**Scientific Method**



What is it?

* The process used to find answers to questions about the world!

Is there only one?

* Nope – there are many versions but they all have the following steps in common.

Steps

1. Ask a Question
2. Do Background Research
3. Construct a Hypothesis
4. Test Your Hypothesis by Doing an Experiment
5. Make Observations
6. Analyze Data and Draw a Conclusion

**Purpose/Question**- What do you want to learn? What is the problem to be solved?

**Research**- Find out as much as you can about the topic.

**Hypothesis**- Predict the answer to the problem. This is usually stated like " If I...(do something) then...(this will occur)"

**Experiment**- The fun part! Design a test or procedure to find out if your hypothesis is correct.

**Observations**- Use your senses to observe information about what happened during the experiment. Record this data.

**Analysis & Conclusion**- Review the data. Check to see if your hypothesis was correct. Summarize the experiment.

Additional Terms to Know

Experiments include two types of variables (things that change):

Independent Variable



* This is the part of your experiment that you will change on purpose to test your hypothesis.

Dependent Variable

* This is what occurs in response to the changing independent variable.

Control Group

* It is part of the experiment where you do not include the Independent Variable. The control helps you judge your experimental results.

Observations can be:

Quantitative

* Information gathered by measuring

&

Qualitative

* Information gathered by observing (using your senses)

When making observations, be careful not to make inferences! Inferences come later, when you analyze your data and draw conclusions.

Inference

* A conclusion reached on the basis of evidence and reasoning (i.e. how we explain the meaning of our observations).

E.g. Observation: The plant is turning yellow.

Inference: The plant is yellowing because it doesn’t get enough sunlight.