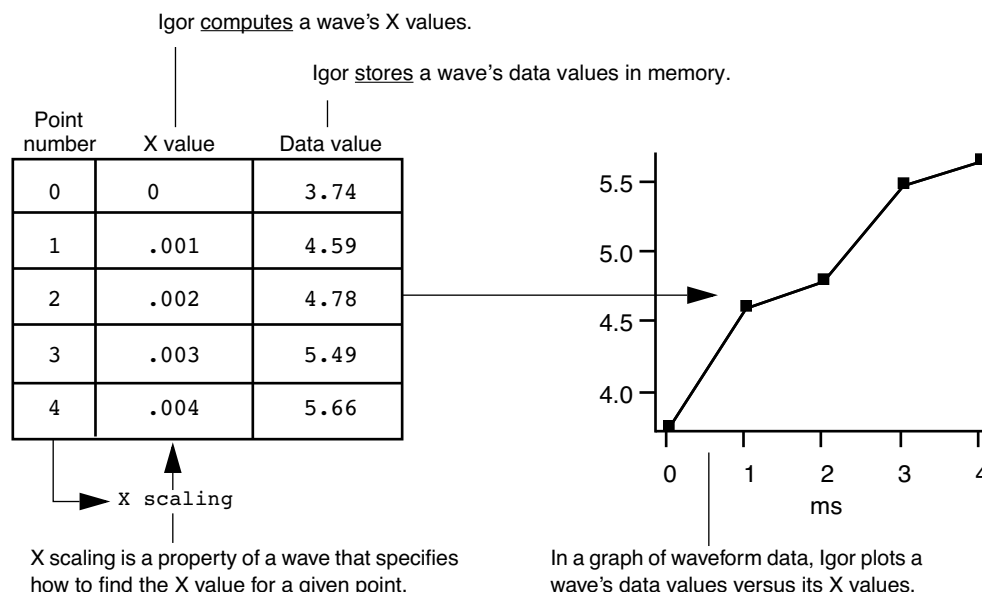In the following illustration, the wave consists of five data points numbered 0 through 4. The user has set the wave's X scaling such that its X values start at 0 and increment by 0.001 seconds per point. The graph displays the wave's stored data values versus its computed X values.

Igor computes a wave's X values.

Igor stores a wave's data values in memory.

Point number	X value	Data value
0	0	3.74
1	.001	4.59
2	.002	4.78
3	.003	5.49
4	.004	5.66

X scaling

X scaling is a property of a wave that specifies how to find the X value for a given point.

In a graph of waveform data, Igor plots a wave's data values versus its X values.

Waves can have from one to four dimensions and can contain either numeric or text data.

Igor is also capable of dealing with data that does not fit the waveform metaphor. We call this XY data. Igor can treat two waves as an XY pair. In an XY pair, the data values of one wave supply the X component and the data values of another wave supply the Y component for each point in the pair.

A few analysis operations, such as Fourier transforms, inherently work only on waveform data. They take a wave's X scaling into account.

Other operations work equally well on waveform or XY data. Igor can graph either type of data and its powerful curve fitting works on either type.

Most users create waves by loading data from a file. You can also create waves by typing in a table, evaluating a mathematical expression, acquiring from a data acquisition device, and accessing a database.

How Objects Relate

This illustration shows the relationships among Igor's basic objects. Waves are displayed in graphs and tables. Graphs and tables are displayed in page layouts. Although you can display a wave in a graph or table, a wave does not need to be displayed to exist.

Waves reside in memory.
Each wave has a unique name that you can assign to it.

You use a wave's name to designate it for display or analysis or in a mathematical expression.

Waves

The traces in a graph and columns in a table are representations of waves.

Graph   **Table**

Page layouts display multiple graphs and tables as well as pictures and annotations for presentation.

Page Layout