**The Scientific Method**

The scientific method is an organized plan for gathering, organizing and communicating information. It involves making an observation, posing a question, forming a hypothesis, designing and testing an experiment, collecting and interpreting data, drawing conclusions and communicating results.

The Goal: To solve a problem or better understand an observed event.

Observations: information obtained through your senses.

Question: Based on your observation, you ask a question that can be solved scientifically. The question is often times referred to as the “problem”.

Hypothesis: A possible answer to your question. Based on prior knowledge and research.

Experiment: Used to test the hypothesis.

* Parameter: any factor that can be measured (data).
* Variable: parameter that changes during an experiment.
  + Independent Variable: the parameter (variable) that is deliberately changed by the experimenter.
  + Dependent Variable: the parameter (variable) that changes in response to the independent variable.
* Control: what is used for comparison in an experiment.

Data: facts, figures and other evidence gathered through observations during an experiment.

Conclusion:

* Claim: A statement or conclusion that answers the original question/problem.
* Evidence: Scientific data that supports the claim. The data needs to be appropriate and sufficient.
* Reasoning: A justification that connects the evidence to the claim. It shows why the data counts as evidence by using scientific principles.

Communicating Results: share what you have learned with others through writing and speaking.

Theory: a well-tested explanation for a set of observations or experimental results. We assume a theory is true.

Law: fact. Summarizes a pattern found in nature. Has been verified many times by many different people.