



**version 7 for Macintosh
User's Guide**

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DeltaGraph 7 User's Guide for Macintosh

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What's New:

This section provides information on updates and additions that have been made to DeltaGraph® since version 5.0.

DeltaGraph v 7.0

DeltaGraph 7 is a major new release of DeltaGraph for Macintosh and Windows, incorporating user interface changes as well as several new and enhanced features. We've listed below some of the interface changes as well as the major new features in the Mac OS X version.

New Features:

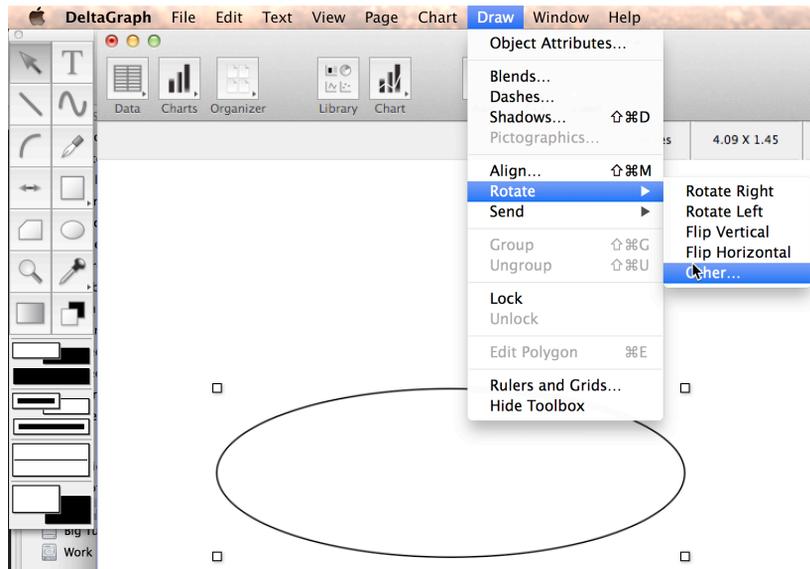
- Free rotation of (most) drawing objects
- Show values under cursor
- Highlight Data for Chart
- Improved Undo
- Pantone™ color swatch files are no longer included in the DeltaGraph install. However, DeltaGraph supports use of color swatch files in the .ai or .acb file format.
- Improved software activation experience, with fewer restrictions on users
- New optional cross platform library file format. Version 7 library files are cross-platform, but the user may continue to use and create version 6 libraries.
- Use Default Chart Font: When using the Chart Advisor or Chart Gallery, the user now has the option of using the default chart font (as specified in the user preferences) when creating new charts from a library. In past versions, all standard charts were created using the default chart font, while all library charts were created with the font specified when the chart was added to the library. Now the user can

specify that the default chart font be used when creating new charts from a library.

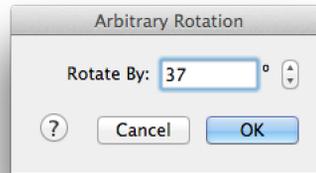
- New, optional file format produces smaller files than version 6 for large data sets. Version 7 documents will be smaller (especially those with large data sheets) than version 6 documents. However, the user may continue to use and create version 6 documents.
- DeltaGraph 7 is supported only on Mac OS X 10.5 and later
- DeltaGraph 7 is now a signed application.

Free Rotation of Draw Objects

Free rotation of is performed by selecting the object in the Draw view, and then choosing the Other... option under the Rotate item in the Draw menu:



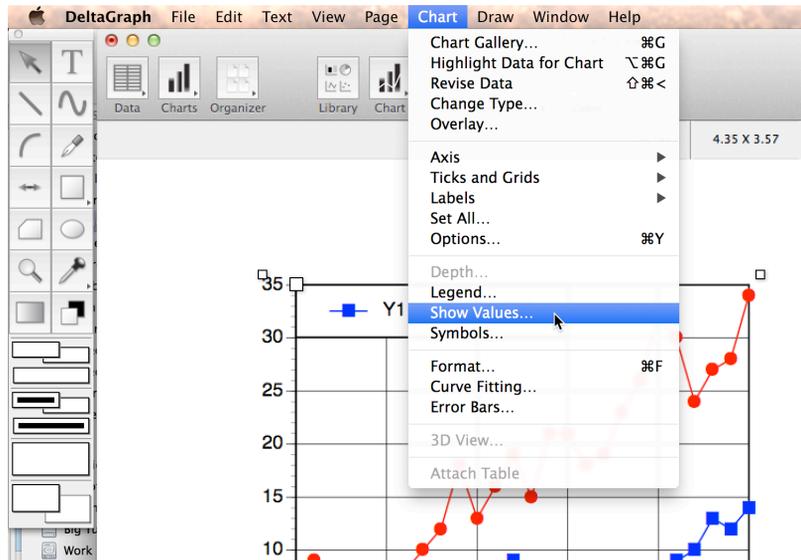
The dialog below will be displayed:

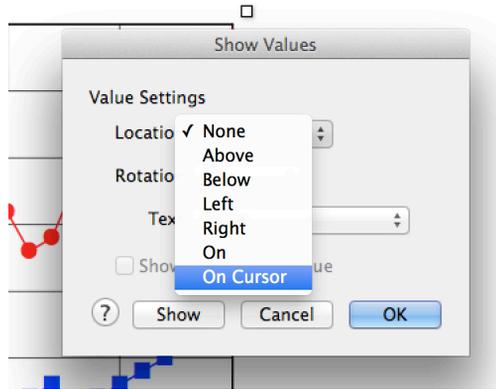


A number between 0 and 359 (inclusive) can be entered.

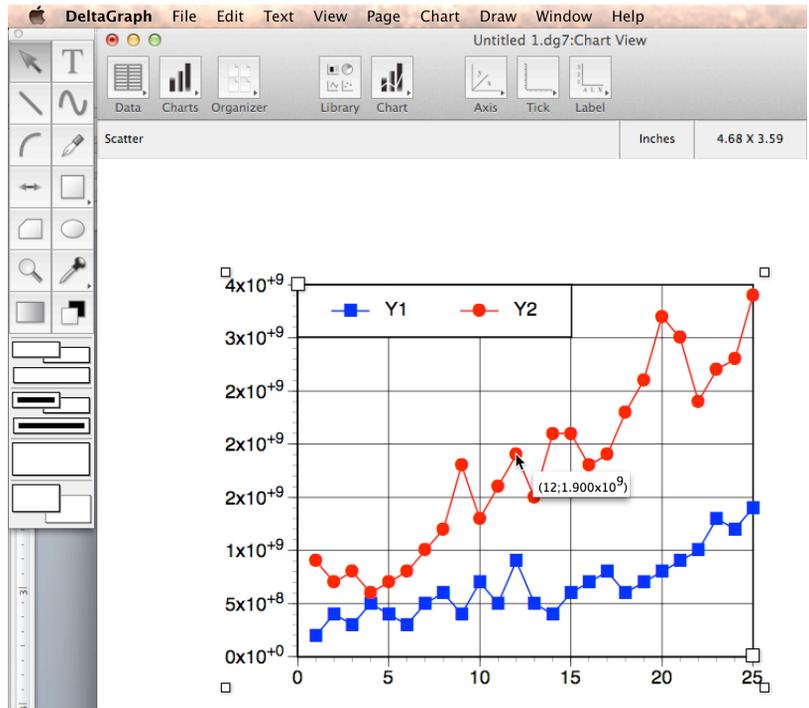
Show Values under Cursor

A floating window containing the value of the data point beneath the cursor in the selected chart can be shown. Select the chart, then choose the Show Values... item in the Chart Menu:



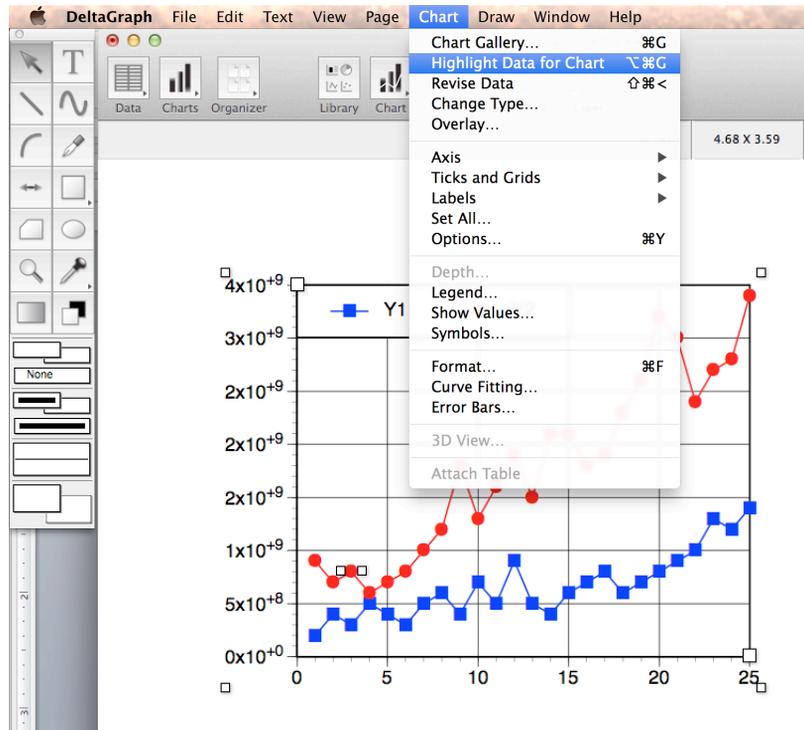


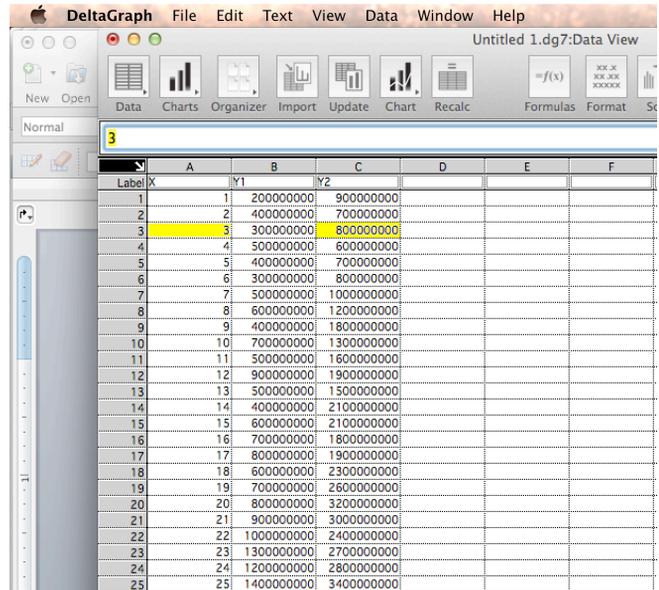
In the Show Values dialog, select the “On Cursor” item from the location popup menu.



Highlight Data for Chart

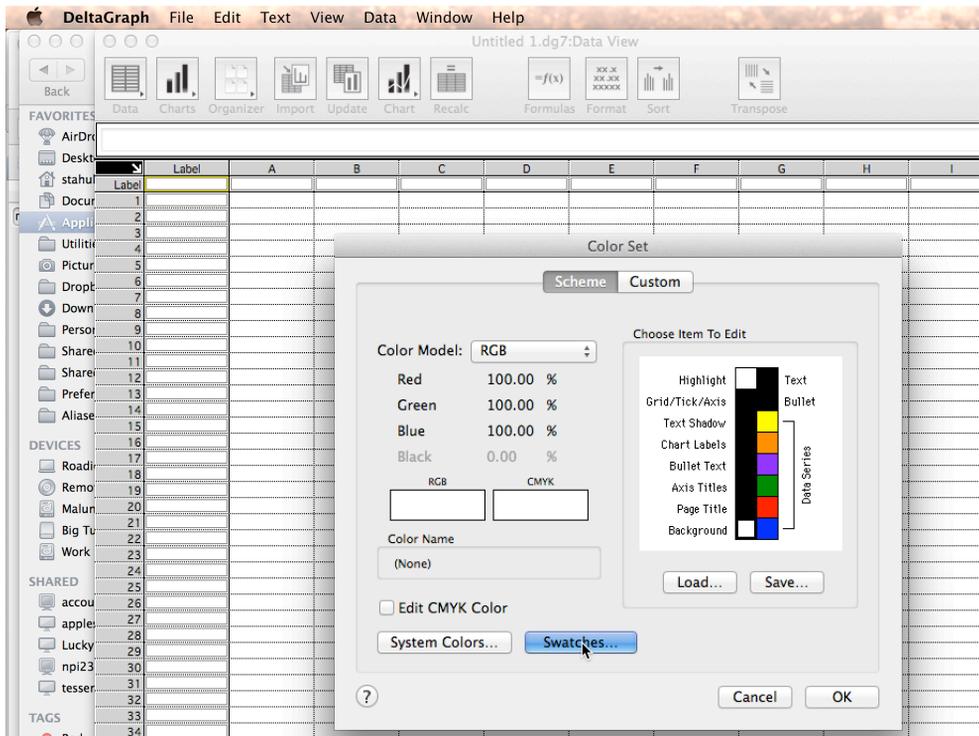
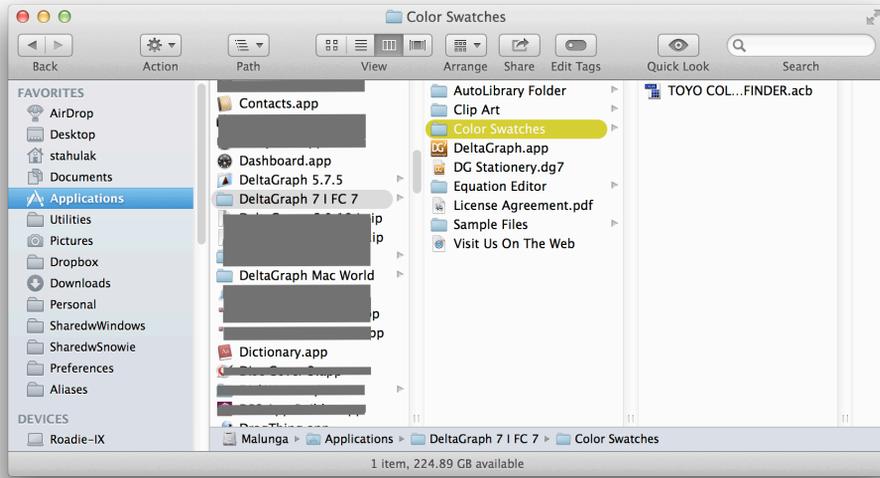
The data represented by the selected chart element(s) can be highlighted in the Data sheet by selecting a chart element, and then selecting the “Highlight Data for Chart” item in the Chart menu.



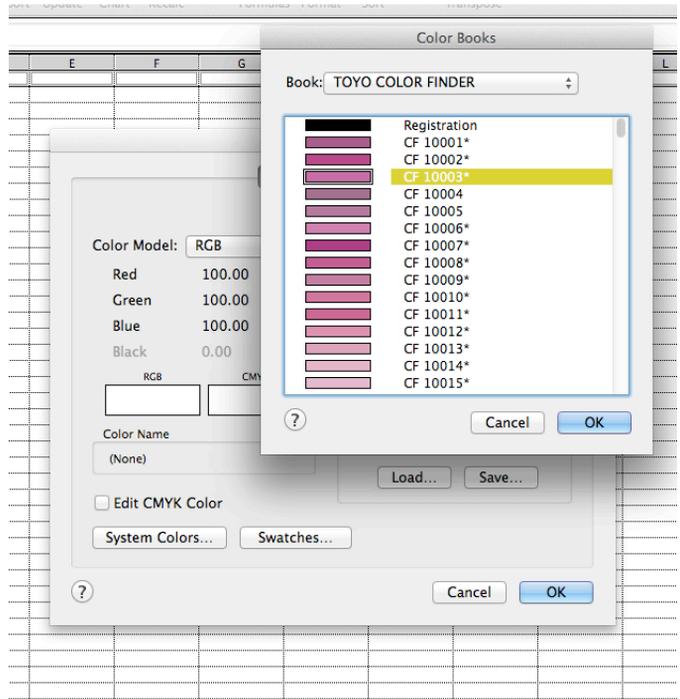


Using Supported Color Swatch files with DeltaGraph 7

Color swatch files in the .acb and .ai file formats can be used by DeltaGraph. In order to use color swatch files of these types, make a copy of the desired swatch files in the “Color Swatches” folder inside the DeltaGraph application folder.



All swatch files in the Color Swatches folder of the correct format will be shown in the Color Books window displayed by clicking the Swatches button in the Color Set window (available via the “Colors...” menu item in the Edit menu).



DeltaGraph v 6.0

DeltaGraph 6 is a major new release of DeltaGraph for Macintosh and Windows, incorporating user interface changes as well as several new and enhanced features. We've listed below some of the interface changes as well as the major new features in the Mac OS X version.

Interface Changes:

- New, Mac OS X style document window.
 - Command Bar, Status Bars now integrated into Document Window
- The Scale Editor in the Command Bar is gone
- Outliner is gone
- Slide Show functionality is gone
- Sorter View has become Organizer View
- The Header / Footer Editor dialog, which used to be accessed via the Print Dialog, is now accessed directly from the item in the File Menu
- The Document Setup... menu item in the File Menu is gone. Custom page sizes are now supported using the Mac OS X Page Setup Dialog. All pages use the Printer's Page size as selected in the Page Setup Dialog.
- In Chart View, new, fully Unicode Text Editor
- Color Editor Window no longer directly references Pantone.

The old "Pantone Colors" button now says "Swatches"

The Pantone color books are no longer embedding in the DeltaGraph application file.

Instead, all color book files in the .ai or .acb file format that are included in the "Color Swatches" folder in the DeltaGraph installation folder will be included in the color books listed in the dialog presented if you click the

“Swatches” button

- Miscellaneous user interface changes

Rearranged Edit, View, Page menus

Font submenu is gone, in favor of Mac OS X Font Window

Functionality Changes:

- New, fully cross-platform file format
- Full cross application support for Unicode international text.
- Added “Draw In CMYK” to preferences
- New implementation of EPS export uses Mac OS X services
- PDF export supports Spot Colors
- Both PDF and EPS support either CMYK or RGB color models
- New Unicode Text Editor
- The font menu is gone, in favor of Mac OS X Font Window
- Not all fonts will now support condensed, extended, or bold styles
- DeltaGraph 6 is supported only on Mac OS X 10.4 and later

DeltaGraph v 5.0.2

The following features were added to DeltaGraph version 5.0.2:

- Updated import/export support for Microsoft® Excel files (including Excel v.X)
- Added data linking (for Excel or text files)

Linking a Data File to a DeltaGraph Data Page

You can create and save a data file in another application (Microsoft Excel or any application that saves data in a tab-, comma-, space-, multi-space-, or custom-delimited text format) and then add the data from the file to a DeltaGraph Data page by “linking” the file to DeltaGraph from the application in which you created it. When you update or modify linked data in the original application, the data are also updated in DeltaGraph when you open the DeltaGraph document containing the linked data.

NOTE

You can link only one file to a Data page, and the linked data overwrite any existing data on the page.

NOTE

If you add data to a page with a linked file, and then you add data to the linked file, the data in the linked file may overwrite the other data on the page.

Linking a Text or Excel File

To link a text data file or Excel file to a DeltaGraph document by importing it, do the following.

1. Save the data file in a format that can be imported into DeltaGraph (tab-, comma-, space-, multi-space-, or custom-delimited text format, or Excel).
2. Open DeltaGraph.
3. Open the destination Data page in a new or existing DeltaGraph

document

4. Choose **Import** from the File menu.
5. From the Show pop-up menu, select the format of the data file to be imported.
6. Navigate to the data file name, and click **Open**. The message “Keep data linked to its file?” is displayed.
7. Click **Yes**. The data file is linked to the DeltaGraph Data page.

The selected data are written into the Data page starting in the upper left-hand corner and overwriting any existing data. A link is established to the original document in its original application, and the DeltaGraph Data page is automatically renamed with the title of the linked document. You can create only one link per Data page.

Updating Linked Data

To update linked data, modify the data in the application that contains the linked data (e.g., Microsoft Excel). When you update or modify linked data in the original application, the data are also updated in DeltaGraph when you open the Delta- Graph document containing the linked data.

You can edit linked data in the Data page, but if you subsequently modify the linked document, the changes you made in the Data page are replaced by the updated linked data. To preserve changes you make to linked data in a Data page, you must unlink the document (see “Unlinking a Data File” below).

If you delete a linked data file, a dialog box is displayed for you to find the file when you open the DeltaGraph document. You need to unlink the document (see “Unlinking a Data File” below).

Unlinking a Data File

After you link a file to a Data page, the “**Link**” command on the Data menu changes to “**Unlink**.” To break the link between a file in another application and a DeltaGraph Data page, select **Unlink** from

the Data menu, or press **cmd-L**.

The data remain in the Data page, but the page is longer automatically updated when you change the data in the original file. You can modify the data in the Data page and save it.

DeltaGraph v 5.5

The following features were added to DeltaGraph version 5.5.

- Drag and drop data import:

You can import data files (including delimited text files and Excel files) by dragging them into the Data view.

- Drag and drop image import:

You can import image files of supported formats by dragging them into the Chart view.

- Drag and drop export to other applications:

You can export charts and other objects or groups of objects by dragging them into other applications. This places a PICT and a PDF version of the image on the clipboard. The receiving application decides which to use.

- Pasting delimited data (tab, space, comma):

A “Paste Delimited” option has been added to the Edit menu. After you cut or copy data from a space-, tab-, or comma-delimited file, select **Paste Delimited** to paste the data into a Data page. You will be asked to specify the delimiter and the data will be added to the data page.

- Added export formats:

Additional export formats are now available (see Chapter 1, “Introduction” or Chapter 14, “Importing and Exporting Graphics”).

- PDF import:

You can import Adobe PDF images to chart pages.

- PDF export:

You can now export individual charts or objects as PDF images (rather than printing to PDF, which prints the whole chart page).

- Improved export quality for non-embedding export formats:

The export process now takes full advantage of the OS X Quartz engine when exporting non-embedded image types (JPG, BMP, Photoshop, QuickTime, TIFF, etc.) . When exporting images, a full range of image quality options is now available by clicking the **Options** button.

- Improved text rendering:

Text is now fully rendered using the Quartz engine.

- Transparency support:

A Transparency tool has been added to the Toolbox in the Chart view (see below).

- Quartz shadow support:

A “Quartz” option has been added to the shadow types in the “Drop Shadow” dialog box in the Chart view (see “Adding Quartz Shadows to Objects” below).

Adding Transparency to Objects

You can add transparency to an object or objects in the Chart view using the Transparency tool in the Toolbox. Transparency effects are maintained if you export the image in any format except EPS or PICT. Transparency layers are maintained when you export the image as a PDF.

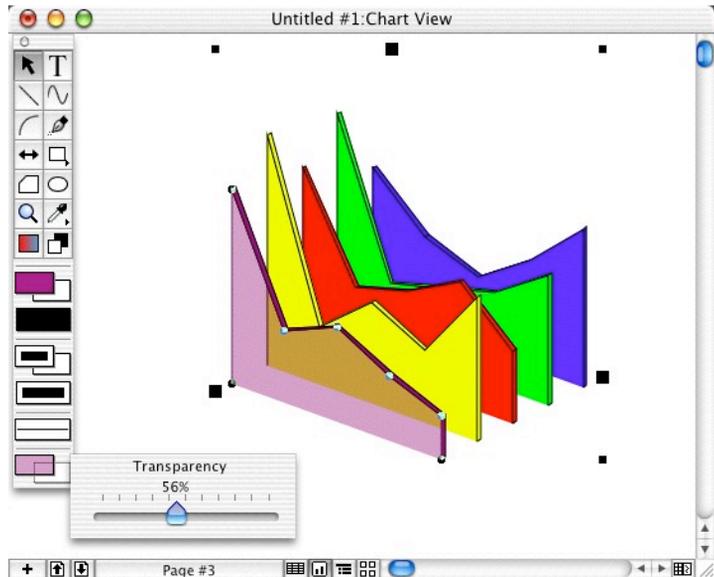
Do the following to apply transparency to an object(s).

1. Select the object(s) you want to make transparent.

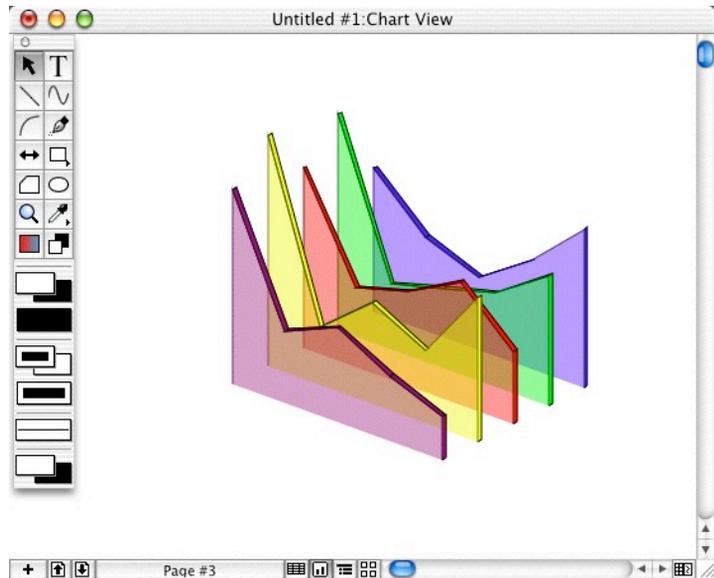
2. Select the Transparency tool from the toolbox. A percentage scale appears.



3. Click and drag the slider on the scale to select the percentage of transparency you want the object to have from 0% (no transparency) to 100% (complete transparency, object not visible)



The transparency is applied as soon as you release the mouse button.



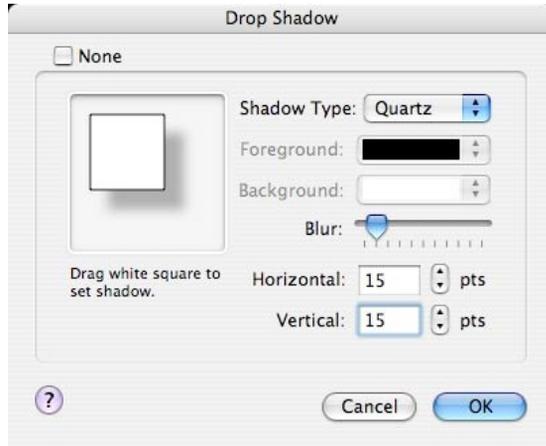
Adding Quartz Shadows to Objects

In addition to drop and inset shadows, you can add a Quartz shadow to an object or objects in the Chart view. A Quartz shadow is a drop shadow that can be made soft and blurry.

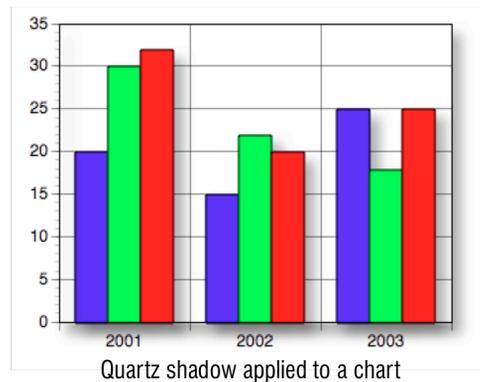
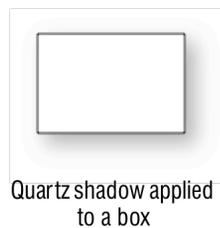
You can place a Quartz shadow behind any Draw, Chart, or Text object in the Chart view. When you place a Quartz shadow behind a Text object, the shadow is placed behind object (the rectangle around the text) and not behind the text itself. (You can place a drop shadow behind the text itself.) You must apply a fill pattern to the Text object for the Quartz shadow to be drawn.

To place a Quartz shadow behind an object, do the following:

1. Select the object(s) you want to change.
2. Choose **Shadows** from the Draw menu. The “Drop Shadow” dialog box appears.
3. At the Shadow Type pop-up menu, select **Quartz**. The following options become available.



4. To set the offset or size of the shadow, either drag the white box on the left until the shadow is displayed as you want it, or at the “Horizontal” and “Vertical” options, type in or click the direction arrows to set the shadow width from -15 to 15 points.
5. To set the softness and blur of the Quartz shadow, click and drag the slider on the “Blur” scale. The image on the left illustrates the blur you have selected.
6. Click **OK** to apply the Quartz shadow and return to the Chart page



You can apply the shadow settings in the “Drop Shadow” dialog box to any object by selecting the Shadow tool from the Toolbox and clicking the object. The same shadow settings are applied until you

change them.

1 Introduction

Red Rock Software is proud to bring you DeltaGraph® 7, the most comprehensive charting application for Mac OS® X. DeltaGraph's more than 20 year presence in the marketplace is testimony to its power and flexibility. Analyze, visualize, and customize your numbers efficiently and with the highest quality output with DeltaGraph 7.

NOTE

Remember that DeltaGraph is copyrighted and your copy has a unique serial number. It is illegal to make copies of DeltaGraph except for backup purposes.

DeltaGraph 7 is a powerful charting program that can be used as a stand-alone application or to complement your spreadsheet and other software programs. DeltaGraph provides the tools you need to communicate information effectively in compelling charts that will be read and remembered.

Whether you need charts to present your sales performance or explain highly technical data, DeltaGraph can help you do it faster and more efficiently with the highest quality results.

DeltaGraph's Chart Gallery features 83 distinct charts and graphs, including two – dimensional (2-D), three-dimensional (3-D), text, double axis, and combination overlay charts. A built-in Chart Advisor® even helps you make a selection if you are unsure about the best chart for your data. Hundreds of chart styles also are possible using the extensive design options provided, such as curve fitting, error bars, depth, 3-D rotation, multiple column shapes, and much more. You have control over every chart element. DeltaGraph includes a complete set of drawing tools, powerful data-handling functions, full color support, and high-resolution color support.

DeltaGraph 7 is available in versions for Apple® Macintosh® computers and Microsoft® Windows® computers. While there are minor differences between the Macintosh and Windows versions of

DeltaGraph, they look and operate in a similar way. DeltaGraph files can even be shared across platforms, a convenient feature for users in mixed platform workgroups.

Import Data Support

You can import the following data formats:

- Microsoft Excel
- Tab-, comma-, space-, multi-, and custom-delimited text formats

Import Graphic Support

You can import the following graphic file formats:

- Encapsulated PostScript® File (.EPSF)
- PDF (.PDF)
- Macintosh PICT (.PICT)
- Windows Bitmap (.BMP)
- Adobe® PhotoShop® (.PSD)
- Portable Network Graphics (.PNG)
- Graphic Interchange Format (.GIF)
- Tagged Image File Format (.TIF, .TIFF)
- QuickTime® Image (.QTI)
- Joint Photographic Experts Group (.JPG, .JPEG)
- JPEG 2000 (.JPG, .JPEG)
- Movie

Export Graphic Support

You can export the following graphic file formats:

- Encapsulated PostScript (.EPS)
- PDF (.PDF)
- Windows Bitmap (.BMP)
- Joint Photographic Experts Group (.JPG, .JPEG)
- JPEG 2000 Image (.JPG, .JPEG)
- Adobe PhotoShop (.PSD)
- Portable Network Graphics (.PNG)
- QuickTime Image (.QTI)
- Tagged Image File Format (.TIF, .TIFF)
- Macintosh PICT (.PICT)

Printer Support

You can print your final chart documents on any printer supported by Mac OS X .

Technical Support

For 24-hour support, search our online solutions database at:

<http://support.redrocksw.com/dgknowledge/>

For email support send your question to:

dgsupport@redrocksw.com

Opening Documents from Previous DeltaGraph Versions

DeltaGraph 7 can open files from previous versions of DeltaGraph back to version 3.0. Simply open the earlier file as you would a DeltaGraph 7 file, using the **Open** option. The file is opened and automatically converted to the latest format.

2 Getting Started

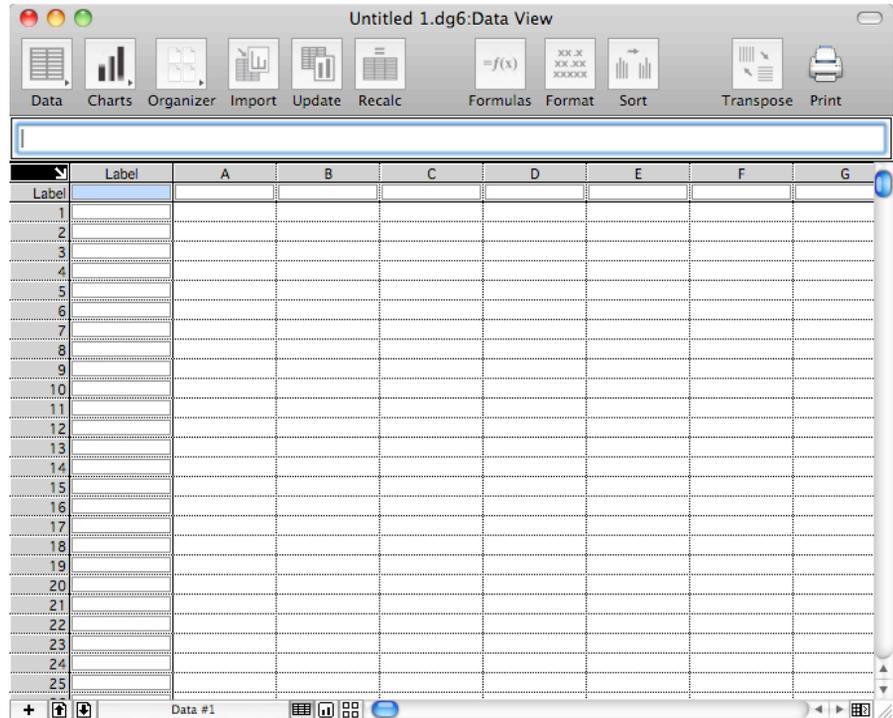
This chapter provides an overview of DeltaGraph for new users and serves as a quick reference for advanced users. It provides information on the following subjects:

- DeltaGraph window elements
- DeltaGraph's three views
- Plotting a chart
- Understanding the basic elements of a chart
- Quick tips
- Using Smart Layouts and backgrounds
- Understanding Custom Libraries
- Using the DeltaGraph Help system

DeltaGraph Window Elements

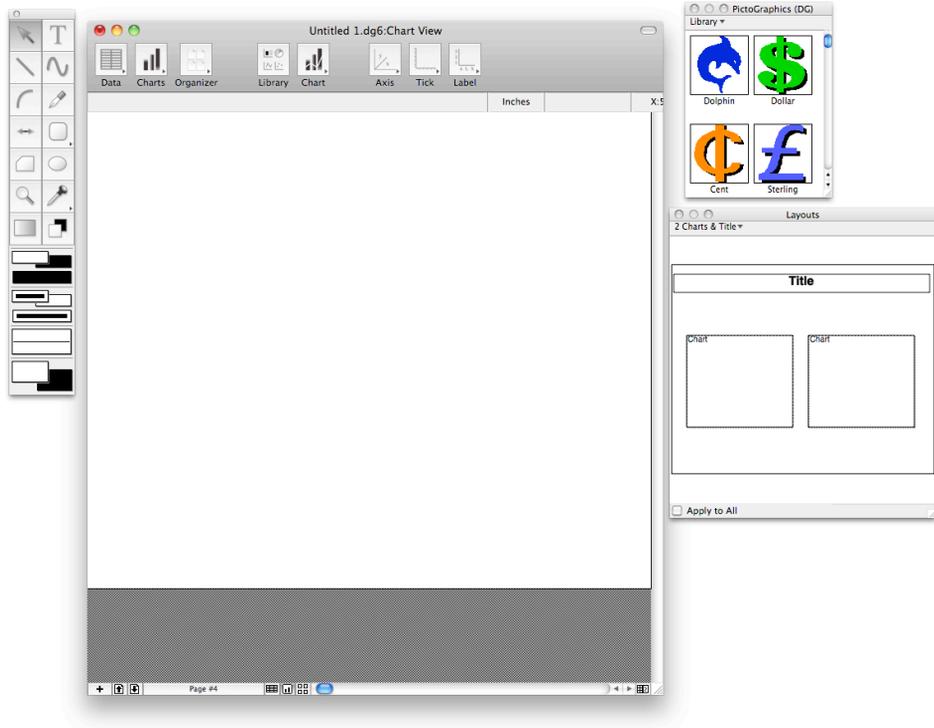
When you open DeltaGraph, the following window elements are displayed:

- Command bar (see page 2-3)
- Navigational bar (see page 2-5)
- Status bar (see page 2-6)
- DeltaGraph "View" (default is the Data view) (see page 2-7)



The commands in the Menus and toolbar vary depending on the view selected. You can customize the various toolbars by control-clicking in it, like any Mac OS X toolbar.

An example of the Chart view in DeltaGraph is shown below. The toolbar, the Toolbox, and other available functions are shown.



Toolbar

The toolbar is located at the top of the window. Some of the icons on the toolbar are standard throughout DeltaGraph, but others vary depending on the view selected.

All images of toolbars in this manual show the default version. You can customize the various toolbars by control-clicking in it, like any Mac OS X toolbar.

NOTE

If the “Tool Tips” option is enabled in “Preferences,” you can move the mouse pointer over an icon on the toolbar or Navigational bar to display a description of the icon’s function (see Chapter 7, “Setting Preferences”). To hide or show the toolbar, click the oval button in the upper-right corner of the window. The following sections provide illustrations of the Command bar in each view with a description of each icon.

Data View Toolbar

The Data view Command bar is shown below with all available icons

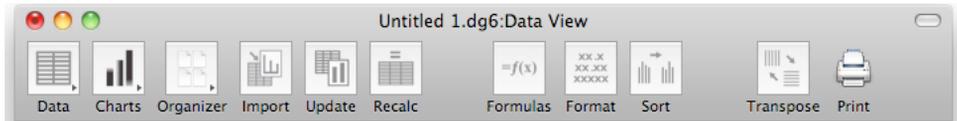
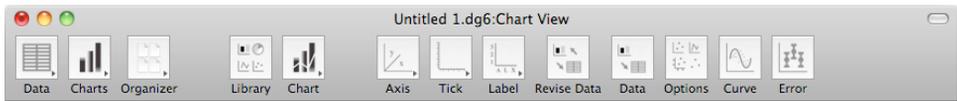


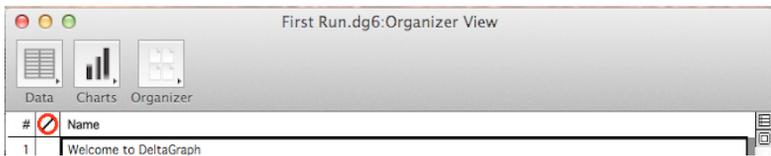
Chart View Toolbar

The Chart view Command bar is shown below with all available icons.



Organizer View Toolbar

The Organizer view Command bar is shown below with all available icons.



Navigational Bar

The Navigational bar, shown below, is located at the bottom of the view window.

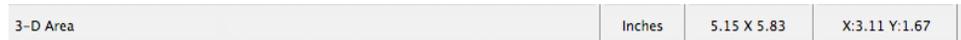


The Navigational bar contains icons to do the following:

- Add a new page (Data and Chart views).
- Move a page up or down (Data, Chart, and Organizer views).
- Select a page (open the “Go To” dialog box to select a page).
- Select a different view.
- Pan the viewable area if the view is larger than the window (arrows and scroll bar).
- View the Data and Chart views side-by-side (Split View).
- Resize the window (click, hold, and drag the Size window icon).

Status Bar

The Status bar is below the toolbar bar in Chart View. The Status bar provides descriptions of the current command and measurement/coordinate information. In the examples below, the top image shows how the Status bar appears in the Chart view.



Status Bar Elements

Element	Description
Object description/ Help	Displays a description of a highlighted menu object; if a command or icon is selected, displays Help information; may also indicate what type of operation is being performed.
Unit of measure	Indicates the unit of measure as specified in the “Rulers & Grids” dialog box.
Object size	Displays the size of the selected object. This can also be used to measure distance or size by clicking and dragging in the Chart page.

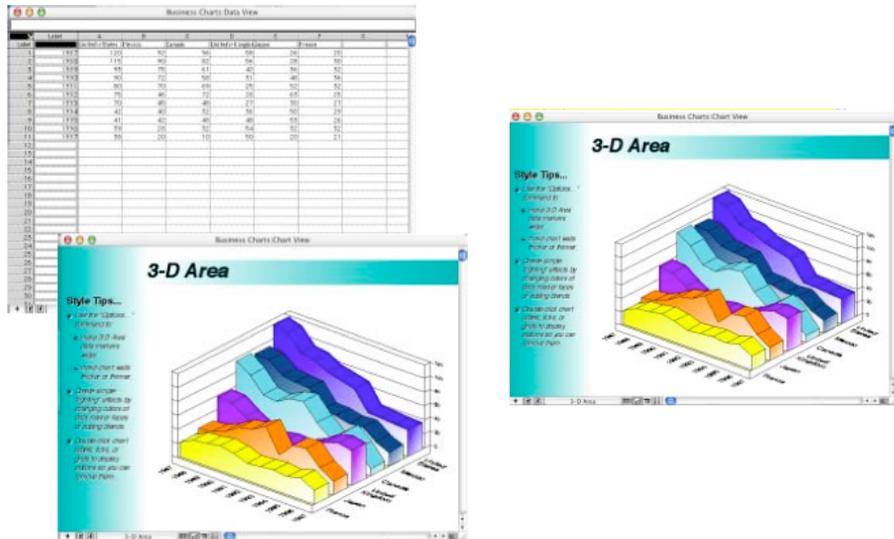
Pointer location

Indicates the position of the pointer on the invisible grid in the active page.

DeltaGraph Views

A document is a DeltaGraph file that contains pages of data and charts that you create. Each document has three different views, as shown below. You can switch views using the View icons on the Command bar and Navigational bar.

You can have multiple documents open at one time.



Data view You use the Data view to enter *numerical* data, which shows a comparison of two or more variables, such as changes over time or differences between two objects. It is used to create two-dimensional (2-D) and three-dimensional (3-D) charts.

Though you can add any number of Data pages to each document (limited only by available memory), you can have only one page open at a time.

Chart view You use the Chart view to view, modify, and enhance a chart once the data are plotted. Though you can add any number of Chart pages to each document (limited only by available memory), you can have only one page open at a time. Each page can hold numerous charts.

Organizer view You use the Organizer view to organize your complete document or presentation. You can reorder pages and slides and apply screen show transitions to Chart pages in this view. In addition, you can use the Layout mode to create a Master Background and Smart Layouts that can be applied to Chart page objects so size, position, and color of objects remain consistent from page to page.

To learn more about...	Refer to...
The Data view	Chapter 4, "Organizing Data in the Data View"
The Chart view	Chapter 9, "Customizing Charts" and Chapter 11, "Working with Objects in Chart View"
The Layout mode	Chapter 5, "Creating Smart Layouts and Backgrounds"

Data View

You use the Data view to enter numerical data and text data for table charts in a spreadsheet format.

You can have numerous Data pages in the Data view, enabling you to store different sets of data in a single document. Only one Data page can be displayed at a time.

To display the Data view, click the Data View icon on the Command bar or the Navigational bar, or choose **Data View** from the View menu.

Data Page

To create a new Data page, do one of the

following:

- Click and hold the Data View icon on the Command bar and select **New Data** from the menu that is displayed.
- Click **Data View** on the View menu, and select **New Data** from the submenu.
- Click on the Navigational bar.

To display the previous or next page in a document, do one of the following:

- Click the up (previous) or down (next) arrow on the Navigational bar.
- Click and hold the Page Selector icon on the Navigational bar and select the page that you want to view.
- Click **Data View** on the View menu, and select the page name from the submenu.

A Data page (see figure below) is used to set up data for the majority of DeltaGraph charts. Each Data page accommodates up to 32,000 rows and 256 columns. With multiple Data pages, you can store different sets of data in one document.

The screenshot shows a window titled "Business Charts.dg6:Data View" with a menu bar containing icons for Data, Charts, Organizer, Import, Update, Recalc, Formulas, Format, Sort, Transpose, and Print. Below the menu bar is a spreadsheet with the following data:

	Label	A	B	C	D	E	F	G
Label		United States	Mexico	Canada	United Kingdom	Japan	France	
1	1992	120	92	96	58	26	20	
2	1993	115	90	82	56	28	30	
3	1994	93	75	61	42	36	32	
4	1995	90	72	58	31	48	36	
5	1996	80	70	69	25	52	32	
6	1997	75	46	72	28	63	25	
7	1998	70	45	48	27	30	27	
8	1999	42	40	32	36	50	29	
9	2000	41	42	48	48	53	26	
10	2001	39	28	32	54	32	32	
11	2002	38	20	10	50	20	21	
12								

Data Page Elements	
Element	Description
Data cell	Contains only one element of the data. You can select any cell by clicking in it. The box is highlighted, and the selected entry appears on the Editing line.
Editing line	Displays the contents of the selected cell so you can make changes to it. If the cell is empty, the Editing line has a blinking cursor so you can enter data for the highlighted cell.
Columns	Columns are headed A, B, C, D, and so on to help you identify them.
Column labels	You enter labels in the row directly below the column letters to identify the data series. The use of column labels depends on the type of chart you are plotting.
Rows	Rows are headed 1, 2, 3, 4, and so on to help you identify them.
Row labels	You enter labels in the column next to the row numbers to identify each category of data. The use of row labels depends on the type of chart you are plotting.
Select All icon	Click to select all data in the Data page (make sure no empty data cells are selected).
Title cell	The intersection of the row labels and the column labels. Enter a title for your Table chart in this cell.

Use commands in the File, Edit, Text, View, and Data menus to manipulate and format the data in a Data page.

To learn more about...	Refer to...
Data pages	Chapter 4, “Organizing Data in the Data View”
Maneuvering in a Data page	“Moving Around in a Data Page”
Assigning Axis titles	“Creating Chart Axis Titles”

Chart View

To display the Chart view, click the Chart View icon on the Command bar or the Navigational bar, or choose **Chart View** from the View menu.

Chart Page

To create a new Chart page, do one of the following:

- Click and hold the Chart View icon on the Command bar and select **New Page** from the menu that is displayed.
- Click **Chart View** on the View menu, and select **New Page** from the submenu.
- Click on the Navigational bar.

To display the previous or next page in a document, do one of the following:

- Click the up (previous) or down (next) arrow on the Navigational bar.

- Click and hold the Page Selector icon on the Navigational bar and select the page that you want to view.
- Click **Chart View** on the View menu, and select the page name from the submenu.

NOTE 

You can plot charts from the Chart view, or the Data view. Each time you plot a chart, you have the option of adding it to an existing Chart page or creating a new Chart page for it.

If you choose to use a Smart Layout (refer to “Using Smart Layouts” in chapter 2), you can apply it to the Chart page before or after you plot the chart. When you plot data without using a Smart Layout, the chart you create is displayed in the upper left corner of the new or selected Chart page.

If you use layouts, text from the charts plotted in the Chart page are matched with layout placeholders. Attributes of the placeholders (size, position, color, etc.) are applied to text and charts in the Chart page.

You can change program settings that affect all Chart pages using the “Preferences” option (see Chapter 6, “Setting Preferences”).

