

Measurements and Tools

In scientific experiments, scientists often need to measure changes in variables. Common variables measured are distance, time, temperature, volume, and mass. To make accurate measurements, specific tools are used with standard international units. Temperature is measured in degrees Celsius ($^{\circ}\text{C}$) by a thermometer. Distance is measured in meters (m), centimeters (cm), or millimeters (mm) by a ruler. Mass is measured in grams (g) by a triple beam balance. Time is measured in seconds (s) and minutes (min) by a stopwatch. Volume is measured in milliliters (mL) by a graduated cylinder.



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Volume is measured in milliliters (mL) by a Graduated Cylinder

[Graduated Cylinder measuring volume of fluid in mL](#)

In some experiments, scientists need to measure a volume of fluid. One tool used to accurately measure volume is a graduated cylinder. It is often marked in units of milliLiters, because milliliters is a standard international unit of volume measurement.

Mass is measured in grams (g) by a Triple Beam Balance

[Triple Beam Balance weighing graham cracker g](#)

In experiments, scientists often need to measure the mass of an object. They can use a triple beam balance to measure the mass in units of grams, represented by the letter g.

Time is measured in seconds (s) and minutes (min) by a Stopwatch

[Stopwatch timing minutes and seconds](#)

In order to time an experiment or events in an experiment, scientists use stopwatches that measure the time in minutes (min) and seconds (s).

Distance is measured in millimeters (mm), centimeters (cm), and meters (m) by a Ruler

[Ruler measuring gap with millimeters, centimeters, and meters](#)

Distance can be measured in a variety of ways according to the context of the experiment. Scientists can measure object height or length, as well as distance traveled. To do so, they often use rulers. The units measured are either millimeters, centimeters, or meters depending on the size of the ruler and the context of the measurement.

Temperature is measured in degrees Celsius by a Thermometer

[Thermometer measuring temperature of lava in degrees of Celsius](#)

Temperature of an object or liquid in the experiment is often measured, as well as temperature of the experimental conditions. Scientists use thermometers, and the standard scientific unit for temperature is degrees Celsius.