, snow, or hail





Background:

Rain is a type of precipitation that happens when water evaporates and travels up higher into the atmosphere. The evaporated water is able to travel up because it's in a gas form known as water vapor. Once the water vapor travels up high enough all the water vapor gathers together to form clouds. Clouds are able to form when there is just the right levels of atmospheric pressure and temperature drops. The large the cloud is the more water vapor has condensed in the atmosphere. When the clouds are too heavy from the amount of water vapor the cloud will no longer be able to hold its form, and the water vapor will fall down to the ground in the form of rain.

In this activity, you will be making a rain gauge. Rain gauges can be used to measure average rainfall. Meteorologists and other scientists use rain gauges to study long-term weather patterns and use them for research. By making your own rain gauge you can be just like a meteorologist and study the average rainfall of your area.

Let's Get Started:

- 1.) Prepare your bottle. Take off any labels that may be on your bottle that way you can easily see through the plastic. Then cut the top of the bottle off at the wide part just below where it starts to get narrow.
- 2.) Place the pebbles in the bottom of the bottle. If you don't have pebbles you can use anything that will help the bottle not get blown over by wind.
- 3.) Flip the top of the bottle, without the cap, upside down. It should look like a funnel because it will funnel rain into the bottom part of the bottle. Line up the cut edges and tape them together and make sure the top part is firmly in place.
- 4.) Using the tape make a straight vertical line from the top edge of the bottle to the bottom. Then use the marker to draw a line on the tape a little bit above the top of the layer of pebbles. This marks the bottom of your rain gauge.
- 5.) Set the ruler against the tape so that the start line lines up with the bottom mark you just made. Use the marker to mark every centimeter along the piece of tape. Then label the centimeters from bottom to top. You could also mark quarter-inches comparatively.





6.) Place the bottle on a level surface and pour some water in until it reaches the bottom mark.

7.) Now your rain gauge is ready to start measuring rainfall. Put the rain gauge outdoors in the best spot you can find. You will want to place it on level ground and where it will not be disturbed. The rain gauge should not be placed anywhere under a structure that will block rain or make extra rainwater drip into the bottle. Examples of where NOT to place it would be under a power line, tree/s, or an edge of a roof. You want to make sure you are getting an accurate measure of rainfall.

8.) Check the weather forecast. If it looks like it will rain make sure the water in the bottom of your rain gauge hasn't evaporated below the bottom mark. If the water level is below the mark refill it to meet that mark.

9.) Now you will wait for the rain. This may be the hardest part. When it finally rains check your gauge to see the water level. Using the measurement mark you put on the tape you can figure out how much rain your area received! Make sure to record your results on a piece of paper.

10.) Experiment! Now that you have a tool for measuring the amount of rainfall you can continue to measure rainfall as long as you like. You could record the average rainfall and then compare the rainfall to different times of the year. Or you could keep your rainfall records and use them to make predictions for new years rainfall. There is so much we can learn from measuring rainfall!

Reflect:

How much rain did the rain gauge gather on the first rainy day?

How much was the total rainfall for the first week you collect rainfall data?

Do you think you'll get more or less rainfall next month?





Apply:

Why do you think it is important to measure the average rainfall?

Where do you think all this rain goes?

What things can we learn about when measuring rainfall?

Wrap Up:

You have now studied rainfall just like a meteorologist. By keeping track of average rainfall it can help us better understand weather trends. The amount of rain is dependent on factors such as temperature, wind currents, and much more. Aquatic ecosystems such as streams, wetlands, rivers, and ponds rely on consistent rainfall trends in order to maintain aquatic life. Along with aquatic life, most wildlife and plant life relies on rain even humans.

Thanks for exploring with us! If you would like to share your water gauge with Raccoon Creek Partnership email us at: raccooncreekpartnership@gmail.com.

See you next time!

