

Scientific Methods Terms

Evidence - factual information

Observations - information collected by using one or more of the senses

Data - the information that is gathered through observations

Quantitative data –

Qualitative data - information that is not easily quantified but is observed with senses

Inference - a logical interpretation of data based on his or her prior knowledge and experience

Hypothesis - a possible explanation for a set of observations or an answer to a scientific problem based on prior knowledge, logical inferences, or imaginative guesses

Controlled Experiment - a method of testing a hypothesis that utilizes a control group and an experimental group with only one variable (difference) between the control and experimental groups.

Variable - one factor in an experiment that is 'manipulated' or changed from the control group

Independent (Manipulating) variable –

Dependent (Responding) variable - the observable or measurable results

Theory - a well-tested explanation that unifies a broad range of observations

Constant –

Experimental group - the manipulated group to which the independent variable is applied

Control group-

Scientific laws must be simple, true and universal. They are accepted at face value based upon the fact that they have always been observed to be true.

(**Note:** There have been things accepted as “law” that were then shown to be false.)

Metric System is a decimal system of measurement whose units are based on multiples of 10. Also known as "SI" or International System of Measurement.

Tools for Seeing Small Objects and Organisms

Microscopes - devices that produce magnified images of structures that are too small to see with the unaided eye

Light microscopes - produce magnified images by focusing visible light rays.

Electron microscopes - powerful microscopes that use electromagnets to focus beams of electrons to visualize extremely small non-living objects.

Spontaneous generation - the idea that life could arise from non-living things

Biogenesis -

Francesco Redi (Arezzo, February 18, 1626 – Pisa, March 1, 1697) was an Italian physician. He is famous for his experiments, which tested the idea of "spontaneous generation." At the time, prevailing wisdom was that maggots formed magically from rotting meat.

What was his experiment?

Density is the mass per unit volume of an object. It is a specific property of matter that can be used to identify different materials.

Technology - the use of scientific knowledge to improve the condition of mankind