In many of the dialog boxes accessed from the Chart menu, you can click a **Show** button to preview the results of your selections without exiting the dialog box. This allows you to experiment with different features without permanently changing your chart. If you want to move the dialog box so that you can see more of the preview chart, click and hold on the Title bar, and drag the dialog box out of the way.

In addition to scroll bars (when needed), a Title bar, and window-sizing icons, a Chart page contains palettes and windows (shown below) that are commonly used in the Chart view.

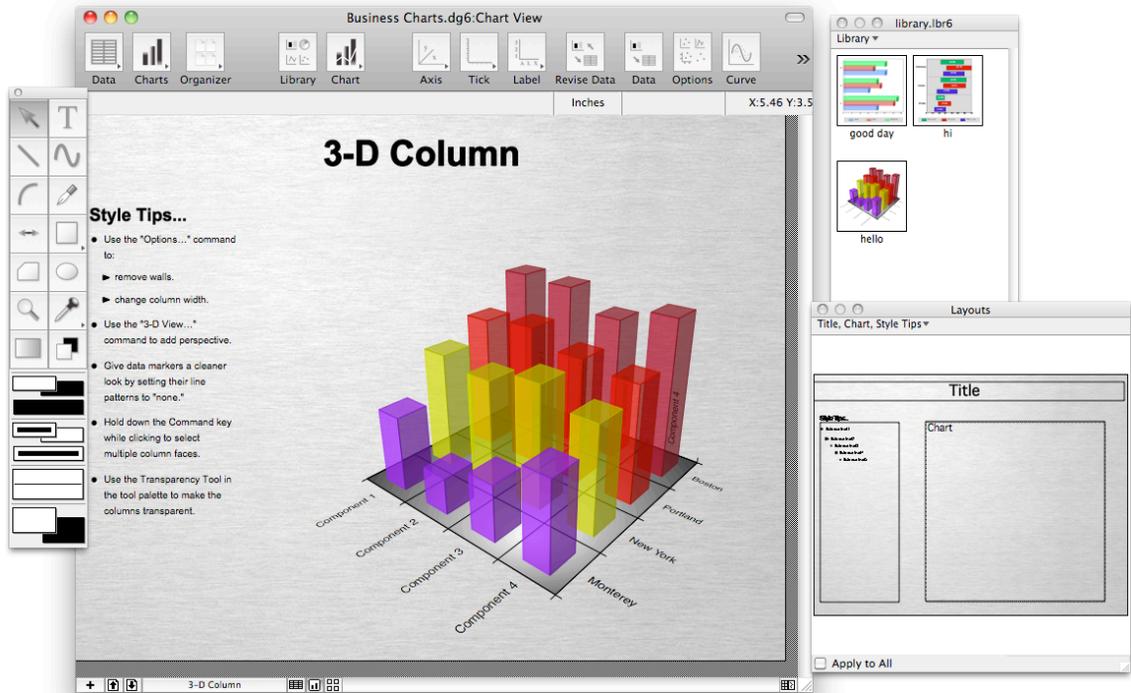
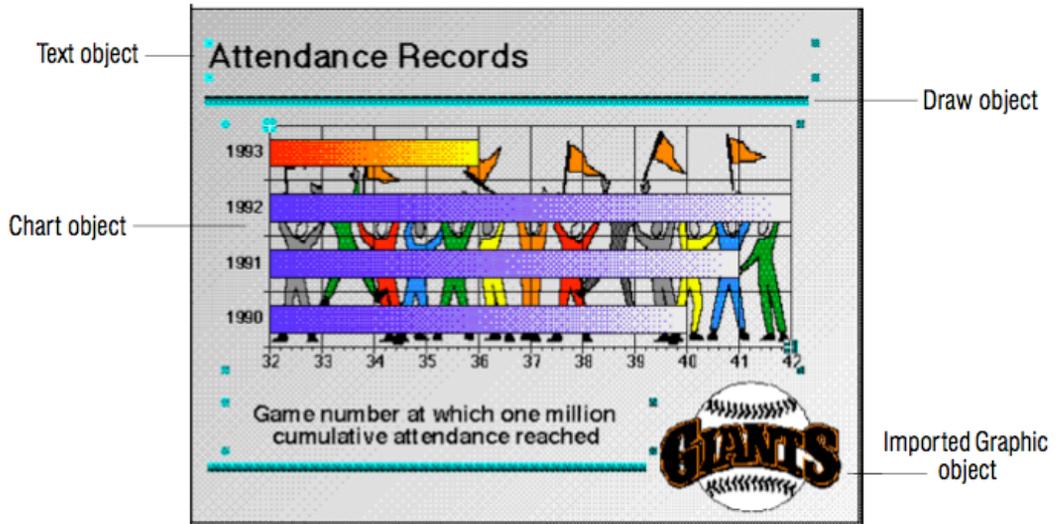


Chart Page Elements	
Element	Description
Custom Library	Stores graphics and chart templates that you can drag into the current document or transfer between documents.
Layout Set window	Contains layouts created in the Layout mode or loaded from a Layout Set file. You can drag and drop layouts from the Layout Set window into a Chart page to determine the position, size, and color of charts and text in the Chart page.
Toolbox	Contains tools and palettes used to create, manipulate, and modify Chart page objects.

To learn more about...	Refer to...
Creating a chart	“Setting Up a Chart” in chapter 8
Managing Chart pages	“Creating or Adding a Chart Page” in chapter 8
Chart view settings	Chapter 6, “Setting Preferences”
Creating placeholders	“Creating and Using Smart Layouts” in chapter 5

Chart Page Objects

You can have four types of objects on a Chart page, as illustrated below and described in the following table.



Object	Description
Chart object	A Chart object contains many chart elements, including labels and titles. You generally use the tools in the Toolbox and commands on the Text and Chart menus to manipulate or modify the elements in a Chart object as well as the Chart object itself. Specify default text attribute settings in "Preferences" (see Chapter 6, "Setting Preferences").
Draw object	A Draw object is any object you add to a Chart page using the Draw tools in the Toolbox. You generally use the Toolbox and commands on the Draw menu to manipulate or modify Draw objects.
Text object	A Text object is any text you add to a chart using the Text tool in the Toolbox. You generally use the Draw tools and commands on the Draw menu to

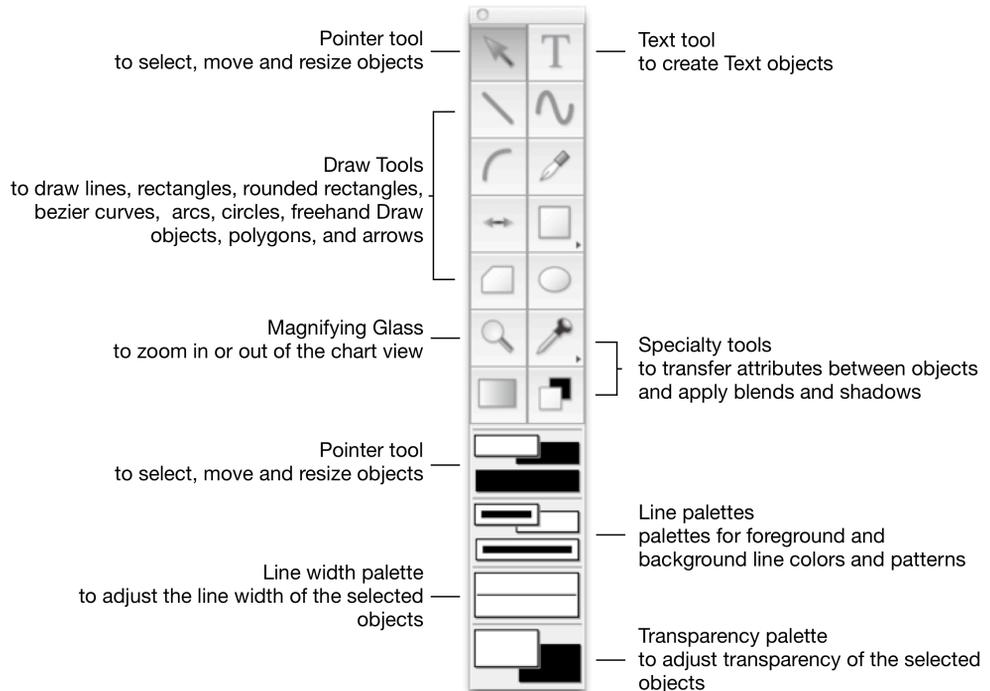
	manipulate or modify a Text object. You can use commands on the Edit menu to edit the text in a Text object and commands on the Text menu to change the text's style attributes. Specify text attribute settings in "Preferences" (see Chapter 6, "Setting Preferences").
Imported Graphic object	An Imported Graphic object is any object imported into a Chart page from another application.

You can change the text attributes (font, size, style, and color) of chart labels and other text that is part of a Chart object from a Chart page, but you must change the content (the text itself) on the corresponding Data page.

To learn more about...	Refer to...
Changing the format of the data	"Formatting Text" in chapter 4
Changing the axis order	"Reformatting a Chart's Axes" in chapter 9
Selecting chart elements	"Selecting a Chart and Chart Elements" in chapter 9
Adding Draw objects	"Creating and Editing Draw Objects" in chapter 11
Adding Text objects	"Working with Text Objects" in chapter 11
Changing the color, fills, etc.	"Using the Draw Menu" in chapter 11

The Toolbox

The Toolbox (see figure below) contains the tools you use to modify Chart objects and create or modify Text and Draw objects in the Chart view. You can choose **Undo** on the Edit menu to cancel the last action performed with a Draw tool.



The Toolbox appears automatically when you switch to the Chart view. You select a tool from the Toolbox by clicking it before drawing in the Chart view. You can double-click a tool to select the tool and lock it “on” until another tool is selected.

To move the Toolbox around the screen, click and drag the Title bar. To hide the Toolbox, click the **Close** button in the upper left-hand corner, or select **Hide Toolbox** from the Draw menu. To display the Toolbox again, choose **Show Toolbox** from the Draw menu.

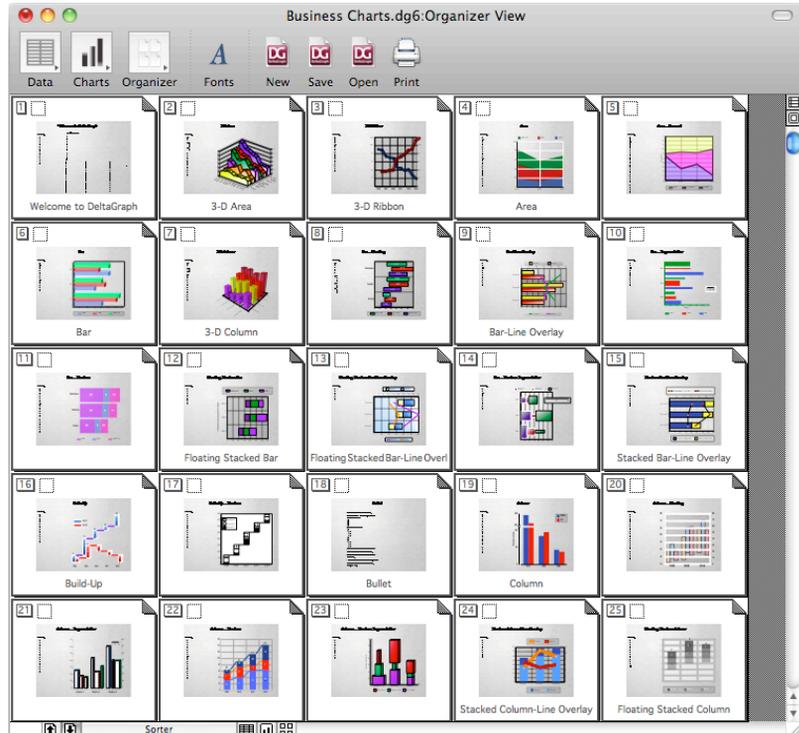
To learn more about...

Refer to...

The Toolbox	“The Toolbox” in chapter 11
-------------	-----------------------------

Organizer View

To display the Organizer view, click the Organizer View icon on the Command bar or the Navigational bar, or choose **Organizer View** from the View menu.



The Organizer view allows you to make global changes to all Chart pages, such as applying Smart Layouts. It also allows you to view and organize all of your Chart pages at the same time.

Plotting a Chart

You can plot (create) charts and chart elements contained in the Chart page from the Data, or Chart view. The plotted chart appears in the Chart view. A Smart Layout can be applied to a Chart page before or after you plot the chart.

Data view To plot data selected in a Data page, press **cmd-G**, or choose **Chart Gallery** from the Data menu. This displays the “Chart Setup” dialog box, which you use to access the Chart Advisor, choose the destination Chart page, select a chart, and select other plotting options.

Chart view To plot data in a Chart page, press **cmd-G**, or choose **Chart Gallery** from the Chart menu. This displays the “Chart Setup” dialog box, which you use to select the plotting options.

Which options you select to plot charts in the Chart view depends on whether the Chart page already contains plotted data from the Data view, whether the Chart page is empty, and whether you intend to use Smart Layouts.

If layouts are used, you can click or double-click most of the placeholders to fill them. Each placeholder contains instructions for filling.

To learn more about...	Refer to...
Selecting data	“Selecting Data” in chapter 4
Creating a chart	Chapter 8, “Plotting Data and the Chart View”
Making changes to a chart	Chapter 9, “Customizing Charts” and Chapter 10, “Changing Chart Options”

The Chart Advisor

If you are unsure of the type of chart that would best suit your data, the Chart Advisor can help you decide. Based on the data you enter in the Data page, and other selections you make in the Chart Advisor dialog box, one or more appropriate choices are provided for a chart type. Any open Custom Libraries, including the “Standard Library,” and any libraries in the “AutoLibrary Folder” will also be displayed as choices.

If you decide to use one of the suggested chart types, you can

plot the chart directly from the “Chart Advisor” dialog box.

To access the Chart Advisor, select the Data view, select the data that you want to chart, and then do one of the following:

- Open the “Chart Setup” dialog box, and select the **Chart Advisor** tab. (The Chart Advisor tab is not available if the Chart Gallery is opened from the Chart view.)
- If you want the Chart Advisor to open automatically when you plot a chart, select **Open Advisor when Plotting** in “Preferences” (see Chapter 7, “Setting Preferences”).

To learn more about...	Refer to...
The Chart Advisor	“The Chart Advisor” in chapter 8
Setting preferences	“Setting Chart View Defaults” in chapter 6

Revising and Updating Charts

If you revise data in the Data view, you need to update the charts plotted from the data. You can update the chart or charts in the Data view, or you can revise the chart(s) in the Chart view.

Data view To update *all* the charts associated with the changed Data pages, click the Update icon on the Data view toolbar, press **cmd-=**, or choose **Update** from the Data menu. Also use this option if you are changing existing data but not adding any data points or sets to the existing Data page.

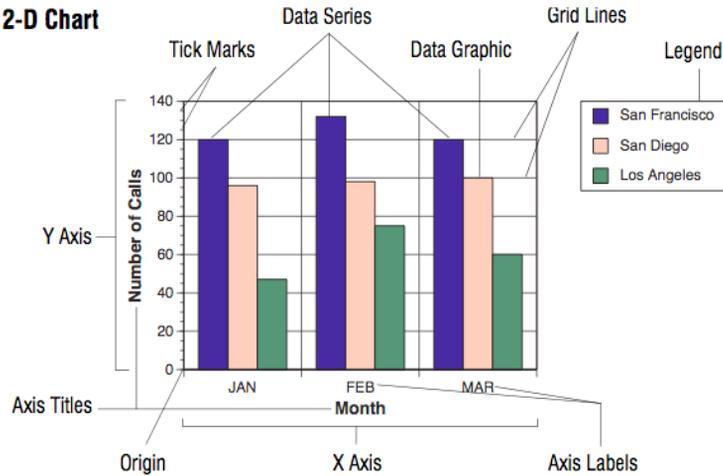
Chart view To update only *one* chart, select it and click the Revise icon in the Chart view toolbar, or choose **Revise Data** from the Chart menu. This option is used when you want to add, remove, edit, or rearrange the data without affecting every chart generated from the data.

To learn more about...	Refer to...
Updating all related charts	“Updating a Chart” in chapter 8
Revising one chart only	“Revising Chart Data” in chapter 8

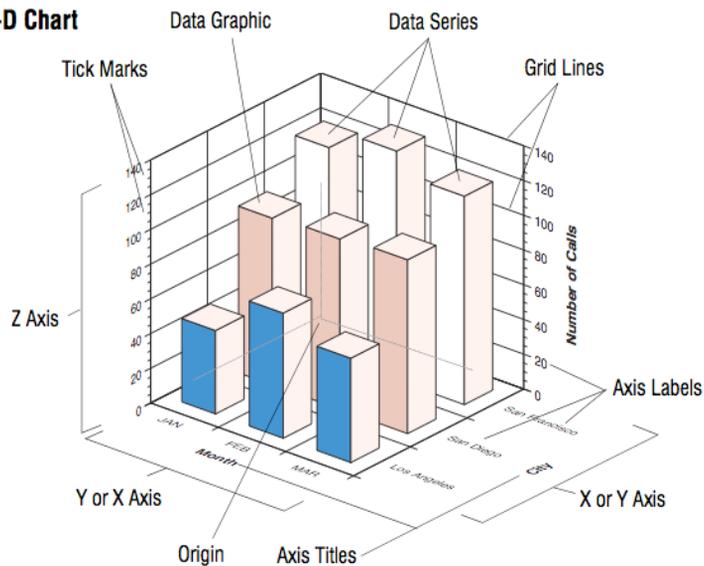
Basic Chart Elements

This section provides information on the basic chart elements of the various charts in DeltaGraph. The following figures and the descriptions in the table are examples of numerical charts.

2-D Chart



3-D Chart



NOTE  The location of the elements in different types of charts may vary, and different types of charts may have different elements. For example, a Ternary chart does not have a Series or Category axis, it has three Value axes.

Basic Chart Elements	
Element	Description
Axis label	Label created in the Data page to name each individual axis. You can change the orientation of the label with the “Labels” command on the Chart menu.
Axis title	Name assigned to each axis. You add Axis titles in the Chart view using the “Labels” command on the Chart menu. 3-D charts can have titles on all three axes. 2-D charts can have titles on two axes.
Chart element	Any part of a DeltaGraph chart such as a grid, tick, label, axis, or data graphic.
Data graphic	A line, bar, or other chart graphic created by a data series—the “heart” of the chart.
Data series	Set of values plotted to create a group of bars, lines, or data graphics. Use the “Series” command on the Data menu to change the data series from columns to rows or from rows to columns in the Data view.
Grid lines	Lines extending from one axis to another to mark the units of measurement and make the graph easier to read. You can change the appearance of the grid lines for each axis using the “Ticks and Grids” command on the Chart menu.
Legend	A text and graphic combination showing the association of the Series axis labels to the data graphic on the chart. Depending on the type of chart, the legend labels are created using the row or column labels in the Data page. You can show/hide the legend or reverse the legend order using the “Legend” command on the Chart menu.

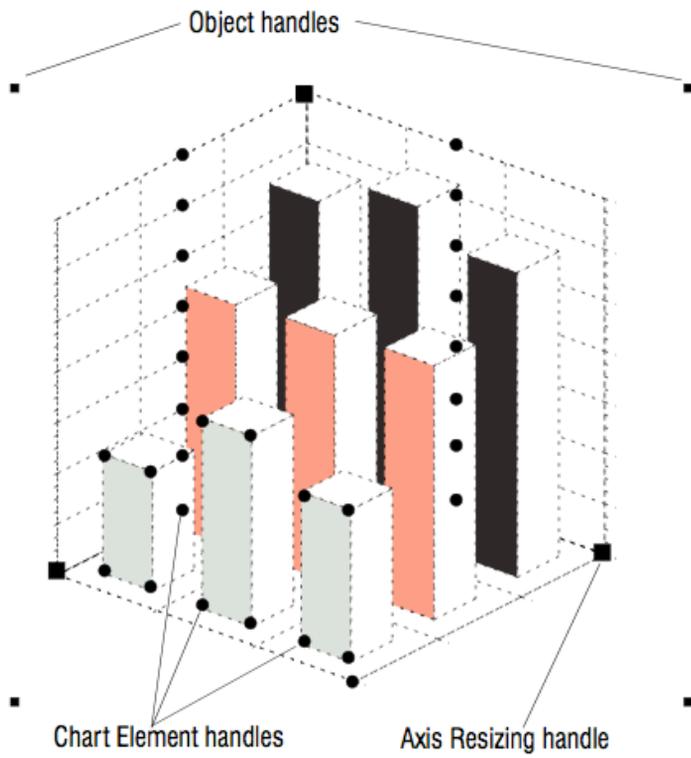
Origin	The point at which two or more axes intersect.
Tick marks	Short marks, usually perpendicular to the axes, that show the units of measurement. You can change the appearance of tick marks by clicking the Ticks and Grids icon on the Command bar or the “Ticks and Grids” command on the Chart menu.
X axis	In a 3-D chart, the position and purpose of the X axis depends on the type of chart. In a 2-D chart, it is the horizontal axis and is used as a Value, Category, or Series axis depending on the type of chart.
Y axis	In a 3-D chart, the position and purpose of the Y axis depends on the type of chart. In a 2-D chart, it is the vertical axis and is used as a Value or Category axis depending on the type of chart.
Z axis	In a 3-D chart, the Z axis is always the vertical axis and can be labeled on both sides of the grid plane. For all 3-D charts, it is a Value axis. In 2-D charts, the Z axis is typically the legend.

To learn more about...	Refer to...
Names of each chart axis	Chapter 7, “Chart Types”

Chart Object Handles

When you select an object in the Chart view, object handles appear around the object to show it is selected.

The figure below illustrates the three types of object handles you will see in a numerical chart. In this 3-D chart, the whole Chart object, the Value axis grids, and one data series are selected.



Handle	Description
Object handles	Small squares surrounding a selected Chart, Text, or Draw object. You can drag the object handles to change the size and shape of any object.
Chart element handles	Small circles surrounding a selected chart element. When a chart element is selected, you can change its color, pattern, and line style. If the element is text, you can change the text attributes. You can move axis labels and titles in numerical charts, but you cannot move other chart elements individually. All labels and titles from one axis can be moved as a group or individually.
Axis resizing handles	Large squares at the endpoint of each axis on a numerical chart. You can drag an axis resizing handle to lengthen or shorten the axis. This resizes the chart in one direction along the axis but does not affect the perspective.

To learn more about...	Refer to...
Selecting chart elements	“Selecting a Chart and Chart Elements” in chapter 9

Quick Tips

Following are a few time-saving tips to open the dialog boxes used to change and apply attributes to elements of a chart or other objects in a Chart page.

Double-Click

Double-click various parts of a chart to display dialog boxes for modifying the appearance of labels, ticks and grids, and so on.

Control-Click

Click any Draw, Text, or Chart object in the Chart view while holding the **control** key to open a dialog box for changing various attributes. You can change fill and line color, pattern and weight, text color, font, style, size, alignment, and blends and shadows.

Click and hold on any Draw, Text, or Chart object in the Chart view to change attributes specific to the type of object selected. Click a Draw or Text object to display a condensed Draw menu. Click a Chart object to display a condensed Chart menu.

To learn more about...	Refer to...
Control-click	“Changing Attributes” in chapter 11

Saving a Document

To save a document for the first time, click the Save icon on the Command bar, select **Save** from the File menu, or press **cmd-S**, enter a document name in the dialog box, and click **Save**. Once the document has been named and saved, click the Save icon on the toolbar to save it with the specified name.

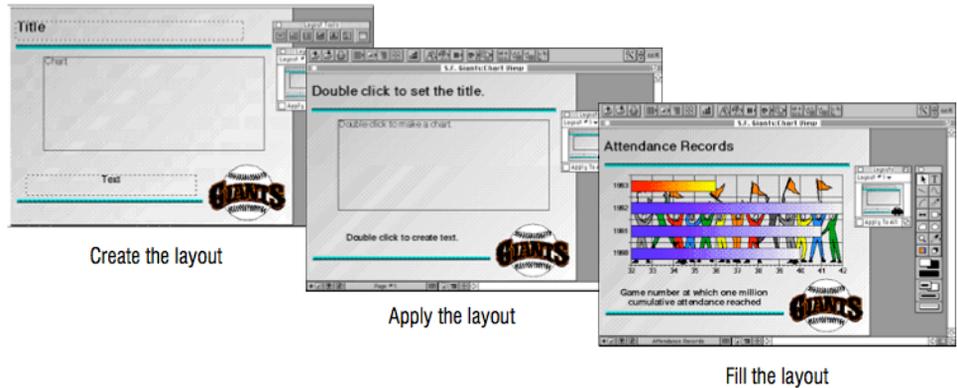
Using Smart Layouts

A Smart Layout, which consists mainly of placeholders for charts, titles, text, graphics, and bullets, serves as a template for assembling and arranging elements (charts, titles, text, graphics, etc.) in a Chart page. Several Smart Layouts are provided with DeltaGraph, but you can also create your own Smart Layouts.

Smart Layout placeholders contain color, font, font size, and other attributes for Chart page objects. There are six types of placeholders: four types are for the tags assigned (Title, Text, Bullet, and Org), one is a Chart placeholder for a plotted chart, and one is a Graphic object placeholder for an Imported Graphic object.

When applied to a Chart page, layouts determine position and size, and assign other attributes to the objects corresponding to the layout placeholders. Smart Layouts provide consistency between Chart pages, and documents.

Each document has its own Layout Set. You can add to a document's Layout Set, or save it for use in other documents. Each Layout Set can include layouts, Master and Exception Backgrounds, and a color scheme.

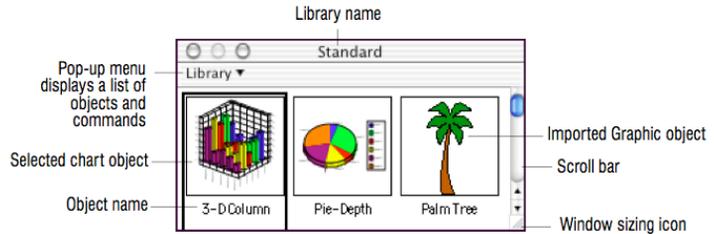


To learn more about...	Refer to...
Layouts	“Creating and Using Smart Layouts” in chapter 5
Backgrounds	“Creating and Using Backgrounds” in chapter 5

Using Custom Libraries

You can use Custom Libraries to store any Chart, Draw, Text, or Imported Graphic object in a readily accessible location. You can use objects stored in a Custom Library again and again without the need to reconstruct intricate chart formatting or use “Cut” and “Paste” commands. When saving a chart in a library, you also have the option of saving the data along with it. This is helpful if you want to transfer the data between documents.

You can open and create libraries in the Chart or Organizer view or in Layout mode. Click and hold the Library icon on the Command bar, or choose **Libraries** from the File menu to display a menu with options to open or create a Custom Library.



To add one or more objects to a new or existing library, select the object(s) and drag the selection into an open library window. If the object is a chart, a prompt appears asking whether you want to save it as a template or with data.

To use a custom chart template or other object from a library, select the object icon in the library and drag it into an open Chart page. (You can also click the submenu in the library window and choose a library object from the list.) If the object is a chart that does not contain data, you are prompted to select the data to be plotted. After data are selected, click **Plot**. The data are plotted in the selected template with all the formatting of the original chart. If the selected object contains a Chart with data, or a Text, Draw, or Imported Graphic object, a copy of the original object appears in the Chart page when you release the mouse button.

To learn more about...	Refer to...
The Custom Library	Chapter 14, "Creating a Custom Library"

Getting Help

The DeltaGraph installation includes a PDF version of this User Guide, available from the Help menu.

If the “Tool Tips” option is enabled in “Preferences”, you can move the mouse pointer over an icon on the Command bar or Navigational bar to display a description of the icon’s function (see Chapter 6, “Setting Preferences”).

You can also visit the Red Rock Software Web site at **www.redrocksw.com** for additional information and technical support for DeltaGraph.

3 Tutorial

This chapter is a tutorial to help you learn the basic functions in DeltaGraph. The four-part tutorial takes you through the typical steps involved in creating a 2-D XY Line chart, a 3-D Area chart, a Bullet chart, and running a slide show.

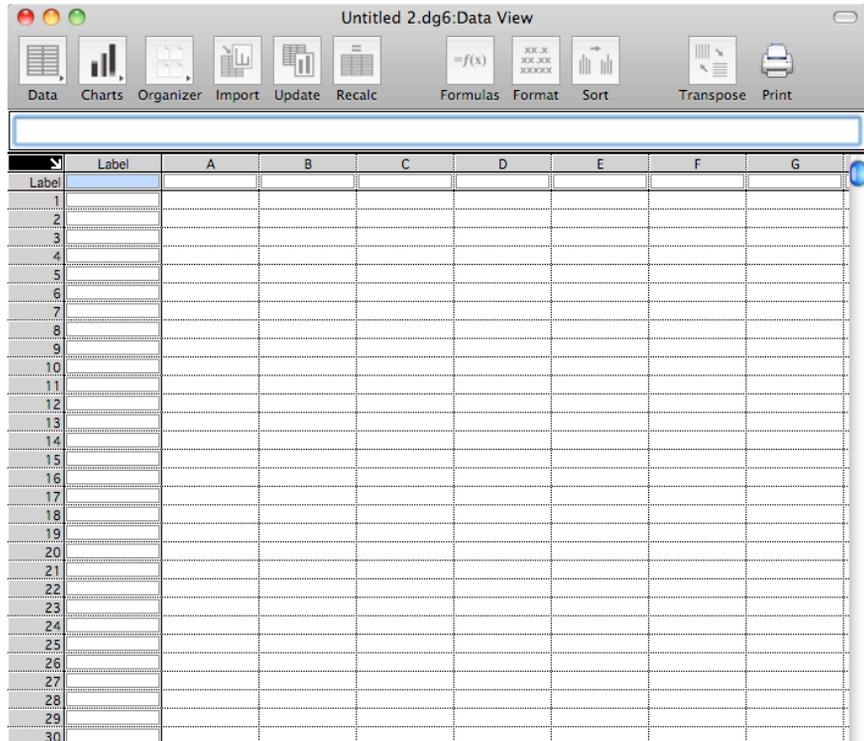
It is recommended that you read Chapter 2, “Getting Started” before you begin the tutorial.

Feel free to experiment with the various functions and options in DeltaGraph while you are completing the tutorial. Don’t worry if your charts look different from the examples in the manual. Remember that you can be creative with Delta- Graph and design charts and presentations to suit your particular needs.

This tutorial assumes that you are familiar with the Macintosh computer and the OS 10.x operating system. If you need help with basic computer functions, refer to your computer’s documentation or the Macintosh Help system.

Opening DeltaGraph

Double-click the DeltaGraph icon, or click the icon and choose **Open** from the Finder File menu, to open DeltaGraph. An empty Data page in the Data view appears on your screen as shown below.



Creating a 2-D XY Line Chart

This lesson shows you how to do the following:

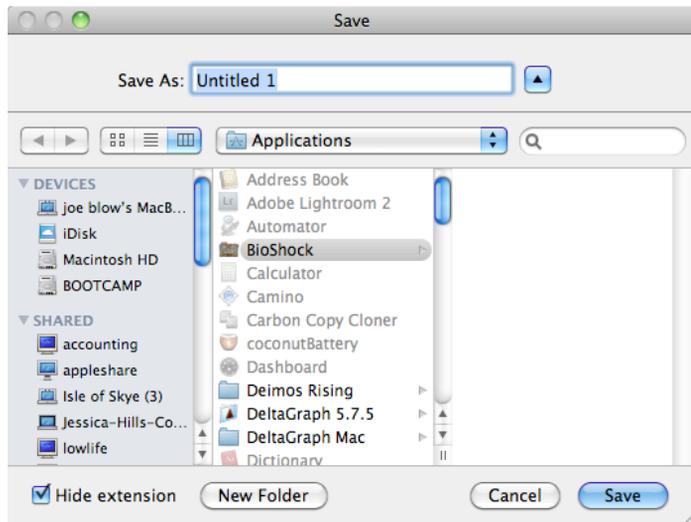
- Name and save a document
- Name a Data page
- Enter labels and data
- Plot a chart using the Chart Advisor
- Change the view size
- Change the text attributes of axis labels
- Move and resize a legend
- Change the chart options

- Change the axis value scaling
- Add grids
- Change a chart's data symbols
- Load a Smart Layout set and apply a Smart Layout
- Add a Text object to the background

In this lesson, you will be entering four data series in four columns on a Data page, plotting a chart from the data using the Chart Gallery, making some changes on the plotted chart, and applying a Smart Layout background to the chart.

Naming the Document

1. Click the Save icon on the Command bar, or choose **Save As** from the File menu. The following dialog box appears.



2. In the “Save As” text box, type **DeltaGraph Demo**.

4. Click **Save**. The Data page is displayed with the document name in the Title bar next to the active view name (e.g., DeltaGraph Demo:Data View).

Naming the Data Page

1. Choose **Name Page** from the View menu.
2. Type **XY Line Data** over “Data #1.”
3. Click **OK**. The Page Selector icon on the Navigational bar displays the new Data page name.

Entering Column Labels

You are going to enter four series of data in four columns on a data page, one series in each column. Take the following steps to enter column labels for the data.

1. Click in the first data cell just below column A. The cell is highlighted, and a blinking cursor appears on the Editing line at the top of the window.

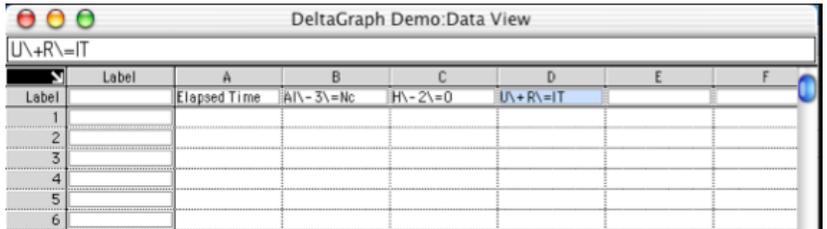
The column labels will appear in the “Label” row beneath the column letters. For this chart, you will not enter row labels, which appear in the first column (headed “Label”) next to the numbered rows. However, row labels are entered in the same manner as column labels.

2. Type **Elapsed Time** on the Editing line, and press **return**. The label is entered at the top of the column and the next cell in the column is highlighted.
3. Click in the data cell just below column B, type **A1\3\=Nc**, and press **return**.

To enter the information from the Editing line in the selected cell, and to move from cell to cell, you can press **return**, **tab**, or one of the arrow keys, or you can click in any data cell. Press **return** to select the next cell in the column; press **tab** to select the next cell in the row; press an arrow key to move one cell at a time in the

direction of the arrow.

4. In the same manner, enter labels for columns C and D as shown below.



	Label	A	B	C	D	E	F
Label		Elapsed Time	A\^-3\=Nc	H\^-2\=0	U\+R\=IT		
1							
2							
3							
4							
5							
6							

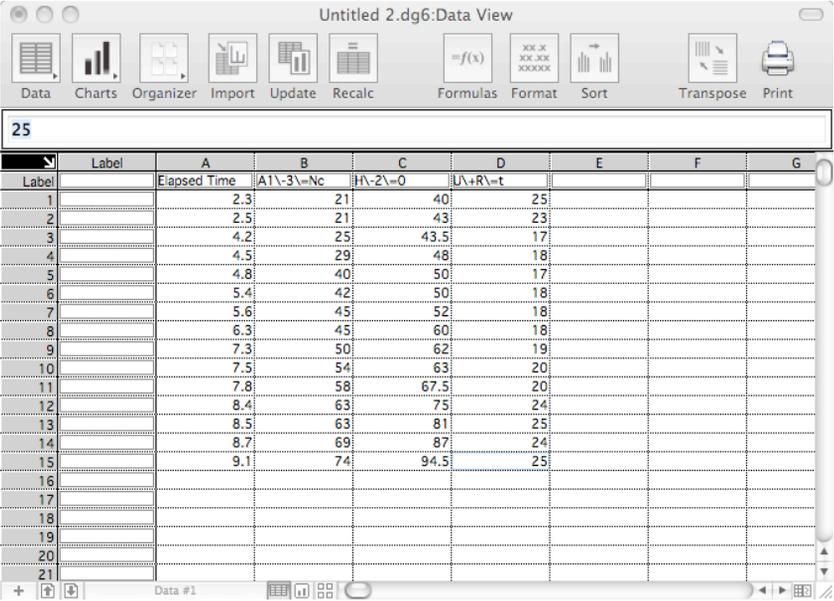
If you make a mistake, use the **delete** key to erase incorrect characters, then retype them; or, click on the Editing line and type over or insert characters.

NOTE 

The special text characters “\”, “+”, “-”, and “=” that you entered in the column labels will create superscript and subscript characters in the labels when you plot the chart. To learn more about entering special text characters in the Data page, see “Entering Special Text Characters” in chapter 4.

Entering the Data

Using the same method you used to enter column labels, enter the rest of the data as shown below.



The screenshot shows a window titled "Untitled 2.dg6:Data View" with a toolbar containing icons for Data, Charts, Organizer, Import, Update, Recalc, Formulas, Format, Sort, Transpose, and Print. Below the toolbar is a text entry field containing the number "25". The main area is a data table with the following structure:

Label	A	B	C	D	E	F	G
1	2.3	21	40	25			
2	2.5	21	43	23			
3	4.2	25	43.5	17			
4	4.5	29	48	18			
5	4.8	40	50	17			
6	5.4	42	50	18			
7	5.6	45	52	18			
8	6.3	45	60	18			
9	7.3	50	62	19			
10	7.5	54	63	20			
11	7.8	58	67.5	20			
12	8.4	63	75	24			
13	8.5	63	81	25			
14	8.7	69	87	24			
15	9.1	74	94.5	25			
16							
17							
18							
19							
20							
21							

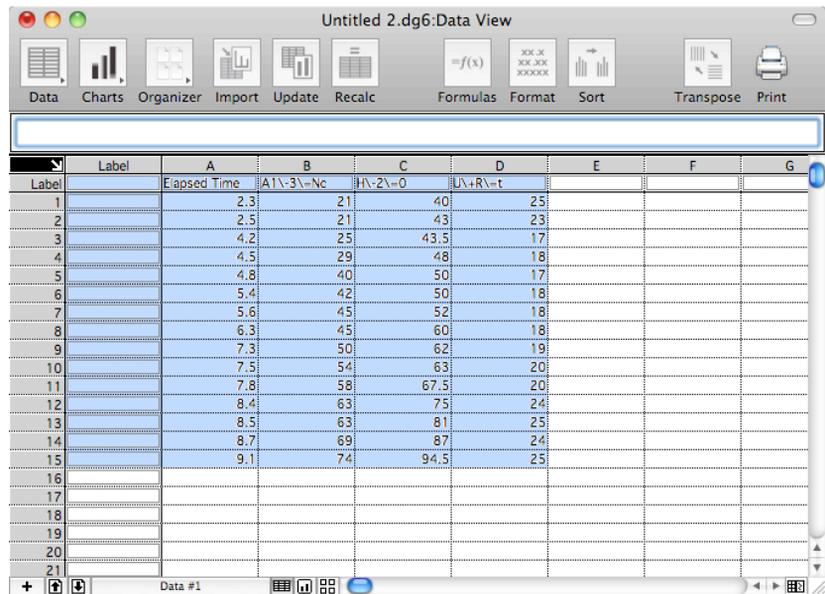
Saving the Document

To save the document, click the Save icon on the Command bar, select **Save** from the File menu, or press **cmd-S**. You should save your document periodically so that you don't lose work if there is a power failure or other problem.

Plotting the Chart

Take the following steps to plot the chart after you have entered all the data and saved the document.

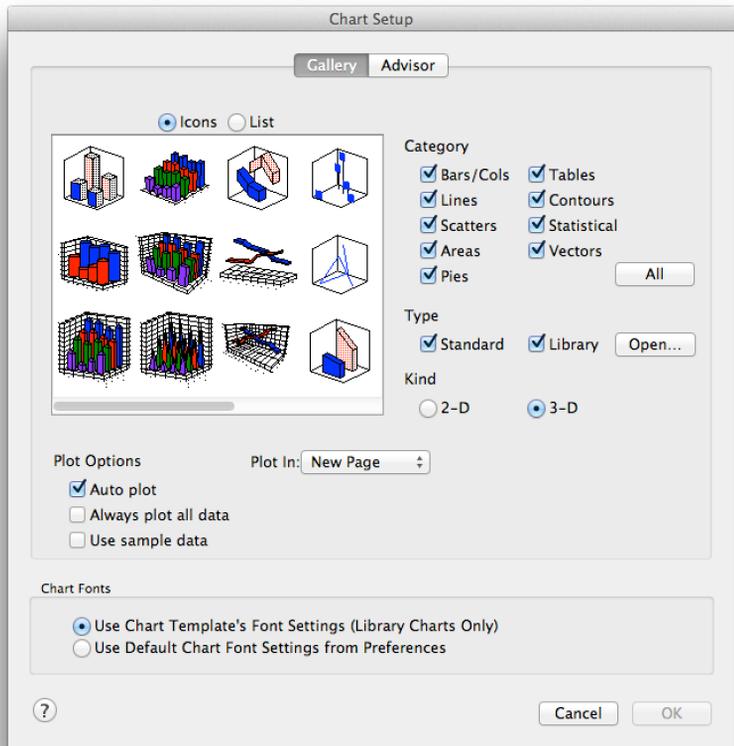
1. Click the Select All icon or press **cmd-A** to select all of the data on the current page in the Data view. All four data series and their associated column labels are selected, as shown below.



The screenshot shows the DeltaGraph software interface with a data table. The Command bar at the top includes icons for Data, Charts, Organizer, Import, Update, Recalc, Formulas, Format, Sort, Transpose, and Print. The data table has the following content:

Label	A	B	C	D	E	F	G
	Elapsed Time						
1	2.3	21	40	25			
2	2.5	21	43	23			
3	4.2	25	43.5	17			
4	4.5	29	48	18			
5	4.8	40	50	17			
6	5.4	42	50	18			
7	5.6	45	52	18			
8	6.3	45	60	18			
9	7.3	50	62	19			
10	7.5	54	63	20			
11	7.8	58	67.5	20			
12	8.4	63	75	24			
13	8.5	63	81	25			
14	8.7	69	87	24			
15	9.1	74	94.5	25			
16							
17							
18							
19							
20							
21							

2. Click the Plot icon on the Command bar, choose Chart Gallery from the Data menu, or press **cmd-G**. The “Chart Setup” dialog box appears.

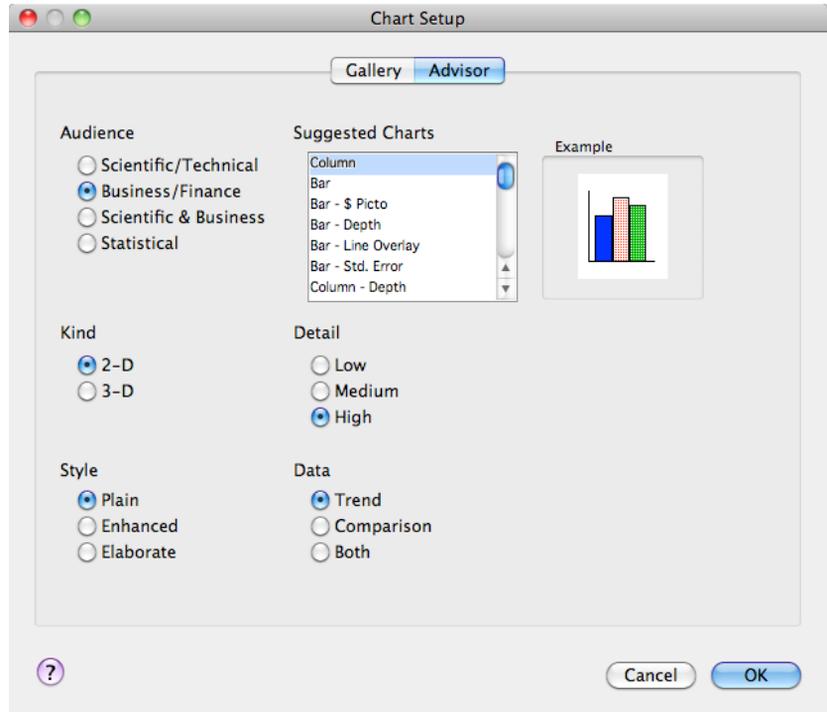


Examples of all of the chart types are displayed.

3. Move the mouse pointer over a chart example to display its chart type below the scroll bar. Click the options on the right side of the dialog box to display various types and categories of charts.

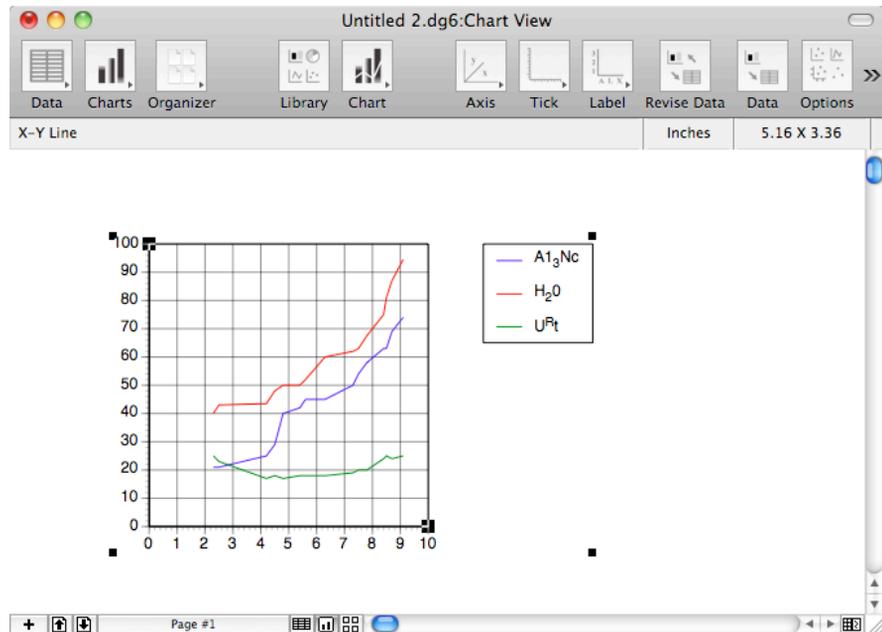
You can select and plot a chart directly from this dialog box or you can use the Chart Advisor to help you determine the best chart to use for the selected data. For this tutorial, you will use the Chart Advisor.

3. Click the **Advisor** tab.



You can also display the Chart Advisor directly from the Data view by clicking the Plot icon while pressing the **option** key.

5. Based on the options you select, the Chart Advisor displays a list of charts that best represent the selected data. Experiment with some of the options to see how the Chart Advisor changes the “Suggested Charts.”
6. Now, select the options as shown in the illustration, and select the **X-Y Line** chart (second option) from the list. The selected chart appears in the Example box.
7. Click **OK**. The XY Line chart is plotted and displayed in the Chart view.



A default name (Page #) appears in the Page Selector at the bottom of the page. You will name the chart page later. Note the superscript and subscript characters in the chart legend that were generated from the special characters you entered in the column labels.

- To move the chart, click and hold on it and drag it to a different location in the window. Be careful not to click a handle (the small black boxes on the corners) or you will resize the chart.

NOTE 

If you cannot see the whole chart, click and drag the window sizing icon in the bottom-right corner of the window to enlarge the viewing area.

Changing the View Size

Take the following steps to change the size of the chart in the viewing area.

