Ch. 1: The Chemical World

Learning Outcomes: By the end of this chapter you should be able to:

- (1) Identify the steps of the Scientific Method. (1.3)
- (2) Identify and be able to interpret a two-variable graph. (1.4)

Equations and Constants

None

(1) The Scientific Method

The Scientific Method has been developed to give scientists a systematic way to organize and study the physical world.

- In your own words, describe each term:
 - Observation:
 - Hypothesis:
 - Experiments:
 - Scientific Law:
 - Theory:
- What is the difference between a hypothesis and scientific law?
- What is the difference between scientific law and theory?
- Diagram the flow of the Scientific Method. Use boxes to indicate steps and arrows to indicate how they are connected.

ChemV20, Elementary Chemistry

Antoine Lavosier studied the process of **combustion** in the 18th century.

• Identify the (1) observation, (2) hypothesis, (3) scientific law, and (4) theory developed to explain the process of combustion.

(2) Graphing

A **graph** is a diagram of two (usually) variables to show their relation.

- The **independent variable** is plotted on the _____ -axis and is defined as:
- The **dependent variable** is plotted on the _____ -axis and is defined as:

The **slope** of the trendline identifies the relationship between the two variables.

- A **positive** slope means the variables are (directly/inversely) related and looks like:
- A **negative** slope means the variables are (directly/inversely) related and looks like:

<u>Ex. 1)</u> A scientist recorded heated a substance and then recorded the temperature at over time. Identify the (1) independent variable, (2) dependent variable, and then (3) sketch your own graph from the data below.

Time (sec)	Temperature (°C)
0	105.2
60	84.5
120	62.3
180	30.9

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