

# The Scientific Method

- Analyzing Data: The process of determining whether data are reliable and whether they support or refute a given prediction or hypothesis.
- Classifying: The process of sorting objects or events into groups based on their common features.
- Collecting Data: Gathering and recording of specific information based on observations.
- Communicating: Sharing information. Includes critiquing work of other scientists and gaining insight from other scientists that can benefit your own work.
- Controlled Experiment: Based on a comparison of a control group and an experimental group.
- Dependent Variable: The factor that changes as a result of the independent variable. The responding variable.
- Experimenting: The process of testing a hypothesis or prediction by carrying out data-gathering procedures under controlled conditions.
- Hypothesizing: The process of forming testable statements about observable phenomena, is often one of the first steps in a scientific investigation. A statement is testable if evidence can be collected that either supports the hypothesis or refutes it. Although a hypothesis may be refuted, it can never be proved true beyond all doubt. It can only be supported by evidence.

**Independent Variable:** The one factor that you change in an experiment. The manipulated variable.

**Inferring:** An Inference is an attempt to explain or interpret observations or to say what caused what you observed.

**Measuring:** The process of determining the dimensions of an object, the number of objects in a group, the duration of an event, or other characteristics in precise units.

**Modeling:** Involves constructing a representation of an object, a system, or a process that helps show relationships between data.

**Observing:** The use of one or more of the five senses to perceive objects or events.

**Organizing Data:** Involves placing observations and measurements in some kind of logical order, such as a graph, chart, table, or map.

**Predicting:** Stating in advance the result that will be obtained from testing a hypothesis. A prediction often takes the form of an "if - then" statement.

**Sequencing:** A sequence is an arrangement of things or events in a particular order.

**Theory:** Most probable explanation for a large set of data.