1. Choose **Scale** from the View menu. A pop-up menu appears with the several choices for sizing the chart. The “Actual” option sizes the chart at 100%. The “Fit To View” option sizes the chart to fit completely in the viewing area. The **command** key combination used to select each option is displayed next to the option.
2. Drag down the menu until **75%** is highlighted, and release the mouse button. The active Chart page resizes so you can see the whole chart. The white area is the actual Chart page; the gray area is outside the page.
3. Click the Scale icon. The Chart page view is resized back to 100%.

Changing the Orientation

To change the orientation (portrait, landscape) of the document, do the following.

1. Select **Page Setup** from the File menu.
2. Select **Landscape**.

Portrait

The shortest side of the page is at the top (e.g., 8 x 11).

Landscape

The longest side of the page is at the top (e.g., 11 x 8).

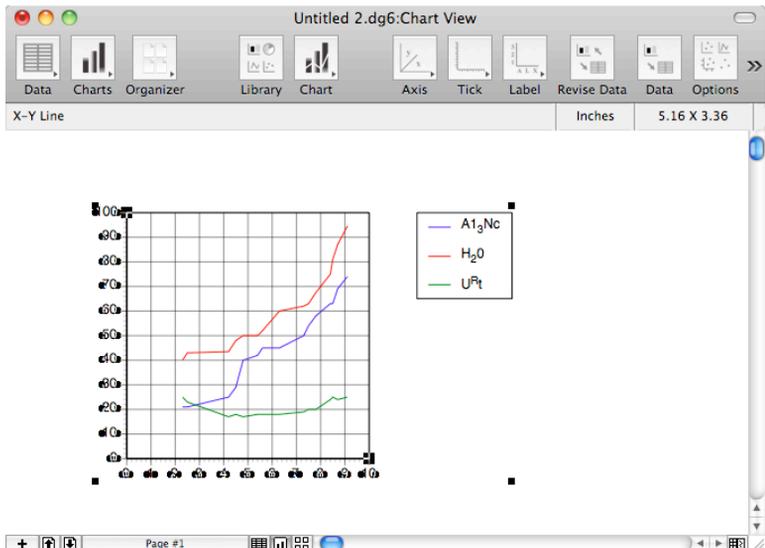
3. Click **OK**. The Chart page is displayed with the new orientation.

Changing the Text Attributes of Axis Labels

The X axis is the horizontal axis of the chart, and the Y axis is the vertical axis of the chart. Both axes on a 2-D XY Line chart are value axes, which means the numbers in the axis labels are generated automatically when the chart is plotted (rather than from text entered in the Data page).

To change the text attributes of the axis labels in the chart, do the following.

1. Click anywhere in the chart to select it. Object handles (small squares) and axis resizing handles (larger squares) appear to show that the chart is selected. These handles are described in detail in “Chart Object Handles” in chapter 2.
2. Click one of the numbers that appear at the bottom of the chart. These are X axis labels. Chart element handles (small circles) appear showing that the X axis labels are selected.
3. Hold down the **command** key and click a number on the left side (Y axis) of the chart. Chart element handles now appear on both the X and Y axis labels.



4. Pull down the Text menu, and select “Show fonts”. Then select a font style, size, and color. The labels reflect your changes.

You can customize the menu bar to include a shortcut to the font dialog box.

5. Experiment with various fonts, styles, sizes, and colors to see how they affect the look of the chart.
6. While the labels are selected, click and drag them away from the axes if they are too close to the tick marks.
7. Click in an empty area of the chart to see the chart without handles.

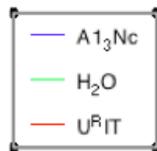
NOTE

If you make a change to the chart that you do not like or didn't intend, select **Undo** from the Edit menu, or press **cmd-Z**, to undo the most recent change.

Moving and Resizing the Legend

Do the following to move and resize the legend in the XY Line chart.

1. With the chart selected, click the frame around the legend. Chart element handles appear showing that the legend is selected.



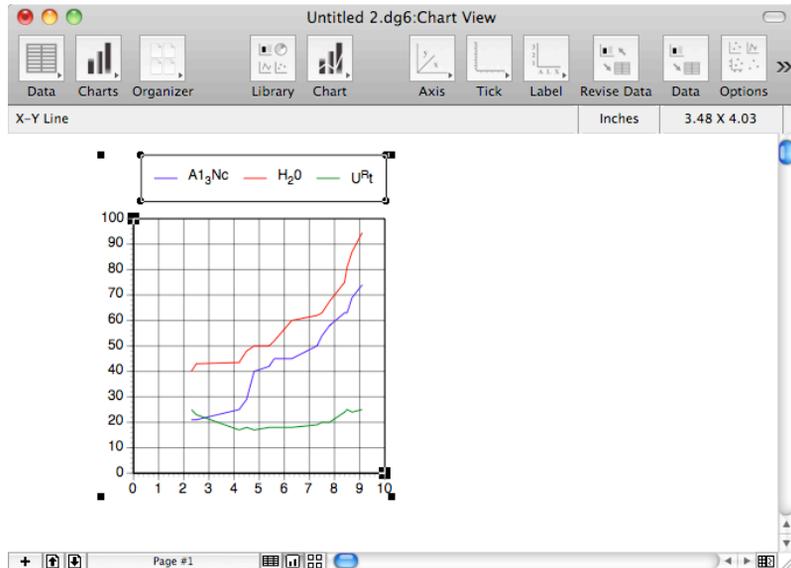
2. Click and hold in any of the empty white space inside the legend and drag the legend above the chart. You can hold down the **option** key while you drag to override the snap-to-grid feature.
3. Release the mouse button. The legend is placed in the new location.
4. Click and hold on the lower-right legend handle and drag it up and to the right, making the legend short and wide.



5. Release the mouse button. The legend is resized, and the legend elements are rearranged.



6. Click and hold on the legend frame and drag it to fine tune the positioning until the legend is in the location shown below, then release the mouse button.



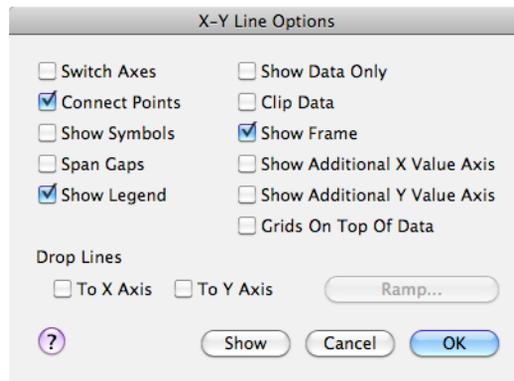
You can also change the text attributes in a legend (in the same manner that you changed the axis labels text attributes) or even hide the legend on the chart (select **Legend** from the Chart menu).

Changing the Chart Options

Do the following to change the appearance of the chart using the “Options” command.

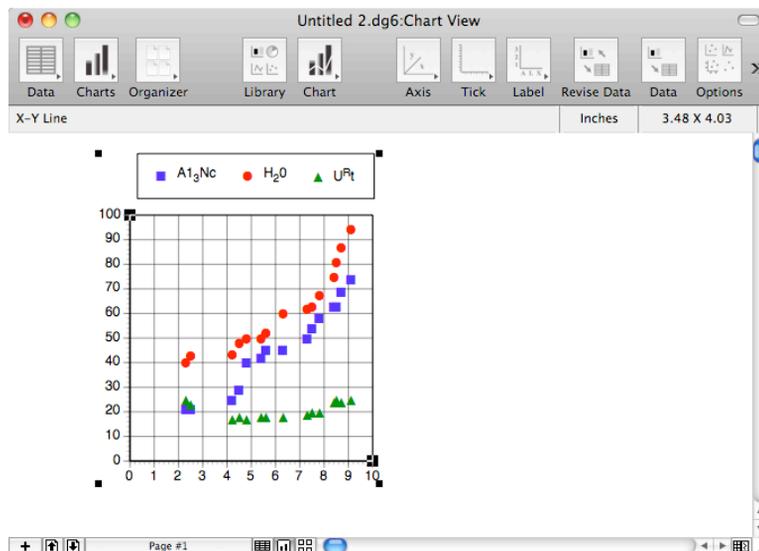
1. Select the chart.
2. Click the Options icon on the Command bar, or select **Options** from the Chart menu.

The following dialog box appears.



3. Click **Show Symbols** to select it, and click **Connect Points** to deselect it.
4. Click **Show** to preview the change. (If necessary, move the dialog box out of the way by clicking on the Title bar and dragging it.)
5. To apply the change and close the dialog box, click **OK**.

The options are applied to the chart as shown below.



- Experiment with different options to see how the appearance of the chart is affected.

The options available in the “Options” dialog box depend on the type of chart selected. You can use the options to make several changes in the appearance of a chart and, in some cases, create an entirely different type of chart.

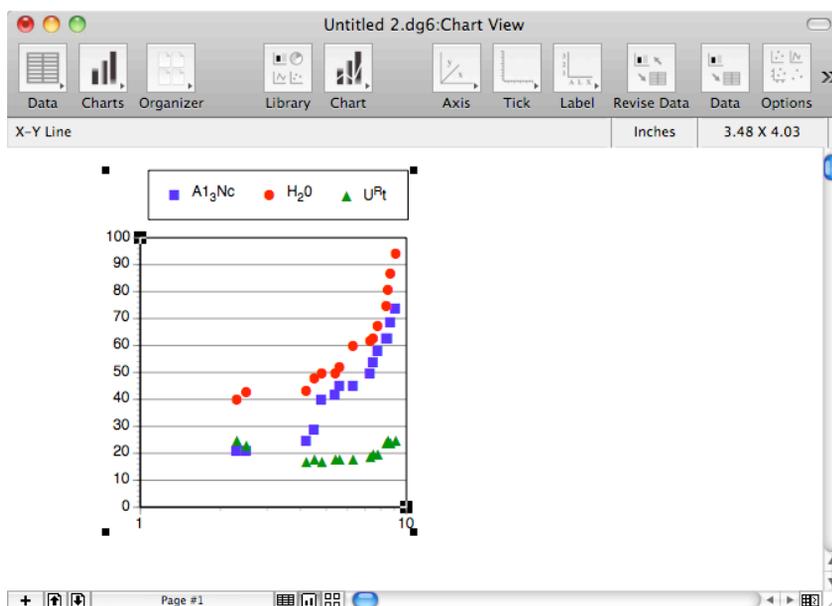
Changing the Axis Values

To maximize the area for data, do the following to adjust the axis scaling.

- Press and hold **control** while you click and hold the mouse button on the chart.

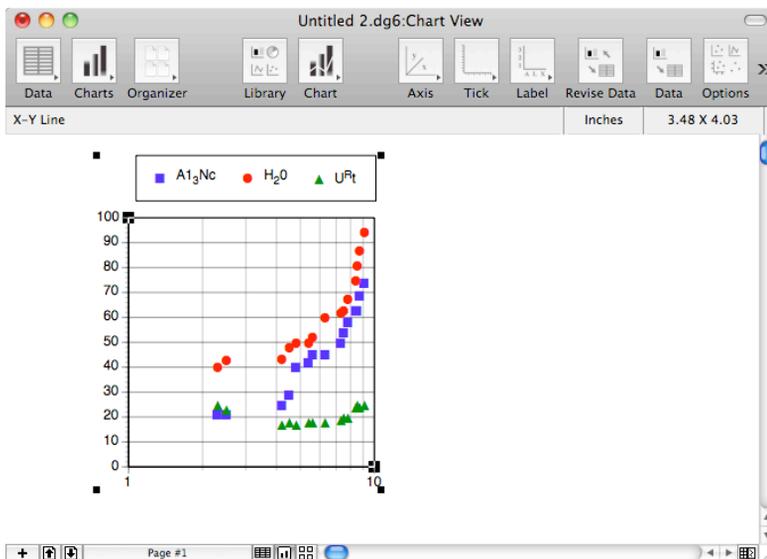
A pop-up menu appears with a list of shortcut commands. Most of the commands on this menu are also displayed on the Chart menu. You can also display the shortcut menu from Draw and Text objects.

2. Select **Axis** from the menu, and select **X Axis** from the submenu.
3. In the “Axis Scaling” section of the dialog box, select **Logarithmic** and verify that “Auto” is enabled for each axis value. This scales the X axis based on powers of 10, which makes rapidly increasing data on a large scale easier to interpret.
4. Click **OK**. Notice that the starting values for the Y (vertical) axis remain the same, but the X (horizontal) axis now begins at “1,” and the grid frequency has changed to reflect the logarithmic scaling.



Adding Grid Lines

1. With the chart selected, select **Ticks and Grids** from the Chart menu, and select **X Axis** from the submenu.
2. Select **Minor** beneath “Show Grid Lines.”



3. Click **OK**. Minor grid lines are added to the X axis.

Changing the Chart Symbols

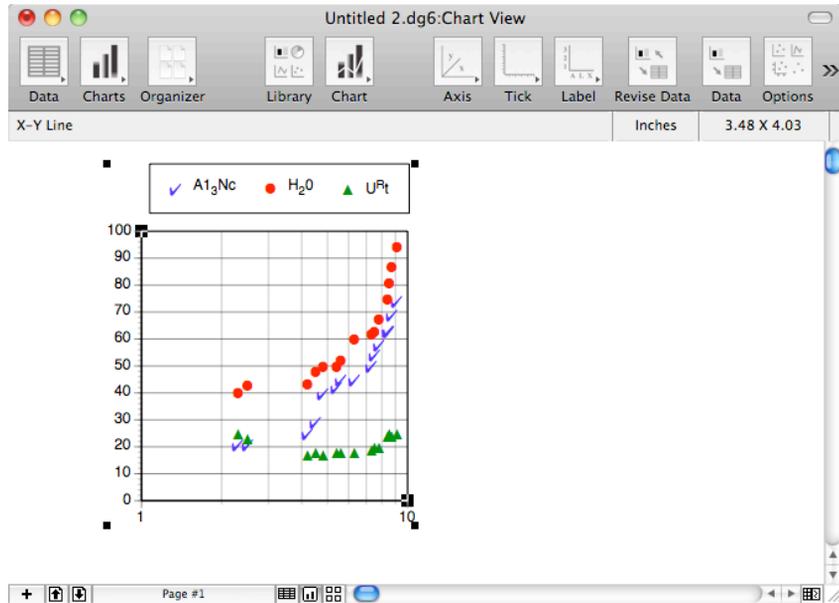
Some of the charts in DeltaGraph display the data points as symbols (such as circles, squares, triangles, checkmarks, and so on). A special font called “DeltaSymbol” is the default symbol font for all charts. The symbol, size, and color can be changed for each data series (column in the Data page).

Do the following to change the symbols on the chart.

1. Select the chart.
2. Double-click one of the square, circle, or triangle symbols in the chart or leg- end.
3. Select one of the data series from the list box on the left side of the dialog box. The color, size, and symbol selections in the dialog box change to reflect the selected data series symbol.
4. Click the “Color” pop-up menu and select a different color; then click the “Size” pop-up menu and select a size.

You can also select a different “Source” for the symbols if available on your system. For example, if you had any Custom Libraries loaded, you could choose an image from the “Custom Symbol” pop-up menu. Or if you have a symbol font collection on your computer, you can select a different font from the “Font” pop-up menu.

5. Click the “Key” pop-up menu and select a different symbol. The symbols available will vary depending on the font selected. You can see what the symbol will look like in the “Example” box.
6. Click **Show** to preview the change. (If necessary, move the dialog box out of the way by clicking on the Title bar and dragging it.)
7. To apply the change and close the dialog box, click **OK**.



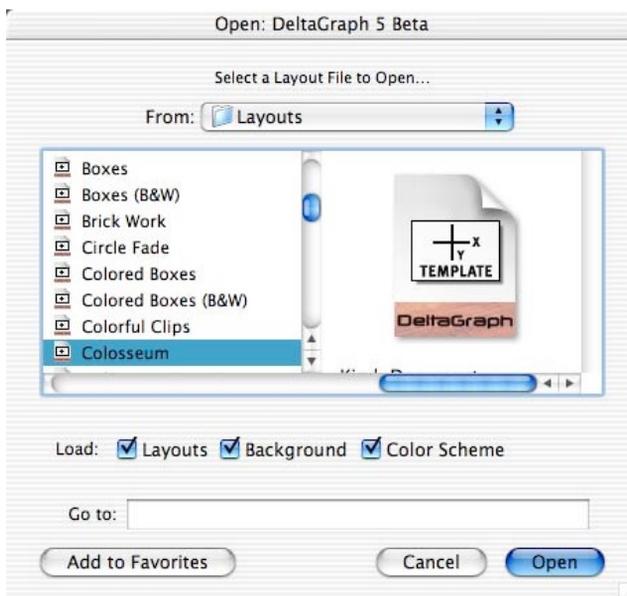
Loading a Smart Layout Set

A Smart Layout is used to position, size, and apply a background to a DeltaGraph document to make all of the charts in the document

consistent. A Smart Layout contains a color scheme, background graphics, and placeholders for the charts, titles, text, graphics, and bullets on a page. Do the following to load a Smart Layout set in the tutorial document.

1. Choose **Layout Editor** from the Edit View menu.
2. Select **Load Set** from the submenu.

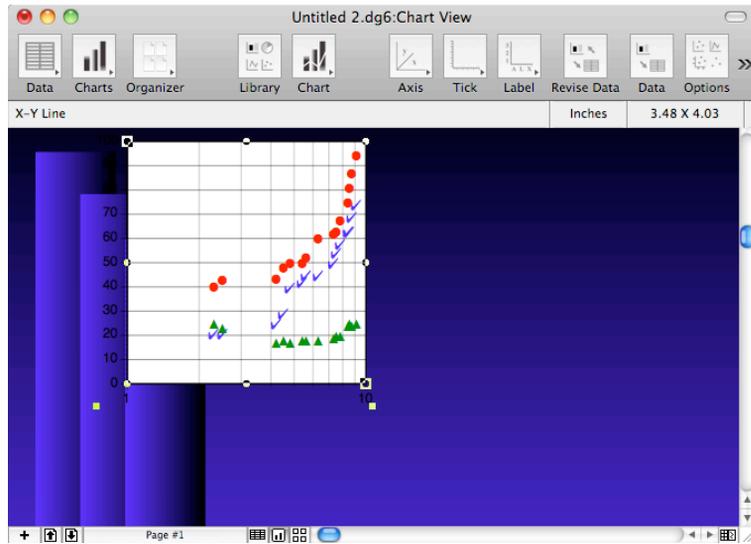
The following dialog box appears.



3. Click the “From” pop-up menu, select the “DeltaGraph” folder, and select the “Layouts” folder from the “DeltaGraph” folder. A list of the Layout Sets in the folder is displayed.
4. Click a layout set to see a preview of the colors and Master Background in its layouts.
5. From this dialog box, you have the option of loading just the layouts, the Master Background, the color scheme, or any combination of the three. For the tutorial, make sure all three are selected.

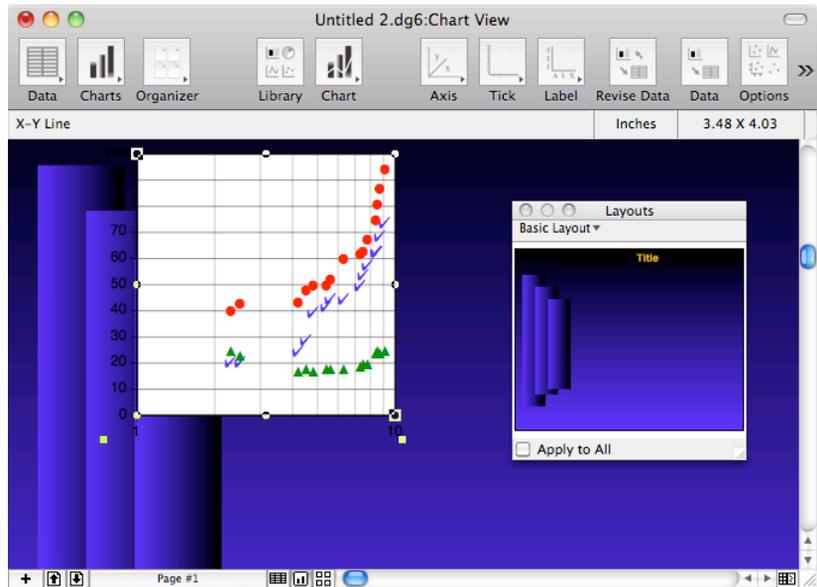
6. Select **Colosseum** from the list and click **Open**.

The Chart page is displayed with the layout set Master Background loaded.



7. Go to Page, submenu "Apply Layout"

A floating Layouts window appears for you to select a layout from the set.



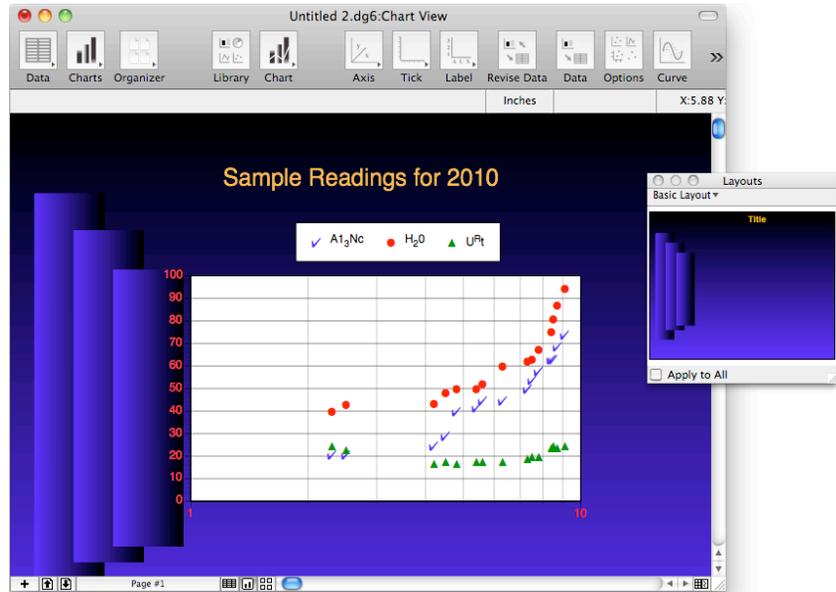
8. Click and hold on the pop-up menu in the Layouts window. A list of the layouts in the set appears. Each layout set contains 12 layouts. The layouts in each set have the same names.
9. Select **4 - 1 Chart & Title**. The selected layout appears in the Layouts window. You can resize the window as required to view the selected layout.
10. Click and hold on the layout in the Layouts window and drag it into the active Chart page. The title entered in the Outliner view is displayed and the chart is sized and positioned to match the selected layout.
11. Change the text and symbol size and color to match the new layout as follows:
 - To change the heading size, click the heading, then click , and select the desired point size from the list.
 - To change the labels, hold down the **command** key and click a number on the Y axis (left side) of the chart, then click a number on the X axis (bottom).

Chart element handles appear on the all the axis labels. Click

and select a point size. To change the color, select **Color** from the Text menu, and select a new color from the menu.

- To change the symbols for the data points, double-click one of the symbols in the chart or legend, and select a new color, size, and/or symbol for each data series.

Your chart should look similar to the one below.



12. Close the Layouts window.

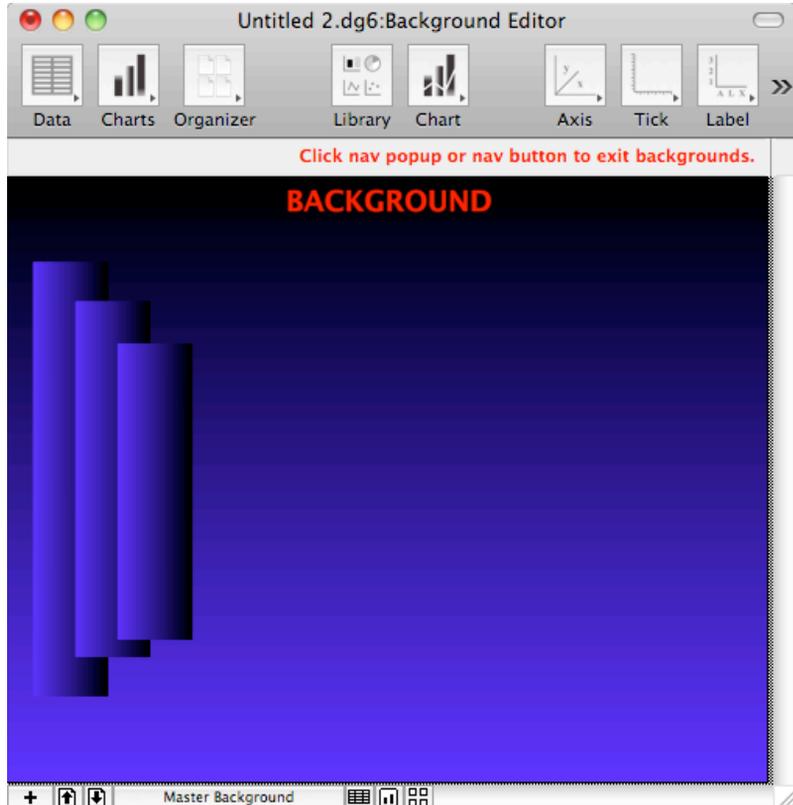
13. Remember to save the document periodically. Click the Save icon, choose **Save** from the File menu, or press **cmd-S**.

Editing the Master Background

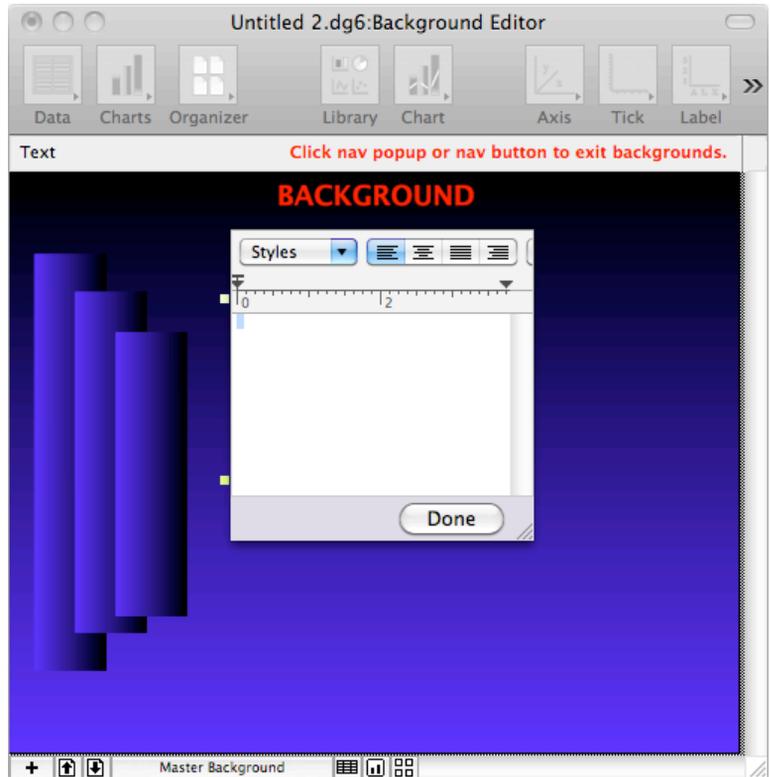
You can add various Draw or Text objects to the Master Background, and you can change the colors of the background. Text placed in the Master Background will appear on all pages in the document. Do the following to add a Text object to the Master Background.

1. Go into the View menu, then the submenu Layout editor and then click Master Background.

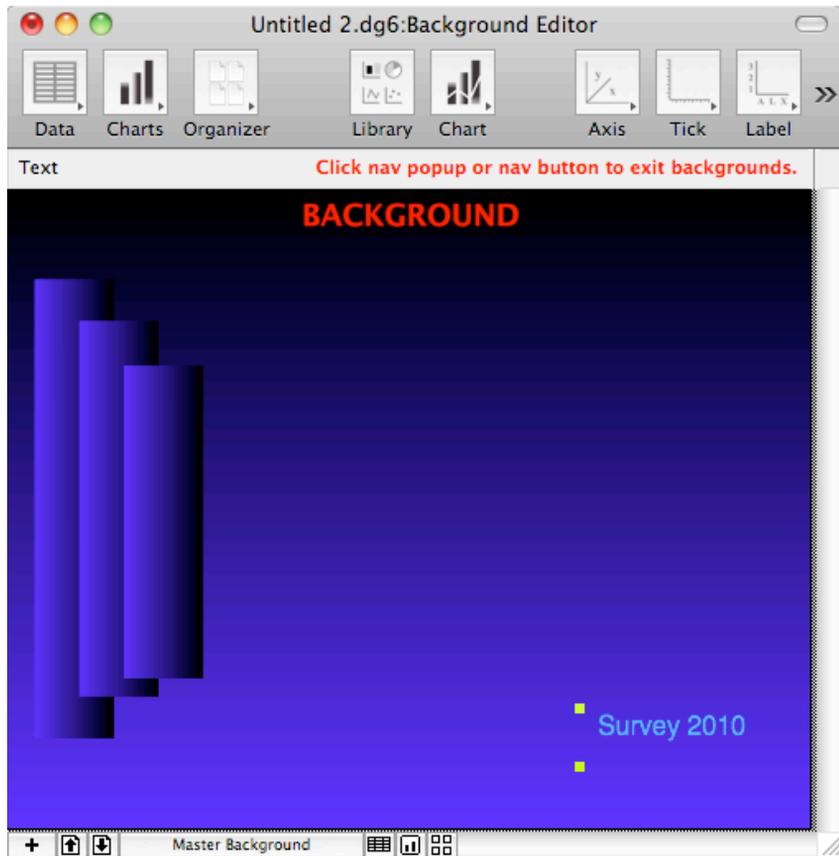
You are switched to the Layout mode, and the Master Background appears. The Window Indicator on the Command bar indicates the mode.



2. Click in the center of the background. The Text Tool box is displayed.



4. Type **Survey 2002** on the text line. Click outside the text block to close the Text Tool box, and the text is displayed on the background. You can also use the tools in the Text Tool box to add tabs, text position, and line spacing to your text.
5. Click the text to select it, and format the text using the text menu to affect; size, color, font and style.
6. Click and hold on the Text object and drag it to place it where you want it in the page.



7. Click the Chart view icon to return to the Chart page. The Chart page appears with the new background elements.

Creating a 3-D Area Chart

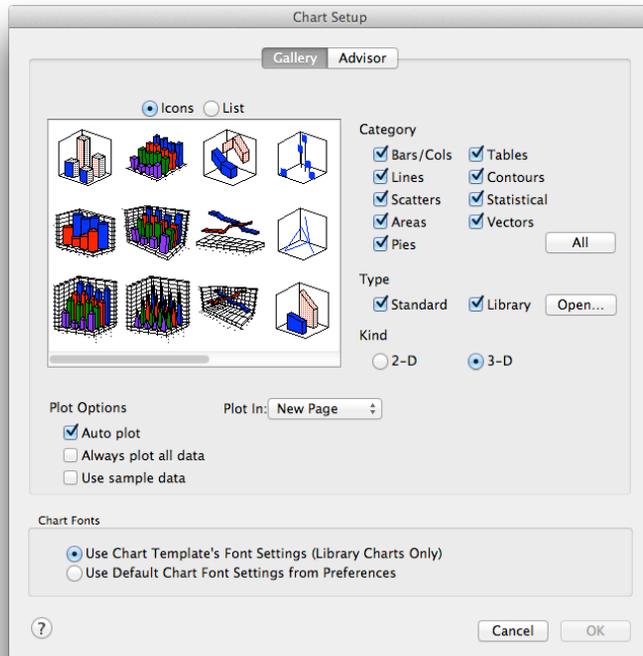
This lesson shows you how to do the following:

- Plot a Chart from the Chart view
- Import data
- Add chart titles
- Resize a chart axis

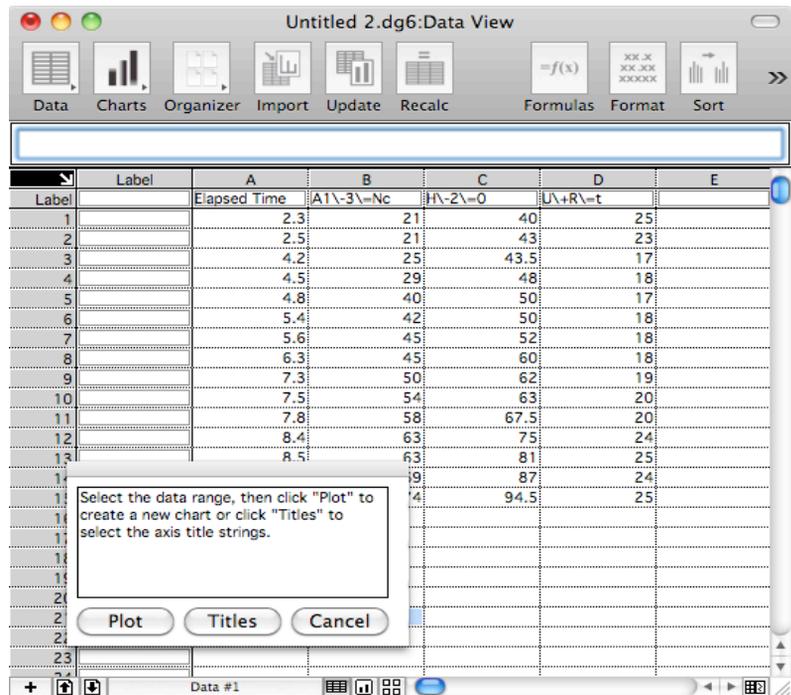
- Change the text attributes of axis labels
- Change the chart options
- Rotate labels on a chart
- Change the view of 3-D charts
- Change fill patterns and color on data graphics
- Name a Chart page

Plotting a Chart from the Chart View

1. On the Chart page, click and hold on the Plot icon on the Command bar and select **Chart Gallery**, choose **Chart Gallery** from the Chart menu, or press **cmd-G**. The “Chart Setup” dialog box appears, and the standard chart types are displayed.



2. In the “Kind” section, click **3-D**.
3. Click the “Plot In” pop-up menu, and select **New Page** to plot the data on a new Chart page.
4. Move the mouse pointer over a chart example to display its chart type below the scroll bar. Click the options in the “Category” section to display various types and categories of charts.
5. Click and hold the mouse on one of the chart examples. A Help box appears explaining the type of data needed for the selected chart.
6. Select the options as shown in the illustration on the previous page, and select the **3-D Area** chart type. The chart example is highlighted indicating that it is selected.
7. Click **OK**. The Data page you created in the first lesson appears with a floating window over it.

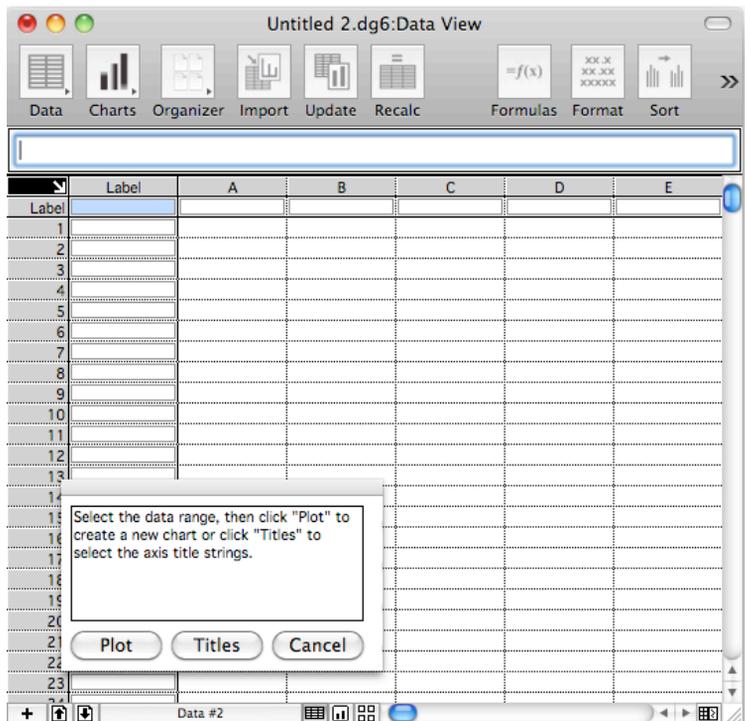


8. Do *not* click anything in or close the floating window. Proceed to

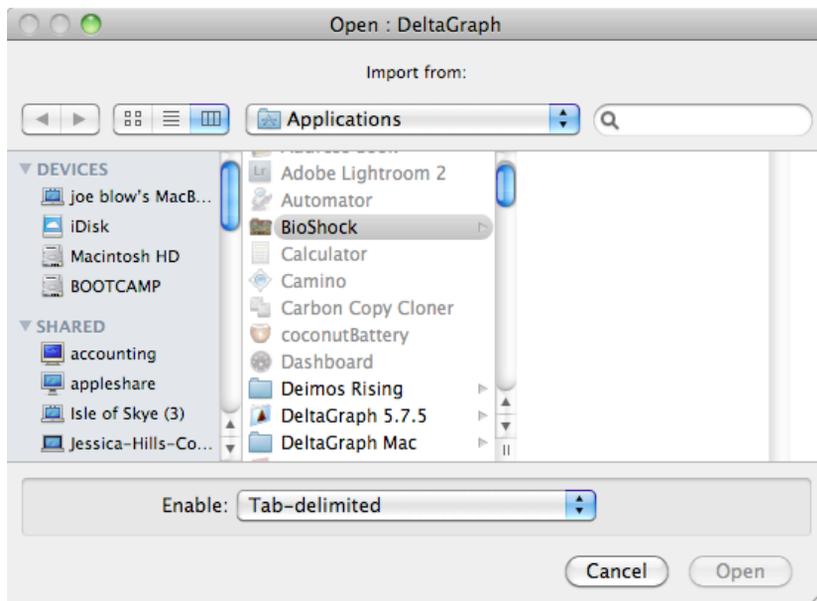
the next section to import data into a new data page.

Importing Data

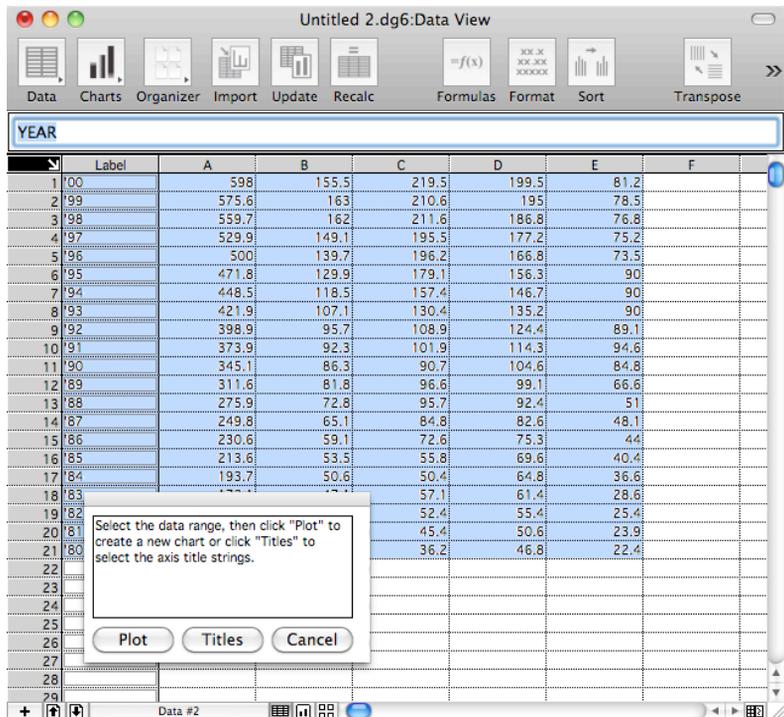
1. Click the Add Page icon on the Navigational bar. A new Data page is created with the name “Data #2.”
2. Choose **Name Page** from the View menu, enter **3-D Area Data** for the new data page name, and click **OK**. The name appears in the Page Selector.



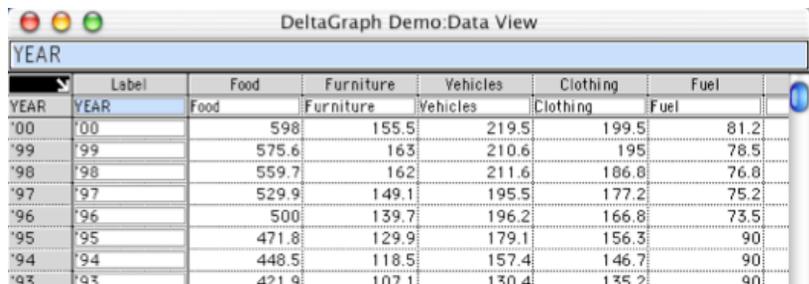
3. Click the Import icon, and select **Tab Delimited** from the pop-up menu. The following dialog box appears.



4. Open the DeltaGraph “Sample Files” folder, and double-click **Buying Trends**. Data from the Sample File appear in the active Data page.



5. Choose **Show Labels** from the Data menu. This option allows you to scroll through the data and still view the column and row labels. It replaces the column letters with the column labels and the row numbers with the row labels.



6. Scroll down to the bottom of the data set.

Adding Chart Titles

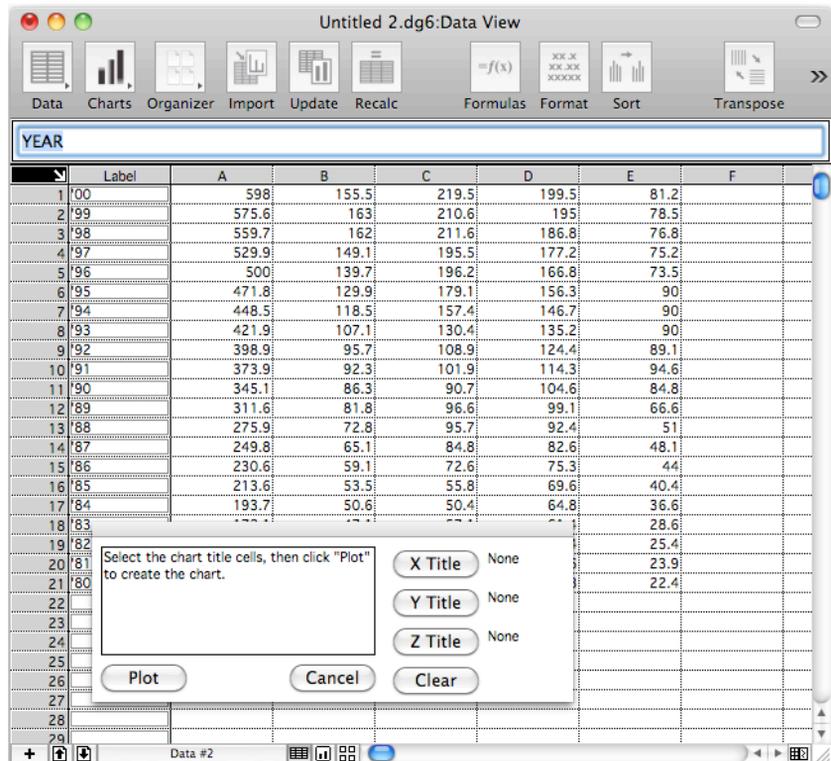
Do the following to add titles to the chart.

1. Click the Select All icon in the top-left corner to select all the data in the Data page.
2. Click **Titles** in the floating window. The floating window is expanded. You can move the floating window by clicking the Title bar and dragging it to another part of the page.

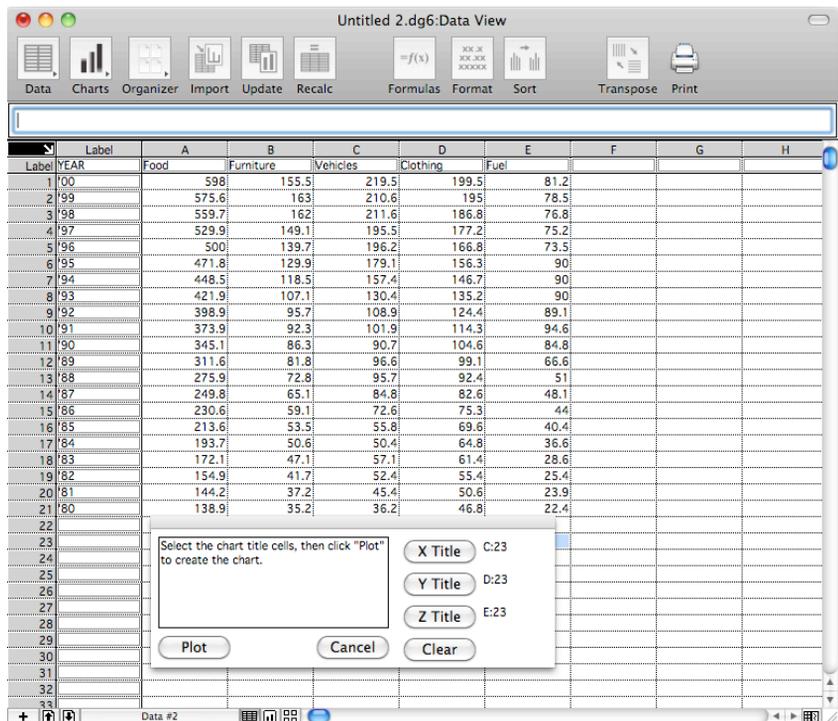
NOTE

If the floating window was closed, or you need to enter titles later, click the Plot icon and select the **Attributes** tab. Type in the headings, and use the “Select Cells” function to specify their locations.

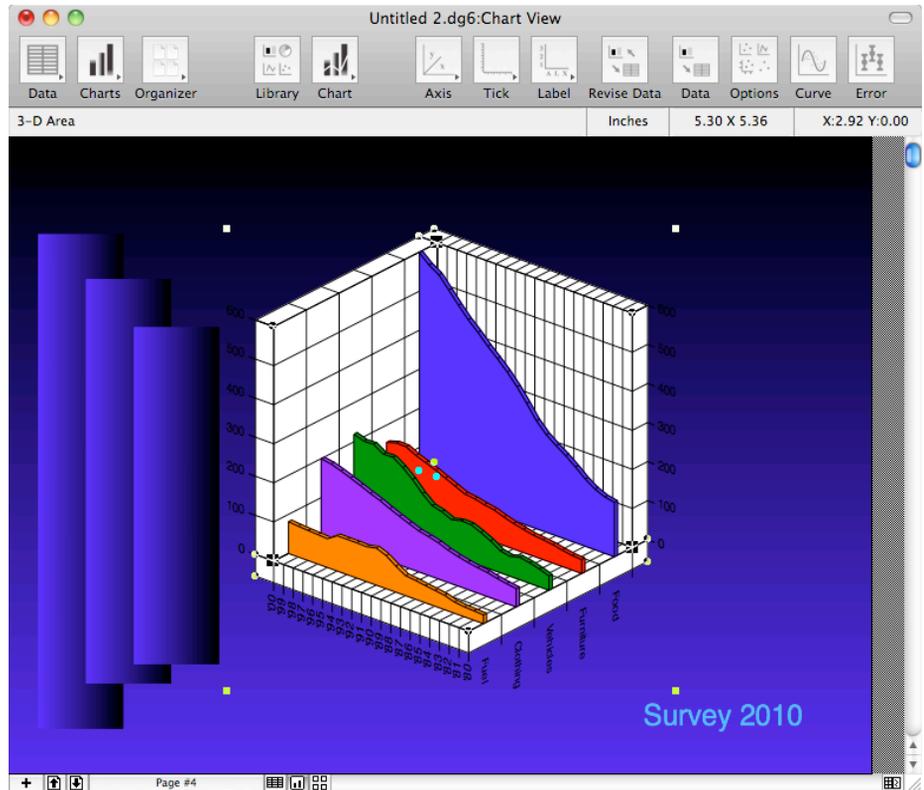
3. Click in the cell on the Data page at the intersection of row “23” and column “Vehicles.”



