

# Chapter 1: The Nature of Science

## Section 1: The Methods of Science

**Science:** based on inquiry that helps develop explanations about events in nature

- Means “knowledge”

Three branches of Science

- **Life Science:** the study of living things
- **Earth Science:** the study of Earth and Space
- **Physical Science:** the study of matter and energy

Scientific inquiry (method): process that uses a set of skills to answer questions or to test ideas about the natural world

- Includes possible steps:
  - State the problem
  - Research and gather information
  - Form a hypothesis
    - **Hypothesis:** possible explanation for an observation that can be tested by scientific investigations
  - Test Hypothesis
    - Design an **experiment** – tests the effect of one thing on another using a control
    - **Variable:** any factor that can have more than one value
    - **Independent variable:** the factor that you want to test
      - It is changed by the investigator to observe how it affects a dependent variable
    - **Dependent variable:** the factor you observe or measure during an experiment
    - **Constant:** a factor that does not change
    - **Control:** standard by which the test results can be compared
  - Analyze the data
    - Graph Results/make calculations
  - Draw Conclusions:
    - **Conclusion:** summary of the information gained from testing a hypothesis
  - Communicate Results/Peer Review

- Write Science Journal Articles or Report it to your teacher

<b>Scientific Theory</b>	<b>Scientific Law</b>
Definition: an explanation of observations or events that is based on knowledge gained from many observations and investigations	Definition: a rule that describes a pattern in nature
Example: The theory of Plate Tectonics	Example: Newton's Law of Gravitational Force
Reason: Explains how the Earth's crust moves and why earthquakes and volcanoes occur.	Reason: It will imply that if you drop an object, it will fall towards the Earth not why it will do that.