Scientific Inquiry

Standard B – 1.5

Standard B-1

The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.

B-1.5
Organize and interpret the data from a controlled scientific investigation by using mathematics, graphs, models, and/or technology

Key Concepts

- Data

- Controlled Scientific Investigations

- Formulas

- Dimensional Analysis

- Graphs

- Direct and Inverse Variations

- Models

- Technology

What You Already Know!

In the **6th grade** you analyzed and interpreted data. In the **7th grade** you used graphs, tables, and charts to explain the relationship between the IV and DV. You interpreted data in the **8th grade**.

What you Should Understand After This Lesson

- **Organize data which is collected from a controlled scientific investigation.**

- **Recognize the implications of various graphs.**

- **Use a formula to solve for one variable if give the value for the other variables.**

- **Understand what a scientific model is.**

- **Understand that technology can be used to develop a better understanding of scientific concepts studied.**

Objective

- *Organize* data from a controlled scientific investigation.

- *Interpret* data from a controlled scientific investigation.
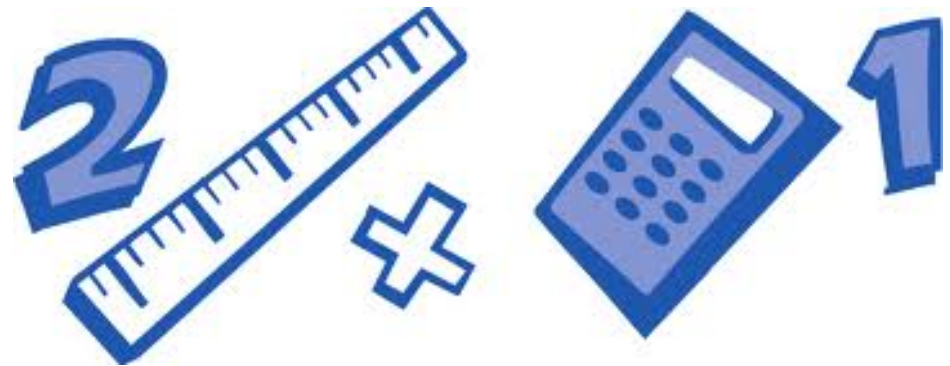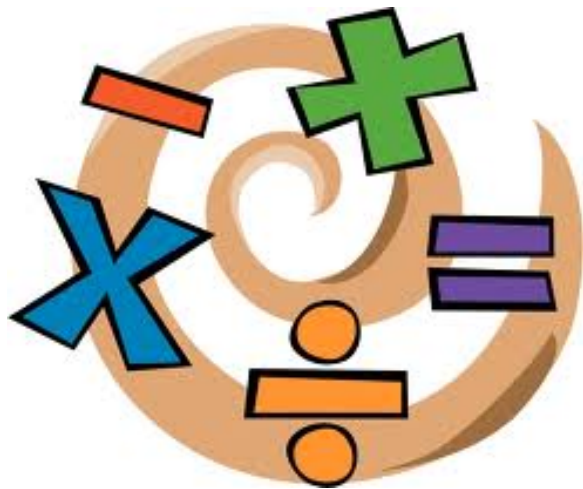
Vocabulary

NONE

Nerd Quirk #105

Being super aggravated when your vocabulary words are not in alphabetical order.

Graphing in Scientific Investigations

In science, it is important that data collected from scientific investigations be neat, legible, and easily interpreted. In order for this to be the case, scientists rely heavily on charts, graphs, and formulas.
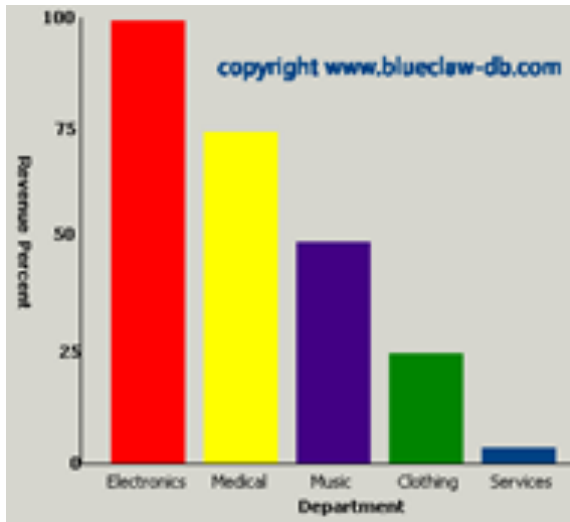
Graphing in Scientific Investigations