4. Type **Year** and press **tab** to move to the next cell. Type **Consumer Goods** and press **tab**, then type **Dollars** and press **tab**.
5. Click **Year** in the Data page to select the cell, and then click **X Title** in the floating window. The cell number appears next to the axis button.
6. Press **tab** to select the “Consumer Goods” cell, and click **Y Title** in the floating window.
7. Press **tab** to select the “Dollars” cell, and click **Z Title** in the floating window.



8. Click the Select All icon, then click **Plot** in the floating window. The 3-D Area chart is plotted and displayed in the Chart view with a default Chart page name (Page#).



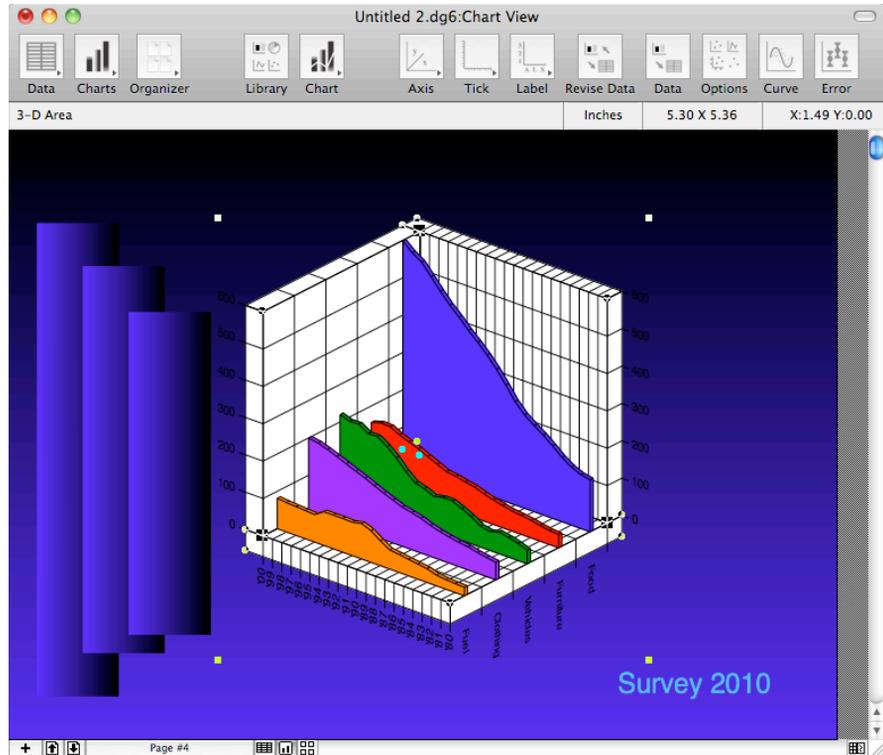
You can adjust the scale using the view menu or zoom tool in the tool bar.

Remember to save your document periodically. Click the Save icon, choose **Save** from the File menu, or press **cmd-S**.

Resizing the Axis

Note that the data on the bottom-left side of the chart are cramped. You need to stretch the chart to make room for it. Do the following to resize the chart axis to make it easier to read:

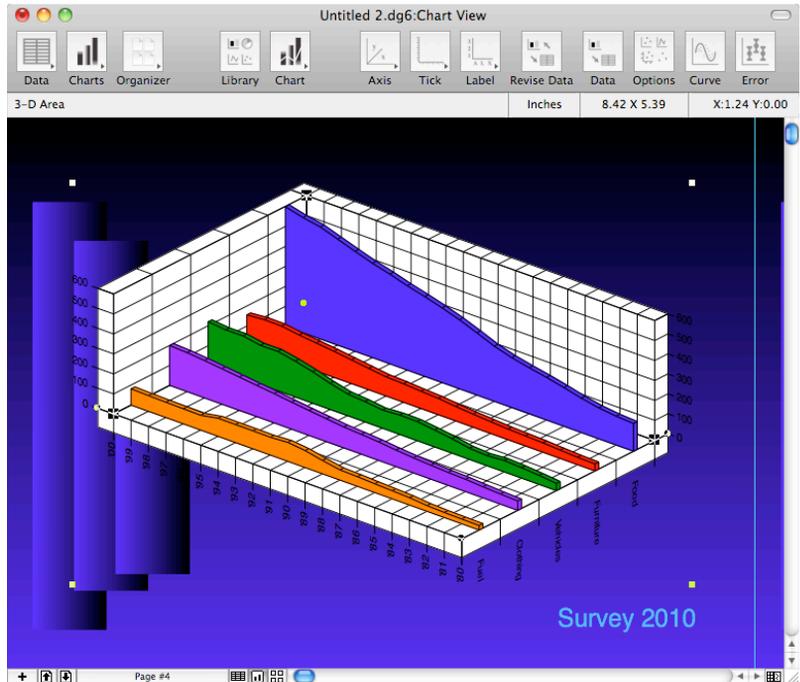
1. Click the chart to select it.



Object handles (small white squares) and axis resizing handles (larger black squares) are displayed to show that the chart is selected.

2. Click and hold the bottom-right axis resizing handle and drag it to the right.

As you drag, the axis expands, allowing more room for the labels on the bottom-left side.



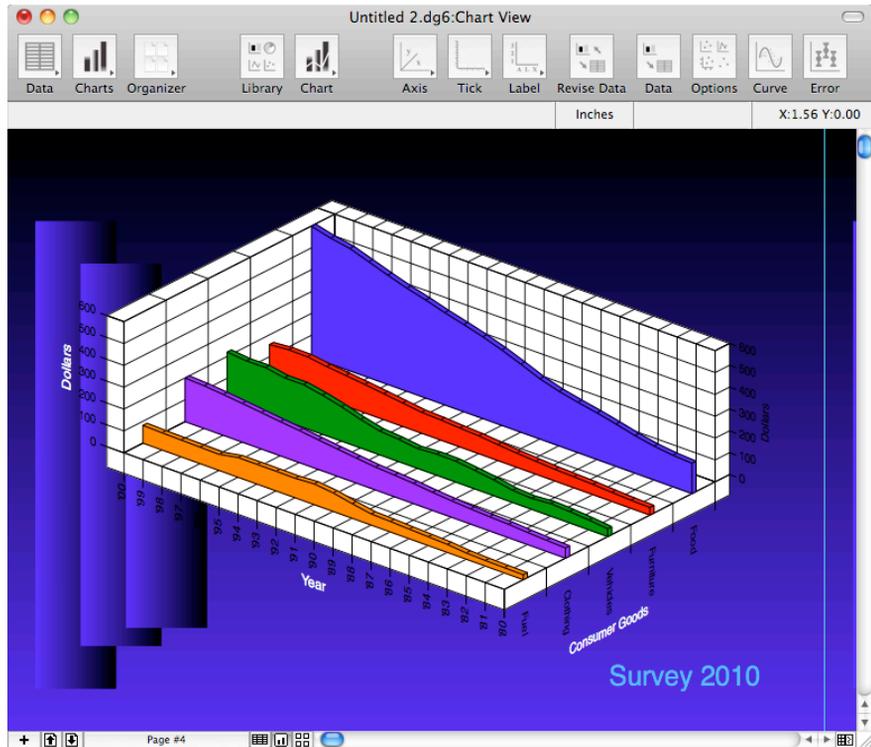
3. Release the mouse button at the point where the chart seems balanced. You can use the other axis handles if needed to adjust the chart. If you want to stretch the entire chart horizontally or vertically, click and drag a Chart object handle.
4. To move the chart, click to select it, then click and hold on the chart and drag it to a new position.

Changing the Text Attributes of Axis Labels

To change the text attributes of the axis labels in the chart, do the following.

1. Click in the chart to select it.
2. Click one of the axis labels on one axis of the chart. Chart element handles (small circles) appear showing that the axis labels are selected.

3. Hold down the **command** key and click a label on each of the other axes of the chart. Chart element handles now appear on all axis labels
4. Use the text menu to change text formatting in the axis labels. You can also select “Set All” from the Text menu to open a “Text Format” dialog box and make all of the changes to the selected text at the same time.
5. Experiment with various fonts, styles, sizes, and colors to see how they affect the look of the chart.

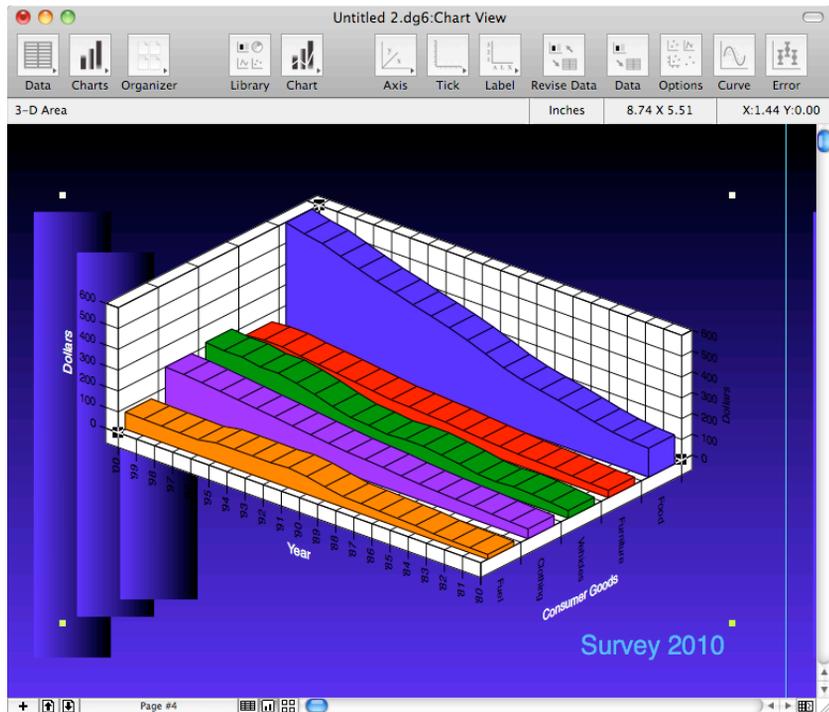


Changing the Chart Options

Do the following to change the appearance of the chart using the “Options” command.

1. Select the chart.

2. Click the Options icon on the Command bar, or select **Options** from the Chart menu.
3. Click to deselect **Projected Ticks and Labels**, change the “Width” (under “Line Width”) to **65%**, and enter a “Wall Thickness” of **15**. You can either type a value in the entry box or click the selection arrows to scroll through the options. Leave all other options “as is.”
4. Click **Show** to preview your change. To apply the change, click **OK**.



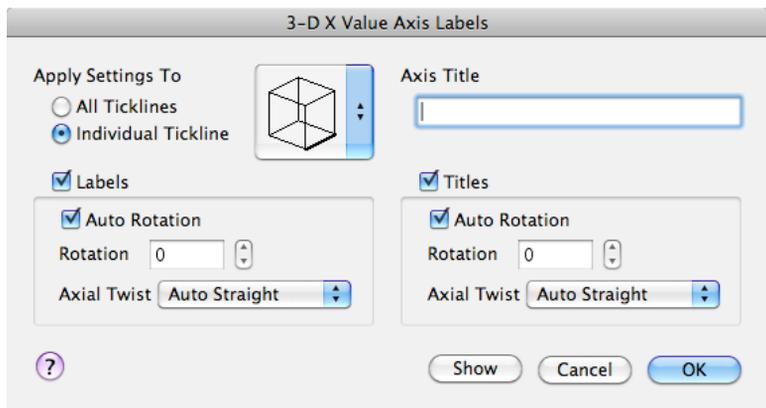
Rotating Labels

You can rotate any of the axis labels or titles on any of the charts you create. You may want to experiment with different settings to find the best angle for them to be displayed. Several things may affect orientation of the labels. When you stretched the chart in the previous

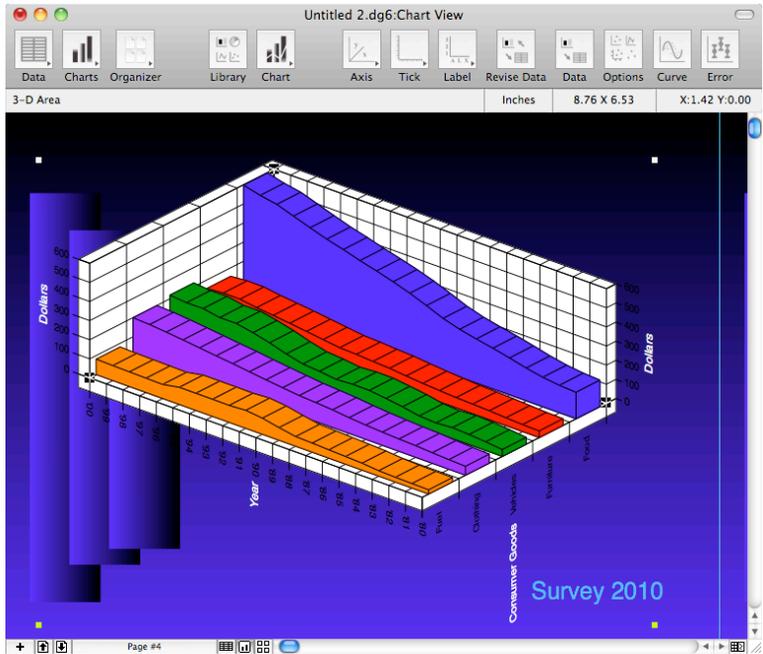
step, the orientation of the axis labels may have changed because the available space was increased. The text size also affects the available space. Do the following to rotate some of the text and axis labels in the chart.

1. Select the chart.
2. Choose **Labels** from the Chart menu, and select **Series (X)** from the submenu. (You can also double-click the axis labels to open the dialog box.) The following dialog box is displayed.

The X axis title “Year” is displayed in the “Axis Title” box.



3. Click the “Apply Setting To” pop-up menu, and select the tickline that identifies the location of the axis labels you want to change. The figure above shows the correct selection for the “Year” labels. You can set each tickline separately.
4. Change the “Rotation” under “Labels” to **90**.
5. Click **OK**. The axis labels are rotated 90°. Experiment with other rotations.

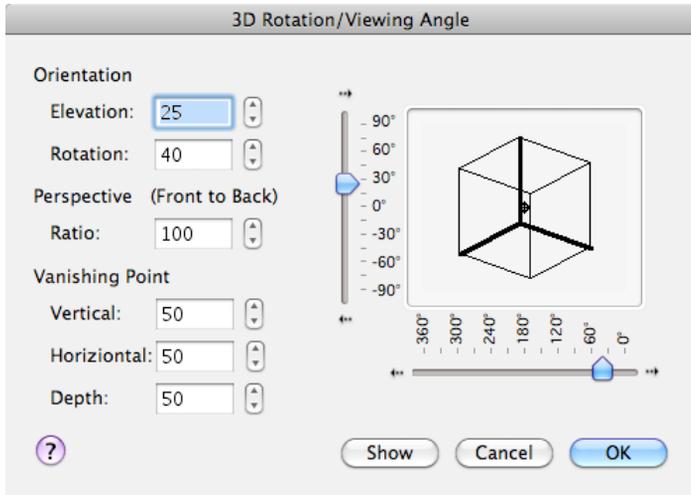


You can click and drag axis titles and labels to reposition them if necessary.

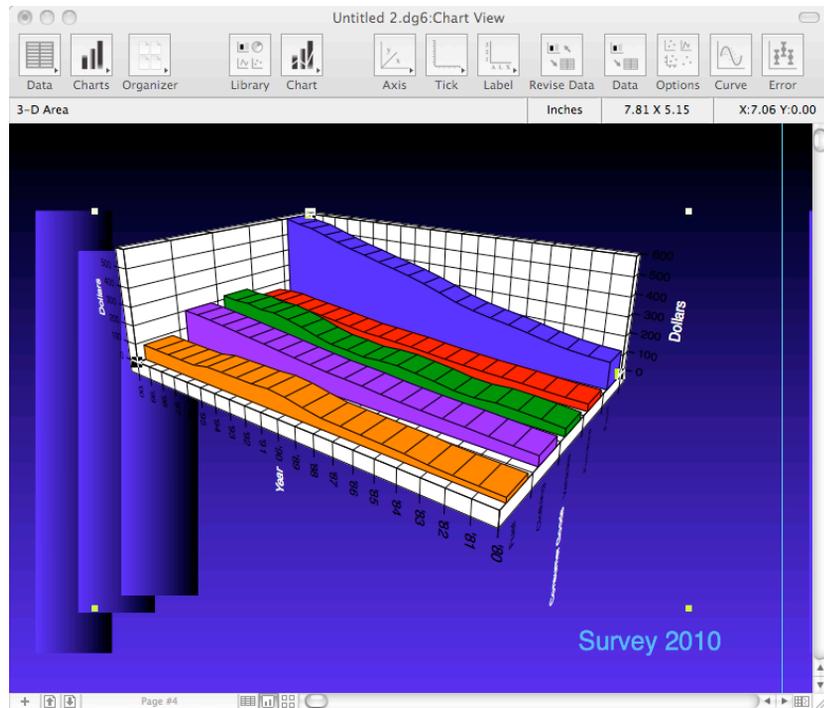
Changing the View of 3-D Charts

Do the following to change the rotation, angle, and perspective of the 3-D chart.

1. Select the chart.
2. Choose **3-D View** from the Chart menu. The following dialog box appears.



3. Change the “Orientation Elevation” to **18**, “Rotation” to **37**, and the “Perspective Ratio” to **60**.
4. Click **Show** to see the results of your selections. You can also change the elevation and rotation by clicking the slides next to and below the sample cube. Experiment with different settings, and click **Show** to see how you want the chart to look.
5. Click **OK** to apply the changes.



You can click and drag axis titles or labels to reposition them if necessary.

Changing Fill Patterns and Other Attributes

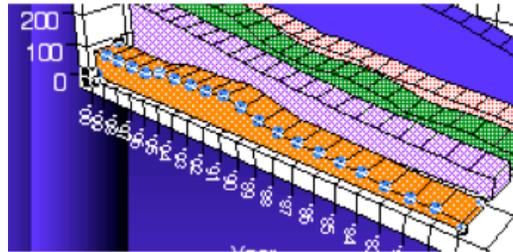
Do the following to change the fill pattern on a selectable chart element (such as the bars, the grid back plane, or anything else in the chart that can be filled with a pattern or color).

1. Click the chart to select it.
2. Click the side of the orange bar (bar closest to the front) in the chart. Chart element handles (a row of small colored circles) along the top indicate that the entire side of the bar is selected.

You can also select any individual element in the chart. For example, click one of the facets or rectangles along the top of a bar. On the first click, the entire top of the bar is selected, as indicated by the chart element handles on the corners. Click again

to select a single facet.

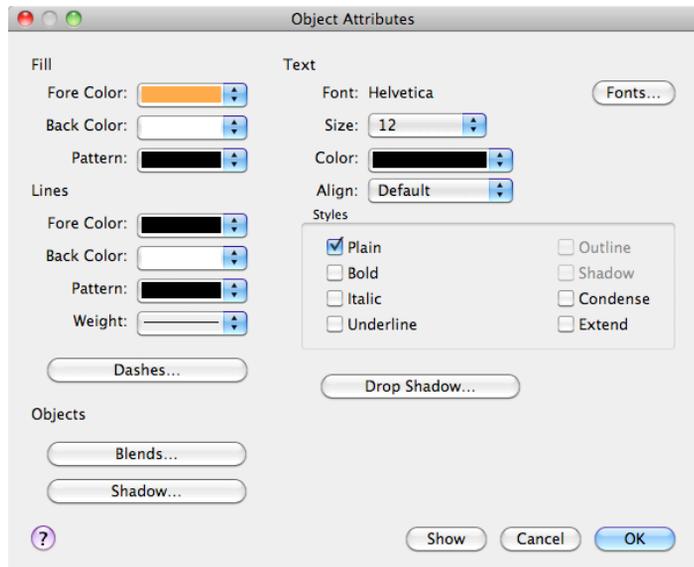
3. Hold down the **command** key, and click the top of the orange bar to select the entire bar. Note the chart element handles on all the corners as well as along the top, as shown below.



NOTE 

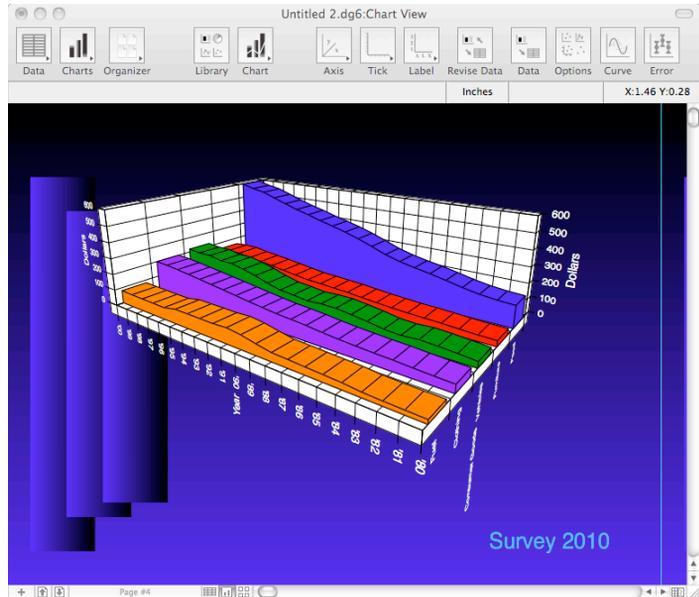
To select more than one element at the same time, hold down the **command** key as you click each element.

4. Hold down the **control** key, and click in the selected bar, click attributes in the resulting menu. The Object Attributes dialog box is now displayed.



You can change fill colors, line patterns, line widths, and colors on the chart. You can also use the “Blends,” “Dashes,” and “Shadows” options to add special effects.

- Click the “Fore Color” pop-up menu. From the color chart, select a different color. You can click **Show** to preview your change.
- To apply the change, click **OK**. The figure below shows the bar changed to red.



You can also use the palettes in the Toolbox to change fill colors, line patterns, line widths, and colors on your chart, and you can use the “Blends,” “Dashes,” and “Shadows” commands on the Draw menu to apply special effects.

- For example, select an element, and click and hold on the foreground fill palette in the Toolbox. Then select a color from the color palette.

Naming the Chart Page

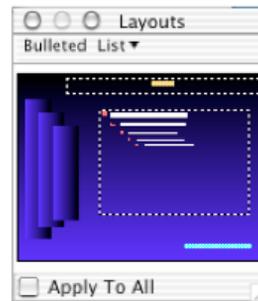
Do the following to name the chart using the “Name Page” option on the View menu. (You can also name a Data page using this option.)

1. Choose **Name Page** from the View menu.
2. Enter “Consumer Spending” in the dialog box.
3. Click **OK**. The new name appears in the Page Selector on the Navigational bar.

Applying a Smart Layout

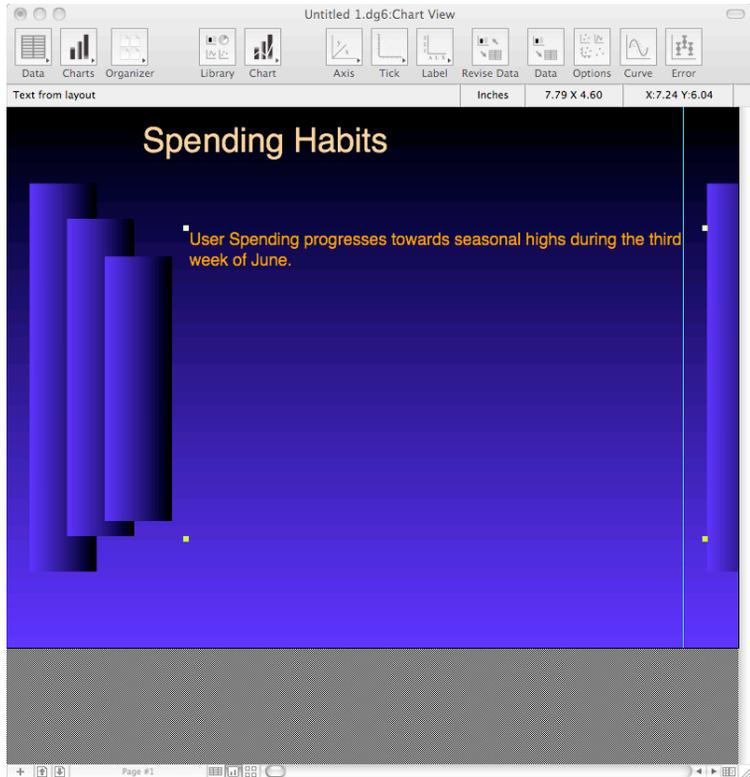
Most data entered in the Outliner automatically appear in the Chart page. A Title line is the exception. It needs a Smart Layout placeholder in order to be visible in the Chart page. Do the following to apply a Smart Layout to the chart.

1. Go into the Layout editor via the View menu.
2. Click the window’s pop-up menu and select **Title**. The Bulleted List lay- out appears in the window.



3. Click and hold the layout and drag it into the active Chart page.

Attributes such as colors, fonts, positions, and size are applied from the Smart Layout. The Title entry from the Outliner is also displayed with the layout’s attributes.

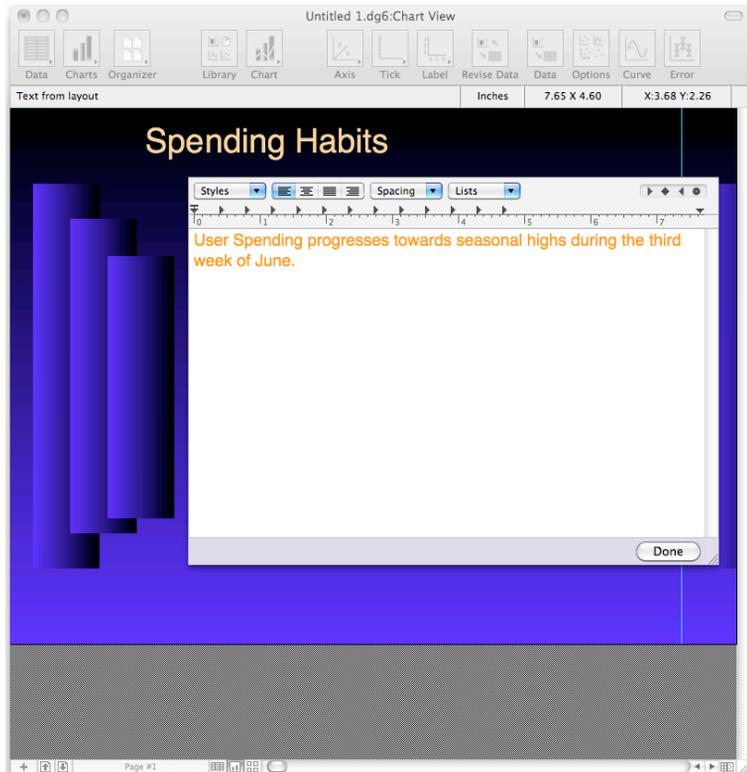


4. Click the heading “Spending Habits” to select it, and then adjust the size using the Text menu. Click and hold to drag the heading into the desired position on the page.
5. Select the chart and drag it to position it on the page in the desired location.

Changing the Text

Do the following to change the text in the chart.

1. Double-click anywhere in the text in the chart. Text editor becomes open.



2. Experiment with changing or adding to the text as follows:

- Click the text and add or delete letters or words.
- Press **return** at the end of the last line to add a new line.
- Change the hierarchical level of a line by clicking at the beginning of the line and pressing **tab**. This moves the bullet one level to the right. Press **shift+tab** to move it one level to the left.

If a line wraps to another line, select the chart, and click and drag a Chart object handle to stretch the chart so the words will all fit on one line.

4 Organizing Data in the Data View

This chapter explains how to work in the Data view to enter or import, edit, and organize data in preparation for plotting charts.

Before you begin working in the Data view, you should be acquainted with basic functions and terminology in DeltaGraph. Refer to Chapter 2, “Getting Started” for information.

This chapter covers the following:

- Overview of the Data view
- Working with Data pages
- Moving around in a Data page
- Entering and selecting data
- Editing data and formatting text
- Inserting/deleting rows and columns
- Changing column widths
- Transposing rows and columns
- Revising data and updating related charts
- Importing and exporting data
- Formatting data
- Sorting data
- Applying numerical formats to data with Formula Builder
- Applying mathematical functions to selected columns of data

- Printing Data pages

Overview of the Data View

You can access the Data view using any of the following methods:

- Click the Data View icon on the Command bar
- Click the Data View icon on the Navigational bar
- Choose **Data View** from the View menu

While in the Data view, click and hold the Data View icon to display a list of available Data pages in the current document and an option for creating a new page.

You enter or import data to create DeltaGraph charts in the Data view. A Data page accommodates up to 32,000 rows and 256 columns.

The screenshot shows a window titled "Business Charts: Data View". The spreadsheet has a "Label" column and columns A through F. The rows are numbered 1 through 11. The data is as follows:

Label	A	B	C	D	E	F
	United States	Mexico	Canada	United Kingdom	Japan	France
1	1987	120	92	96	58	26
2	1988	115	90	82	56	30
3	1989	93	75	61	42	36
4	1990	90	72	58	31	48
5	1991	80	70	69	25	52
6	1992	75	46	72	28	63
7	1993	70	45	48	27	30
8	1994	42	40	32	36	50
9	1995	41	42	48	46	53
10	1996	39	28	32	54	32
11	1997	38	20	10	50	20

Labels below the table: Row labels (1-11), Column labels (A-F), Data Cell.

To learn more about...	Refer to...
Setting the start-up preferences	“Setting General Defaults” in chapter 6

The Data Page

The Editing line at the top of the page (see figure on the previous page) displays the contents of the selected cell. This is where you enter and edit data. When you click in the Editing line, the mouse pointer changes to an I-beam cursor, indicating that you can enter data or make text changes.

There are two types of labels in a Data page: row labels, which are below the column marked “Label,” and column labels, which are to the right of the row marked “Label.” (See the figure on the previous page.)

You do not have to add labels in the Data page to create a chart, but they help you keep track of the data as you enter them, and they categorize and serialize data for chart axes and legends.

Which labels you need, and where you should position them on the Data page, depends on the type of chart you plan to create. For example, a Bar chart uses both row and column labels, a Paired Scatter chart uses no row labels and every other column label, a Table chart is all labels, and a Contour Fill chart does not use any labels at all.

You can place Axis titles for a chart anywhere on the Data page. When you click the Plot icon, the “Chart Setup” dialog box appears. You can choose a chart, then click the “Attributes” tab in the “Chart Setup” dialog box to select the cells you want to use as chart titles.

If you are uncertain of the best way to organize your data for the type of chart you want to plot, refer to Chapter 7, “Chart Types” for recommendations.

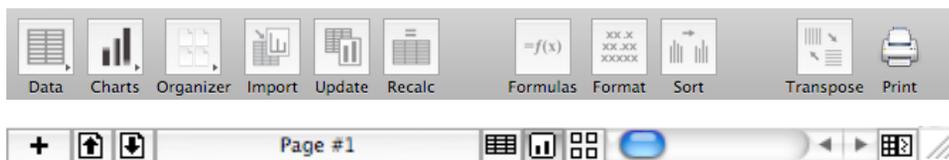
Once the data are entered, you use commands on the Edit, Text, and Data menus to format and manipulate them. You can also cut or copy and paste data between Data pages to combine information from different sources for experiments and projections. If you copy

selected data from several sources and paste them in a new page, for example, you can plot a chart to test a particular hypothesis.

To learn more about...	Refer to...
Naming and deleting pages	“Adding a Data Page” in chapter 4-5
Organizing data for certain charts	Chapter 8, “Chart Types”
Adding numerical formats to labels	“Formatting Text” in chapter 4-13
Selecting cells as chart titles	“Creating Chart Axis Titles” in chapter 9-8

The Command and Navigational Bars

The Command bar, located directly below the Menu bar, and the Navigational bar, located at the bottom of every DeltaGraph view, contain icons that provide short-cuts to menu commands.



All images of the Command bar in this manual show the extended version, which includes all available icons for the view. To change which icons are displayed right click on the bar, then drag what you want onto the command bar from the resulting dialog.

If the “Tool Tips” option is enabled in Preferences, you can move the mouse pointer over an icon on the Command bar or Navigational bar to display a description of the icon’s function (see Chapter 6, “Setting Preferences”).

In the Data view, the Navigational bar (located at the bottom of the view) has icons to perform the following functions:

- Add a new page

- Move a page up or down
- Select a page (opens the Go To dialog box)
- Select a different view
- View the Data and Chart views side-by-side (Split View)

Adding a Data Page

Although you can have an unlimited number of Data pages in the Data view, you can have only one Data page visible at a time. You can create a new Data page using any of the following methods:

1. Click the Add Page icon on the Navigational bar.
2. Click and hold the Data View icon on the Command bar, and select **New Page** from the pop-up menu.
3. Choose **Data View** from the View menu, and select **New Page** from the submenu. An empty data page appears, with a default name (Data #1, Data #2, etc.) displayed in the Page Selector.

Displaying a Data Page

You can view a list of available Data pages and switch between Data pages using either of the following methods.

1. Click the Page Selector icon on the Navigational bar. A list of available Data pages appears on the menu. Click a page on the menu to go to that page.
2. Click and hold the Data View icon on the Command bar. A list of available Data pages appears on the menu. Click a page on the menu to go to that page.

Naming a Data Page

To help you keep track of the Data pages in a document, a default name is assigned to each page as you create it (“Page #1,” “Page #2,” and so on). You can change the default name to help identify the

page's contents. To display the names of all the Data pages in a document, click and hold the Data view icon on the Command bar, or click and hold the Page Selector on the Navigational bar.

To change a Data page name, do the following:

1. Choose **Name Page** from the View menu. The “Page Title” dialog box appears with the current name selected.
2. Type a new name. The new name overwrites the current name.
3. Click **OK** to rename the Data page. The new name replaces the old name. You can see the new name in the Page Selector.

To exit the dialog box without making any changes, click **Cancel**.

Deleting a Data Page

To delete the active (open) Data page, do the following:

1. Select **Delete Page** from the View menu. A prompt appears asking to confirm your selection.
2. Click **OK** to delete the Data page. If you do not want to delete the page, click **Cancel**.

The page and all data on the page are deleted. You cannot delete a Data page associated with a currently plotted chart.

Moving Around in a Data Page

The horizontal and vertical scroll bars make it easy to navigate through large sets of data. The vertical scroll bar is calibrated to 1,000 rows so you can fine tune your scrolling position when working with average-size data sets. This means that when you drag to the bottom of the scroll bar, row 1,000 is displayed at the top of the page. If the page has more than 1,000 rows of data, the next number divisible by 100 is displayed at the top of the page.

The different ways of moving around in a Data page and selecting individual cells are outlined in the table below. When key combinations are indicated, press both keys simultaneously.

Key(s)	Movement
Left arrow	Moves the selection to the left one cell, or registers the entry on the Editing line then selects the cell to the left of the current selection.
Right arrow	Moves the selection to the right one cell, or registers the entry on the Editing line then selects the cell to the right of the current selection.
Up arrow	Moves the selection up one cell, or registers the entry on the Editing line then selects the cell above the current selection.
Down arrow	Moves the selection down one cell, or registers the entry on the Editing line then selects the cell below the current selection.
return	Same as Down arrow.
tab	Same as Right arrow.
shift+tab	Same as Left arrow.
shift+return	Same as Up arrow.
Mouse button click	Selects the cell under the mouse pointer, or registers the entry on the Editing line then selects the cell under the mouse pointer.

Entering Data

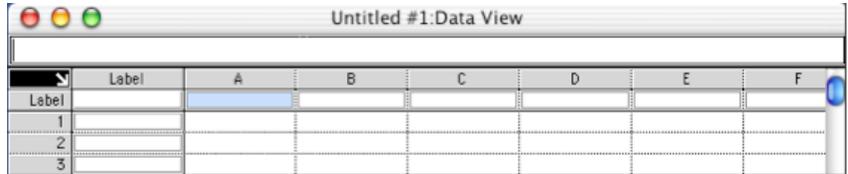
Before you begin entering data, be sure you know how to move around in a Data page (see “Moving Around in a Data Page” in chapter 4). And if you are uncertain of the best way to organize your data for the type of chart you want to plot, refer to Chapter 7, “Chart Types” for recommendations.

As you enter data you will notice that numbers are right-justified and letters are left-justified. If you create a label consisting of numbers that you want treated as letters, such as a date, enter a

quotation mark (") before the number, or choose **Alignment** from the Text menu and **Left** from the submenu.

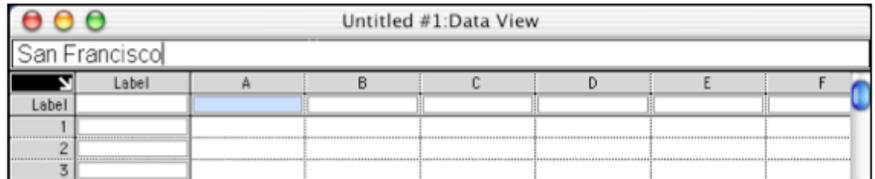
To enter data in a Data page, do the following:

1. Use the mouse or arrow keys to select the cell in which you want to enter data. If the cell is empty, the cursor blinks at the insertion point on the Editing line.



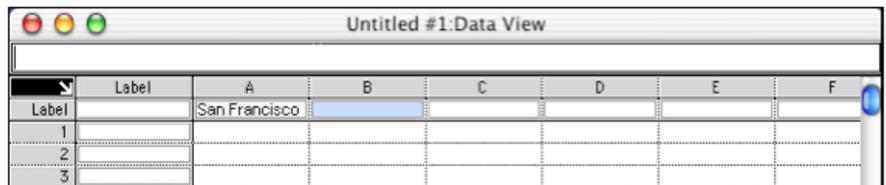
If something has been entered in the cell, the contents appear and are selected (highlighted) on the Editing line. If you type anything at this point, the current entry is overwritten. If you want to edit the current entry and not type over it, click on the Editing line to deselect the data before typing.

2. Type the data you want to enter on the Editing line.



If you make a mistake, press **Delete** to backspace delete characters, or click and drag to select the incorrect characters, then type the corrections.

3. Click in a cell, press **return**, or press an arrow key to select another data cell.



Everything you enter on the Editing line is placed in the data cell.

If the data you entered contains more characters than will fit in the current cell width, you can resize the columns to see more of the entry (see “Changing the Column Width” in chapter 4). You can also make columns narrower so that you can see more columns on the page.

4. Continue to select cells and enter information until all your data are entered.

To learn more about...	Refer to...
Resizing columns	“Changing the Column Width” in chapter 4
Setting date and time formats	“Formatting Text” in chapter 4
Organizing data for certain charts	Chapter 7, “Chart Types”
Reversing data in the Data page	“Transposing Data” in chapter 4

Selecting Data

Whether you plot a chart from the Data view or from the Chart view, you need to select the data that you want included in the chart. You can select all or only a portion of the data on a page. This allows you to plot more than one chart from a single Data page.

You can select data in a variety of ways. If you want data plotted in the same order that you entered it in the Data page, however, you must select them from the top down and from left to right.

The different methods of selecting data are described below.

Select a single cell

Click in the cell or use the arrow keys, **tab**, or **return** to select the desired cell. The contents of the selected cell appear, highlighted, on the Editing line.

Select a row of data

Click the number label at the left of the desired row. The entire row is selected and the row label, if any, appears on the Editing line.

Select a column of data

Click the letter label above the desired column. The entire column is selected and the column label, if any, appears on the Editing line.

Select more than one adjacent row or column

Click the first or last row or column in the group you want included, then drag to the last or first row or column you want included in the group of rows or columns.

Select a block of data

Click the first or last cell in the block you want to select, then hold down the **shift** key and click the cell in the opposite corner of the block. The contents of the first cell selected appear on the Editing line.

or...

Click in the first or last cell you want to select, and drag the mouse pointer diagonally down or up across the data you want to select. If all of the data you want to select are not visible in the page, continue dragging and the data are scrolled automatically. The contents of the first cell selected appear on the Editing line.

Select non contiguous cells or blocks of data

To select cells that are not next to each other, hold down the **command** key and click each cell, row, column, or data block that you

want to select. You can select groups or blocks of data to include in the noncontiguous group using any of the methods described above.

Select all data in the Data page

Click the Select All icon, choose **Select All** from the Edit menu, or press **cmd-A**. All

data in the Data page are selected, including the lowest right-hand cell that contains data. This method may also select empty cells, which is not desirable when plotting.

Select columns in a different order for plotting

To plot data in a different order than you entered it in the Data page, hold down the **command** key while selecting columns in the order that you want the data plotted. If you want to select rows to be plotted in a different order, select **Series** on the Data menu, and select **In Rows** from the submenu.

Editing Data

You can cut, copy, delete, replace, or otherwise modify the words or numbers you have entered or imported in data cells, and you can cut, copy, clear, or paste rows, columns, or blocks of data in the Data page. You can also add empty rows or columns to the Data page.

To edit the data in a cell, use the mouse or arrow keys to select the cell in which you want to edit the data. The contents of the cell appear and are selected (high- lighted) on the Editing line. To cut, copy, paste, or clear all of the data in a cell, leave all of the data on the Editing line selected, or select only the data you want to cut, copy, paste, or clear.

To cut, copy, paste, or clear the data in any number of selected cells, rows, or columns, select the cells, rows, columns, or block of data as described in “Selecting Data” above.

Then do any of the following to edit the data:

Overwrite the current data on the Editing line

Do not click on the Editing line; type the new data over the highlighted entry. Press **return** or an arrow key to accept the new data.

Edit the current entry and not overwrite it

Click on the Editing line to deselect the data before typing. Press **Delete** to back- space delete characters, or click and drag to select the incorrect characters, then type the correction. Press **return** or an arrow key to accept the change.

Cut the data in the selected cell(s), row(s), column(s), or block

“Cut” data if you want to remove them and paste them elsewhere. Open the Edit menu and select **Cut**, or press **cmd-X**. Use “Paste” to paste it in another location on the Data page or in another Data page.

Clear the data from the selected cell(s), row(s), or column(s)

“Clear” data if you want to delete them permanently. Open the Edit menu and select **Clear**. (You will not be able to paste the data back in a Data page as you cannot “Undo” the action.)

Copy the data in the selected cell(s), row(s), column(s), or block

Open the Edit menu and select **Copy**, or press **cmd-C**.

Paste the data that you cut or copied

To paste the data that you cut or copied into another cell(s), row(s), column(s), or block on the same or another Data page, do one of the following. Any existing data is overwritten.

- Select (highlight) the cell(s), row(s), column(s), or block into which you want to paste the data, open the Edit menu and select **Paste**, or press **cmd-V**.
- Click the cell in the top, left corner of the area in which you want to paste it, open the Edit menu and select **Paste**, or press **cmd-V**. A block of data is pasted starting with the selected cell and

moving to the right and down.

You can add or delete rows and columns in the data page, as follows:

Insert an empty row

Select the row above which you want to add a row, then choose **Insert Rows** from the Data menu. To insert more than one row, select the number of rows that you want to insert. The new row(s) are inserted just above the selected row(s).

Insert an empty column

Select the column next to which you want to add a column, then choose **Insert Columns** from the Data menu. To insert more than one column, select the number of columns that you want to insert. The new column(s) are inserted to the left of the selected column(s).

Delete rows

Select the row or rows you want to delete, then choose **Delete Rows** from the Data menu. If an existing chart uses the data in the row(s), a prompt asks you to confirm the deletion. Click **OK** to delete the row(s).

Delete columns

Select the column or columns you want to delete, then choose **Delete Columns** from the Data menu. If an existing chart uses the data in the column(s), a prompt asks you to confirm the deletion. Click **OK** to delete the column(s).

To learn more about...	Refer to...
Selecting cells, rows, and columns	“Selecting Data” in chapter 4

Formatting Text

Select **Font**, **Style**, or **Color** on the Text menu. Or select text on the page, and select **Alignment** on the Text menu to change the alignment of the selected text (only “Left,” “Center,” and “Right” apply to text on the Data page).

You can also select **Set All** on the Text menu, to open a “Text Format” dialog box and make all attribute changes to the text at the same time.

Changes to text on the Data page affect the look of the text in the Data view only; the plotted chart is not affected.

Entering Special Text Characters

You can add superscript and subscript text or enter line breaks in a plotted chart by entering “Special Text” characters in the text in the Data page. The modifications appear only in the Chart view.

NOTE

The “Superscript” and “Subscript” commands on the Text menu, Style submenu, and the Style icon menu can be applied only in the Chart view.

To add a Special Text character, do the following:

1. Click the data cell that contains the text you want to change .
2. In the Editing line, click to place the cursor in front of the text you want to make superscript, subscript, or where you want to place a line break.
3. Choose **Special Text** from the Text menu, and select **Insert Superscript**, **Insert Subscript**, or **Insert Linebreak** from the submenu, or type in the special character sequence displayed on the menu and shown below.

Superscript	\+
Subscript	\-
Line Break	\r

All text that follows the superscript or subscript marker will be changed. All text that follows the line break marker will appear

on a second line.

4. If you want normal text to follow the superscript or subscript text, place the cursor after the special text, and select **Insert Normal** from the Text menu, Special Text submenu to make all text following the cursor normal.

Normal \=

Example: These are \+ special text
\= characters. Appears as: These are
special text characters.

Changing the Column Width

If you are working with especially long or short data entries, you can adjust the column width to a more appropriate size. To change the width of a column, do the following:

1. Move the mouse pointer into the gray row at the top of the table and center it on the line that divides two columns (to the right of the column you want to resize). The pointer changes to .
2. Click and drag the column line to a new position. Only the column to the left of the line you moved is resized.

Transposing Data

Click the Transpose icon on the Command bar, or choose **Transpose** from the Data menu to switch the physical position of rows and columns in a Data page and the axes in any charts plotted from the data. “Transpose” affects *all data on the page regardless of what is selected*. If you try to transpose data that has already been plotted, a prompt warns you that data may be lost or changed and gives you a chance to cancel the command.

If you already have charts plotted from the data, click the Series icon on the Command bar, or select **Series** on the Data menu, to switch the axes in any new charts you plot without changing plotted charts or the data from which they are plotted.

Select **In Rows** to switch the axes and plot the series in rows. Select

In Column to plot the series in columns. You will not see the switch in the Data view, only when you plot the chart.

NOTE  If you switch the series, all charts you plot from Data pages in all documents will be switched until you switch it back or exit DeltaGraph.

Revising Data and Updating Charts

If you revise, delete, or add data in a Data page, you can update one or more of the charts plotted from the data without replotting the charts.

To update *all* the charts in the current DeltaGraph document, make the changes in the Data pages, then click the Update icon on the Command bar, select **Update** from the Data menu, or press **cmd-=**. All charts for which data have been changed are updated.

To update *one* particular chart, select the chart in the Chart view, then click the Revise Data icon on the Command bar, choose **Revise Data** from the Chart menu, or press **cmd-,** (comma). The originating Data page is opened for you to make changes.

