

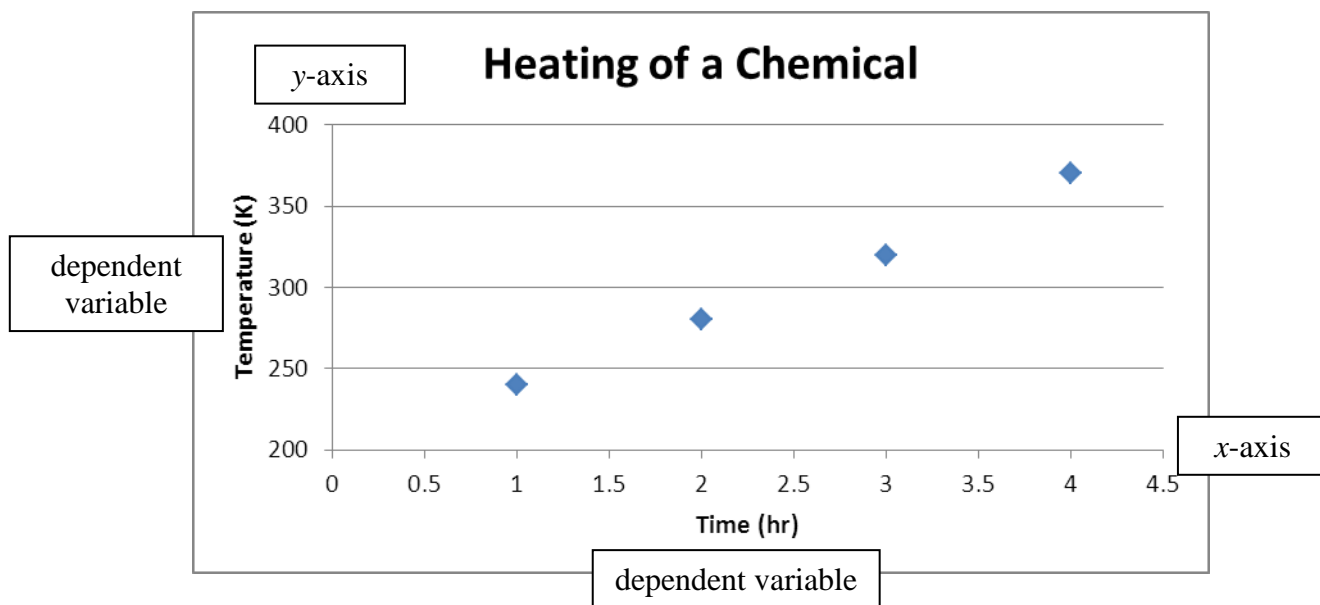
Chemistry Graphing References

Vocabulary:

- **Graph:** A picture of data from a data table
- **Data:** Information gathered from observation
- **Title:** A brief way to describe the content of a graph or table.
- **Variable:** Tells WHAT information is being collected.
- **Independent variable:** Variable that is being controlled more directly, we intentionally change it. It changes without being effected by the dependent variable.
- **Dependent variable:** It changes as a result of changes in the independent variable.
- **Unit:** Tells how information was measured. For example, time would be the variable, unit may be seconds, minutes, hours, days, weeks, etc.
- **Ordered pairs:** Two pieces of data that directly correspond to each other.

Graphing Tips:

- Independent variable goes on the horizontal axis, or x -axis. Must be labeled with the variable AND units. Example: time (min).
- Dependent variable goes on the vertical axis, or y -axis. Must have variable and units, too.
- Scaling must be done on both the x -, and y -axis. Highest and lowest numbers must be included, intervals must be regular, and should be spaced as far apart as possible. Make the graph as large as possible while being sure to include all data.
- Every graph should have a title



In the graph above, the independent variable is time (measured in hours) and the dependent variable is temperature (measured in kelvins). The chemist does not control time but does control the times at which measurements are made. Thus time is the independent variable. Because the temperature changes with time, temperature is the dependent variable.

Data Tables

Purpose: to organize information collected from experiments or research.

Need the following

Title:

- Name that describes the information you collected
- Capitalize important words.

Columns with Headings:

- Explains the kind/type of data
- Lists actual information (numbers, descriptions, etc.)

Units:

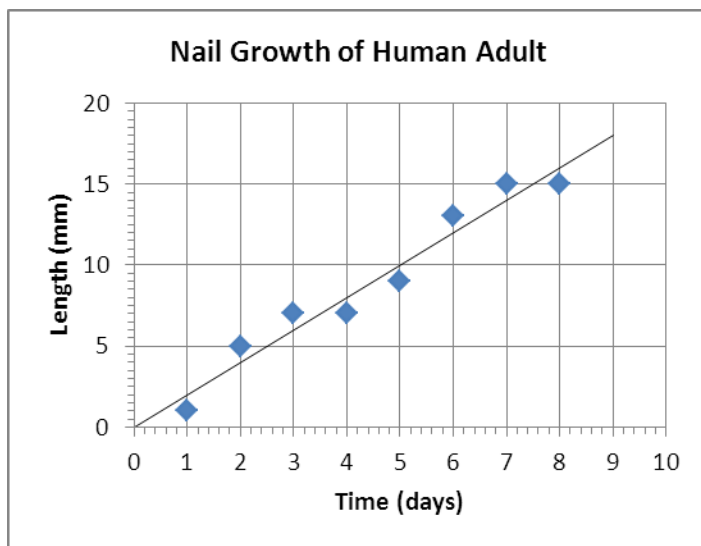
- Type of measurement
- Must always be shown (meters, °C, %, etc.)

Table Example:

Table 1: Student Height in Meters

Student Name	Height (meters)

Graph Example:



Graphs

Purpose: to provide a clear picture of numerical relationships.

Need the following

Title:

- Describes what the graph is about.

Axes:

- x is horizontal axis, y is vertical axis

Labels:

- Explain what the number represents

Units:

- Type of measurement; written in parenthesis, ex. (min)

Scale:

- Numbers on axes must be equally spaced and have the same increments.

Two types of graphs

Line Graph:

- Shows relationship between two factors as they change.

Bar Graph:

- Compare different volumes or quantities

Notice the following

Line Graph:

- Numbers on the x-axis go **ON** the lines
- Numbers on the y-axis go **ON** the lines
- Plot the points, circle the points, make a best-fit line (do **NOT** connect the dots).

Bar Graph:

- Numbers on x-axis go **BETWEEN** the lines.
- Numbers on y-axis go **ON** the lines.
- Make vertical columns

Terminology

a. Variable

- Information (data) being collected
- Properties of characteristics of some event, object, or experiment that can take on different values or amounts.

b. Independent Variable

- The variable controlled by the experiment; goes on the x-axis

c. Dependent Variable

- The factor being measured in the experiment; goes on the y-axis

Example:

In a study of how different amounts of sunlight cause plants to grow, the amount of sunlight is the independent variable and the growth of the plant is the dependent variable.