A Controlled Experiment

Part of the scientific method
Variables

- A factor that can change. A variable can change other factors when it changes.

Examples of variables:
- Temperature
- Light
- Open vs. Closed container
- Location
- Time
- Elevation
- Pressure
Quantitative and Qualitative

- A Quantitative Variable is one that is measured using numbers. Examples: temperature is measured in degrees, length can be measured in centimeters.

- A Qualitative variable is one that can not be measured in numbers, but by its qualities. Such as bright, green, hot, cold, pain.
Independent vs. Dependent Variables

- The **dependent variable** is a factor that changes because the **independent variable** changes. However, the independent variable is not changed by the dependent variable.

- **Example:** Elevation and Boiling temperature of water. The boiling temperature of water changes because of changes in elevation. Changes in the boiling temperature of water do not change elevation.
Graphing Variables

- The **Independent variable** is always graphed on the **X axis**.
- The **dependent variable** is always graphed on the **Y axis**.

Boiling Temperature of water

![Graph showing the relationship between feet above sea level and boiling temperature of water.](image)
Control

-A variable or factor that does not change in the experiment. It remains constant.

In a Controlled experiment only one variable is allowed to change at a time. Everything else remains constant.
Replicates

- In an experiment multiple copies of the experiment are done at the same time.
- This is to ensure that the results are accurate (true) and not due to a mistake, error or chance event.
Treatments

- Set of variables in the experiment that are the same in each group of replicates.
- 2 Treatments

Covered

Uncovered