Use “Update” if you are changing, but not adding to, the existing data. Since only the selected block of data is used to plot the chart, you must use “Revise Data” to remove or add data to the chart.

NOTE  If you selected the “Always Plot All Data” option in the Chart Gallery when you plotted your chart, all data, no matter what was added, removed, or selected, are updated.

To learn more about...	Refer to...
Updating all related charts	“Updating a Chart” in chapter 8
Revising one chart only	“Revising Chart Data” in chapter 8

Importing Data

You can import data into a new Data page. Several possible formats are available. To bring data from another application into a Data page, click the Import icon on the Command bar, or choose **Import** from the File menu. You can import any of the following data formats:

Tab delimited

ASCII or UTF8 file, each field separated by a tab

Comma delimited

ASCII or UTF8 file, each field separated by a comma

Space delimited

ASCII or UTF8 file, each field separated by a space

Custom delimited

ASCII or UTF8 file, displays a dialog box so you can enter a custom string of separators for the imported data. You can enter an ASCII code containing up to three characters.

Multi-space delimited

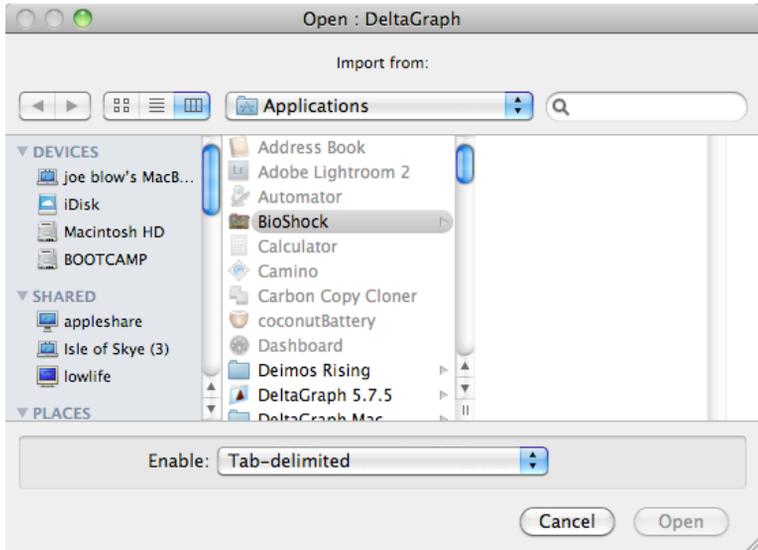
ASCII or UTF8 file, spaces are interpreted as separate fields. Most applications create tab-delimited text files. To determine which format a file contains, use a word processing program to open the data file and look at how each field is separated.

To import data from another application, do the following:

1. Open a new or existing Data page.
2. Click in the cell where you want your imported data to begin. This applies only if you have specified the option in “Preferences” (see “Setting Export / Import / Clipboard Defaults” in chapter 6) to

import to a selected cell

3. Click the Import icon on the Command bar, or choose **Import** from the File menu. An “Open” dialog box is displayed.



4. Click the “Show” pop-up menu, and select the format of the file you want to import. Files not compatible with the selected format are dimmed or not displayed.
5. Click the “From” pop-up menu, and select the folder in which the file you want to import is located.
6. Double-click the name of the file you want to import, or select the file and click **Open**.

By default, if the first row or column of the imported data contains text, the data are placed so the text begins in the “Label” row and column. If the first column of the imported data is numerical, the data are placed beginning in column A, row 1.

If you want to change the default so that imported data are placed beginning in a selected cell in the Data page, change the settings in Preferences (see “Setting Export/Import/Clipboard Defaults” in chapter 6). You might want to do this if, for example, you want to use dates as category and series labels.

After importing data, you might need to use the “Cut” and “Paste”

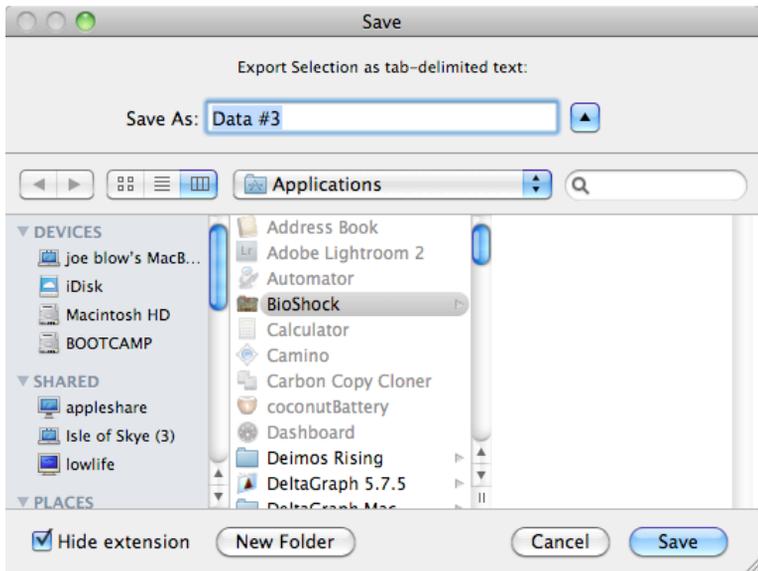
commands on the Edit menu to rearrange column and row labels (see “Editing Data” in chapter 4).

To learn more about...	Refer to...
Importing Data	“Importing Data” in chapter 4
Setting “Import Location” options	“Setting Export/Import/Clipboard Defaults” in chapter 6

Exporting Data

Use the Export command to compile the data from a Data page into a tab-delimited file that can be imported into another application. The entire contents of the active Data page (regardless of what is selected) is included in the export file. To export data from DeltaGraph, do the following:

1. Open the Data page that contains the data you want to export.
2. Choose **Export** from the File menu, and the “Save” dialog box is displayed.



“Tab-delimited text” is the only export type currently available.

3. A default name consisting of the current page name and a “.txt” extension is entered in the Save As text box. If you want to rename the file, type over the default name.
4. Select the drive and folder in which you want to save the import file from the “Where” pop-up.
5. Click **Save**. The data are saved to the specified folder and can be imported into any application that reads tab-delimited text files.

Formatting Data

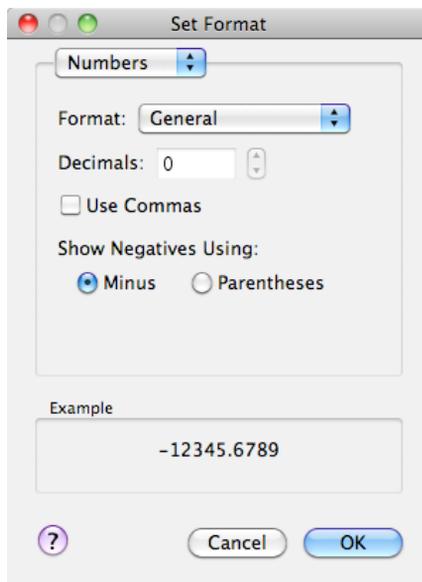
Use the Format command to reformat numerical data as times, dates, currency, percentages, or scientific values. When you format row and/or column labels in a Data page, the Category and/or Series axis labels of related charts are formatted automatically. Formatting of other data in a Data page appears only in the Data page.

In the Data view, you can select and format row labels, column labels, and data. (In the Chart view you can format Value axis labels only with the “Format” command on the Chart menu.) When a chart is first plotted, the format of the data in the first data cell in each

column determines the format of the chart labels for the axis corresponding to that column. If you need to change the format of the chart after it is plotted, you must change it in the Chart view. Once the chart is plotted, changing the format in the Data page will have no effect on the chart.

To reformat numerical data as currency, percentages, or scientific values, do the following:

1. Select the data you want to reformat. Refer to “Selecting Data” in chapter 4 for information on selecting data.
2. Choose **Format** from the Data menu, or press **cmd-F**. The “Set Format” dialog box appears.



3. Click the pop-up at the top of the dialog box and select **Numbers**.
4. Select from the following options. An example of each format you select is displayed in the “Example” box at the bottom of the dialog box.

Format

Click to open a pop-up menu, and choose one of the following formats to apply to the selected data.

General

Shows numbers as you entered or imported them into the Data page. This is the default format.

Fixed

Adds a fixed number of decimal places as specified in the “Decimals” option. For example, if you enter **1** in the “Decimals” text box, 15 becomes 15.0.

Currency

Places a dollar sign (\$) before the number. For example, 15 becomes \$15.

Percent

Adds two zeros and a percent sign (%) after the number. For example, 15 becomes 1500% and 0.15 becomes 15%.

Scientific (E)

Shows numbers in scientific notation. For example, 15 (with 1 in the “Decimals” text box) becomes 1.5E+1.

Scientific (10)

Shows numbers in scientific notation with the exponents displayed as superscripts. For example, 15 (with 1 in the “Decimals” text box) becomes $1.5 \times 10^{+1}$ ($1.5 \cdot 10^1$ in the Chart view).

Engineering (E)

Shows numbers in scientific notation with powers of 10 automatically changed to multiples of 3. For example, 15 (with 1 in the “Decimals” text box) changes to 15.0E+0.

Engineering (10)

Shows numbers in scientific notation with powers of 10 automatically changed to multiples of 3 and the exponents displayed as superscripts. For example, 15 (with 1 in the “Decimals” text box) becomes $1.5 \times 10^{+1}$ ($1.5 \cdot 10^1$ in the Chart view).

Decimals

Sets the number of decimal places from 0 to 15. Not available when “General” is the selected format.

Use Commas

Inserts a comma every three places to the left of the decimal point.

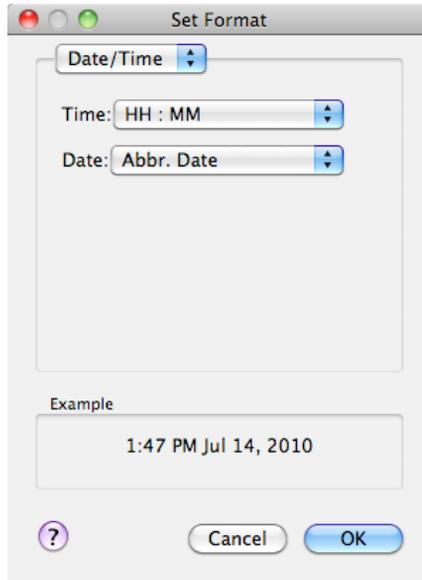
Show Negative Using

Select whether to show negative values with a minus sign or parentheses.

5. Click **OK** to implement the changes. To exit the dialog box without making any changes, click **Cancel**.

To reformat numerical data as times and/or dates, do the following:

1. Select the data you want to reformat. Refer to “Selecting Data” in chapter 4 for information on selecting data.
2. Click the Format icon on the Command bar, choose **Format** from the Data menu, or press **cmd-F**. The “Set Format” dialog box appears.
3. Click the pop-up at the top of the dialog box and select **Date/Time**.



4. Select from the following options. An example of the resulting format is shown in the “Example” box at the bottom of the dialog box.

Time

Click to display a pop-up menu, and choose one of the following time formats for the selected data.

Format	Example
No Time	Displays date only
MM:SS	59:30
HH:MM	12:59 PM
HH:MM:SS	12:59:30 PM
24HH:MM	24:59
24HH:MM:SS	24:59:30

Date

Click to display a pop-up menu, and choose one of the following date formats for the selected data.

Format	Example
No Date	Displays time only
Short Date	4/23/2003
Abbr. Date	Apr 23, 2003
Abbr. Date With Day	Fri Apr 23, 2003
Long Date	April 23, 2003
Long Date With Day	Friday April 23, 2003
Day-Month-Year	23-Apr-2003
Day-Month	23-Apr
Month-Year	Apr-2003
Year	2003
Month	April
Abbr. Month	Apr
Weekday	Friday
Abbr. Weekday	Fri

5. Click **OK** to implement the changes. To exit the dialog box without making any changes, click **Cancel**.

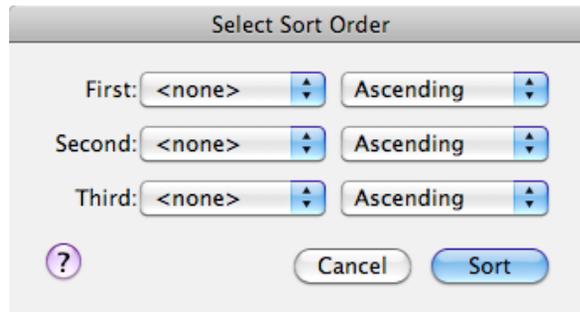
Sorting Data

You can change the order in which the data are displayed in selected columns. You cannot sort column labels in the first row (“Label”). You can sort numbers or text (alphabetically).

To sort selected data, do the following:

1. Select the column or columns of data you want to sort.
2. Click the Sort icon on the Command bar, or choose **Sort** from the Data menu.

The following dialog box appears.



3. Select from the following options:

First

Click to display a pop-up menu of the letter labels of the selected column(s) and choose the column you want sorted first. Then click the pop-up to the right and choose whether you want the data sorted in **Ascending** or **Descending** order. “Ascending” sorts from lowest to highest, top to bottom. “Descending” sorts from highest to lowest, top to bottom.

Second

If you selected more than one column, choose the column you want sorted secondary to the first column. Then click the pop-up to the right and choose whether you want the data sorted in **Ascending** or **Descending** order.

Third

If you selected more than one column, choose the column you want sorted tertiary to the second column. Then click the pop-up to the right and choose whether you want the data sorted in **Ascending** or **Descending** order.

If you choose to sort second and third column, the data in the column selected in “First” are sorted first, the column selected in “Second” is sorted relative to the data in “First,” and the column selected in “Third” is sorted relative to the data in “Second.”

For example, if the data look like the following before it is sorted:

A	B
15	26
10	37
11	36
14	68
11	45
11	22

If you select both columns, and choose to sort column A “first” in ascending order, the results are as follows:

A	B
10	37
11	45
11	36
11	22
14	68
15	26

The numbers in column A are sorted numerically, but the numbers in column B stay in the same rows relative to column A that they were in before sorting. Note that the numbers in column B next to the “11”s in column A are not sorted.

If you choose to sort column B “second” in ascending order, the results are as follows:

A	B
10	37
11	22
11	36
11	45
14	68
15	26

The numbers in column B are now sorted relative to the numbers in column A. Note that the numbers in column B next to the “11”s in column A are sorted in ascending order.

4. Click **Sort** to reorder the columns as specified. To exit the dialog box without making any changes, click **Cancel**.

If you want to sort each column individually and not relative to each other, select them one at a time, then select the column label from the “First” pop-up, select **Ascending** or **Descending**, and click **Sort** for each column.

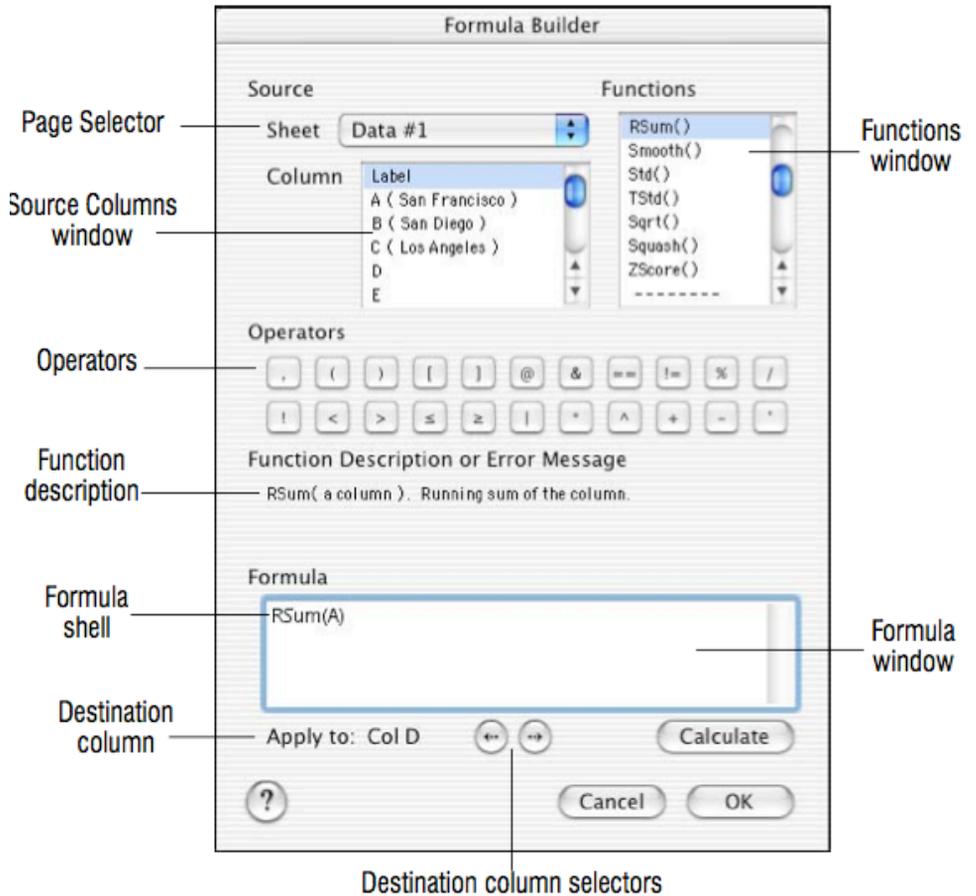
Building Formulas

Use the Formula Builder command to perform calculations on a selected column of data, and fill a single cell or an entire column with values, times, and/or dates.

To create a formula, do the following:

1. Open the Data page you want to use as the destination page.
2. Select a destination column for the results of the calculation. **Select an empty or unneeded column because calculations overwrite any existing data.** Refer to “Selecting Data” in chapter 4 for information on selecting a column.

- Click the Formula Builder icon on the Command bar, double-click the destination column's letter label, or choose **Formula Builder** from the Data menu. The "Formula Builder" dialog box appears.



The label of the destination column appears under the Formula window at the bottom-left of the dialog box ("Apply to:"). You can choose a different destination column by clicking the right or left arrow buttons next to the column label.

NOTE  Refer to the table in chapter 4 for information on each of the elements in the dialog box.

4. Scroll through the list of functions in the Functions window and double-click the function you want to include in the formula. The appropriate formula shell appears in the Formula window with the cursor between the parentheses. The function description appears directly above it.

You can also type the function name in the Formula window. If you need to enter more than one function, separate consecutive functions with an appropriate operator. Click the operator button, or type the operator in the formula.

In the example above, the Function Description indicates that a column reference is required to complete the formula for the selected function, **RSum**.

You create a formula using a combination of source column references and operators.

5. In the Source Columns window, double-click the column on which you want the function to be performed, or type the column's letter label (A, B, C, etc.) between the parentheses in the Formula window.

To include a source column that is not on the same page as the destination column, select the new page from the "Page Selector" pop-up menu, then double-click the column in the Source Columns window. The page name and column label are entered. To enter an alternate page's column manually in the Formula window, enter the page name and column label in the following format:

Page "Name":D

If you want to perform the function on more than one source column, separate the consecutive columns with a comma. Click the comma operator button, or type the comma in the formula.

In the example above, a running sum will be performed on column A, and the calculations will be placed in column D.

6. Enter any additional information or operators for the formula as stated in the function description. Refer to "Formula Builder Functions" in chapter 4 for information on the functions available with descriptions and guidelines for completing the formula for each function.

7. Click **Calculate** after you have entered the formula.

If you made a mistake filling in the formula, a warning message is displayed that explains the problem or what you need to do before the calculation can be completed.

If the formula is correct, the results of the calculations appear in the destination column. (If you cannot see the column, move the dialog box out of the way by clicking on the Title bar and dragging it.)

8. Click **OK** to save the calculations and return to the Data page. To exit the dialog box without entering the calculations on the Data page, click **Cancel**.

After the calculations are entered in the Data page, you can include the column of calculated data in a plotted chart, you can edit the data (see “Editing Data” in chapter 4), and you can perform another calculation on them.

If you select a column containing data that were created by a calculation function, the function used to perform the calculation is selected when you open the “Formula Builder” dialog box.

Update Calculations

Function calculations are based on the initial value of the source data. If you change the source data, the calculated data do not change automatically. If you want to update the calculations, click the Recalculate icon on the Command bar, or select **Recalculate** from the Data menu.

Update Plotted Charts

To update associated charts after adding one or more columns of calculated data to a Data page, click the Revise Data icon on the Command bar, or choose **Revise Data** from the Chart menu. If you used the “Recalculate” command to update numbers, associated charts are updated automatically if “Update Charts Automatically” is enabled in “Preferences” (see “Setting Chart View Defaults” in chapter 6).

Formula Builder Dialog Box Elements

Formula Builder Dialog Box Elements	
Element	Description
Destination column	The label of the column selected to receive the results of the calculation. To change the destination column in the dialog box, click the destination column selectors.
Destination column selectors	Click the left or right arrow buttons to change the destination column for the calculation results. You can choose any column on the original destination page.
Formula window	Displays the function's formula as you create it. You can also type in all or parts of the formula.
Formula shell	A template for pre-programmed formula calculations.
Function description	A description of the information required to complete a function's formula that is displayed when you double-click a function in the Functions window. Also, error messages are displayed if errors occur during calculation.

Formula Builder Dialog Box Elements (continued)	
Element	Description
Functions window	List of the functions you can apply automatically. Double-click a function to select it. The function name and a formula shell appear in the Formula window, and a brief description of what is required to complete the formula appears just above the window.
Operators	<p>Used to enter constants. You can click an operator button or type in the Formula window to include operators in the formula. Following are descriptions of operators that may not be self-explanatory.</p> <p>#True To enter manually, type 1.</p> <p>#False To enter manually, type 0.</p> <p>[] Takes the row number from the annotated column; for example, B[4] takes the entry from the fourth row of column B.</p> <p>@' and ' (Fill function only) Enters a date or time. @' precedes the time/date, and ' follows it, as in @'July 4, 1992', @'7/4/93', or @'10:29:59'.</p> <p>! Logical inversion (changes true to false and vice versa).</p> <p>% Divides by 100.</p> <p># Hash constants. Used to identify a name as a constant (e.g., #True).</p> <p>^ Signifies exponentiation in the formulas as binary operators.</p>
Page selector	Click to select a page(s) from which to select a source column for the calculations. You can use columns from different pages in the same formula and set up functions for more than one page at a

	time.
Source Columns window	Lists all the column labels from the selected page. Double-click the source column for the calculations to enter the column label in the formula.

Formula Builder Functions

The following table lists all the functions you can apply automatically in the Formula Builder. Each description includes a brief explanation of what each function does, the description from the dialog box, and sample guidelines for completing the function formula. Items in brackets [] indicate an optional entry for the formula.

Formula Builder Functions	
Function	Description
Abs	Takes the absolute value of each number in the source column and writes it into the corresponding cell of the destination column. The absolute value is the number without its sign; for example, the absolute value of -9 is 9. Examples: Abs(a), Abs(-9)
Avg	Writes the average of each row of numbers for two or more source columns into the corresponding cell in the destination column. Separate each column in the formula with a comma. Avg(two or more columns or numbers) Examples: Avg(a,b), Avg(a,b,c), Avg(5,14)
TAvg	Writes the average of the <i>total</i> of all the cells in the source column(s) into the first cell of the destination column. Separate each column in the formula with a comma. TAvg(one or more columns or numbers) Examples: TAv(a,b), TAv(a,b,c), TAv(3,6,14)
	Writes the difference between each source value and the one that follows it into the corresponding cell of the destination column.

Diff	Diff(a column) Examples: Diff(a), Diff(b)
Exp	Writes the transcendental constant e (2.71828...) to the power of each value in the source column into the corresponding cell in the destination column. Exp(a number or column) Examples: Exp(9), Exp(a)

Formula Builder Functions (continued)	
Function	Description
Fill	Generates and writes data starting with the value, time, or date specified, incrementing by the value specified, to fill the number of cells specified in the destination column. Fill(start, increment, count [, units]) Examples: Fill(0,5,10), Fill(0,100,10,#Rand), Fill(@'Oct 19, 93',1,10,#Wk), Fill(@'Oct 31, 93',2,10,#Mon)
Filter	Evaluates values in the source column. If the values fall within the parameters specified, the corresponding value is output based on the second parameter. Filter(logical exp, true values [, false values]) Examples: Filter(a<5,a), Filter(a≥10,b)

Freq	<p>Counts the number of times each value appears in the source column, then lists the frequency of each source value in the destination column. Bound specs are used to define the bin range and can be defined in a separate column on the Data page.</p> <p>Bins compare the source column to the defined bound spec and out-put the number of values that falls within each bin. Rounding flags are: 0=< the number found in the bin (false), and 1=\leq the number found in the bin (true). If bound specs are used, the rounding flag is “<” otherwise it is = Freq(a column [, bound spec [, rounding flag]]).</p> <p>Freq(a column [, bound spec [, rounding flag]]) Examples: Freq(a), Freq(a, b), Freq(a,b,1)</p>
FreqL	<p>Labels the bins used in a Freq function and places them in the destination column. If bound specs are not used, rounding flags are not displayed. The FreqL formula must be exactly the same as the Freq formula. Refer to Freq (above) for rounding flag information.</p> <p>FreqL(a column [, bound spec [, rounding flag]]) Examples: FreqL(a), FreqL(a, b), FreqL(a,b,1)</p>
Ln	<p>Writes the natural logarithm of each value in the source column into the corresponding cell in the destination column.</p> <p>Ln(a number or column) Examples: Ln(9), Ln(a)</p>

Formula Builder Functions (continued)	
Function	Description
Log	<p>Writes the base 10 logarithm of each value in the source column into the corresponding cell in the destination column.</p> <p>Log(a number or column) Examples: Log(9), Log(a)</p>

Median	<p>Writes the median of each row of numbers for two or more source columns into the corresponding cell in the destination column. Separate each column in the formula with a comma.</p> <p>Median(two or more columns or numbers)</p> <p>Examples: Median(a,b), Median(a,b,c), Median(5,14)</p>
TMedian	<p>Writes the median of the <i>total</i> of all the cells in the source column(s) into the first cell of the destination column. Separate each column in the formula with a comma.</p> <p>TMedian(one or more columns or numbers)</p> <p>Examples: TMedian(b), TMedian(a,b), TMedian(a,b,c)</p>
Mn	<p>Writes the minimum value of a column in the destination column. Mn(a column of numbers)</p> <p>Examples: Mn(a)</p>
Mod	<p>Writes the remainder of the divide operation of the two parameters in the source column into the corresponding cell in the destination column.</p> <p>Mod(a column, number or column) Examples: Mod(a,9), Mod(a,b), etc.</p>
Mx	<p>Writes the maximum value of a column in the destination column. Mx(a column of numbers)</p> <p>Examples: Mx(a)</p>
RSum	<p>Creates a running sum of all the values in the source column, then writes the sum of each value and all values that precede it in the column into the corresponding cell of the destination column.</p> <p>RSum(a column)</p> <p>Examples: RSum(a), RSum(b)</p>

Formula Builder Functions (continued)	
Function	Description
Smooth	<p>Adds the current cell to a user-specified number of cells that follow it and writes the average into the corresponding cell of the destination column.</p> <p>Smooth(a column, smooth width) Examples: Smooth(a, 7)</p>
Std	<p>Writes the standard deviation for each row in the source column(s) into the corresponding cell in the destination column. Separate each column in the formula with a comma.</p> <p>Std(two or more columns or numbers) Examples: Std(a,b), Std(a,b,c)</p>
TStd	<p>Writes the <i>total</i> standard deviation of all the cells in the source column(s) into the first cell of the destination column. Separate each column in the formula with a comma.</p> <p>TStd(one or more columns or numbers) Examples: TStd(b), TStd(a,b), TStd(a,b,c)</p>
Sqrt	<p>Writes the square root of each value in the source column into the corresponding cell in the destination column.</p> <p>Sqrt(a number or column) Examples: Sqrt(9), Sqrt(a)</p>
Squash	<p>Compresses all entries in the column by removing all blank data cells. Enter the column you want to compress.</p> <p>Squash(a column) Examples: Squash(c), Squash(a)</p>
	<p>Determines the mean of all values in the source column, calculates the deviation of each source value from the mean, and writes the difference as a number of standard deviation units into the corresponding cell in the</p>

ZScore	<p>destination column.</p> <p>ZScore(a column)</p> <p>Examples: ZScore(a), ZScore(b)</p>
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Formula Builder Functions (continued)	
Function	Description
Trans	<p>Transcendental functions. All transcendentals are calculated in radians, not degrees. Enters the function of each value in the source column in the corresponding cell in the destination column.</p> <p>Transcendentals: sin, asin, sinh, asinh, cos, acos, cosh, acosh, tan, atan, tanh, atanh, cot, acot, coth, acoth, csc, acsc, csch, acsch, sec, asec, sech, asech</p> <p><i>Trans name</i>(a number or column) Examples: sin(9), cos(a), acos(b)</p>
Others	<p>You can also create other mathematical formulas for addition, subtraction, multiplication, division, or a combination.</p> <p>Examples: a+b, a+b+c, a+b-c, a/c, a+b*c</p> <p>To take the third, fourth, or nth root of a column or number, enter $A^{(1/n)}$ in the Formula window (with "n" being the power).</p> <p>Examples: $A^{(1/3)}$ for cube root, $A^{(1/8)}$ for 8th root</p>

Creating a Histogram

You can create histograms in DeltaGraph using either of the following two methods:

1. Enter and select a column of histogram data in the Data view and plot a Histogram chart from the “Chart Setup” dialog box. Refer to “Histogram Chart” in chapter 7 for information.

or...

2. Bin the data manually as follows:
 - Perform a FreqL function on source column(s) (to set up labels for the chart)
 - Perform a Freq function on the same source column(s) using a different destination column
 - Plot a column chart using both destination columns.

Refer to “Creating a Histogram” in chapter 9 for more information.

Printing a Data Page

To print a Data page, click the Print icon on the Command bar, or choose **Print** from the Data view. A dialog box is displayed to make the necessary selections. In addition to the usual “Print” dialog box options, you can specify whether you want Data page grid lines and/or row and column labels to print or not. All data on the current page are printed regardless of what is selected.

To learn more about...	Refer to...
Printing from the Chart view	Chapter 15, “Printing in Chart View”

5 Creating Smart Layouts and Backgrounds

This chapter explains how to create and use Smart Layouts and backgrounds. A Smart Layout, which consists mainly of placeholders for charts, titles, text, graphics, and bullets, serves as a template for assembling and arranging elements (charts, titles, text, graphics, etc.) in a Chart page. A background, which can consist of any combination of graphics, text, colors, and patterns, is a backdrop behind all of the elements in a page or layout. Layouts and backgrounds make it easy to standardize the appearance of your Chart pages to enhance their visual appeal.

This chapter covers the following:

- An overview of Smart Layouts, backgrounds, and Layout Sets
- Loading and saving Layout Sets
- Creating a Master Background
- Creating and applying Exception Backgrounds
- Creating and applying Smart Layouts
- Using a layout to start creating a presentation
- Filling Smart Layout placeholders

To learn more about...	Refer to...
Page orientation and size	“Setting Up the Document” in chapter 16

Overview of Smart Layouts and Backgrounds

A Smart Layout is applied to Chart pages on a page-by-page basis. A background is applied to Chart pages or layouts. You can save your backgrounds and layouts to use again and again.

When applied to a Chart page, a Smart Layout causes all elements on the page, whether already there or added later, to align and size themselves according to the attributes of their corresponding placeholder. You can also assign color schemes, type attributes, and other properties to placeholders, which the page elements take on automatically when the layout is applied to a page. Smart Layouts can be stored with the active document or saved as named sets so they can be used with any DeltaGraph document.

There are two types of backgrounds: the Master Background and Exception Backgrounds. DeltaGraph automatically applies the Master Background to every Chart page in a document, though you can replace the Master Background with one of the two possible types of Exception Backgrounds: a Layout Background, which you assign to a specific layout and DeltaGraph applies to every Chart page that uses that layout, or a Page Background, which you assign to a particular Chart page. You can have only one Master Background for each document but an unlimited number of Exception Backgrounds.

You must be in the Layout mode to create and edit your layouts and backgrounds. You can access the Layout mode from any view by choosing the Layout Editor from the View menu. This displays a submenu so you can create a new layout, apply an existing layout to a Chart page, load or save a Layout Set, or display the Master Background to edit.

The Layout Mode contains a set of tools and palettes and two windows—the Layout window and the Background window. Because layouts and backgrounds are often used in tandem, you will probably switch frequently between the two windows, adjusting layout placeholders and background elements until you achieve the look you want. You can create numerous pages in each window, but you can have only one page and one window open at a time.

DeltaGraph includes a collection of pre-formatted Smart

Layouts to get you started. These are stored in the “Layouts” folder included with DeltaGraph.

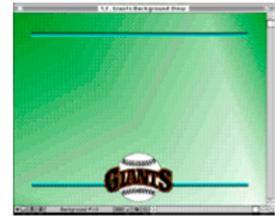
Applying a Smart Layout to a Chart page is as easy as dragging an icon for the preferred layout from the Layout Set window into an open Chart page. Empty place- holders contain instructions for filling.



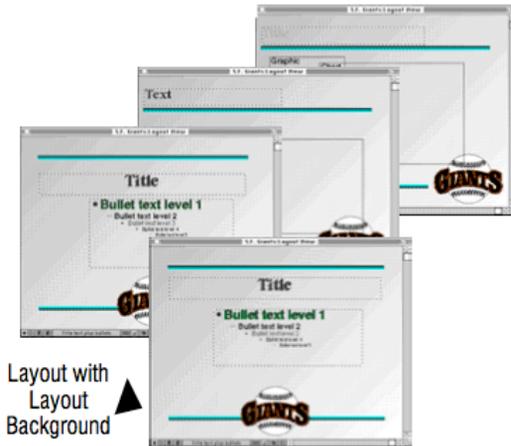
The Master Background is applied automatically to all layouts and Chart pages; you can replace it with an Exception background.



The Layout Background is an Exception Background applied to a layout.



The Page Background is an Exception Background applied to a single Chart page.



Layout with Layout Background



Chart page with Page Background

The layouts are stored in a “Layout Set” and can be dragged into a Chart page for consistent presentations.

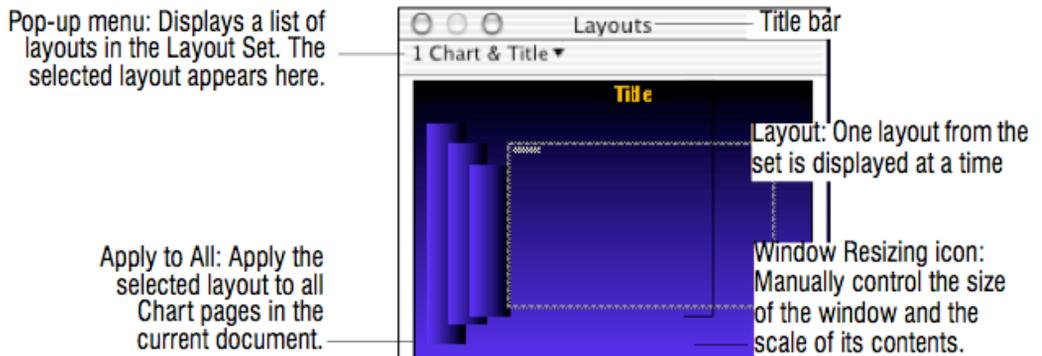
The Chart page objects can be positioned, sized, and assigned other attributes even when a layout is applied.

To learn more about...	Refer to...
Color schemes	“Color Schemes” in chapter 9

Layout Sets

Every Smart Layout you create while working in a document is saved as a “set” with that document and can be displayed in the document’s Layout Set window. The Layout Set can be used with the originating document only, unless it is saved as a named Layout Set, then it can be loaded into any DeltaGraph document. Any Master or Exception Backgrounds, or color schemes in the document, are also saved with the Layout Set.

The Layout Set window has all the standard window characteristics for Macintosh applications. In addition, the window contains a menu listing all the layouts loaded in the set, and it displays a scaled-down version of the selected layout. There is also an option that allows you to apply the selected layout to all the Chart pages in the current document. The Layout Set window reflects the layout that is applied to the currently active Chart page. Whenever you resize the Layout Set window, the displayed layout fits the dimensions of the window.



A document’s Layout Set can be displayed in the Layout Set window in the Layout mode by choosing **Layouts** from the View menu and selecting **Apply Layouts** from the submenu.

A Layout Set can be displayed in the Chart view or the Thumbnail mode of the Organizer view by clicking the Layouts icon on the Command bar or by choosing **Apply Layouts** from the Page menu. You can also choose **Layouts** from the View menu and select **Apply Layouts** from the submenu.

Each DeltaGraph document has its own Layout Set. Whether it is empty or contains multiple Layout Sets loaded from other files, this

Layout Set remains completely independent of saved sets and sets in other documents. When you load a set, you actually merge or overwrite sets. Unlike a Custom Library, if you close the document's Layout Set you do not have to re-open the file, you just have to click the Layout icon to re-display the window.

To learn more about...	Refer to...
Naming layouts	“Naming or Renaming a Layout or Background” in chapter 5
Naming/Saving Layout Sets	“Saving a Layout Set” in chapter 5

Moving Around in the Layout Mode

While in the Layout mode, you will often find yourself moving back and forth between windows and pages. DeltaGraph gives you several options for navigating in Layout mode as well as to and from Chart pages.

Because you can have multiple pages in the Layout mode, the Add Page, Page Up, Page Down, and Page Selector icons on the Navigational bar are fully operational, though they offer different options depending on whether you are in the Layout window or the Background window.

In addition to command icons and a set of magnification controls, the Layout mode Command bar, shown below, has a special Window indicator that lets you see at a glance whether you are in the Layout window or the Background window of the Layout mode.



The special Layouts menu, available only in this mode, allows you to copy the current layout into a new Layout window (“Duplicate Layout”), hide placeholders (“Hide Layout Items”), hide the current background (“Hide Background”), change the background for the

active layout (“Edit Background”), or hide the Layout tools (“Hide Layout Tools”).

Creating or Adding Layout and Background Windows

Layouts can be created in the Layout mode or as you move into Layout mode. Backgrounds can only be created while you are in Layout mode or if you have chosen “Edit Background” from the Layouts menu while in the Chart view or Thumbnail mode of the Organizer view.

There are two ways to create an empty layout or background as follows:

1. Click the Add Page icon on the Navigational bar.
2. (Layouts only) Choose **Layouts** from the View menu and select **New Layout** from the submenu. The empty page appears with a default name (Layout #1, Back-ground #2, etc.) displayed in the Page Selector.

Displaying a Layout or Background

You can view a list of available layouts and backgrounds, and switch between layouts/backgrounds a variety of ways, as follows.

1. Click the Page Selector icon at the bottom of the page. A list of available layouts/backgrounds appears in the pop-up menu.

Naming or Renaming a Layout or Background

You cannot rename the Master Background, but you can rename Exception Backgrounds. The best time to name a layout or background is when you are creating it. This will save you from having to go back to the Layout mode or to the Chart page or layout to change a name. It may be helpful if you name your layouts and

back- grounds in a way that indicates the kinds of placeholder(s) included in the layout (i.e., “Title&1Chart,” “Chartw/Text,” etc.), or the type of background (i.e., “DoubleBlndw/HLine,” etc.).

To help you keep track of the Chart pages in a document, DeltaGraph automatically assigns default names like “Layout #1,” “Background #2,” and so forth. You can assign names to Chart pages to help identify their contents. All the Chart pages associated with a document can be displayed by clicking the “Plot In” pop-up menu at the bottom of the Chart Gallery, by clicking and holding the Chart view icon on the Command bar, or by clicking and holding the Page Selector icon at the bottom of the page.

You cannot name the Layout Sets that are part of specific documents. But if you save a Layout Set to a file, you will be asked to name the file, creating a named Layout Set you can load in any DeltaGraph document.

NOTE 

Each Layout Set included with DeltaGraph has twelve identically named layouts. These Layouts Sets have been created so that if you use a layout from one of the sets, when a new set is loaded, that layout is replaced with the identically named layout from the new set. The position, size, and colors of the two sets may be totally different. This allows you to change the look of your entire document just by loading a different Layout Set. It is important to keep the names of layouts in each Layout Set the same so they can be easily updated with new Layout Sets. Keep this in mind if you decide to create a Layout Set of your own.

To name or rename a layout or background, do the following:

1. In the Layout mode, display the layout you want to name.

To navigate, use the View icons, the Page Selector icon, or commands from the “Layouts” submenu on the File menu.

2. Choose **Name Page** from the View menu. The “Page Title” dialog box appears with the default name selected.
3. Enter a new name. The new name overwrites the default name.
4. Click **OK** to rename the layout or background. The new name replaces the old name. You can see the new name in the Page Selector at the bottom of the page. To exit the dialog box without

making any changes, click **Cancel**.

To learn more about...	Refer to...
Saving a named Layout Set	“Saving a Layout Set” in chapter 5

Deleting Layouts and Backgrounds

Use the “Delete Page” command on the View menu to delete a layout or back- ground. This deletes the layout or background and all objects on the page from the document as well as from the Layout Set.

If the current document contains layouts or backgrounds you do not want included in a Layout Set file, you can use this command to remove unwanted backgrounds before saving.

To delete the active layout or background, do the following:

1. Choose **Delete Page** from the View menu. A dialog box appears asking you to confirm your selection.
2. Click **OK** to delete the layout or background. To exit the dialog box without making any changes, click **Cancel**.

Loading and Saving Layout Sets

Any Layout Set open when you save the current DeltaGraph document is automatically saved with the document. Master and Exception Backgrounds and color schemes are also saved with the Layout Set. Layout Sets themselves can be saved as named sets so they can be loaded and used in any DeltaGraph document.

Once a Layout Set has been loaded into a DeltaGraph document, it loses its link with the original Layout Set file. To save any changes you make to a Layout Set, you must save the set to a file.

If you prefer, you can also export backgrounds as you would any

graphic element or place backgrounds in a Custom Library so you can share them with other Delta- Graph documents. A Color Scheme palette can also be saved as a separate file using the **Colors** command.

To learn more about...	Refer to...
Creating Custom Libraries	“Creating a Library” in chapter 14
Saving Color Scheme palettes	“Color Schemes” in chapter 9
Exporting graphics	“Exporting Graphics” in chapter 13

Loading a Layout Set

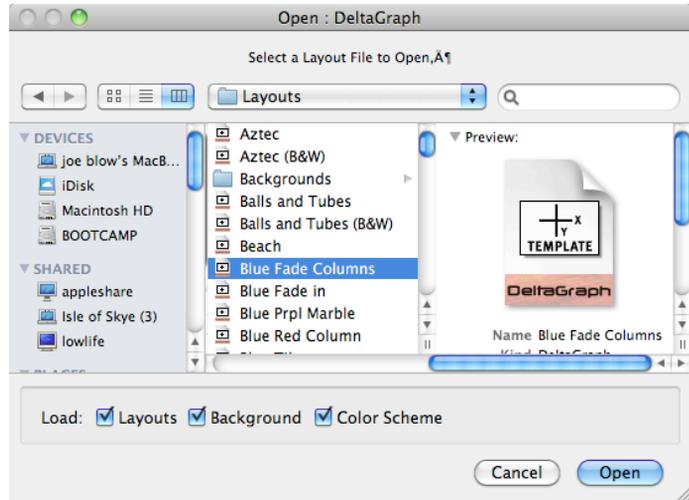
Saved Layout Sets can be loaded in any DeltaGraph document. You cannot use a Layout Set from another DeltaGraph document unless the set has been saved to a file. Even though a DeltaGraph document has only one Layout Set, you can merge other Layout Sets in the same document.

When loading a Layout Set, you have the option of loading all or some layouts, backgrounds, or the color scheme. If you merge Layout Sets, the Master Back- ground and color scheme of the current document’s Layout Set will be replaced by those in the merging Layout Set unless you deselect “Background” and “Color Scheme” when loading.

To load a Layout Set, do the following:

1. Choose **Layouts** from the View menu and select **Load Set** from the submenu.

The “Open” dialog box appears.



2. Locate the Layout Set you want to open. Click a Layout Set to preview the Master background and color scheme.
3. Select or deselect **Layouts**, **Background**, or **Color Schemes**. If selected, the layouts, backgrounds, and color schemes from the selected Layout Set are loaded in the current document's Layout Set.

NOTE 

If you load new backgrounds and/or a color scheme, the existing ones are replaced.

4. Double-click a Layout Set name or select the name and click **Open**. If the current Layout Set has layouts or backgrounds with the same names, a message appears asking if you want to add them to the current Layout set or replace the current layouts and backgrounds.

Depending on the options selected in the dialog box, the background, color scheme, and layouts are loaded and displayed in the view.

Saving a Layout Set

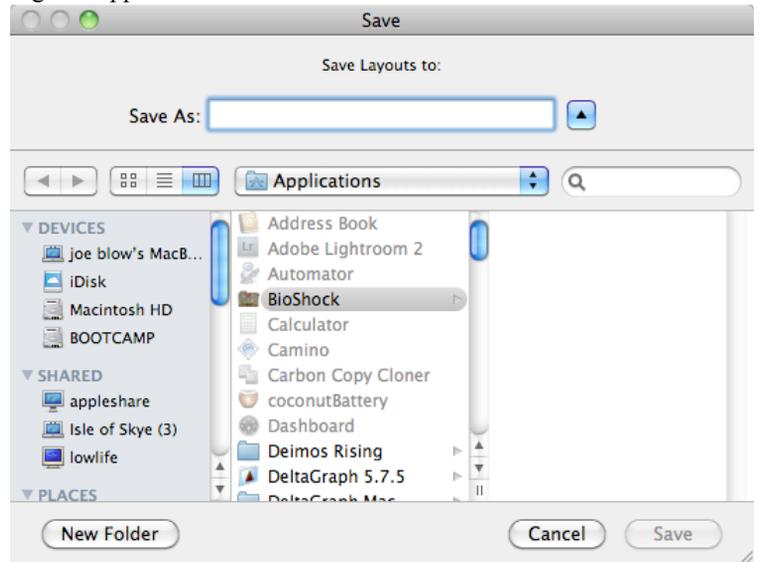
Layout Sets saved to a file consist of any layouts in the existing Layout Set, the Master Background, additional backgrounds created, and a color scheme. Even though the Layout Sets are automatically saved to the active DeltaGraph document, you can save a Layout Set to a file so it can be loaded in other DeltaGraph documents.

You can also use the Layout Set to save only the backgrounds and a color scheme by deleting any layouts in the set before saving.

To save a Layout Set, do the following:

1. Choose **Layouts** from

the Edit menu and select **Save Set** from the submenu. The “Save” dialog box appears.



2. In the Save As box, enter the name you want to give this Layout Set.
3. Click **Save** to save the Layout Set.

You can choose **Load Set** from the Layouts submenu to load a saved set in another DeltaGraph document.

Creating and Using Backgrounds

You can create backgrounds in the Background window of the Layout mode. DeltaGraph automatically applies the Master Background to all Layouts and Chart pages created in the current document. Any changes made to the Master Background are automatically reflected in the Layouts and Chart pages using the Master Background.

If you do not want all the layouts and Chart pages in the current document to have the same background, you can specify one of two possible Exception Backgrounds: a Layout Background or a Page Background. Which one you use depends on whether you want to apply the background to every page that uses a particular layout or to one or more individual pages only. When you change a Layout Background, every Chart page using that layout reflects the change. Changing a Page Background affects only the page(s) using that background.

