

# Scientific Methods

Chapter 1.2

## Scientific Methods

- **The Scientific Method** – organized approach to solving a problem or leading an investigation

1. I.D. the problem, determine what you want to know, or ask a question
2. Research – find out all you can, look at the specifics
3. Hypothesis – suggested explanation or question - AKA Inference

4. Experimentation – organized procedure to test, measure, or observe something

Variable – factor that is changed in the experiment

Independent variable – part of experiment that is changed by experimenter

Dependent variable – observation that is different due to the changed factor (I.V.)

Control – factor held constant (unchanged) in the experiment

Data – information we take notice of and record

5. Analysis – information is viewed (visualized) to see similarities, differences or trends in our observations (usually with graphs etc.)

6. Conclusion – the problem is solved or initial question is answered

## Theory vs. Law

- Once a hypothesis has been tested and generally accepted it may lead to the development of a **THEORY**

## Theory vs. Law

- Once a theory is well established through research and experimentation, it may become a scientific LAW
- LAW – is a rule that describes natural phenomenon. To become a LAW, a theory must be proven correct every time it is tested

## Theory or Law?

- Gravity pulls down on objects
- LAW
- Dinosaurs became extinct because of the weather
- THEORY
- Heat is the Kinetic energy of matter
- LAW
- According to Einstein time travel is possible
- THEORY