Length (cm)	Mass (g)
14	27
8	15
12	23
11	22
9	18

Charts

Data should be organized in charts which lists the values of the independent variable in the first column and the value of the dependent variable in the second column.
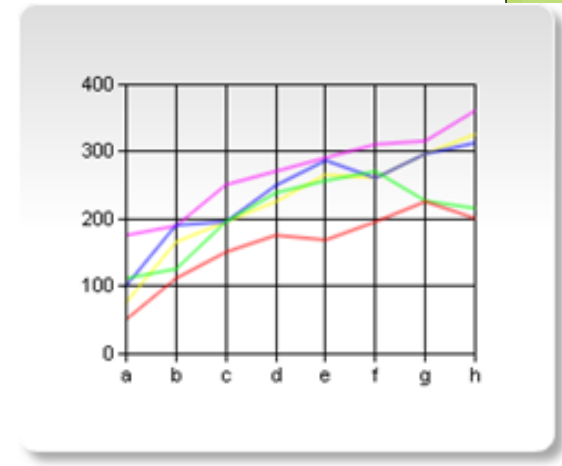
Graphing in Scientific Investigations

Bar Graph

Figure 1.1
Composition of solid waste by weight, generated by households[1]
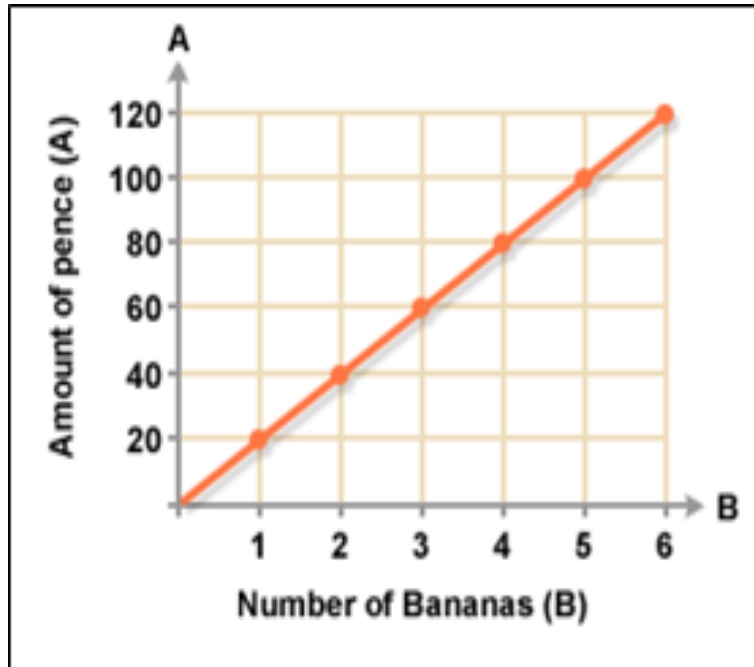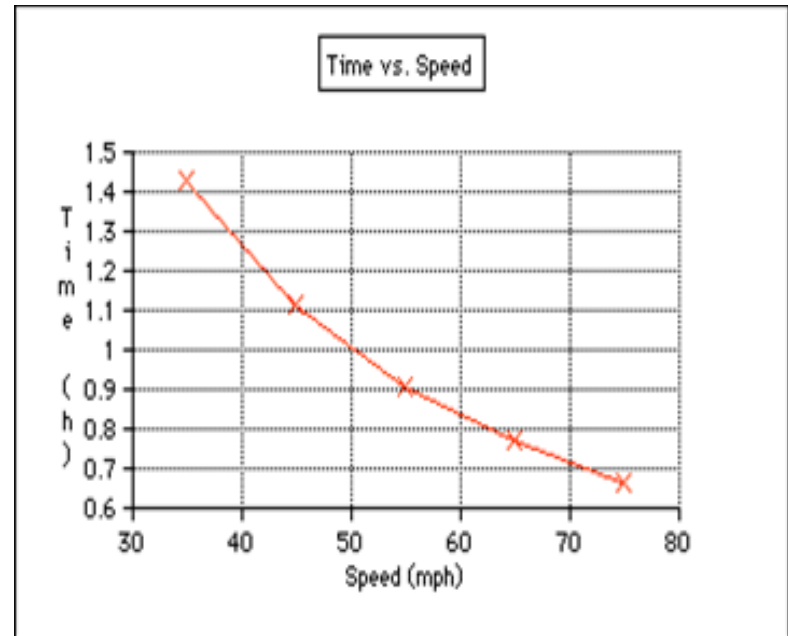
Circle Graph

Line Graph

Graphing in Scientific Investigations

Direct Variation

Inverse Variation

Models and Technology

Models

Information gathered during scientific investigations is not always used to only construct a graph. Models are also used.

Technology

The application of scientific knowledge to develop new products, procedures, or solutions to real world problems.