Backgrounds can contain any combination of type, graphics, colors, and patterns. You might want to include nothing more than a background color and a copyright line, or you may want to add the corporate logo, a decorative border, and an eye-catching color blend.

You can temporarily hide the background in the active Chart page by choosing **Hide Background** from the Page menu. Selecting this command does not affect printing. If you print a Chart page while “Hide Background” is selected, the background prints even though it is not visible on-screen.

The Master Background

Because it is intended to serve as a backdrop for most (if not all) of the Chart pages and slides in a document, the Master Background is applied automatically to all layouts and Chart pages in the active document. Though you can have only one Master Background per document, you can have any number of Exception Backgrounds that

can be applied to individual Chart pages and Smart Layouts.

To create a Master Background, do the following:

1. Choose **Layouts** from the View menu and select **Master Background** from the submenu.

DeltaGraph takes you to the Background window of the Layout mode and displays the Layout mode Command bar, the DeltaGraph Toolbox, and the Master Background page at 50% view size. Unless you have already worked on the Master Background, the only element on the page is a page-sized box (with an X in the middle) that you can select, resize, drag, or delete.

2. Unless you want to leave the background plain white, select the background box and apply a color or blend.

See “Applying Colors” in chapter 11 if you need help creating or applying colors or “Adding Special Blends to Objects” in chapter 11 if you need help creating blends.

3. Create, paste, or import any text or graphics you want to include in your Master Background.

There is no limit to the number of objects you can include. Just remember that everything you place in your Master Background is going to appear behind every Chart page unless an Exception Background is applied.

4. Exit the Master Background page.

Where you go from here depends on what you want to do next. You can use the View icons, the Page Selector icon, or commands from the View menu to navigate.

NOTE 

It is important to remember that whenever you exit the Master Background window, the background on the active page becomes the new Master Background, replacing the current Master Background in all your layouts and Chart pages. DeltaGraph alerts you before letting you exit so you do not replace your Master Background inadvertently.

Layout Backgrounds

A Layout Background is an exception to the Master Background that is applied to a particular layout. This Exception Background replaces the Master Background each time the layout is used in a Chart page.

If you *do not* want to permanently change the background of a layout, you have two options: 1) you can change the background in individual Chart pages, or 2) you can create two layouts which are virtually the same except one uses the Master Background, and the other uses a new Layout Background.

When a Layout Background is created for a specific layout, the link to the Master Background is broken. Any changes to the Master Background will not change the background for the layout or any Chart page using the layout.

To create a Layout Background, do the following:

1. Open DeltaGraph to the layout page you want to change. The layout page appears with placeholders and the Master Background.
2. Click the Background icon in the Layout Tools palette, or choose **Edit Background** from the Layouts menu. An alert dialog box appears, warning you that this operation will break the link to the Master Background.
3. Click **OK**. The placeholders disappear, and a copy of the background used in the current layout appears. If the current layout set does not contain a Master Background, the background appears with a large **X** in the middle.

The changes made to this background have no effect on the Master Background.

4. Click the background element and change the background as necessary. If other Exception Backgrounds have been created, they appear in the “Page Selector” pop-up menu at the bottom of the page. You can also switch to any of these pages, including the Master Background, if you change your mind.

The background that is displayed when you return to a DeltaGraph view will be your Layout Background. If you select

one of the Exception Backgrounds from the “Page Selector” pop-up menu and return to the layout, that Exception Background becomes the Layout Background.

Page Backgrounds

A Page Background is an exception to the Master Background that is applied to an individual Chart page.

The link to the Master Background is broken in this case, which means that any changes to the Master Background will not change the background for the Chart page.

To create a Page Background, do the following:

1. Open DeltaGraph to the Chart page you want to change.
2. Choose **Edit Background** from the Page menu. An alert dialog box appears warning you that this operation will break the link to the Master Background.
3. Click **OK**. The placeholders or other objects in the page disappear, and a copy of the background used in the current Chart page appears. If the current layout set does not contain a Master Background, the background appears with a large X in the middle.

The changes made to this background have no effect on the Master Background.

4. Change the background as necessary. If other Exception Backgrounds have been created, they appear in the “Page Selector” pop-up menu at the bottom of the page. You can also switch to any of these pages, including the Master Background, if you change your mind.

The background that is displayed when you return to a DeltaGraph view will be your Page Background. If you select one of the Exception Backgrounds from the “Page Selector” pop-up menu and return to the Layout, that Exception Background

becomes the Page Background.

Editing Backgrounds

When you change a Master Background, any Chart pages using that background are updated automatically to reflect the changes. If you have assigned Exception Backgrounds to any Chart pages or Layouts, those backgrounds will not be updated.

To edit an Exception Background such as a Layout or Page Background, you must be on the originating layout or Chart page. The procedures for editing backgrounds are the same as for creating them.

To learn more about...	Refer to...
Creating a Master Background	“The Master Background” in chapter 5
Creating a Layout Background	“Layout Backgrounds” in chapter 5
Creating a Page Background	“Page Backgrounds” in chapter 5

Relinking to the Master Background

When you assign an Exception Background to a Chart page or layout, the link to the Master Background is broken. If you decide later that you need to use the Master Background on these pages, DeltaGraph allows you to re-link to the Master Background.

To relink to the Master Background, do the following:

1. Open the layout or Chart page using the Exception Background.
2. If you are in the Chart view, choose **Edit Background** from the Page menu. If you are in the Layout mode, choose **Edit Background** from the Layouts menu. The placeholders or other objects in the page disappear, and the Exception Background appears.

3. Click the Page Selector bar on the Navigational bar, and select **Master Background** from the pop-up menu. The Master Background appears, replacing the Exception Background.
4. leave the background editor. An alert dialog box appears asking if you want to re-link to the displayed background.
5. Click **OK**. The Chart page or Layout you were working on is displayed with the Master Background. If you want to exit the dialog box without recreating the link, click **Cancel**.

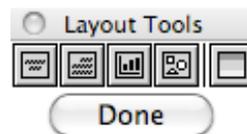
Creating and Using Smart Layouts

You create layouts in the Layout window of the Layout mode and apply them to Chart pages.

Each Smart Layout may contain one or more placeholders that define the size, location, and other attributes (font, color, etc.) of the various elements on the Chart page. You can have an unlimited number of placeholders in a layout and an unlimited number of layouts per document, but only one layout per Chart page.

Creating Layouts

Use the icons in the Layout Tools palette (below) to create the placeholders, and can use the Draw tools in the Toolbox to add other elements if desired. (You might, for example, want to have a rule under the title or a border around the bullet text.)



Placeholders are easily added to a layout page. You simply click a Placeholder icon in the Layout Tools palette, then click and drag the cursor across the layout page as if using the Rectangle tool. The name of the placeholder appears in the box after it is drawn.

A placeholder has most of the properties of a Chart view object; when it is selected in the layout page, you can use tools from the Toolbox and commands from the Draw menu to move, resize, and manipulate it. In addition, you can use the Font icons and/or commands from the Text menu to change text attributes for Title, Text, and Bullet placeholders. There is no limit to the number of placeholders that can be placed in one Layout.

You can apply any layout to any Chart page. If all your Chart pages consist of exactly the same elements (a title, a chart, and a supporting graphic, for instance), you might want to use the same layout on every page so that each element always appears in exactly the same place at exactly the same size. But if different pages have different elements, or some charts need to be larger than others, you might want to use several different layouts.

Layouts are saved with the document or stored in sets. DeltaGraph includes numerous sets of professionally designed Layout Sets. Each Layout Set consists of

12 pre-defined, identically named layouts, a Master Background, and a color scheme. The colors, placement, and size of the placeholders in each Layout Set can vary dramatically. If you use these Layout Sets, you can load any of the other Layout Sets (use the **Replace** option when loading Layout Sets) to give your document a completely different look.

If you do not want to use the Master Background with a particular layout (the Master Background is applied automatically to all layouts), you can override it by creating and applying a Layout Background, as described in “Layout Backgrounds” in chapter 5.

If you are trying to coordinate a layout with a background or a particular Chart page, you may find yourself needing to switch views frequently. Use the View icons and the Page Selector icon to get around quickly.

You can return to a layout page and make changes at any time. The changes will be reflected immediately in all pages using the changed layout.

You can temporarily hide layout placeholders by choosing **Hide Layout Items** from the Layouts menu if you are in the Layout mode or from the Page menu if you are in a Chart page. This command

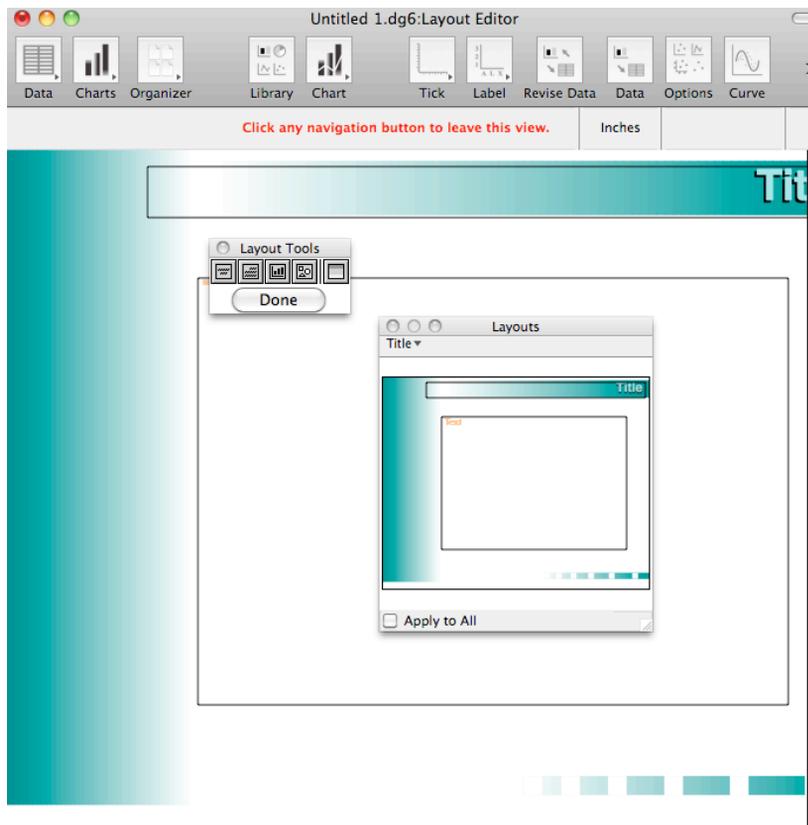
affects the on-screen view only. Layout items do not print, regardless of which option is selected.

To create a Layout, do the following:

1. Choose **Layout Editor** from the View menu and select **New Layout** from the submenu.

DeltaGraph takes you to the layout window of the Layout mode and displays the Layout mode Command bar, the DeltaGraph Toolbox, the Layout Tools palette, and the Master Background page at 50% view size. Unless you have already worked on the Master Background, the only element on the page is a page-sized box (with a white fill) that you can select, resize, drag, or delete.

If you open the Layout Set window (choose Apply **Layouts** from the Page menu), the layout you create appears in the Layout Set window in a scaled-down version.



2. Click the Title Placeholder icon in the Layout Tools palette. The cursor changes to a crosshair.
3. Click and drag the cursor to create the placeholder box. The name of the placeholder appears in the box. You can resize or move the placeholder at any time in the Layout page. In the Chart page, however, you cannot manipulate the placeholders until they are filled.
4. Create and position Bullet, Chart, Text, Org, and Graphics placeholders, using the icons in the Layout Tools palette. There is no limit to the number of placeholders you can place in one Layout page.
5. Change the placeholder attributes as desired. A placeholder has most of the properties of a Chart view object. When it is selected, you can use tools from the Toolbox and commands

from the Draw menu to move, resize, and manipulate it. In addition, you can change the following attributes for Layout place- holders:

Title/Text placeholders

You can change all text attributes, including font, size, style, alignment, and Color.

Bullet placeholders

You can change the shape, position, and color of the bullets for each level, line and paragraph spacing for each level, and text attributes for the entire block or level by level. This is now done using the Unicode text editor in a normal text box.

Chart/Graphic Object placeholders

There are no attributes that you can pre-define except the size and position of the placeholder.

6. If you want this layout to have a special background, you can create and apply a Layout Background to override the Master Background. The Layout Back- ground will appear on every Chart page using the layout. (See “Layout Back- grounds” in chapter 5 for more information.)
7. Choose **Name Page** from the View menu to name the Layout. The standard DeltaGraph naming dialog box appears.
8. Enter the name of the layout and click **OK**.
9. Exit the Layout page.

You can use the View icons, the Page Selector icon, or commands from the View menu to navigate to another view or page.

To learn more about...	Refer to...
Setting up an Organizational chart	“Organizational Chart” in chapter 7
Filling placeholders	“Filling Layout Placeholders” in chapter 5
Manipulating objects	“Manipulating Objects with the Pointer Tool” in chapter 11
Changing text attributes	“Formatting and Editing Text in a Text Object” in chapter 11
Creating a Layout Background	“Layout Backgrounds” in chapter 5

Editing Layouts

Layouts can be edited to change the size and position of placeholders and the color and size of text in the placeholders. Text attributes of Bullet placeholders can only be changed in the Layout mode.

To edit a layout, do the following:

1. Double-click the layout in the Layout Set window or choose one of the layouts from the view menu.
2. Edit the Layout as necessary. Use the text editor to affect text, tab, leading, and symbol attributes for Bullet placeholders.
3. Click one of the navigational icons on the Command bar or Navigational bar to return to the previous view.

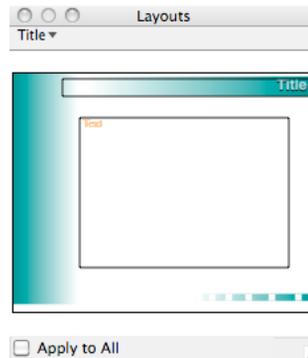
Applying Layouts

Layouts can be applied to an empty Chart page or to a Chart page containing charts and/or text. If you apply a layout to an empty page, DeltaGraph displays instructions in each placeholder on how to insert information. If you apply a layout to an existing Chart page, any graphics or charts in the Chart page that match up to a placeholder are snapped to that position and size, taking on the attributes assigned to

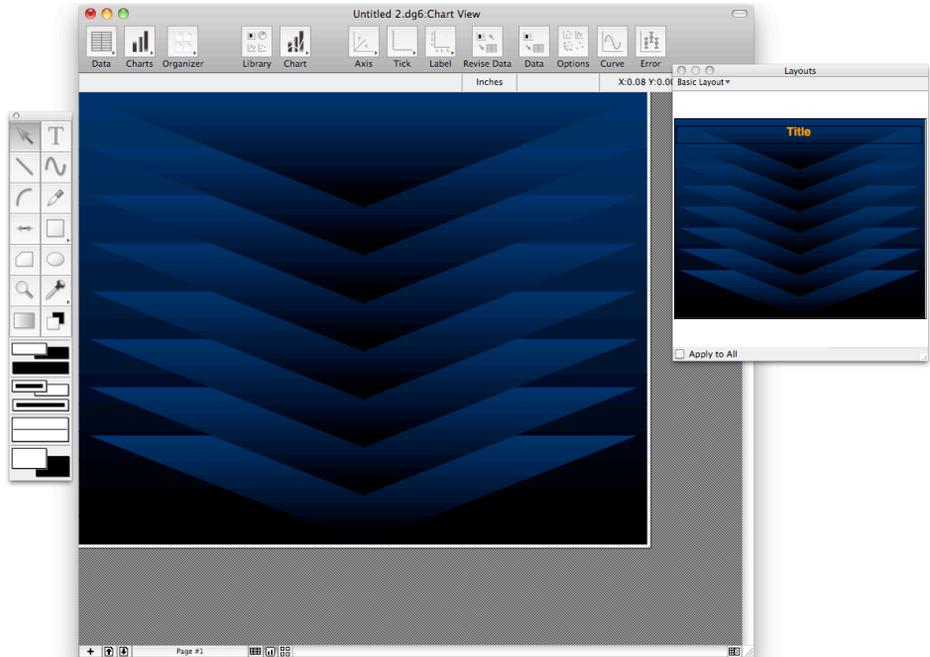
the placeholder. You can apply layouts you have created in the same document or layouts loaded in the document from a saved Layout Set.

To apply a Layout, do the following:

1. Open the DeltaGraph Chart page to which you want to apply a Layout. You can apply a layout to a new Chart page or to a Chart page that already contains any combination of charts, text, and graphics.
2. Choose **Apply Layouts** from the Page menu. The Layout Set window appears in the upper right corner of the view. It contains scaled-down versions of the layouts in the current document Layout Set. If you have loaded any other Layout Sets, these layouts are also included in the window. The name of the layout appears directly below the Layout Set window title bar.



3. If the layout you need is not displayed, click the pop-up menu arrow, and select a layout from the list. The layout you select appears in the window. You can adjust the size of the window to enlarge or shrink the layout sample that appears.
4. If you want to apply the layout to all Chart pages in the current document, select **Apply To All** at the bottom of the Layout Set window.
5. Click the layout displayed in the window and drag it into the Chart page.



If the Chart page is empty, the placeholder(s) appear in the page, with written instructions on what to do. For additional information, see “Filling Layout Placeholders” in chapter 5.

If the Chart page contains Text, Chart, or Draw objects, the objects that match up with a placeholder are snapped into position. Any objects on the page that do not match up with a placeholder remain unchanged.

To learn more about...	Refer to...
The Layout Set window	“Layout Sets” in chapter 5
Loading a Layout Set	“Loading a Layout Set” in chapter 5

Filling Layout Placeholders

Smart Layout placeholders contain brief instructions for filling when they appear in the Chart pages. Follow the prompts that appear inside the placeholder. If the corresponding objects are already on the Chart page when a layout is applied, they automatically take on the attributes of the placeholder.

Depending on the type of placeholder, Smart Layouts can be filled from the Chart, or Data views.

Filling a Title Placeholder

A Title placeholder can be filled from the Chart view. In the Chart page, you will notice that the page's default name appears in the placeholder. To change this, click the placeholder and start typing a new title. The new title automatically renames the Chart page (notice the new name in the Page Selector at the bottom of the page).

Filling a Text Placeholder

A Text placeholder can be filled from the Chart view. In the Char view, click the placeholder and start typing.

Filling a Chart Placeholder

A Chart can be filled from the Chart or Data views. In the Chart view, double-click the placeholder. The “Chart Setup” dialog box appears so you can select a chart type, then you are switched to the Data view so you can select your data.

In the Data view, select the data you want to plot, then click the Plot icon on the Command bar, press **cmd-G**, or choose **Chart Gallery** from the Data menu to select a chart type.

When the chart is plotted, the size and color of the chart matches the

attributes of the placeholder.

To learn more about...	Refer to...
Filling a Chart placeholder from the Data view	“Creating a Chart in the Data View” in chapter 8
Filling a Chart placeholder from the Chart view	“Creating a Chart in the Chart View” in chapter 8

Filling a Graphic Placeholder

A Graphic placeholder can be filled only from the Chart view. Once you select the placeholder, you can import or paste a graphic in the placeholder, or drag an image from an open Custom Library onto the placeholder.

6 Setting Preferences

This chapter describes how to set preferences (defaults) for several of the tasks you perform in DeltaGraph and for working with charts. You can manually change many of the chart defaults in individual charts.

This chapter covers the following:

- Setting defaults for the general operation of DeltaGraph
- Setting default preferences for viewing charts
- Setting default preferences for drawing in the Chart view
- Setting default preferences for export/import/clipboard
- Setting default preferences for charts
- Setting default preferences for Automatic Updates

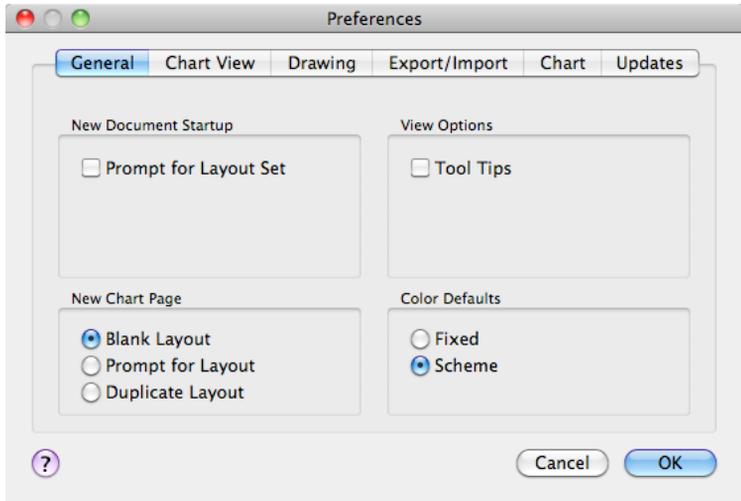
Choose **Preferences** from the DeltaGraph menu. The “Preferences” dialog box appears.

There are five tabs that each contain options to set up preferences for different tasks. The General tab is displayed when you open the dialog box. Click a different tab to view a different group of preferences. The following sections provide information on the options in each of the tabs.

Click **OK** when you are finished setting up your preferences to implement the changes. To exit the dialog box without making any changes, click **Cancel**.

Setting General Defaults

To set general defaults for DeltaGraph click the **General** tab.



Make selections and enter data as required. You have the following options:

New Document Startup

Determines how a new document is started, as follows:

For Charting

Start a new document with the Data view as the initial view.

Prompt for Layout Set

Automatically open the “Load Layout” dialog box when a new document is created.

View Options

Determine what is displayed in the DeltaGraph views, as follows:

Tool Tips

If enabled, when you move the mouse pointer over a Command bar

icon, a brief description of the icon is displayed. If disabled, no message is shown.

New Chart Page

Determines whether or not Smart Layouts are automatically applied to new Chart pages, as follows:

Blank Layout

A blank layout is applied to a new Chart page.

Prompt for Layout

The Layout Set window appears every time a new Chart page is created so you can apply a layout.

Duplicate Layout

The layout used in the previous Chart page is applied to the new Chart page.

Color Defaults

Determines the default colors used when creating charts and objects in the Chart View.

Fixed

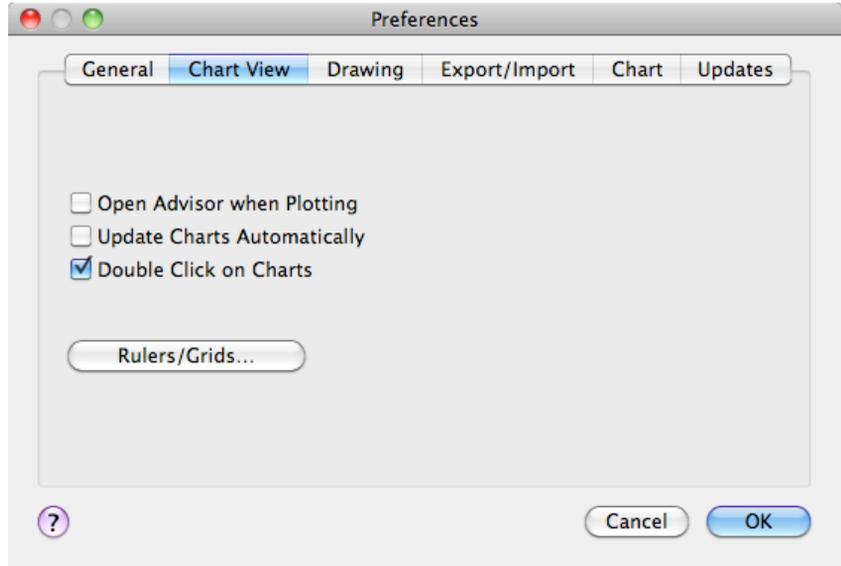
The standard DeltaGraph default colors are used.

Scheme

Color Scheme palette colors are used.

Setting Chart View Defaults

Click the **Chart View** tab to set preferences for the Chart view.



Make your selections and enter data as needed. You have the following options:

Open Advisor when Plotting

Opens the “Chart Setup” dialog box with the Chart Advisor tab selected when you click the **Plot** button, select **Chart Gallery** from the Data menu, or press **cmd-G**. (Only applies when plotting from the Data view.)

Update Charts Automatically

Sets a global preference so that charts are updated automatically when you modify the associated data. This eliminates the need for you to select the data and click **Update**.

NOTE  “Update Charts Automatically” is a substitute for the “Update” command but does not replace “Revise Data.” If you modify a

selected range of data, you do not need to select **Update**, but if you add or remove data cells, you still need to select **Revise Data**.

Double-click on Charts

Allows you to double-click various parts of a chart to display a dialog box relating to that area; in other words, if you double-click the Value axis labels, the “Labels” dialog box for that axis appears. Change takes effect immediately.

Set Ruler/Grid Defaults

Click **Rulers/Grids** and a dialog box is displayed for setting ruler and grid preferences. Setting these options will affect all existing chart pages. They will not affect those rulers and grids you have set manually on charts. (See “Changing Rulers and Grids” in chapter 11.)

Units

Click the pop-up menu and select whether you want to display the rulers in inches, centimeters, points, picas, or ciceros.

Show rulers

Select to show the rulers along the top and left-hand side of the Chart view. Deselect to hide the rulers.

Grid Settings

Set preferences for the horizontal and vertical grid in the Chart view, as follows:

Grid Size

Enter or select the size of the space between the grid lines (in the measurement unit you selected in “Units” above).

Show Grid

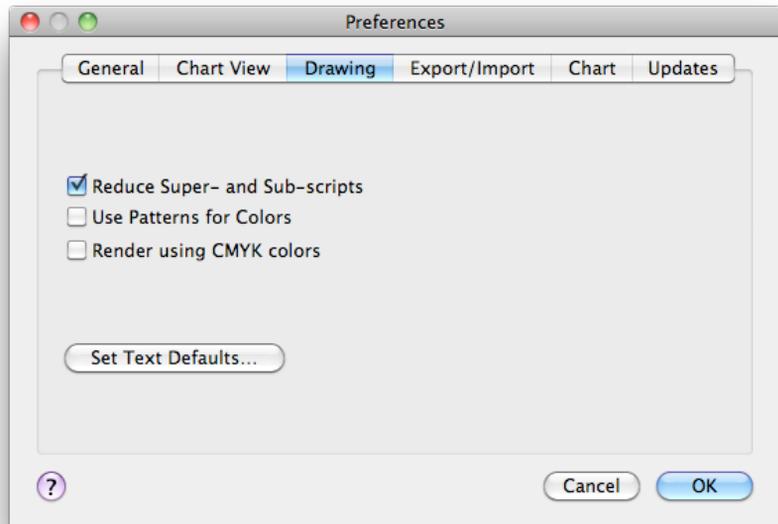
Select to show the grid; deselect to hide it.

Snap to Grid

Aligns all objects with the underlying grid when you create, resize, or move them.

Setting Draw Object Defaults

Click the **Drawing** tab to set defaults for manipulating draw and text objects in the Chart view and for applying colors and blends to any Chart page object.



Make your selections and enter data as needed. You have the following options:

Reduce Super- and Sub-scripts

Automatically reduces by 20% the font size of superscripts and subscripts created using the “Special Text” command in the Data view. Applies only to charts.

Use Patterns for Colors

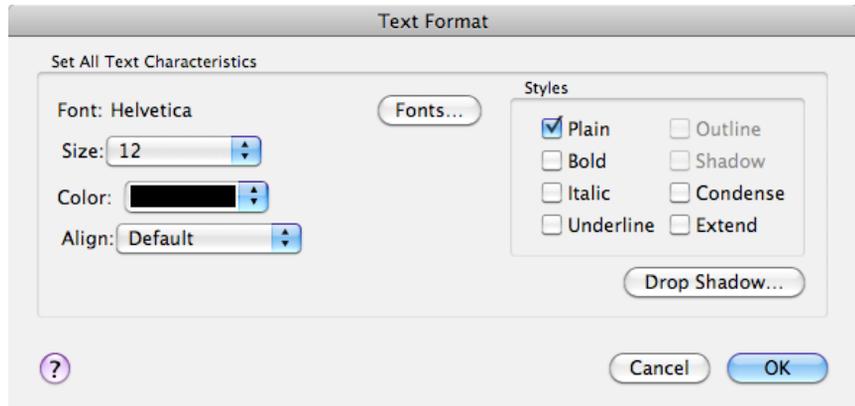
Available for charts and other objects, this option uses patterns instead of colors when the monitor setting in the Macintosh Control Panel is set to “Black and White.” It is used mostly for black-and-white or monochrome monitors. Change takes effect immediately.

Render Using CMYK

Renders drawings using colors in CMYK space as opposed to RGB.

Set Text Defaults

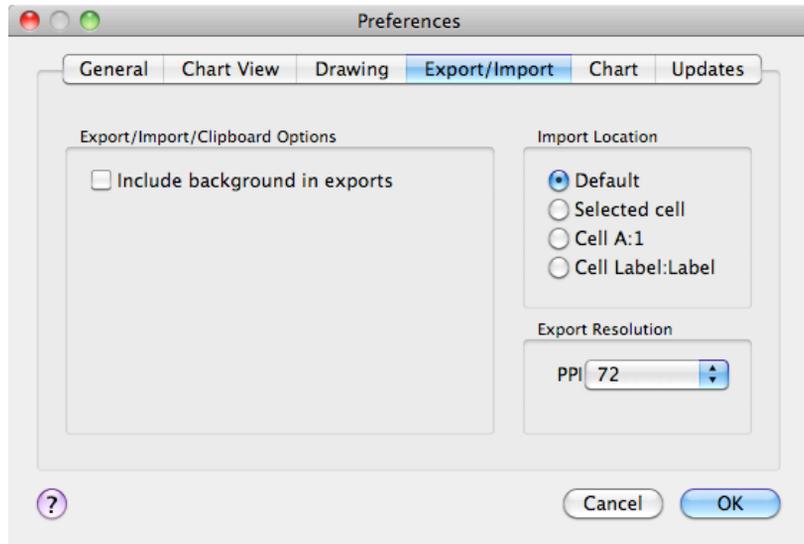
Click to open the “Set All Text Characteristics” dialog box, and set text attributes for all new Text objects as well as Bullet and Organizational charts appearing in the Chart view without a layout placeholder. Sets defaults in the Chart view both for text blocks created using the Text tool.



Use the pop-up menus and check boxes to make your selections, then click **OK** to implement the changes and exit the dialog box. Changes take effect immediately but apply to new Text objects only.

Setting Export/Import/Clipboard Defaults

Click the **Export/Import** tab to set export, import, and clipboard preferences.



Make your selections and enter data as needed. You have the following options:

Include background in exports

Includes backgrounds when exporting objects from the Chart or Organizer view. If you create a Master Background or an exception background, you can export all objects in the page plus the background used on that page. Only the background from the first page of each Chart page is exported. with the individual pieces.

Import Location

Select how you want imported data to arrive in the Data view, as follows:

Default

Imported data arrives in the upper left of the data sheet, with text placed in the label column and row and numbers in column A and row 1.

Selected cell

Allows you to select the cell where you want imported data to be inserted. The cell you highlight becomes the upper-left cell of the new data (the “offset” cell). This lets you avoid overwriting existing data in a Data page and makes it possible to import data from a number of different files into the same Data page. It also gives you the option of overriding DeltaGraph’s attempt to discern labels from numerical data. Dates can then be used as category and series labels.

Once you have chosen this option, simply highlight the cell where you wish the data to be entered and it is inserted, using the selected cell as its top left-hand corner. The methods for pasting data are the same. Pasting always places the data in the selected cells.

Cell A:1

Places the upper-left corner cell of the imported data in column A, row 1 of the Data page. This ensures that no data will be placed in the Label row or column.

Cell Label:Label

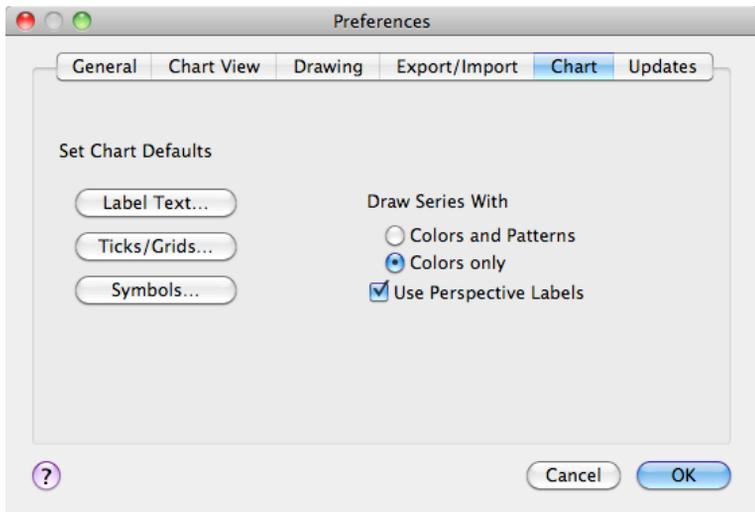
Places the upper-left corner cell of the imported data in the Label row and column of the Data page. When plotting charts, DeltaGraph interprets the contents of cells in the Label row and column as text, whether they contain values or characters. Using this option, you can force DeltaGraph to plot numbers (such as dates) as chart series or category labels on charts.

PICT Scaling

Determines the scaling of exported PICTs and raster images. Higher dpi (dots per inch) values produce higher output resolution for PICT files. Can be used for exporting to applications requiring a lower resolution PICT.

Setting Chart Defaults

Click the **Chart** tab to set defaults for label text, ticks and grids, and symbols. The Chart defaults affect each chart that uses them when you recalculate the charts. They do not affect labels, ticks, grids, and symbols you set manually in charts.



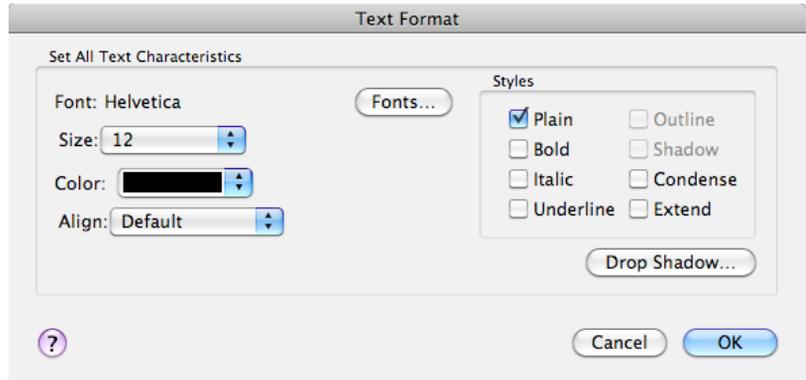
Make your selections and enter data as needed. You have the following options:

Set Chart Defaults

Select the default label text, ticks and grids, and symbols for charts, as follows:

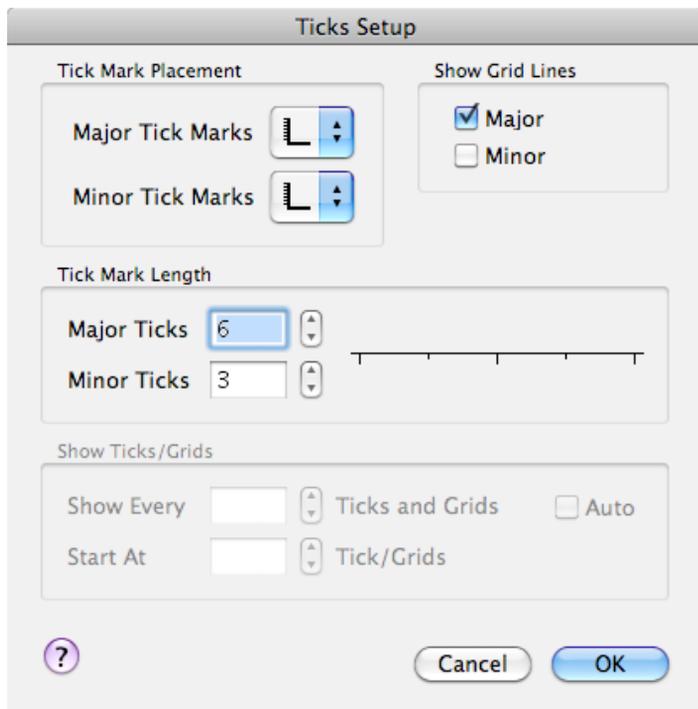
Label Text

Click to open the “Set All Text Characteristics” dialog box and change the defaults for the font, size, color, alignment, and style of label text. (Note that these changes may affect the “Auto” orientation and rotation of a chart’s labels.)



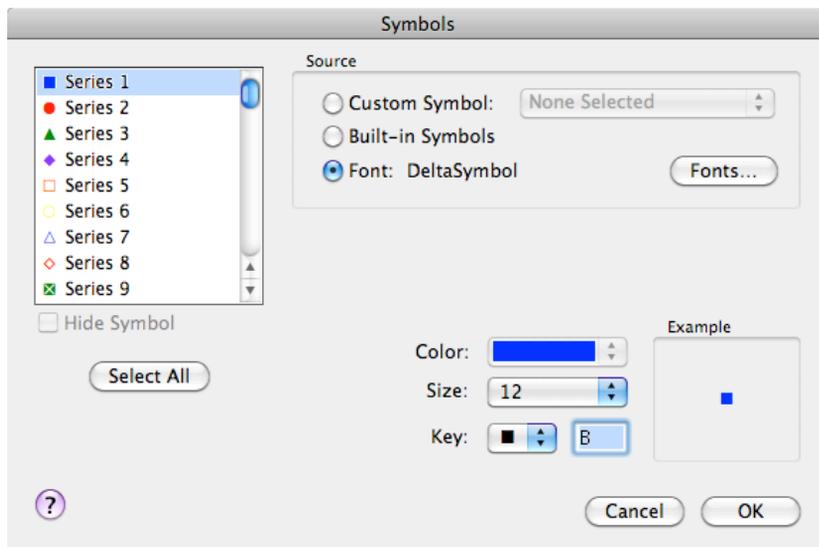
Ticks/Grids

Displays a dialog box that allows you to set the tick mark placement for both major and minor ticks, set tick mark length, and turn on major or minor grids. The “Show Ticks/Grids” section is disabled in Preferences but is enabled in the Ticks Setup dialog box for some chart types.



Symbols

Displays a dialog box to customize default chart symbols. Options include setting custom font and size. You can also select the type of default symbols you want from an extensive list of symbol keys.



As with ruler, tick, and grid defaults, after the chart is recalculated, setting these options affects all existing charts that use the defaults. They do not affect those symbols you have set manually in charts.

NOTE  Symbol “Color” is disabled because default colors depend on the “Fixed/Scheme” color default, which you set for an entire document (see page 7-3).

Draw Series with

Determines how patterns and colors are displayed on the screen and printed, as follows:

Colors and Patterns

Uses colors and patterns when displaying/printing Chart pages.

Colors Only

Uses colors only when displaying/printing Chart pages.

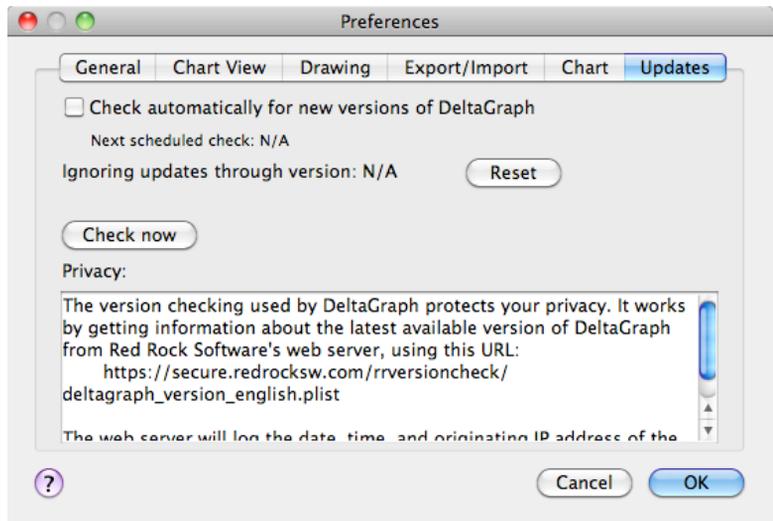
Use Perspective Labels

Affects 3-D chart labels only. Labels are automatically displayed in the same perspective as their associated charts. This preference applies to new charts only.

To turn off perspective labels for selected charts only, use the **Options** command on the Chart menu.

Setting Automatic Update Defaults

Click the Updates tab to change preferences for DeltaGraph's update service.



Selecting the “Check automatically for new versions of DeltaGraph” box will cause DeltaGraph to check for updates upon opening, alternatively you can click the check now button to check for updates immediately. The “Ignoring updates through version:” text refers to the dialog brought up when a new version is detected, if ignored the update will be listed under this text.

To learn more about...	Refer to...
Setting label text defaults	“Creating and Positioning Axis Labels and Titles” in chapter 9
Changing ticks and grids	“Creating Axis Breaks” in chapter 9
Customizing symbols	“Changing Chart Symbols” in chapter 9
Creating color schemes	“Color Schemes” in chapter 9
Symbol options	“Changing Chart Symbols” in chapter 9

7 Chart Types

This chapter describes and illustrates each DeltaGraph chart and the type of data needed to create it. This chapter covers the following:

- An overview of DeltaGraph chart types and the data they require
- 2-D Business charts
- 2-D Technical charts
- 2-D Statistical charts
- 3-D Business charts
- 3-D Technical charts

Chart Type Overview

DeltaGraph's chart types fall into two main categories: 2-D and 3-D.

2-D and 3-D charts, are considered “numerical” charts even though some may contain textual data, are plotted from data entered in a Data page..

Numerical charts in DeltaGraph can have as many as three different types of axes: a *value axis*, which is defined by the values of the data plotted, a *category axis*, which displays the different categories of data, and a *series axis*, which is associated with the data series.

In DeltaGraph, most 2-D charts contain two axes and a legend. The vertical axis is the Y axis, and the horizontal axis is the X axis. One of the axes is always a value axis. The second axis can be a category axis, a series axis, or even another value axis, depending on the type of chart.

3-D charts have three axes: X, Y, and Z. On all 3-D charts, the vertical

axis is the Z axis and is always a value axis. The function, name, and placement of the X and Y axes depend on the type of chart.

As you will discover, some charts are exceptions to the rules just outlined. The rest of this chapter examines the charts in detail, explaining the purpose of each chart, how to set up your data, and how the data are converted into a chart.

If all of this is a bit overwhelming, you may want to use the Chart Advisor to help you choose the right chart type. To use the Chart Advisor, you must first import or enter data in the Data view.

To learn more about...	Refer to...
The parts of a chart	“Basic Chart Elements” in chapter 2
Entering data in a Data page	Chapter 4, “Organizing Data in the Data View”
Using Layouts	“Creating and Using Smart Layouts” in chapter 5
Modifying your charts	Chapter 9, “Customizing Charts” and Chapter 10, “Changing Chart Options”
The Chart Advisor	“The Chart Advisor” in chapter 8

2-D Business Charts

Column Chart

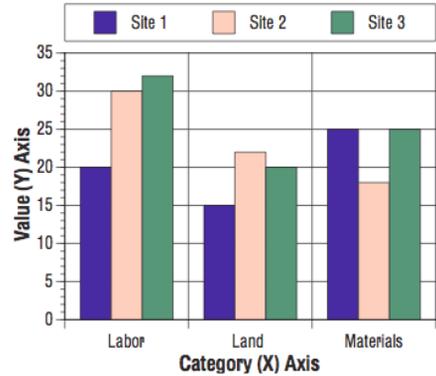
Use a Column chart to compare one item to another or to compare the same or different items over a period of time. Column charts effectively show dramatic changes from one category to another.

Each row of data corresponds to one set of columns for a given

category. Each column of data corresponds to a data series. Each column in a given category represents a value in the Data page. The vertical or Y axis shows values. The horizontal or X axis shows categories.

Row labels are used to name each category. Column labels are used to name each data series. These labels appear in the legend.

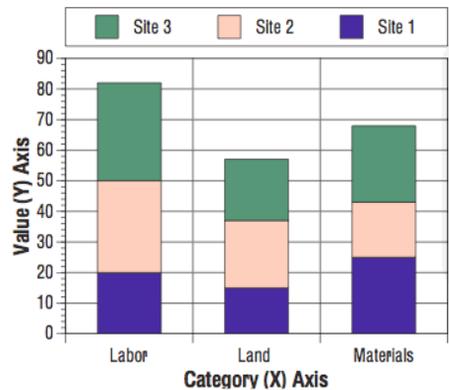
	Label	A	B	C
Label		Site 1	Site 2	Site 3
1	Labor	20	30	32
2	Land	15	22	20
3	Materials	25	18	25



Stacked Column Chart

Use a Stacked Column chart to compare parts to the total or to show how components of an item change over time.

	Label	A	B	C
Label		Site 1	Site 2	Site 3
1	Labor	20	30	32
2	Land	15	22	20
3	Materials	25	18	25



Each row of data corresponds to a single segmented column in the

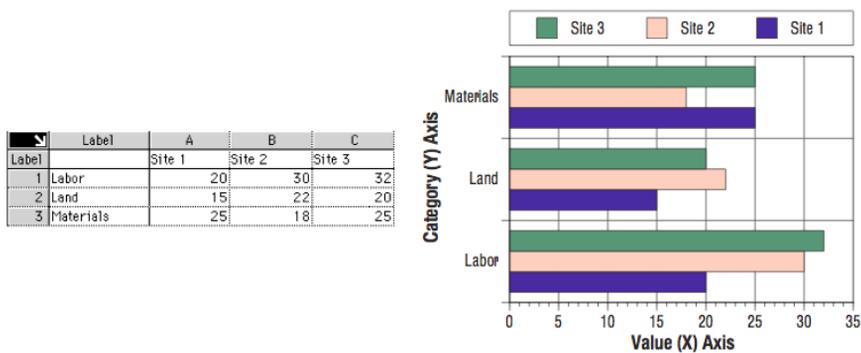
chart (category). Each column of data corresponds to the same shade or color in each of the columns in the chart. Each column segment represents a value in the Data page.

The vertical or Y axis shows values. The horizontal or X axis shows categories. The series are stacked on top of each other rather than placed side by side as in a regular Column chart.

Row labels are used to name each category. Column labels are used to name each data series. These labels appear in the legend.

Bar Chart

Use a Bar chart to compare sizes and amounts or to emphasize differences between items, usually at the same point in time.



Each row of data corresponds to one set of bars for a given category. Each column of data corresponds to a data series. Each bar in a given category represents a value in the Data page. The vertical or Y axis shows categories. The horizontal or X axis shows values.

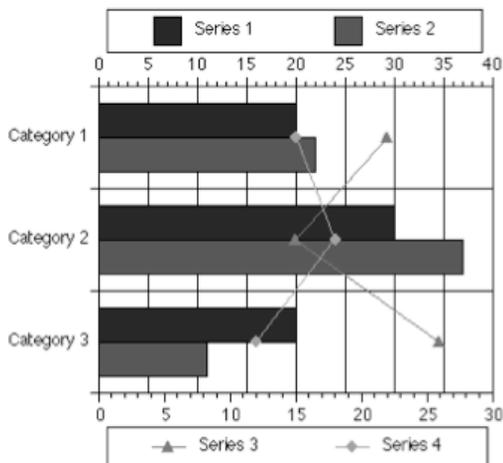
Row labels are used to name each category. Column labels are used to name each data series. These labels appear in the legend.

