# Nature of Science Lesson 1 – Scientific Inquiry

**What is Science?**

***Science*** – investigation and exploration of natural events and of the new information that results from these investigations.

**3 Branches of Science that we will study this year:**

1. ***Physical Science*** – the study of matter and energy
2. ***Life Science*** – the study of life and the processes that occur in living organisms, such as plants and animals.
3. ***Earth Science*** – the study of the processes that occur on Earth. Astronomy is often included in the earth sciences.

**What is Scientific Inquiry?**

***Scientific inquiry*** - A process that uses a variety if skills and tool to answer a question or test ideas. (May have heard this called the Scientific Method).

Possible Sequence of process:

1. Ask a Question
2. Hypothesis and Predict
3. Test Hypothesis (Experiment)
4. Analyze Results (Data Analysis)
5. Draw Conclusions
6. Communicate Result
7. **Ask a Question** –need a scientific question that can be answered by making observations and collecting data.
8. **Hypothesis/Predict** – a hypothesis is a possible explanation for an observation that can be tested by scientific investigations.

- Scientist often make prediction as part of this step.

1. **Test Hypothesis (Experiment)** - to test your hypothesis you design an experiment.

- Collect ***data*** – facts figures and other evidence.

***Variables*** – factors that can change in an experiment. In a good experiment all the variables are the same except for the one being tested.

- ***Manipulated variable (independent)*** – the variable that is changed or manipulated.

***Responding variable (dependent)*** – the variable that is expected to change due to the manipulated variable.

1. **Analyze Results** – look for trends or patterns in the data.

- data tables – used to keep all data organized.

- graphs – used by scientist to help spot trends/patterns.

1. **Draw Conclusions** – scientist draw conclusions after analyzing their results. Sometimes their results are not what they expected.
2. **Communicate Results** – scientist share their results so others can learn from them. They do this in journal articles, conferences, and via the internet.