



EXPERIMENT OVERVIEW

Student Rainfall Measurement Experiment

A simple introduction to Rainflower's neighborhood rainfall research — what you will do, why it matters, and how your measurements become real science.

GRADES 9–12 | BANGLADESH | STUDENT FIELD RESEARCH

Measure carefully. Report honestly. Learn from local rain.

What is this experiment?

You will place a simple rain collector at your home, school, or neighborhood. Every day you will measure the rain that fell directly from the sky, write down the result, empty the collector, and put it back. Once a week, you will submit all of your measurements in one report.

When many students across Bangladesh measure rain the same careful way, something powerful happens: together, your numbers show how rainfall changes from one street, one upazila, and one district to another. Scientists call this citizen science — real observations, collected by ordinary people, that support real research.

OUR STANDARD The goal is not perfect weather-station data. The goal is careful, honest, and comparable student observations. An honest “I missed today” is worth more to science than an invented number.

What will you investigate?

- How much rain falls at your own location, day by day and week by week.
- How rainfall differs between neighborhoods, districts, and divisions.
- Whether heavy rainfall matches the flooding or waterlogging you see nearby.
- How much useful water could be collected from a typical roof.

The main research question

How much direct rainfall does your location receive, and how does it compare with rainfall measured by other students at other locations?

What counts as “direct rainfall”?

Your collector must catch only drops falling straight from the sky. Water that flows or splashes from a roof, tree, wall, pipe, or flooded ground is called runoff. Runoff makes your measurement bigger than the true rainfall — so it must never enter your collector.

REMEMBER Direct rain from the sky: YES. Water from roofs, trees, walls, pipes, or floods: NO.

What does “1 millimeter of rain” mean?

One millimeter (mm) of rainfall means the rain would form a layer of water 1 mm deep on a flat, level surface — if none of it soaked in, flowed away, or evaporated. Rainfall is always reported in millimeters, not liters.

1 mm of rain falling on 1 square meter $\approx$ 1 liter of water

What you will do

1. Set up an approved straight-sided container in an open location with a clear view of the sky.
2. Check the collector at the same time every day (we recommend 8:00 AM).
3. Measure the water depth in millimeters with a ruler.
4. Record the measurement immediately — including zero on dry days.
5. Empty the collector completely.
6. Return it to the exact same clean, level, secure position.
7. Submit one complete report every week.
8. Use your data to calculate totals, draw graphs, and explain what you found.

The weekly cycle

Step	What you do
1. Observe	Inspect the collector before touching it. Was it moved, tilted, or contaminated?
2. Measure	Read the water depth in millimeters, at eye level.
3. Record	Write down the result, time, and any problems — right away.
4. Reset	Empty the container and return it to the same position, clean and level.
5. Report	Submit all seven daily entries together at the end of the week.
6. Analyze	Use your valid readings to find totals, patterns, and roof-water potential.

Scientific honesty

Real scientists deal with problems all the time: equipment tips over, storms cause overflow, a measurement gets missed. What makes data trustworthy is honesty about those problems.

THE HONESTY RULE A missing measurement is not zero. An overflow is not an exact number. A knocked-over collector is not valid data. Reporting a problem honestly is more scientific than inventing a value.

What you will learn

- **Measurement skills** — units, precision, and consistent procedure.
- **Mathematics** — totals, averages, percentages, and comparisons with real data you collected yourself.
- **Graphing and interpretation** — turning numbers into pictures and conclusions.
- **Quality control** — deciding when data can be trusted and when it cannot.
- **Water awareness** — how much rain your community receives and how it could be preserved.

Safety first

SAFETY Never climb onto roofs, trees, walls, or unsafe structures. Never go outside during lightning, dangerous wind, or flooding. A measurement is never worth an injury — wait until conditions are safe, and ask an adult for help when needed.

Where this method comes from

Your protocol follows the same principles used by professional and volunteer rain observers around the world, including the World Meteorological Organization's Guide to Instruments and Methods of Observation (WMO-No. 8) and the CoCoRaHS community precipitation network. You are joining a global tradition of careful rain measurement.

Ready to start? Your next step is the Setup, Data Collection and Reporting Guide — it walks you through every detail.