Bar With Line Overlay Chart

Use a Bar with Line Overlay chart to compare sizes and amounts or

to emphasize differences between items, usually at the same point in time. The line overlay shows the trend of one or more items over a period of time or number of events.

	Label	A	B	C	D
Label		Series 1	Series 2	Series 3	Series 4
1	Category 1	20	22	22	15
2	Category 2	30	37	15	18
3	Category 3	20	11	26	12



Each row of data corresponds to one set of bars for a given category. Each column of data corresponds to a data series. Each bar in a given category represents a value in the Data page. The vertical or Y axis shows categories. The horizontal or X axis shows values. Each column of data corresponds to one line or bar (series) in the chart. You can have more than one series per Data page. The vertical or Y axis shows values. The horizontal or X axis shows categories.

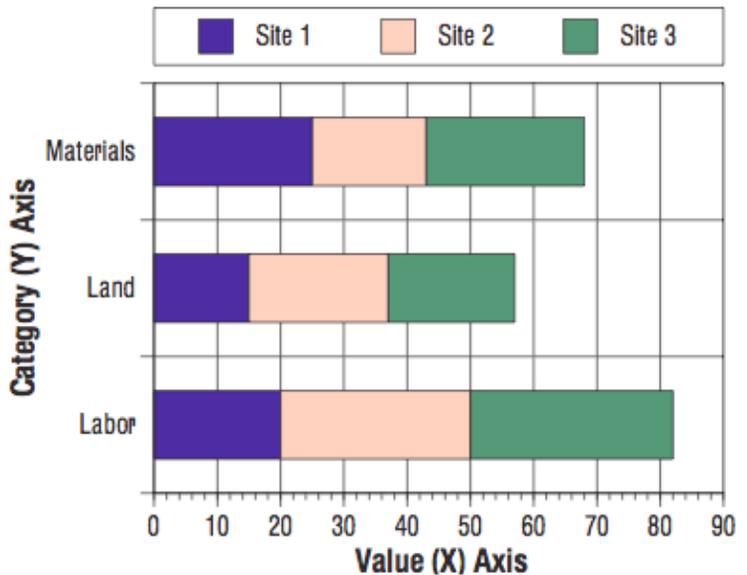
Row labels are used to name each category. Column labels are used to name each data series. These labels appear in the legend.

To learn more about...	Refer to...
Other chart options	“Bar with Line Overlay Chart Options” in

Stacked Bar Chart

Use a Stacked Bar chart to show how all categories in a series compare over time or to compare parts to the total.

	Label	A	B	C
Label		Site 1	Site 2	Site 3
1	Labor	20	30	32
2	Land	15	22	20
3	Materials	25	18	25



Each row of data corresponds to one segmented bar (category). Each column of data corresponds to one segment of the bar in the chart. Each bar segment represents a value in the Data page. The vertical or Y axis shows categories. The horizontal or X axis shows values. The series are stacked one after another in a single bar, rather than placed side by side as in a regular Bar chart.

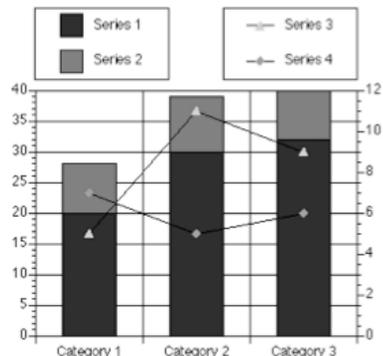
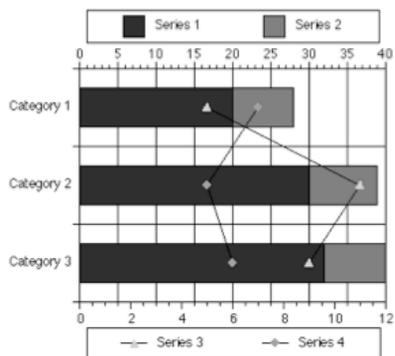
Row labels are used to name each category. Column labels are used to name each data series. These labels appear in the legend.

To learn more about...	Refer to...
Other chart options	“Stacked Bar and Column Chart Options” in chapter 10

Stacked Bar and Column with Line Overlay Charts

Use a Stacked Bar with Line Overlay or Stacked Column with Line Overlay chart to compare parts to the total or to show how components of an item change over time. The line overlay shows the trend of one or more items over a period of time or number of events.

	Label	A	B	C	D
Label		Series 1	Series 2	Series 3	Series 4
1	Category 1	20	8	5	7
2	Category 2	30	9	11	5
3	Category 3	32	8	9	6



Each row of data corresponds to a single segmented bar or column in the chart (category). Each column of data corresponds to the same shade or color in each row or column. Each bar or column segment

represents a value in the Data page.

For Bar charts, the vertical or Y axis shows values. The horizontal or X axis shows categories. The series are stacked on top of each other. For Column charts, the vertical or Y axis shows categories. The horizontal or X axis shows values. The series are placed side by side

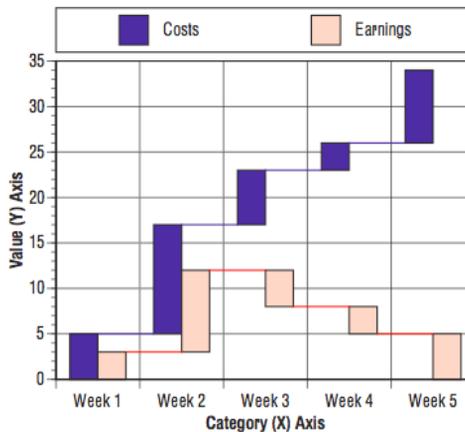
Row labels are used to name each category. Column labels are used to name each data series. These labels appear in the legend.

To learn more about...	Refer to...
Other chart options	“Stacked Bar and Column with Line Overlay Chart Options” in chapter 10

Build-Up Chart

Use Build-up charts to plot several different categories that build up to a total.

	Label	A	B	C
1	Year 1	Land	Labor	Materials
2	Year 2	12	41	18
3	Year 3	16	36	31
4	Year 4	44	16	40
5	Year 5	32	12	31
6	Year 5	19	29	20



Build-up charts are typically used to show the progression of factors that make up the total. Each category's bar starts where the previous one leaves off. For instance, you might plot a starting sales figure and then build it up monthly, with each month's sales appearing in a separate category. The final category's ending value would be the cumulative sales figure.

Categories are connected between series by colored lines. You can change this by selecting "Connect between series" in the "Build-Up Options" dialog box.

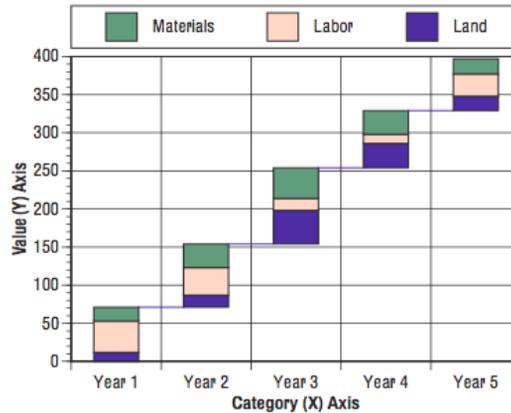
These charts also allow for multiple series. Subsequent series follow the first series in each category.

To learn more about...	Refer to...
Other chart options	"Build-Up and Stacked Build-Up Chart Options" in chapter 10

Stacked Build-Up Chart

The Stacked Build-up chart is similar to the Build-up chart except that it totals the values of all the rows of data and stacks them on top of each other then records the overall growth in value of the combined data.

	Label	A	B	C
	Label	Land	Labor	Materials
1	Year 1	12	41	18
2	Year 2	16	36	31
3	Year 3	44	16	40
4	Year 4	32	12	31
5	Year 5	19	29	20



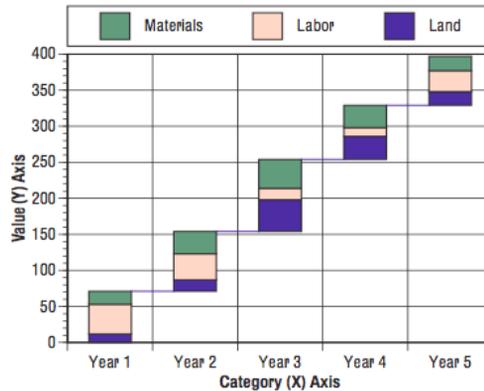
As with Build-up charts, Stacked Build-up charts allow you to plot several different categories that build up to a total. Each category's bar starts where the previous one leaves off and typically shows the progression of factors that make up the total. For instance, you might plot a starting purchasing figure for supplies of wood, concrete, and steel, and then increase it monthly, with each month's purchases appearing in a separate category. The final category's ending value would be the cumulative purchasing figure.

Categories are connected between series by colored lines. You can change this by selecting "Connect between series" in the "Build-Up Options" dialog box. Stacked Build-up charts also allow for multiple series. The stacked version can have more than one value for each category.

Floating Bar and Column Charts

Use a Floating Bar or Floating Column chart to specify ranges of data in bar or column format. Specify the lowest and highest value for each bar. This results in bars that "float" without being attached to the category axis.

	Label	A	B	C
Label		Land	Labor	Materials
1	Year 1		12	41
2	Year 2		16	36
3	Year 3		44	16
4	Year 4		32	12
5	Year 5		19	29



Two columns of data are required for each data series. The first column is typically used for the starting value, the second column for the ending value. The order in which you enter values does not matter; DeltaGraph will plot a bar covering the range of the two values. However, if you are using the range to display positive or negative change, use the “Show Values” command, once the chart has been plotted, to display the order in which the values were entered.

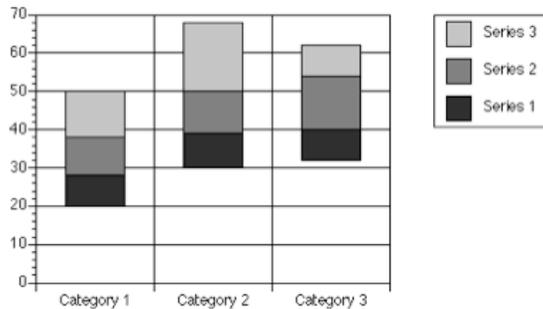
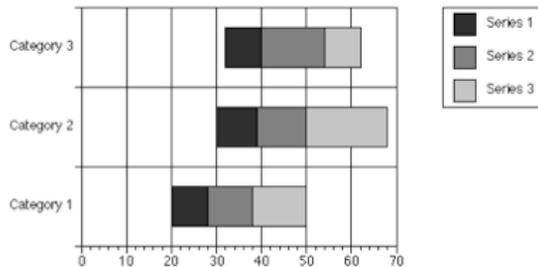
Row labels are used to name each category. Column labels are used to name each data series. For this type of chart, label alternate columns as only the first label for each range appears on the legend.

To learn more about...	Refer to...
Other chart options	“Floating Bar and Column Chart Options” in chapter 10

Floating Stacked Bar and Column Charts

Use a Floating Stacked Bar or Floating Stacked Column chart to specify ranges of data in bar or column format and to compare parts to the total or to show how components of an item change over time.

	Label	A	B	C	D
	Label	Baseline	Series 1	Series 2	Series 3
1	Category 1	20	8	10	12
2	Category 2	30	9	11	18
3	Category 3	32	8	14	8



The first data column of the charts is the baseline and each subsequent data column is stacked in series. For Column charts, categories appear on the X axis, and values appear on the Y axis. For Bar charts, values appear on the X axis, and categories appear on the Y axis. However, if you use the range to display positive or negative change, use the “Show Values” command after you plot the chart to display the order in which the values were entered.

Each row of data corresponds to a single segmented column in the chart (category). Each column of data corresponds to the same shade

or color in each of the columns in the chart. Each column segment represents a value in the Data page.

The vertical or Y axis shows values. The horizontal or X axis shows categories. The series are stacked on top of each other rather than placed side by side as in a regular Column chart. Row labels are used to name each category. Column labels are used to name each data series.

NOTE 

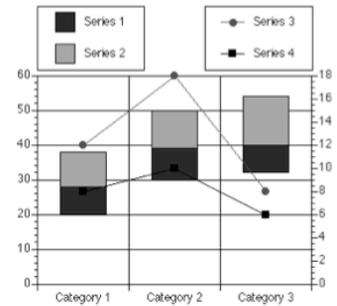
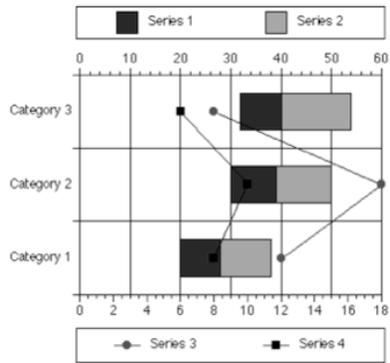
When creating combination charts, this chart type can be used as a base chart.

To learn more about...	Refer to...
Other chart options	“Floating Stacked Bar and Column Chart Options” in chapter 10

Floating Stacked Bar and Column with Line Overlay Charts

Use a Floating Stacked Bar with Line Overlay or a Floating Stacked Column with Line Overlay chart to compare parts to the total or to show how components of an item change over time. Specify the lowest and highest value for each bar. This results in bars that “float” (not attached to the category axis). The line overlay shows the trend of one or more items over a period of time or a number of events.

	Label	A	B	C	D	E
Label		Baseline	Series 1	Series 2	Series 3	Series 4
1	Category 1	20	8	10	12	8
2	Category 2	30	9	11	18	10
3	Category 3	32	8	14	8	6



Each row of data corresponds to a single segmented bar or column in the chart (category). Each column of data corresponds to the same shade or color in each of the rows or columns in the chart. Each bar or column segment represents a value in the Data page.

For Bar charts, the vertical or Y axis shows values, and the horizontal or X axis shows categories. The series are stacked on top of each other.

For Column charts, the vertical or Y axis shows categories, and the horizontal or X axis shows values. The series are placed side by side.

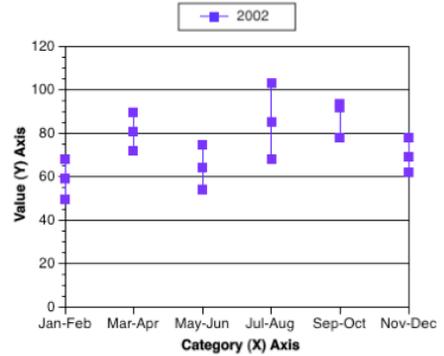
Row labels are used to name each category. Column labels are used to name each data series. The labels appear in the legend.

To learn more about...	Refer to...
Other chart options	“Floating Stacked Bar/Column with Line Overlay Chart Options” in chapter 10

High-Low Chart

Use a High-Low chart to show the highs and lows of different items or different periods of time.

	Label	A	B
		1992	
1	Jan-Feb	68	50
2	Mar-Apr	75	54
3	May-Jun	90	72
4	Jul-Aug	103	68
5	Sep-Oct	92	78
6	Nov-Dec	78	62



Two columns of data are required for each data series. The first column is used for the high point and the second is used for the low point. You can have more than one series per Data page, but remember that the first column is for high values and the second column is for low. The vertical or Y axis shows values, and the horizontal or X axis shows categories.

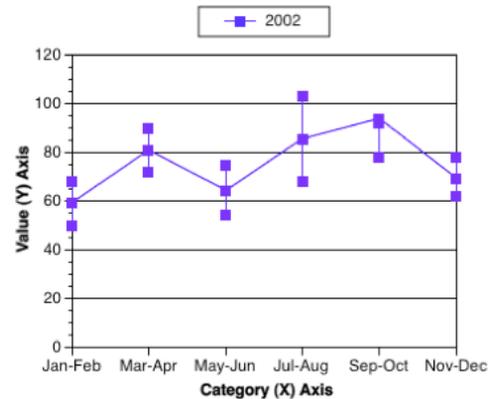
Row labels are used to name each category. Enter a label in the first column of each series to name the data series. These labels appear in the legend.

To learn more about...	Refer to...
Changing symbol shape and color	“Changing Chart Symbols” in chapter 9

Range Chart

A Range chart shows the highs and lows of an item as well as the midpoints between the two. You can make these comparisons over time.

	Label	A	B	C
	Label	1992		
1	Jan-Feb	68	50	59
2	Mar-Apr	75	54	64.5
3	May-Jun	90	72	81
4	Jul-Aug	103	68	85.5
5	Sep-Oct	92	78	81
6	Nov-Dec	78	62	69
7		(high data)	(low data)	(median data)



Three columns of data are required for each data series. The first two columns produce values for the high and low points. The third column produces values for the midpoints. You can have more than one series per Data page. The vertical or Y axis shows values. The horizontal or X axis shows categories.

Row labels are used to name each category. Enter a label in the first column of each series to name the data series. These labels appear in the legend

To learn more about...	Refer to...
Changing symbol shape and color	“Changing Chart Symbols” in chapter 9
Other High-Low and Range chart options	“High-Low and Range Chart Options” in chapter 10

Segmentation Charts

Segmentation charts allow you to add a second value to a column or bar chart. This second value is represented by the comparative widths of each column or bar. Segmentation charts are often referred to as “variable-width column” charts. The width of the column showing the greatest second value is represented at 100%, with the other columns represented as proportions of that.

If you wish to represent types of computers both by annual unit sales and annual dollar sales, Annual unit sales could be represented by the height of the columns or bars, while annual dollar sales could be represented by the width of the columns or bars.

In addition to series legends, Segmentation charts display Segmentation legends by default. The Segmentation legend can be customized in a similar way to Value axes. Double-click the legend’s tick grid to bring up the “Value Axis Ticks & Grids” dialog box and make your selections as required. Double-click the numbers in the legend to bring up the “Value Axis Labels” dialog box. The Segmentation legend can also be scaled to allow for larger numbers. Segmentation charts have their own “Bar/Column Segmentation Options” dialog box.

When entering data, you should place category names in the Label column. Each series of data requires two columns. In the first column, enter values representing the height (or length) that will be displayed against the value axis. The label that you enter at the top of the first column will appear in the legend. In the series’ second column, enter values representing the magnitude (width) of the column, which will be displayed against the Segmentation legend. You can create multiple series in Segmentation charts by entering two columns of data for each series.

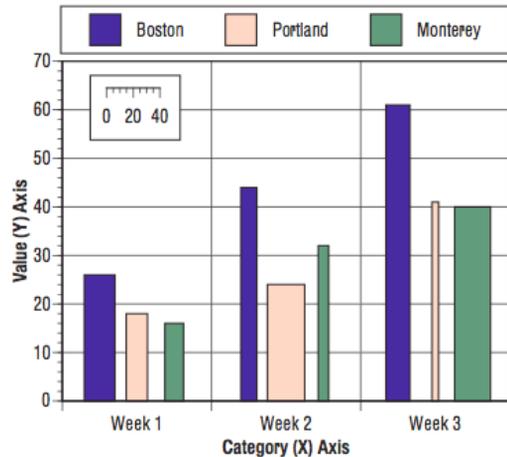
To learn more about...	Refer to...
Customizing the Segmentation legend	“Changing Tick Marks and Chart Grids” in chapter 9 and “Creating and Positioning Axis Labels and Titles” in chapter 9

To learn more about...	Refer to...
Other Segmentation chart options	“Bar and Column Segmentation Chart Options” in chapter 10

Column Segmentation Chart

Use a Column Segmentation chart when you require a Column chart that needs to show two values per series. As with Column charts, they are especially effective in showing dramatic changes between categories. But with the Column Segmentation chart, if series perform in markedly different ways between two sets of values, this can be shown very clearly.

Label	A	B	C	D	E	F
1 Week 1	26	23	18	16	16	14
2 Week 2	44	12	24	28	32	8
3 Week 3	61	18	41	5	40	27

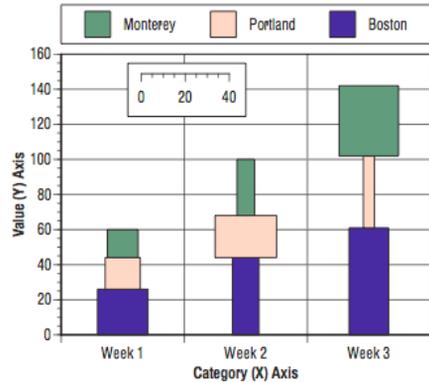


Stacked Column Segmentation Chart

Use a Stacked Column Segmentation chart when you want to group series and compare them categorically as a whole. The second value for each series provides another measure that can be displayed as width. With this Segmentation chart, if categories perform in

markedly different ways between two sets of values, it can be shown very clearly. Differences in widths become much sharper in Stacked Segmentation charts

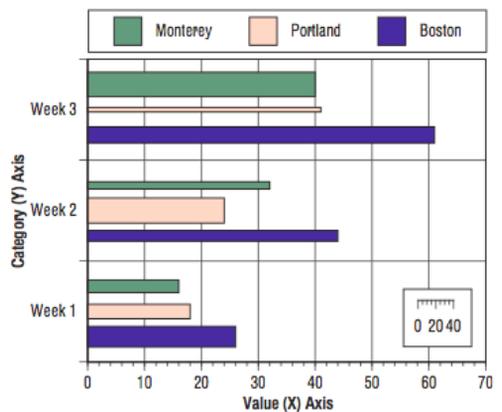
Label	A	B	C	D	E	F	
1	Week 1	26	23	18	16	16	14
2	Week 2	44	12	24	28	32	8
3	Week 3	61	18	41	5	40	27



Bar Segmentation Chart

Use a Bar Segmentation chart when you require a bar chart that needs to show two values per series. As with Bar charts, they are effective in showing dramatic changes between categories. But with this Segmentation chart, if series perform in markedly different ways between two sets of values, it can be shown clearly.

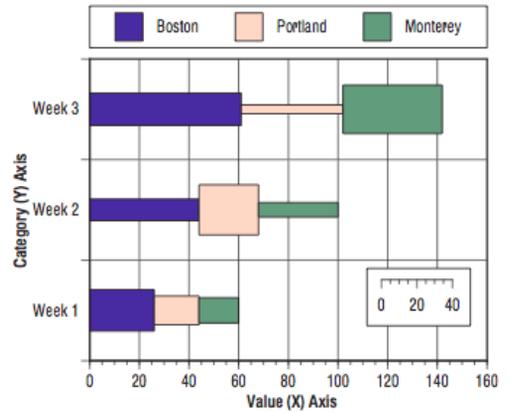
Label	A	B	C	D	E	F	
1	Week 1	26	23	18	16	16	14
2	Week 2	44	12	24	28	32	8
3	Week 3	61	18	41	5	40	27



Stacked Bar Segmentation Chart

Use a Stacked Bar Segmentation chart when you want to group series and compare them categorically as a whole. The second value for each series provides another measure that can be displayed as width. With this segmentation chart, if categories perform in very different ways between two sets of values, this can be shown very clearly. Differences in widths become sharper in stacked segmentation charts.

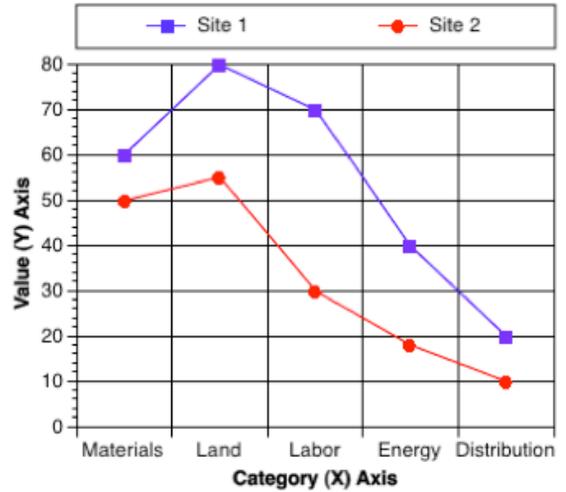
	Label	A	B	C	D	E	F
	Label	Boston		Portland		Monterey	
1	Week 1	26	23	18	16	16	14
2	Week 2	44	12	24	28	32	8
3	Week 3	61	18	41	5	40	27



Line Chart

Use a Line chart to show the trend of one or more items over a period of time or number of events.

	Label	A	B
Label		Site 1	Site 2
1	Materials	60	50
2	Land	80	55
3	Labor	70	30
4	Energy	40	18
5	Distribution	20	10



Line charts are best for plotting long series of data points. Each column of data corresponds to one line or series in the chart. You can have more than one series per Data page. The vertical or Y axis shows values. The horizontal or X axis shows categories.

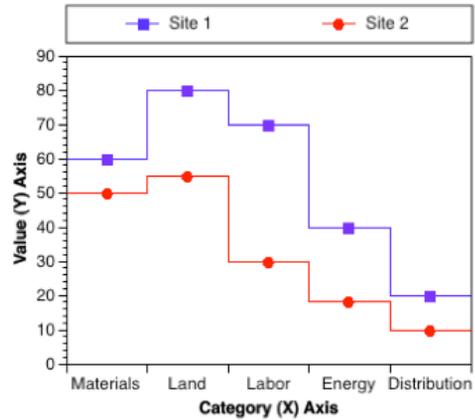
Row labels are used to name each category. Column labels are used to name each data series. These labels appear in the legend.

To learn more about...	Refer to...
Changing symbol shape and color	“Changing Chart Symbols” in chapter 9

Step Chart

Use a Step chart to compare items that do not show a trend. Step charts display discrete points along the value axis, with vertical lines showing the difference between each point.

	Label	A	B
Label		Site 1	Site 2
1	Materials	60	50
2	Land	80	55
3	Labor	70	30
4	Energy	40	18
5	Distribution	20	10



Each column of data corresponds to one series of steps (or a data series) on the chart. You can have more than one series per Data page. The vertical or Y axis shows values. The horizontal or X axis shows categories.

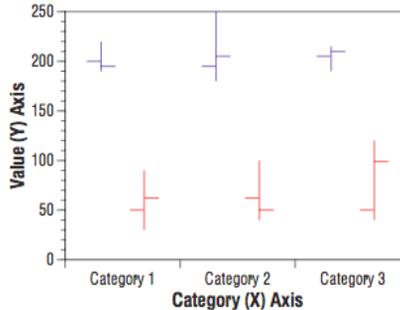
Row labels are used to name each category. Column labels are used to name each data series. This label appears in the legend.

To learn more about...	Refer to...
Changing symbol shape and color	“Changing Chart Symbols” in chapter 9
Other chart options	“Line and Step Chart Options” in chapter 10

Open High Low Close Chart

Use an Open High Low Close chart to show values that fluctuate in a given time period, such as a day or hour.

	Label	A	B	C	D	E	F	G	H
		Series 1				Series 2			
1	Category 1	200	220	190	195	50	90	30	62
2	Category 2	195	250	180	205	62	100	40	50
3	Category 3	205	215	190	210	50	120	40	99



You can plot the starting value (open), the high, the low, and the final value (close). This chart is similar to the Candlestick chart. It is commonly used for market analysis and is also seen in investment publications. It can be used to plot the opening, high, low, and closing prices of an investment for a particular time, such as a day of oat futures.

Each series must have four columns of data representing the open, high, low, and close respectively. Each Data page can contain more than one series of data at one time. The default chart has a vertical line extending from the low to the high values and a horizontal line projecting out to the left at the opening value and one extending to the right for the closing value. The length and direction of the horizontal lines can be adjusted using the “Options” command.

Row labels are used to name each category. Enter a label in the first column of each series to name the data series. These labels appear in the legend

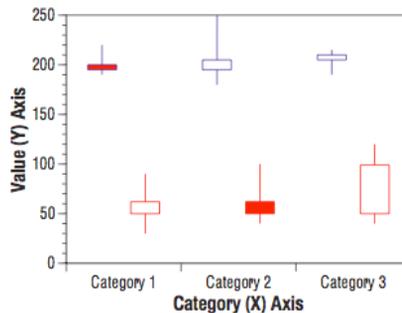
A special legend can be turned on using the “Show Open/Close Legend” option in the “Options” dialog box. It indicates which side of the vertical line represents the opening value and which represents the closing value.

To learn more about...	Refer to...
Other chart options	“Open High Low Close Chart Options” in chapter 10

Candlestick Chart

Use a Candlestick chart to show whether the open or close activity has increased or decreased within the bounds of the highs and lows for different items or different periods of time.

	Label	A	B	C	D	E	F	G	H
		Series 1				Series 2			
1	Category 1	200	220	190	195	50	90	30	62
2	Category 2	195	250	180	205	62	100	40	50
3	Category 3	205	215	190	210	50	120	40	99



This chart is similar to the Open High Low Close chart. It is commonly used for market analysis and is also seen in investment publications. It can be used plot the opening, high, low, and closing prices of an investment for a particular time, like a day of oat futures.

Each series must have four columns of data representing open, high, low, and close respectively. The default chart has a vertical line, or “wick,” extending from the low to the high values. A box extends from the open value to the close value. Each Data page can contain more than one series of data at one time.

Row labels are used to name each category. Enter a label in the first column of each series to name the data series. These labels appear in the legend. A special legend can be turned on using the “Show Candle Legend” option in the “Options” dialog box. It indicates which color represents an increasing box and which color represents a decreasing box.

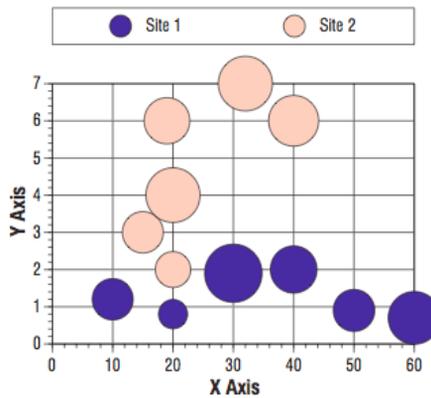
If the close value is higher than the open value, the candle is increasing and the default box color is white. If the close value is lower than the open value, the candle is decreasing and the default box color is red. The width of the open/close box can be adjusted using the “Options” command.

To learn more about...	Refer to...
Other chart options	“Candlestick Chart Options” in chapter 10

Bubble Chart

A Bubble chart shows a visual comparison using three values.

	Label	A	B	C	D	E	F
Label		Site 1	Y1	Z1	Site 2	Y2	Z2
1	Bubble 1	10	1.2	4	20	2	3
2	Bubble 2	20	0.8	2	15	3	4
3	Bubble 3	30	1.9	7.9	20	4	7
4	Bubble 4	40	2	5.2	19	6	5
5	Bubble 5	50	0.9	4.1	32	7	7
6	Bubble 6	60	0.7	6.5	40	6	6



In a Bubble chart, each data series requires three columns of data. The first column produces the values for the X coordinate points, the second column produces the Y coordinate points, and the third column determines the size of the bubbles. Each data point represents a measurement that is the intersection of two values in a row and the diameter of a bubble.

All the coordinates entered in a Bubble chart measure values; therefore, the vertical or Y axis and the horizontal or X axis both show values.

To label each data series, enter labels over each column of X coordinates in the Data page. These labels appear in the chart legend. A separate value legend provides a scale for the bubble size. This legend can be modified using the “Options” command in the Chart menu.

To ensure that you do not have bubbles covering each other, change

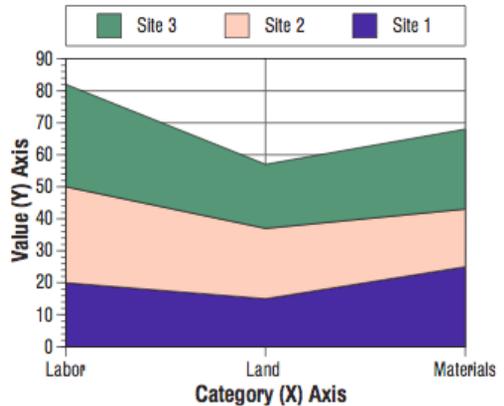
the fill of all the bubbles to “None.” To change the size of the bubbles with respect to the data in the Z-component, click and drag the end of the small axis in the bubble size legend. Stretching the legend axis makes the bubbles bigger. Shrinking the legend makes the bubbles smaller.

To learn more about...	Refer to...
Changing the legend and other options	“Bubble Chart Options” in chapter 10

Area Chart

Use an Area chart to emphasize the volume or size of a data series over time.

	Label	A	B	C
		Site 1	Site 2	Site 3
1	Labor	20	30	32
2	Land	15	22	20
3	Materials	25	18	25



Each column of data corresponds to a data series or a filled area on the chart. The vertical or Y axis shows values, and the horizontal or X axis shows categories.

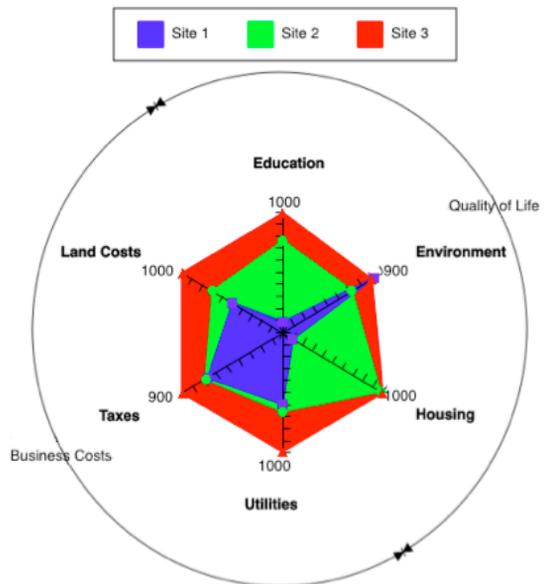
Row labels are used to name each category. Column labels are used to name each data series in the legend.

To learn more about...	Refer to...
Area chart options	“Area Chart Options” in chapter 10

Spider Chart

Use a Spider chart to show multiple variables, such as performance levels, ratings in different areas, or progress. A Radar chart can be created using a Spider chart and specific options from the “Options” dialog box (Chart menu).

	Label	A	B	C
1	Quality of Life:Education	90	765	1000
2	Environment	822	624	800
3	Housing	100	980	1000
4	Business Costs:Utilities	590	656	990
5	Taxes	676	688	900
6	Land Costs	501	700	1000



This chart calls for three or more rows and one or more columns of data. Each row of data corresponds to a category or spoke in the chart. Each column of data corresponds to a data series. These labels appear in the legend.

Row labels are used to name each category or spoke. Column labels are used to name each data series. These labels appear in the legend.

If one or more of the chart's spokes falls into a group, you may want to enter group labels, which function somewhat like an axis title in that they identify consecutive runs of categories. Group labels appear beyond the category labels around the perimeter of the chart and lie midway between the first category of the group and the last. To enter group labels, enter the group name, a colon (:), and the category label in the label column of the first category in the group. All category labels between one group label and the next are automatically included in the preceding group.

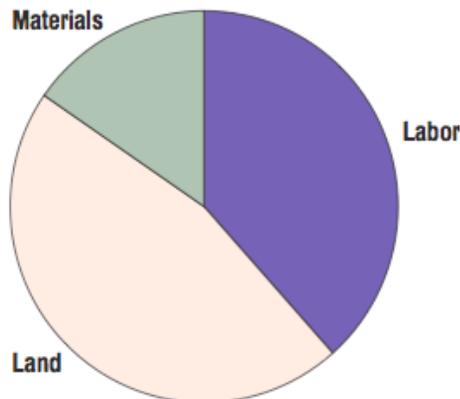
Spider chart labels can be re-positioned by choosing "Labels" from the Chart menu.

To learn more about...	Refer to...
Radar charts	"Spider Chart Options" in chapter 10

Pie Chart

Use a Pie chart to show the relationship of parts to the whole.

	Label	A
1	Labor	50
2	Land	60
3	Materials	20



This chart type uses only one column of data. Each wedge of the pie represents a row value. A Donut chart can be created using a Pie chart and specific options from the "Options" dialog box (Chart menu). The center section of a Donut chart represents the sum of the

values of all parts.

You can separate the pie slices in the chart by clicking a wedge and dragging it away from the rest of the pie. DeltaGraph allows you to drag a slice in one direction only. You can apply colors to Pie slices individually or as a whole. If you apply depth to a Pie using the “Depth” option from the Chart menu, you can apply separate colors to the depth or the Pie surface. Only the Pie parts selected are changed.

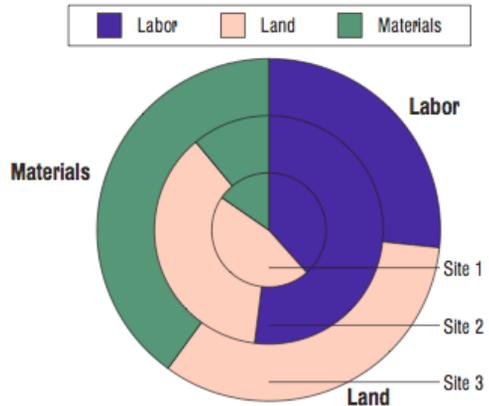
Row labels are used to name each pie slice. These labels also appear in the legend. Column labels are not used in the chart.

To learn more about...	Refer to...
Donut charts and other chart options	“Pie and Stacked Pie Chart Options” in chapter 10

Stacked Pie Chart

Use a Stacked Pie chart to show the relationship of the parts to the whole for two or more data series.

	Label	A	B	C
Label		Site 1	Site 2	Site 3
1	Labor	50	52	12
2	Land	60	37	15
3	Materials	20	11	18



The information required for a Stacked Pie chart is identical to that required for a Multiple Pie chart. The Stacked Pie, however, plots a

separate pie for each column of data selected and stacks them on top of each other. The wedges of each pie represent the row values in that column. You can apply colors to Pie slices individually or as a whole. If you apply depth to a Pie using the “Depth” option from the Chart menu, you can apply different colors to the depth or the pie surface. Only the pie parts selected are changed.

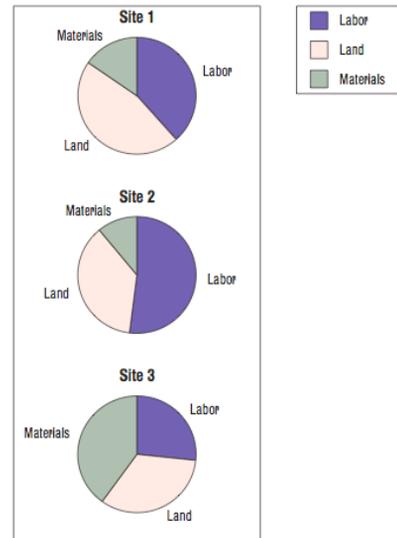
Row labels are used to name each pie slice. These labels also appear in the legend. Column labels are used to name each pie.

To learn more about...	Refer to...
Other chart options	“Pie and Stacked Pie Chart Options” in chapter 10

Multiple Pie Chart

Use a Multiple Pie chart to show the relationship of the parts to the whole for two or more data series.

	Label	A	B	C
		Site 1	Site 2	Site 3
1	Labor	50	52	12
2	Land	60	37	15
3	Materials	20	11	18



The information required for a Multiple Pie chart is identical to that required for a Stacked Pie chart. The Multiple Pie chart, however, plots a separate pie for each column of data selected and arranges them without stacking them. The wedges of each pie represent the row values in that column.

You can separate the pie slices in the chart by clicking a wedge and dragging it away from the rest of the pie. This moves all the wedges of the same category at one time. To move only one slice, click the wedge you want to move again. Delta- Graph allows you to drag the slices in one direction only.

You can apply colors to pie slices individually or as a whole. If you apply depth to a pie using the “Depth” option from the Chart menu, you can apply separate colors to the depth or the pie surface. Only the pie parts selected are changed.

Row labels are used to name each pie slice. Column labels are used to name each pie. These labels also appear in the legend.

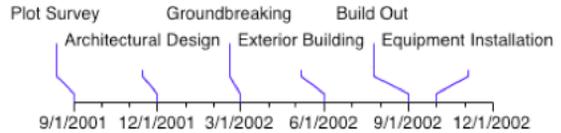
You can reshape the arrangement of the pies or make their sizes proportional to a single pie’s contribution to the sum of the data in all the pies. You can resize and reshape the pies and spread or shrink the space between the pies.

To learn more about...	Refer to...
Other chart options	“Multiple Pie Chart Options” in chapter 10

Time Line Chart

Use a Time Line chart to display a project schedule, time line, or even a product comparison based on a predetermined scale.

Label	Label	A
1	Plot Survey	9/1/93
2	Architectural Design	12/1/93
3	Groundbreaking	3/1/94
4	Exterior Building	6/1/94
5	Build Out	9/1/94
6	Equipment Installation	10/1/94



A Time Line uses two columns per data series. Enter the labels for your Time Line in the first column (Label) and the numbers or times in the second column (A). You can create additional series on the same Data page with (B) labels, (C) numbers, (D) labels, (E) numbers, and so on.

Once the Time Line is plotted, you can select and reposition chart labels as a group or individually. When you drag a category label to a new location, the “arm” connecting it to the Time Line follows.

To learn more about...	Refer to...
Selecting chart elements	“Selecting a Chart and Chart Elements” in chapter 9
Changing the category axis	“Creating Axis Breaks” in chapter 9
Other chart options	“Time Line Chart Options” in chapter 10

Table Chart

Use a Table chart to chart data as it appears in the Data page.

	Label	A	B	C
Label	Temperatures	High	Low	Median
1	Jan-Feb	68	50	59
2	Mar-Apr	75	54	64.5
3	May-Jun	90	72	81
4	Jul-Aug	103	68	85.5
5	Sep-Oct	92	78	81
6	Nov-Dec	78	62	69

Temperatures	High	Low	Median
Jan-Feb	68	50	59
Mar-Apr	75	54	64.5
May-Jun	90	72	81
Jul-Aug	103	68	85.5
Sep-Oct	92	78	81
Nov-Dec	78	62	69

Enter the table data, including row and column labels, as you want them to appear in the Table chart. You can use the upper left-hand cell in the Data page to enter a title over the row labels in the table. You can also make a chart column wider by selecting a vertical line and dragging it.

You can attach a Table chart to an existing category-based chart by choosing “Attach Table” from the Chart menu. (The command is dimmed if you select an inappropriate chart.) Created from the same data used to plot the selected chart, the new Table chart appears in the Chart page aligned with the existing chart’s row labels. Because the two charts share the same “width between grids,” you cannot resize the Table chart along the adjoining axis. The only way to change this dimension of the Table chart is to resize the original. The Table chart resizes automatically to maintain the alignment.

As soon as you select a Table chart in the Chart view, you will notice a shaded border around the outside. The Selection icon in the upper left corner of the shaded border changes from a solid square to a grid when you click it to indicate which selection mode you are in. The solid square indicates the backplane is selected. The grid indicates that the chart elements can be selected individually so you can change text attributes and alignment.

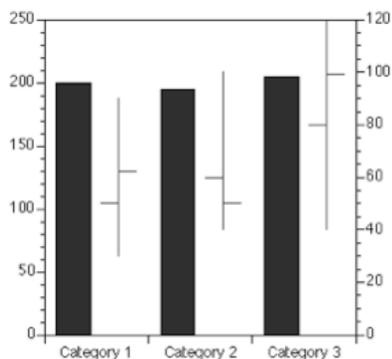
Refer to the figure below for additional information about the Table chart.

To learn more about...	Refer to...
Other Table chart options	“Table Chart Options” in chapter 10

Volume Open High Low Close Chart

Use these charts to show values that fluctuate in a given time period, such as a day or hour. These charts can plot the total volume, starting value (open), the high, the low, and the final (close) values. This chart is similar to the Candlestick chart. It is commonly used for market analysis and appears in investment publications. It can be used to plot the volume, opening, high, low, and closing prices of an investment for a particular time.

	Label	A	B	C	D	E
		Volume	Open	High	Low	Close
1	Category 1	200	50	90	30	62
2	Category 2	195	60	100	40	50
3	Category 3	205	80	120	40	99



Each series must have five columns of data that represent volume, open, high, low, and close respectively. Each Data page can contain more than one series of data at one time. The default chart has a vertical line extending from the low to the high values and a horizontal line projecting out to the left at the open value and one extending to the right for the close value. The length and direction of the horizontal lines can be adjusted using the “Options” command.

Row labels are used to name each category. Enter a label in the first column of each series to name the data series. These labels appear in the legend.

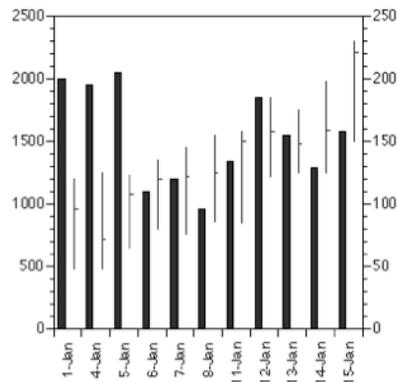
A special legend can be turned on using the “Show Open/Close Legend” option in the “Options” dialog box. It indicates which side of the vertical line represents the opening value and which represents the closing value.

To learn more about...	Refer to...
Other chart options	“Volume Open High Low Close and Volume High Low Close Chart Options” in chapter 10

Volume High Low Close Chart

This chart is similar to the Volume Open High Low Close chart except that it does not use the second column of data. The open values are not represented, and the corresponding second column in every series should be left empty.

	Label	A	B	C	D	E
Label		Volume		HI	Low	Close
1	1-Jan	2000		120	48	96
2	4-Jan	1950		125	48	72
3	5-Jan	2050		123	65	108
4	6-Jan	1100		135	80	120
5	7-Jan	1200		145	76	122
6	8-Jan	961		155	86	125
7	11-Jan	1345		158	85	150
8	12-Jan	1850		185	122	158
9	13-Jan	1550		175	125	148
10	14-Jan	1295		198	125	159
11	15-Jan	1580		230	150	221



These charts plot the total volume, the high, the low, and the final value (close). As with Volume Open High Low Close charts, Volume High Low Close charts show values that fluctuate in a given time period, such as a day or hour.

Each series must have five columns of data, with the second column of data empty. These represent the volume, high, low, and close

respectively. Each Data page can contain more than one series of data at one time. The default chart has a vertical line extending from the low to the high values, one horizontal line projecting to the left for the opening value, and one extending to the right for the closing value. You can adjust the length and direction of the horizontal lines.

Row labels are used to name each category. Enter a label in the first column to name the data series. These labels appear in the legend. A special legend can be turned on using the “Show Open/Close Legend” option in the “Options” dialog box. It indicates which side of the vertical line represents the opening value and which represents the closing value.

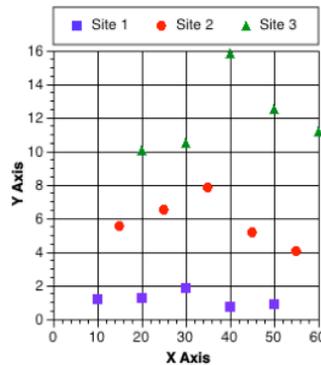
To learn more about...	Refer to...
Other chart options	“Volume Open High Low Close and Volume High Low Close Chart Options” in chapter 10

2-D Technical Charts

Paired Scatter Chart

Use a Paired Scatter chart to show data points from one or more data series with each point having unique X and Y coordinates.

	Label	A	B	C	D	E	F
Label		Site 1	Y1	Site 2	Y2	Site 3	Y3
1	Point 1	10	1.2	15	5.6	20	10.1
2	Point 2	20	1.3	25	6.6	30	10.6
3	Point 3	30	1.9	35	7.9	40	15.9
4	Point 4	40	0.8	45	5.2	50	12.6
5	Point 5	50	0.9	55	4.1	60	11.2



This chart is similar to the Paired XY Line chart in the way the data are organized, but they are plotted differently because the Paired Scatter does not sort the X values before plotting the data.

“Paired” refers to how the chart interprets the data that makes up each series of X and Y coordinates.

