Lesson Plan

Measuring and Recording Rainfall

MET éireann

In this lesson each student will learn:

1. How to build a rain gauge.
2. How to read a rain gauge and record data.
3. How to present data on a graph.
4. How to comment on their findings.
5. How to calculate the mean monthly rainfall.

How do we measure rain?

We use an instrument called a **rain gauge** to measure rain.

A rain gauge records the amount of rain that has fallen in a particular length of time.

Most rain gauges measure rainfall in millimetres.

Experiment 1: Recording and measuring rain

Materials needed:

- Plastic bottle (2 litre)
- A graduated cylinder
- A funnel, ideally of the same outside diameter as the bottle (or see Part 1, #7.)
- Permanent black marker, fine nib
- Water
- Notepad
- Graph paper
- Pen
- Scissors

Method:

Part 1: Building a rain gauge

1. Using the graduated cylinder, pour 10mls of water into the bottle.
2. Mark off 10ml on the bottle with permanent marker.
3. Repeat steps 2 and 3, marking the bottle at 10 ml increments (10ml, 20ml.....)
4. This is the scale used to measure rainfall.
5. Empty all of the water out of the bottle.
6. Place the funnel in the bottle.
7. Or cut the top off the plastic bottle where the arrow & line indicates in picture above. Turn it upside down and put into the bottle, securing with glue or tape. It must be fully sealed.
8. This is now a rain gauge.

Part 2: Recording data

1. Bury the rain gauge outside, a few inches into the ground, in an open area away from any nearby obstructions such as buildings, trees, etc.
2. Each day, record how much rain falls using a notebook and empty the bottle.
3. Repeat this everyday for a month.
4. Record the data on the notepad.
5. Choose one month in winter and one in summer to show differences.
6. After a month of recording, draw a graph to represent the data.
7. Plot the days along the horizontal axis and the rainfall along the vertical axis.
8. Join the dots.

Part 3: Analysing results

To convert the rainfall amount (ml) to mm please use the following equation

Volume of rainfall amount (ml) = $\pi r^2 h$

We want to know the value of 'h' – the height of rainfall in mm. The 'r' is the radius of the bottle. The diameter of a standard 2 litre soft drinks bottle is 10cm ~ radius 5cm. All known values must be converted to litre and meter *before* using the equation.

e g. 50ml of water works out as a depth of 6.36mm of rainfall in this bottle.

1. Ask the following questions:

   - Has the amount of rainfall changed over the month?
   - Are there any differences between winter and summer months?
   - What was the wettest day?
   - What was the driest day?

2. Calculate the total rainfall for the month by adding up the rainfall recorded on each day.