

Graphing Skills

Remember: Graphs show AVERAGED data – NOT the raw data

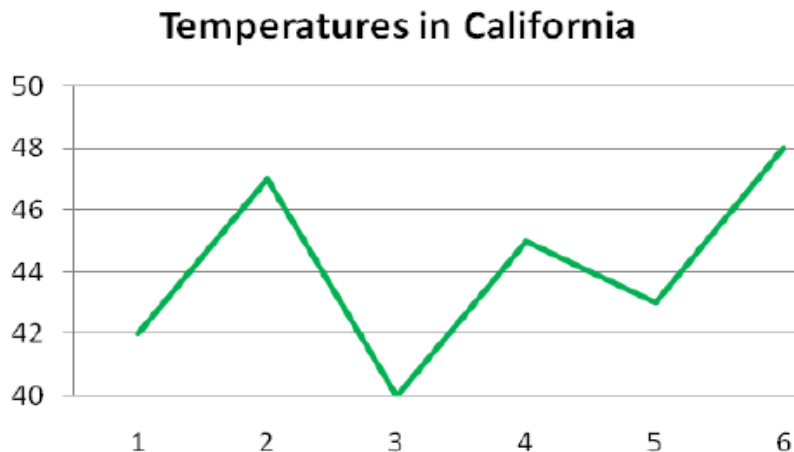
How to set up a Graph

Graphs need several things to communicate its meaning to others. Take a look at the example below:

Draw a line to all indicated parts of the correlating graph.



Now complete this graph by labelling parts and adding the missing parts:





Graphing and Analyzing Scientific Data

Graphing is an important procedure used by scientist to display the data that is collected during a controlled experiment. There are three main types of graphs:

Pie/circle graphs: Used to show parts of a whole.

Bar graphs: Used to compare amounts.

Line graphs: Use to show the change of one piece of information as it relates to another change.



Both bar and line graphs have an “X” axis (horizontal) and a “Y” axis (vertical).

Parts of a Graph:

Title: Summarizes information being represented in ANY graph.

Independent Variable: The variable that is controlled by the experimenter, such as, time, dates, depth, and temperature. This is placed on the X axis.

Dependent Variable: The variable that is directly affected by the I.V. It is the result of what happens as time, dates, depth and temperature are changed. This is placed on the Y axis.

Scales for each Variable: In constructing a graph, one needs to know where to plot the points representing the data. In order to do this a scale must be employed to include all the data points. This must also take up a conservative amount of space. It is not suggested to have a run on scale making the graph too hard to manage. The scales should start with 0 and climb in intervals such as, multiples of 2, 5, 10, 20, 25, etc...the scale of numbers will be determined by your data values.

Legend/Key: A short descriptive narrative concerning the graph's data. It should be short and concise and placed under or next to the graph.

For any set of data, you will need to determine the following:

Mean: This is determined by adding all the numbers in a set of data and then dividing by the number of values.

Median*: This is the middle number in a set of data. If there is an even set of numbers in the data, then take the average of the two middle numbers.

Ex: 2, 3, 4, 8, 12, 16, 20 median = 8

Ex: 3, 5, 8, 11, 17, 19, 27, 30 median is $11 + 17 = 28/2 = 14$

Mode*: This is the number that occurs most often in a set of data.

Ex: 3, 4, 6, 6, 7, 9, 9, 9, 12, 15 mode = 9

* To determine median and mode, the numbers in the set of data must be put in numerical order.