In the Paired Scatter chart, data are arranged in paired columns of coordinate points that make up each data series. Each data series has two columns of data. The first column produces the X coordinate of the point, and the second column produces the Y coordinate of the point. A data symbol is plotted at the points with the specified X and Y coordinates. This allows you to plot data points that have different X and Y coordinates for each data series.

The number of rows determines how many points are in a data series.

To label each data series of a Paired Scatter chart, enter labels over each column of X coordinates in the Data page. These labels appear in the chart legend. Because the Paired Scatter chart uses values on both the vertical and the horizontal axes, there are no category axis labels.

To learn more about...	Refer to...
Changing symbol shape and color	“Changing Chart Symbols” in chapter 9
Other chart options	“Scatter and XY Line Chart Options” in chapter 10

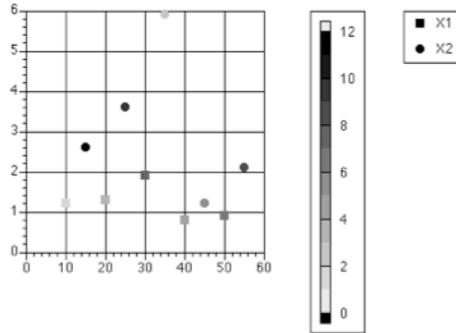
Paired Intensity Scatter Chart

Use a Paired Intensity Scatter chart to show data points from one or more data series with each point having unique X and Y coordinates.

“Paired” refers to how the chart interprets the data that makes up each series of X and Y coordinates.

In the Paired Intensity Scatter chart, data are arranged in paired columns of coordinate points that make up each data series. Each data series has three columns of data. The first column produces the X coordinate of the point, the second column produces the Y coordinate of the point, and the third column produces the Z-axis color intensity value. A data symbol is plotted at the points with the specified X and Y coordinates. Color intensity values set in the “Color Ramp” dialog box are accessed from the “Chart Options” dialog box. This allows you to plot data points that have different X and Y coordinates for each data series. The number of rows determines how many points are in a data series.

	Label	A	B	C	D	E	F
Label	X1	Y1	Z1	X2	Y2	Z2	
1	Point 1	10	1.2	1.1	15	2.6	11.1
2	Point 2	20	1.3	3.5	25	3.6	9.2
3	Point 3	30	1.9	7.9	35	5.9	2.1
4	Point 4	40	0.8	4.5	45	1.2	5.1
5	Point 5	50	0.9	6.2	55	2.1	8.6



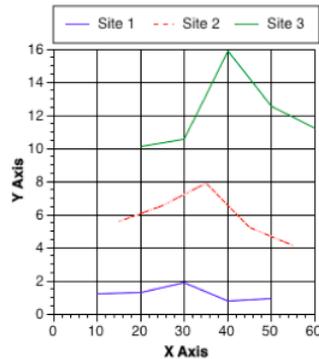
To label each data series of a Paired Intensity Scatter chart, enter labels over each column of X coordinates in the Data page. These labels appear in the chart legend. Because the Paired Intensity Scatter chart uses values on both the vertical and the horizontal axes, there are no category axis labels.

To learn more about...	Refer to...
Changing symbol shape and color	“Changing Chart Symbols” in chapter 9
Other chart options	“Intensity Scatter and Paired Intensity Scatter Chart Options” in chapter 10

Paired XY Line Chart

Use a Paired XY Line chart to show sorted data points from one or more data series with each having a unique X and Y coordinate.

	Label	A	B	C	D	E	F
Label		Site 1	Y1	Site 2	Y2	Site 3	Y3
1	Point 1	10	1.2	15	5.6	20	10.1
2	Point 2	20	1.3	25	6.6	30	10.6
3	Point 3	30	1.9	35	7.9	40	15.9
4	Point 4	40	0.8	45	5.2	50	12.6
5	Point 5	50	0.9	55	4.1	60	11.2



“Paired” refers to how the chart interprets the data that make up each series of X and Y coordinates.

This chart type is similar to an XY Line chart but uses a different type of data. The Paired XY Line chart is similar to the Paired Scatter chart in the way the data are organized, but they are plotted differently because the Paired XY Line chart sorts the X values from left to right before plotting the data, while the Paired Scatter chart does not.

In the Paired XY Line chart, data are arranged in paired columns of coordinate points that make up each data series. Each data series has two columns of data. The first column produces the X coordinate of the point. The second column produces the Y coordinate of the point. A line is drawn connecting the points in the series. This lets you plot multiple series of data with different X and Y coordinates for each data series. The number of rows determines how many points are in a data series.

To label each data series of a Paired XY Line chart, enter labels over each column of X coordinates in the Data page. These labels appear in the chart legend.

Because the Paired XY Line chart uses values on both the vertical and the horizontal axes, there are no category axis labels.

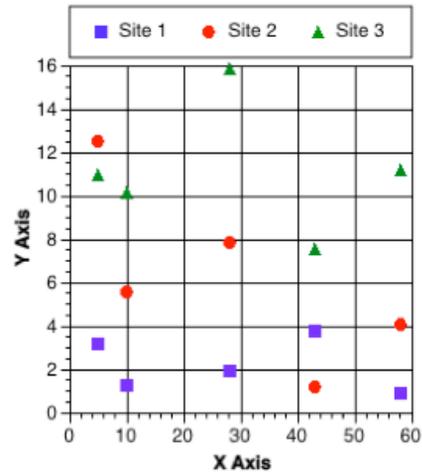
NOTE  If the X coordinate data are not sorted, they are sorted internally so a line is drawn from the point with the lowest X coordinate to the highest. The actual data does not change in the Data page. If you want the data to remain unsorted, use a Paired Scatter chart and turn on “Connect Data Points” in the “Options” dialog box.

To learn more about...	Refer to...
Other chart options	“Scatter and XY Line Chart Options” in chapter 10

Scatter Chart

Use a Scatter chart to show data points from one or more data series with each point having the same X coordinate and unique Y coordinates.

	Label	A	B	C	D
	X		Site 1	Site 2	Site 3
1	Point 1	5	3.2	12.6	11
2	Point 2	10	1.3	5.6	10.2
3	Point 3	28	2	7.9	15.9
4	Point 4	43	3.8	1.2	7.6
5	Point 5	58	0.9	4.1	11.2



This chart is similar to the XY Line chart in the way the data are organized, but they are plotted differently because the Scatter chart does not sort the X values plotting the data. The number of rows determines how many points are in a data series.

A Scatter chart produces a scatter plot in which both the vertical or Y axis and the horizontal or X axis measure values. Each data series consists of two coordinates. The first coordinate (X), which is the same for all series, represents the first column of data. The second coordinate (Y), which differs for each series, represents the remaining columns of selected data. For each series in the chart, symbols are drawn that correspond to two coordinate data points. The number of rows determines how many points are in a data

series.

To label each data series of a Scatter chart, enter labels over each column of Y coordinates in the Data page. These labels appear in the chart legend. Because the Scatter chart uses values on both the vertical and the horizontal axes, there are no category axis labels.

If your X coordinate column is not located at the beginning of your data, you can select non-adjacent columns of data by selecting the column you want for your X coordinate first and then holding down the **command** key and choosing the data you want for your Y coordinates.

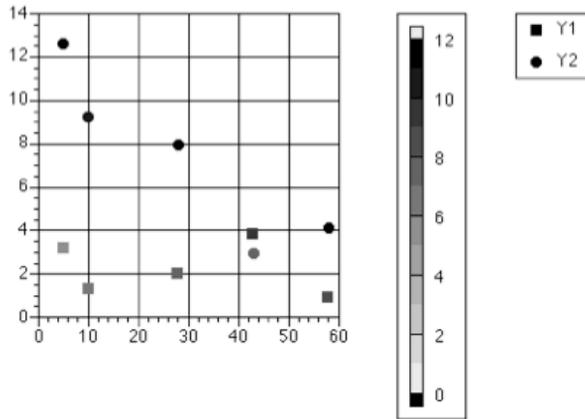
To learn more about...	Refer to...
Other Scatter chart options	“Scatter and XY Line Chart Options” in chapter 10

Intensity Scatter Chart

Use an Intensity Scatter chart to show data points from one or more data series with each point having the same X coordinate and unique Y coordinates plus a Z-axis intensity value. The number of rows determines how many points are in a data series.

Intensity scatter produces a scatter plot in which both the vertical or Y axis and the horizontal or X axis measure values. Each data series consists of two coordinates plus a Z-axis color intensity value. The first coordinate (X), which is the same for all series, represents the first column of data. The second (Y) and third (Z) coordinates, which differ for each series, represent the remaining columns of selected data. For each series in the chart, symbols are drawn that correspond to two coordinate data points. Color intensity values set in the “Color Ramp” dialog box are accessed from the “Chart Options” dialog box.

	Label	A	B	C	D	E
	Label	X	Y1	Z1	Y2	Z2
1	Point 1	5	3.2	5	12.6	11
2	Point 2	10	1.3	6.6	9.2	10.2
3	Point 3	28	2	7.2	7.9	11.8
4	Point 4	43	3.8	9	2.9	7.6
5	Point 5	58	0.9	8.3	4.1	11.2



To label each data series of a Scatter chart, enter labels over each column of Y coordinates in the Data page. These labels appear in the chart legend. Because the Scatter chart uses values on both the vertical and the horizontal axes, there are no category axis labels.

If your X coordinate column is not located at the beginning of your data, you can select nonadjacent columns of data by selecting the column you want for your X coordinate first and then holding down the **command** key.

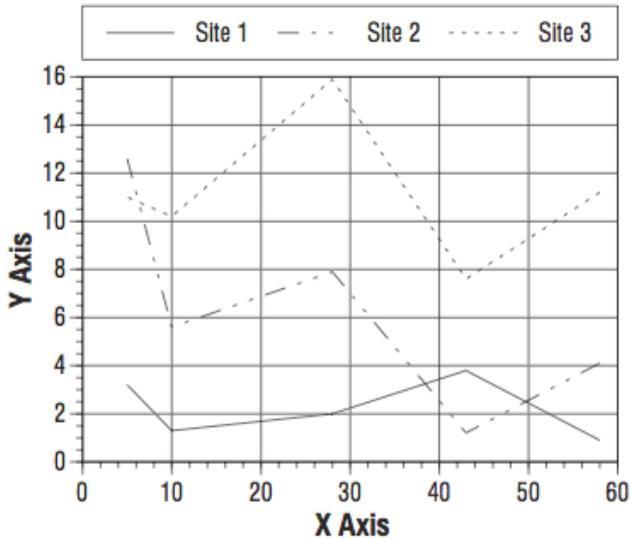
NOTE  When creating combination charts, this chart type can be used as a base chart.

To learn more about...	Refer to...
Changing symbol shape and color	“Changing Chart Symbols” in chapter 9
Other chart options	“Intensity Scatter and Paired Intensity Scatter Chart Options” in chapter 10

XY Line Chart

Use an XY Line chart to show a comparison of one or more data series with each having the same X coordinate and unique Y coordinates.

	Label	A	B	C	D
		X	Site 1	Site 2	Site 3
1	Point 1	5	3.2	12.6	11
2	Point 2	10	1.3	5.6	10.2
3	Point 3	28	2	7.9	15.9
4	Point 4	43	3.8	1.2	7.6
5	Point 5	58	0.9	4.1	11.2



This chart is similar to the Scatter chart in the way the data are organized, but they are plotted differently because the XY Line chart sorts the X values from left to right before plotting the data, while the Scatter chart does not.

An XY Line chart produces a line chart in which both the vertical or Y axis and the horizontal or X axis measure values. This differs from a Line chart where the X axis is a category axis. The XY Line chart allows you to use unevenly spaced data increments in the X axis.

Each data series consists of two coordinates. The first coordinate (X), which is the same for all series, represents the first column of data. The second coordinate (Y), which differs for each series, represents the remaining columns of selected data. For each data series in the chart, a line is drawn that corresponds to two coordinate data points. The number of rows determines how many points are in a data series.

To label each data series of an XY Line chart, enter labels over each column of Y coordinates in the Data page. These labels appear in the chart legend. Because the XY Line chart uses values on both the vertical and the horizontal axes, there are no category axis labels.

If your X coordinate column is not located at the beginning of your data, you can select non-adjacent columns of data by selecting the column you want for your X coordinate first and then holding down the **command** key and choosing the data you want for your Y coordinates.

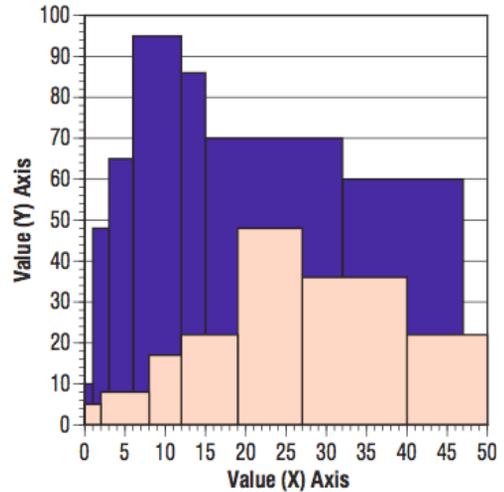
NOTE 

If your X coordinate data are not in sorted order, they are sorted internally so that a line is drawn from the point with the lowest X coordinate to the highest. The actual data are not changed in the Data page. If you want the data to remain unsorted, use a Scatter chart and turn on “Connect Data Points” in the “Options” dialog box.

XY Column Chart

The XY Column chart (also known as a Merimeko chart) is essentially a scatter plot with lines added to create columns of potentially differing widths.

Label	A	B	C	D
1	1	10	2	5
2	3	48	8	8
3	6	65	12	17
4	12	95	19	22
5	15	86	27	48
6	32	70	40	36
7	47	60	50	22



This allows you to represent changes in values and differences between values by plotting rectangular areas. Each column can be t

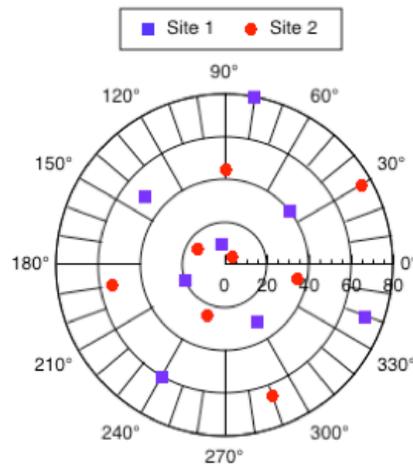
To learn more about...	Refer to...
Other XY Column chart options	“XY Column Chart” in chapter 7

as lines or filled with color.

Polar Chart

Use a Polar chart to show a relationship between an angle measured in degrees and some other quantity. For example, volume vs. direction of listener measured at some fixed distance from a loudspeaker, the strain at a particular point on a camshaft as it rotates through 360 degrees, or the quantity of measured airborne contaminant near a pollution source vs. wind direction. This chart can also be used to show cyclical trends by scaling time into degrees.

	Label	A	B	C	D
Label		Site 1	Angle1	Site 2	Angle2
1	Point 1	10	100	5	50
2	Point 2	20	200	15	150
3	Point 3	30	300	25	250
4	Point 4	40	400	35	350
5	Point 5	50	500	45	450
6	Point 6	60	600	55	550
7	Point 7	70	700	65	650
8	Point 8	80	800	75	750



The Polar chart requires at least two columns of data for each data series. The first column of data corresponds to distance from the center of the chart or the Radius, and the second column corresponds to the number of degrees on the perimeter of the chart or the Angle. To label each series, enter labels over the first column of each data

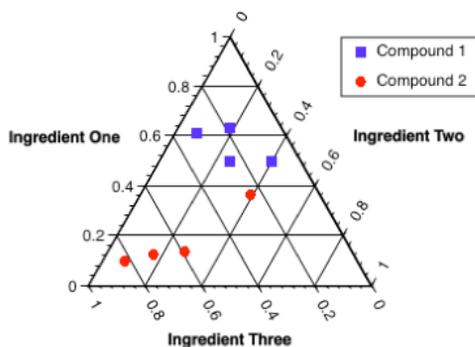
series in a Data page.

To learn more about...	Refer to...
Changing symbol shape and color	“Changing Chart Symbols” in chapter 9
Other chart options	“Polar Chart Options” in chapter 10

Ternary Chart

Use a Ternary chart to show the percentage of a whole based on three parts of information.

Label	A	B	C	D	E	F
1 Point 1	10	40	80	100	1000	120
2 Point 2	20	20	70	120	500	90
3 Point 3	30	30	60	140	300	70
4 Point 4	40	10	50	160	100	150



The Ternary chart requires three columns of data for each data series. The first column corresponds to values on the X axis, the second column corresponds to values on the Y axis, and the third column corresponds to values on the Z axis. The position of the axes for a

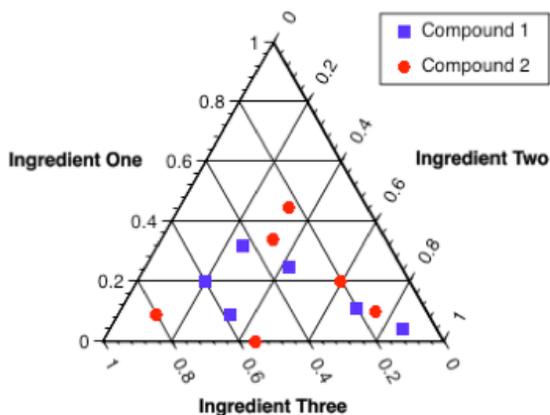
Ternary chart can be changed from the “Options” dialog box. To label each data series, enter labels over the first column (X) of each data series. These labels appear in the legend.

To learn more about...	Refer to...
Changing symbol shape and color	“Changing Chart Symbols” in chapter 9
Other chart options	“Ternary and Percent Ternary Chart Options” in chapter 10

Ternary Percent Chart

Use a Ternary Percent chart to show the percentage of a whole based on three parts of information, two of which are given as data in percent form.

	Label	A	B	C	D
		Compound 1		Compound 2	
1	Point 1	0.2	0.6	0.33	0.33
2	Point 2	0.25	0.43	0.6	0.2
3	Point 3	0.33	0.58	0.75	0.15
4	Point 4	0.42	0.33	0.32	0.23
5	Point 5	0.69	0.2	0.45	0.55
6	Point 6	0.86	0.1	0.11	0.8



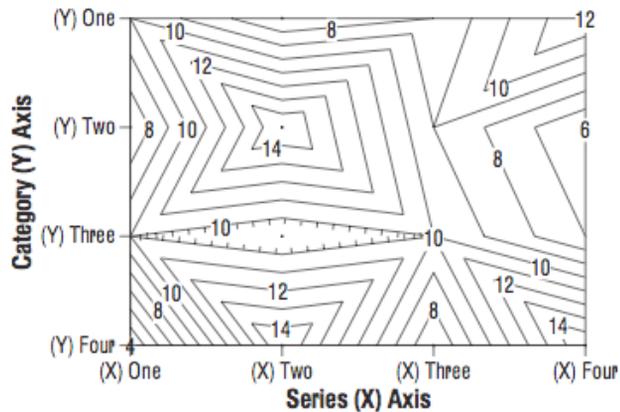
The Ternary Percent chart requires two columns of data for each data series. Data must be in percent form (between 0 and 1). The X axis is a percentage of the value in the first column. The Y axis is a percentage of the value in the second column. Based on the two percents, a third value (Z axis) is calculated automatically as a percent of the remainder. To label the data series, enter labels over the first column (X) of each data series (every second column). The labels appear in the legend. The position of the axes for a Ternary Percent chart can be changed from the “Options” dialog box.

To learn more about...	Refer to...
Changing symbol shape and color	“Changing Chart Symbols” in chapter 9
Other chart options	“Ternary and Percent Ternary Chart Options” in chapter 10

Contour Line Chart

The Contour Line chart is a variation of the Contour Fill and 3-D Surface Line/Fill charts. The Contour Line chart does not have a value axis. The values are shown as a series of lines and numbers in the chart instead.

	Label	A	B	C	D
Label		(X) One	(X) Two	(X) Three	(X) Four
1	(Y) One	10	7	8	12
2	(Y) Two	7	15	9	6
3	(Y) Three	10	9	10	7
4	(Y) Four	4	15	7	15



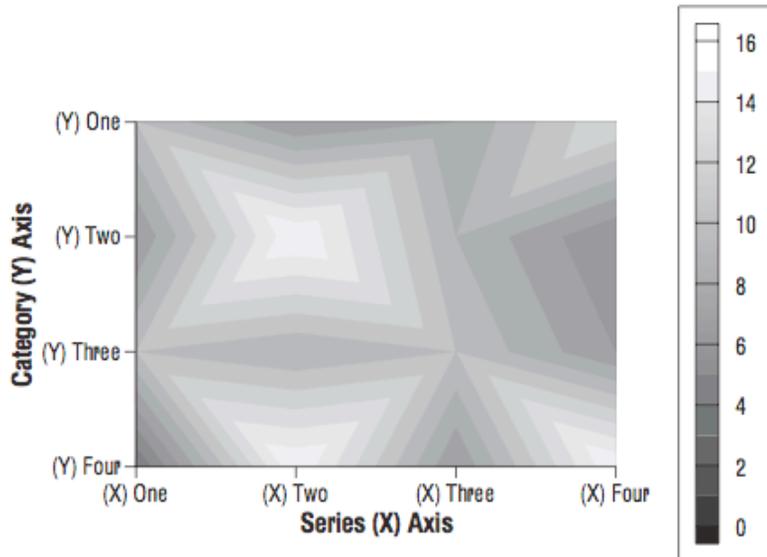
You must have at least two columns and two rows of data in a Contour Line chart. The vertical or Y axis shows the category, the horizontal or X axis shows the series. Each row of data corresponds to a category. Each column of data corresponds to a series. Each value in the Data page is represented at the intersection of the category and series points. Row labels are used to name each category on the Y axis. Column labels are used to name each series on the X axis.

To learn more about...	Refer to...
Other chart options	“Contour Line Chart Options” in chapter 10

Contour Fill Chart

Use a Contour Fill chart to show surface variation of two sets of evenly spaced values (such as latitude and longitude at 10° intervals), which can be entered as row and category labels, and a unique number (such as elevation at a given point).

	Label	A	B	C	D
Label		(X) One	(X) Two	(X) Three	(X) Four
1	(Y) One	10	7	8	12
2	(Y) Two	7	15	9	6
3	(Y) Three	10	9	10	7
4	(Y) Four	4	15	7	15



The Contour Fill chart is a variation of the Contour Line and 3-D Surface Line/Fill charts. The Contour Fill chart does not have a value axis. The values are shown as a variation in pattern or color and are represented in the legend instead.

You must have a least two columns and two rows of data in a Contour Fill chart. The vertical or Y axis shows the category. The horizontal or X axis shows the series. Each row of data corresponds to a category. Each column of data corresponds to a series. Each value in the Data page is represented at the intersection of the category and series points. Row labels are used to name each category on the Y axis. Column labels are used to name each series on the X axis.

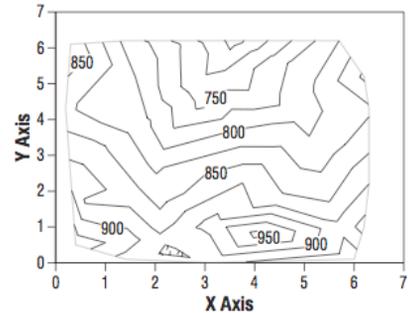
To learn more about...	Refer to...
Other chart options	"Contour Fill Chart Options" in chapter 10

XYZ Contour Line Chart

Use an XYZ Contour Line chart to show variations and relationships over three sets of values: latitude, longitude, and elevation, for example.

Label	A	B	C
1	0.3	6.1	870
2	1.4	6.2	793
3	2.4	6.1	755
4	3.6	6.2	690
5	5.7	6.2	800
6	1.6	5.2	800
7	2.9	5.1	730
8	3.4	5.3	728
9	3.4	5.7	710
10	4.8	5.6	780
11	5.3	5	804
12	6.2	5.2	855
13	0.2	4.3	830
14	0.9	4.2	813
15	2.3	4.8	762
16	2.5	4.5	765
17	3	4.5	740
18	3.5	4.5	765
19	4.1	4.6	760
20	4.9	4.2	790
21	6.3	4.3	820
22	0.9	3.2	855
23	1.7	3.8	812
24	2.4	3.8	773
25	3.7	3.5	812
26	4.5	3.2	827
27	5.2	3.2	805
28	6.3	3.4	840
29	0.3	2.4	890
30	2	2.7	820
31	3.8	2.3	873
32	6.3	2.2	875
33	0.6	1.7	873
34	1.5	1.8	865

35	2.1	1.8	841
36	2.1	1.1	862
37	3.1	1.1	908
38	4.5	1.8	855
39	5.5	1.7	850
40	5.7	1	882
41	6.2	1	910
42	0.4	0.5	940
43	1.4	0.6	915
44	1.4	0.1	890
45	2.1	0.7	880
46	2.3	0.3	870
47	3.1	0	880
48	4.1	0.8	960
49	5.4	0.4	890
50	6	0.1	860
51	5.7	3	830
52	3.6	6	705



Each data series requires three columns of data. The first column produces the values for the X coordinate points, the second column produces the Y coordinate points, and the third column (Z) represents an elevation. You are limited to 32,767 data points when creating an XYZ Contour Line chart. Remember that the more data points the chart contains, the longer it takes to plot and redraw.

The XYZ Contour Line chart is a variation of the XYZ Contour Fill

chart. The XYZ Contour Line chart is 2-D with the third dimension of values shown as an annotated elevation on the chart. An XYZ Contour Line chart does not require labels or a legend.

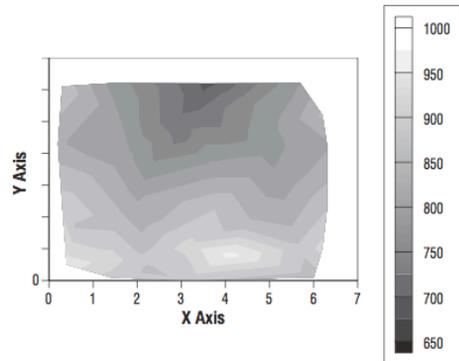
To learn more about...	Refer to...
Other chart options	“Contour Line Chart Options” in chapter 10

XYZ Contour Fill Chart

Use an XYZ Contour Fill chart to show variations and relationships over three sets of values: for example, latitude, longitude, and elevation.

Label	A	B	C
1	0.3	6.1	870
2	1.4	6.2	793
3	2.4	6.1	755
4	3.6	6.2	690
5	5.7	6.2	800
6	1.6	5.2	800
7	2.9	5.1	730
8	3.4	5.3	728
9	3.4	5.7	710
10	4.8	5.6	780
11	5.3	5	804
12	6.2	5.2	855
13	0.2	4.3	830
14	0.9	4.2	813
15	2.3	4.8	762
16	2.5	4.5	765
17	3	4.5	740
18	3.5	4.5	765
19	4.1	4.6	760
20	4.9	4.2	790
21	6.3	4.3	820
22	0.9	3.2	855
23	1.7	3.8	812
24	2.4	3.8	773
25	3.7	3.5	812
26	4.5	3.2	827
27	5.2	3.2	805
28	6.3	3.4	840
29	0.3	2.4	890
30	2	2.7	820
31	3.8	2.3	873
32	6.3	2.2	875
33	0.6	1.7	873
34	1.5	1.8	865

35	2.1	1.8	841
36	2.1	1.1	862
37	3.1	1.1	908
38	4.5	1.8	855
39	5.5	1.7	850
40	5.7	1	882
41	6.2	1	910
42	0.4	0.5	940
43	1.4	0.6	915
44	1.4	0.1	890
45	2.1	0.7	880
46	2.3	0.3	870
47	3.1	0	880
48	4.1	0.8	960
49	5.4	0.4	890
50	6	0.1	860
51	5.7	3	830
52	3.6	6	705



Each data series requires three columns of data. The first column produces the values for the X coordinate points, the second column produces the Y coordinate points, and the third column (Z) is represented by the legend and the patterns or colors corresponding to elevation in the chart.

You are limited to 32,767 data points when creating an XYZ Contour Fill chart. Remember that the more data points the chart contains, the longer it takes to plot and redraw.

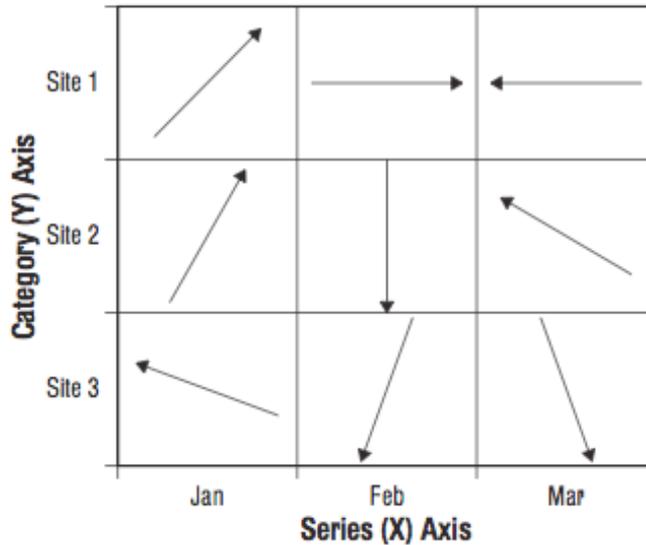
The XYZ Contour Fill chart is a variation of the 3-D Surface chart. The XYZ Contour Fill chart is 2-D, with the third dimension of values shown as a variation in pattern or color. Labels are not used on an XYZ Contour Fill chart, but values may be shown.

To learn more about...	Refer to...
Other chart options	"Contour Fill Chart Options" in chapter 10

Gridded Vector Chart

Use a Gridded Vector chart to display a direction (like air flow) using vectors (arrows) over a gridded area.

	Label	A	B	C
Label		Jan	Feb	Mar
1	Site 1	45	90	270
2	Site 2	30	180	300
3	Site 3	290	200	160



This chart is similar to the Radius/Angle Gridded Vector chart except that the R/A Gridded Vector chart lets you specify the length of the vectors through data. In this chart, the vectors remain static as a percentage of the size of the chart plot frame.

At least one data series is required (each data series requires a single value). Since the data gives the angle at which to draw the vector on the gridded chart, a value between 0 and 360 can be entered. Values outside the 0 to 360 range are supported (if greater than 360, 360 is subtracted from the value; if less than 0, 360 is added to the value). All vectors on this chart are drawn at the same length.

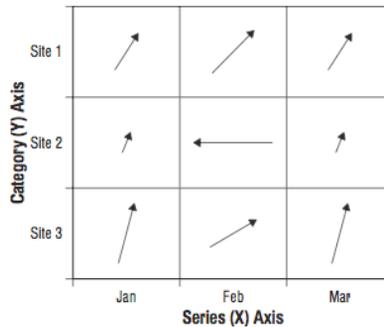
Row labels are used to name each category on the Y axis. Column labels are used to name each series on the X axis. Vectors in the chart can be edited by double-clicking the arrows or by choosing “Edit Arrows” from the Draw menu.

To learn more about...	Refer to...
Other chart options	“Gridded Vector Chart Options” in chapter 10
Changing the vectors	“Creating and Editing an Arrow” in chapter 11

Radius/Angle Gridded Vector Chart

Use a Radius/Angle Gridded Vector (R/A Gridded Vector) chart to show direction (like airflow) using vectors (arrows) over a gridded area.

	Label	A	B	C	D	E	F
Label		Jan		Feb		Mar	
1	Site 1	24	33	33	45	24	33
2	Site 2	12	22	44	270	12	22
3	Site 3	34	15	30	60	34	15



This chart is similar to the Gridded Vector chart except that the R/A Gridded Vector chart lets you specify the length of the vectors through data. In the Gridded Vector chart, the vectors remain static as a percentage of the size of the chart plot frame.

Each data series requires at least two columns of data. The first column represents the radius or length of each vector and the second column represents the angle of the vector. Since the angle value gives the angle at which to draw the vector on the gridded chart, a value between 0 and 360 can be entered in the second column. Values outside the 0 to 360 range are supported (if the value is greater than 360, 360 is subtracted from the value; if the value is less than 0, 360 is added).

Row labels are used to name each category on the Y axis. Column labels are used to name each series on the X axis.

Vectors in the chart can be edited by double-clicking the arrows or by choosing “Edit Arrows” from the Draw menu.

To learn more about...	Refer to...
Changing the vectors	“Creating and Editing an Arrow” in chapter 11
Other chart options	“R/A Gridded Vector and XY Vector Chart Options” in chapter 10

XY Vector Chart

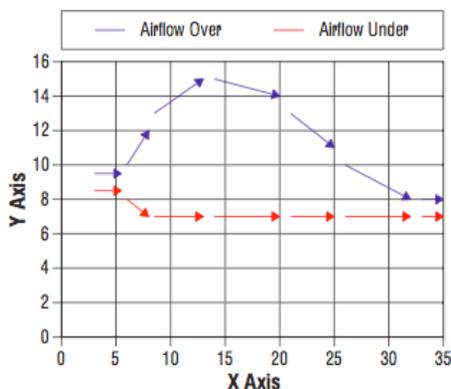
Use an XY Vector chart to display a direction (like airflow) using vectors and a magnitude (dependent on the endpoint calculation method).

This chart is similar to the Gridded Vector and R/A Gridded Vector charts except this chart is not based on a grid. The other two charts depend on the origin point always starting in a grid block, while the XY Vector chart specifies the origin point based on the X and Y axes scaling.

Each data series requires four columns of data. The first two columns represent the origin or “tail” of the vector. To label each series, enter labels over the first column (X) of each data series. These labels appear in the chart legend. Because the XY Vector chart uses values on both the vertical and horizontal axes, there are no Category axis

labels.

	Label	A	B	C	D	E	F	G	H
		Airflow Over				Airflow Under			
1	Vector 0	3	9.5	2.5	0	3	8.5	2.5	0
2	Vector 1	6	10	2	2	6	8	2	-1
3	Vector 2	8.5	13	4.5	2	8.5	7	4.5	0
4	Vector 3	14	15	6	-1	14	7	6	0
5	Vector 4	21	13	4	-2	21	7	4	0
6	Vector 5	26	10	6	-2	26	7	6	0
7	Vector 6	33	8	2	0	33	7	2	0



Using the “Delta” (change) method in the “Options” dialog box, columns three and four determine the endpoint or “head” of the vector (Δx and Δy), giving the incremental offset from the tail to the head of the arrow. Using the “End Point” method, columns three and four determine the endpoint or “head” of the vector (the X coordinate and the Y coordinate) based on the X axis and Y axis scaling. Using the “Radius/Angle” method, columns three and four determine the endpoint or “head” of the vector (the radius length and the radius angle respectively) based on the vector legend scaling.

You can also use the “Options” command to switch methods for determining the endpoint of the vector. Vectors in the chart can be edited by double-clicking the arrows or choosing “Edit Arrows” from the Draw menu.

To learn more about...	Refer to...
Switching the vector endpoints	“R/A Gridded Vector and XY Vector Chart Options” in chapter 10
Changing the vectors	“Creating and Editing an Arrow” in chapter 11

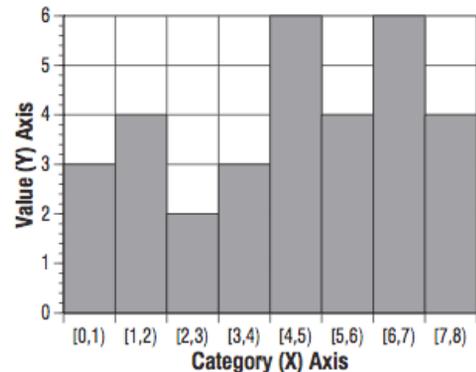
2-D Statistical Charts

Histogram Chart

Use a Histogram chart to show the frequency or occurrence of selected data in a specified range.

Label	A
1	4
2	0.5
3	5
4	7
5	1
6	8
7	6
8	5
9	3
10	8
11	0.5
12	6
13	1
14	6
15	4
16	2
17	5
18	7
19	6
20	4
21	2
22	3
23	4

24	0.5
25	8
26	7
27	6
28	6
29	4
30	1
31	5
32	3
33	4
34	1
35	7



All the values in the data selection are lumped together then divided into groups called categories or “bins,” and the number of data values in each bin is counted. All data values are lumped together in one series (a single column). Any labels for the categories or series are ignored. There is only one series and no legend, so series labels are not needed. At least one data cell needs to be selected. Histogram “bin” labels take the place of category labels, whose options are chosen in the “Options” dialog box, “Binning” option. This dialog box can also be used to control which values go in each bin. A

rectangular data graphic is drawn for each bin, displaying the count in each. Labels are created for each data graphic, describing what is counted in each bin. The content of the labels is also controlled in the “Options” dialog box.

This chart can be “overlaid” with an Ogive chart by using the “Show Ogive” option in the “Options” dialog box. The direction in which the running sum increases may be chosen in the Histogram chart “Options” dialog box.

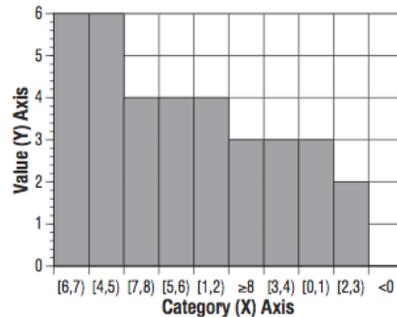
To learn more about...	Refer to...
Binning data and other chart options	“Histogram Chart Options” in chapter 10
Creating a Histogram chart manually	“Creating a Histogram” in chapter 8

Pareto Chart

Use a Pareto chart to show data that need to be counted and sorted.

Label	A
1	4
2	0.5
3	5
4	7
5	1
6	8
7	6
8	5
9	3
10	8
11	0.5
12	6
13	1
14	6
15	4
16	2
17	5
18	7
19	6
20	4
21	2
22	3
23	4

24	0.5
25	8
26	7
27	6
28	6
29	4
30	1
31	5
32	3
33	4
34	1
35	7



The data graphic representing the count is a rectangle, like that used for the Histogram chart. The functionality of the Pareto chart is almost identical to the Histogram chart, except that the bins are sorted according to the frequency count for each bin.

All data values are lumped together in one series (a single column). Any labels for the categories or series are ignored. There is only one series and no legend, so series labels are not needed. At least one data cell needs to be selected.

Pareto “bin” labels take the place of category labels, whose options are chosen in the “Options” dialog box, “Binning” option. The direction in which the sorted counts increase may be chosen in the Pareto chart “Options” dialog box.

This chart can be “overlaid” with an Ogive chart by using the “Show Ogive” option in the “Options” dialog box.

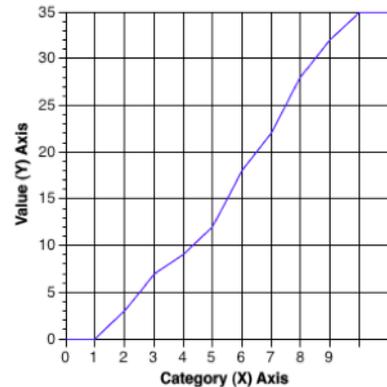
To learn more about...	Refer to...
Binning data and other chart options	“Pareto Chart Options” in chapter 10

Ogive Chart

Use an Ogive chart to show the running sum of frequency counts.

Label	A
1	4
2	0.5
3	5
4	7
5	1
6	8
7	6
8	5
9	3
10	8
11	0.5
12	6
13	1
14	6
15	4
16	2
17	5
18	7
19	6
20	4
21	2
22	3
23	4

24	0.5
25	8
26	7
27	6
28	6
29	4
30	1
31	5
32	3
33	4
34	1
35	7



Ogive bin labels take the place of category labels. Bin labels are controlled through the “Binning” option in the “Options” dialog box. The running sums of the frequency counts may increase from left to right or right to left as selected in the Ogive chart “Options” dialog box. Each column of data is treated as a separate data series. A line data graphic is drawn for each data series.

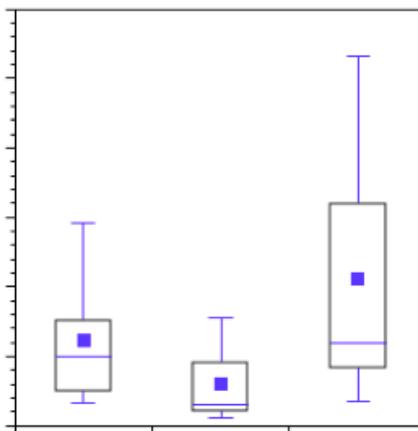
This chart can be “overlaid” on a Histogram or Pareto chart by using the “Show Ogive” option in the “Options” dialog box for those charts.

To learn more about...	Refer to...
Binning data and other chart options	“Ogive Chart Options” in chapter 10

Box Plot Chart

Use a Box Plot chart to show the “spread” of data between categories.

	Label	A	B	C	D	E	F	G	H
1	Sample 1	2	6	5	4	13	16	31	28
2	Sample 2	21	3	10	4	7	3	12	1
3	Sample 3	32	52	55	32	12	10	8	16



Rather than charting all data for each series and category, statistics are computed to reduce the amount of information displayed while still showing the distribution of data in each category.

A Box Plot data graphic consists of five or six different pieces of information calculated from the data selection. The top, bottom, and line through the middle of the box correspond to the 75th percentile (top quartile), 25th percentile (bottom quartile), and 50th percentile (median) respectively. The whiskers on the bottom extend from the 10th percentile (bottom decile) and top 90th percentile (top decile).

Outlier caps are placed at the end of the top and bottom decile whiskers (outlier caps). Any value falling beyond these outlier caps would be considered an outlier. The size of the outlier caps can be customized by specifying a width in the Box Plot “Options” dialog box. A symbol may also be placed on the arithmetic mean but only if the “Show Means” option is selected in the “Options” dialog box.

The amount of data entered and the ordering of values is immaterial. Each row corresponds to a box or new category. Since the data for each series is combined into a representation for a single category, the resulting chart has only one data graphic per category. Series are not distinguished from each other in the final chart. Series labels are ignored. Row labels are used to name each category or box.

The amount of separation is controlled with the “Object Placement” options in the

“Options” dialog box.

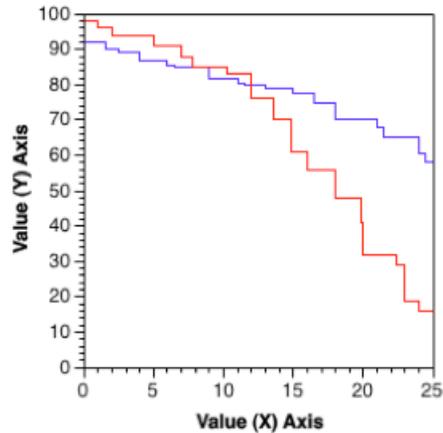
To learn more about...	Refer to...
Changing the separation and other options	“Box Plot Chart Options” in chapter 10

Survival Chart

Survival charts, found under Statistical charts in the Chart Gallery, plot surviving elements, expressed either as absolute numbers, or as percentages.

If you were, for example, a doctor wishing to chart the survival of patients during an epidemic, the chart would consist of a Y axis that designates the percentage of patients surviving and an X axis designating the time elapsing. (It could also be other criteria, such as the concentration of a chemical used on bacteria when the X axis might plot cubic centimeters of chemical used.) The plot typically starts at 100% (but can begin at whatever the starting absolute quantity is) on the Y axis with a stepped line tracing the gradual decline in survival rate.

	Label	A	B	C	D
		Series 1		Series 2	
1		0	92	0	98
2		1.5	90	1	96
3		2.5	89	2	94
4		4	87	5	91
5		6	85.5	7	88
6		6.5	85	7.8	85
7		9	82	10.2	83



Data for a Survival chart must be entered as follows: in column A, enter periods of time elapsed (or cubic centimeters used or whatever the survival is dependent upon), in column B, enter the number surviving.

To learn more about...	Refer to...
Other Survival chart options	“Survival Chart Options” in chapter 10

Quality Control Charts

DeltaGraph offers a variety of quality control charts. Quality control charts, also known as Shewhart charts, are specialized graphs used for the study of control of continuous processes. These charts are based on the idea that if control limits are established, the natural

variability of a process can be quantified. Any variation exceeding the established limits indicates a separate cause of variation.

Quality control charts can be classified broadly according to the type of data analyzed, as follows:

Charts for variables

Indiscrete values, or continuous data, are used when the quality characteristic to be analyzed is measured on a continuous scale. For example, the measurement of unit parts or yields of a chemical process would result in indiscrete values.

Charts for attributes

Discrete values, or enumerated data, are used when the quality characteristic of a process is measured by counting the number of nonconformities (defects) in an item or by counting the number of nonconforming (defective) items in a sample.

DeltaGraph's quality control charts consist of X and Y data points plotted as symbols connected by line segments. The plotted values are the result of computations performed by DeltaGraph based on the type of quality control chart selected. A central line is also plotted to represent the average of all plotted values.

DeltaGraph offers six types of quality control charts, as described in the following sections.

X-R (X Bar-R) Chart

The X-R (X Bar-R) chart uses the measured values in each subgroup to compute both the average value and the range.

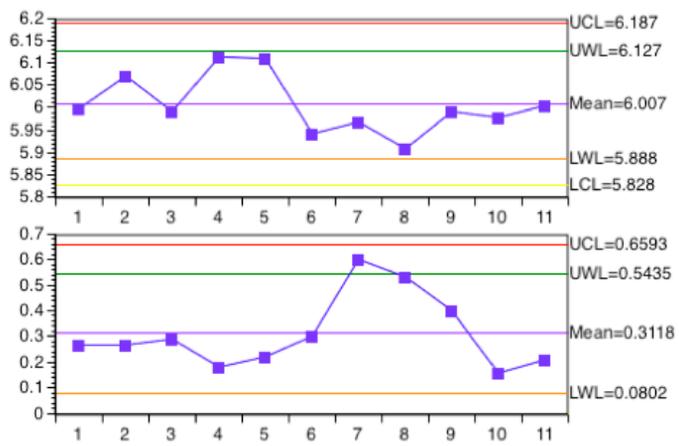
X-R charts are shown in two different forms, either as a single plot with two Y axis scales on the same plot or as two separate plots.

The values plotted along the X axis are the subgroup number, which is either the row number or a lot number. The Y axis values are the average of the measured data for each subgroup for the first axis and the range for the second. Generally this type of chart is limited to

fewer than ten (<10) measured values. At greater than ten (>10), the analyst becomes more interested in the standard deviation than the range of the data.

If you select more than two columns, the first column will be interpreted as sub- group numbers or measured data.

	Label	A	B	C	D	E	F
Label	Sub group No.	06:00:00 AM	10:00:00 AM	02:00:00 PM	06:00:00 PM	10:00:00 PM	Mean
1	1	6.1	5.95	6.11	5.99	5.84	6.00
2	2	6.23	6.01	6.13	5.96	6.03	6.07
3	3	5.89	6.02	6.08	5.84	6.13	5.99
4	4	6.12	6.19	6.11	6.01	6.14	6.11
5	5	6.21	5.99	5.99	6.17	6.19	6.11
6	6	5.92	5.84	5.86	6.14	5.95	5.94
7	7	6.31	5.71	5.85	6.1	5.87	5.97
8	8	6.13	5.6	5.91	5.9	6.01	5.91
9	9	6.2	5.9	6.01	5.8	6.05	5.99
10	10	6.04	6.02	5.94	5.88	6.01	5.98

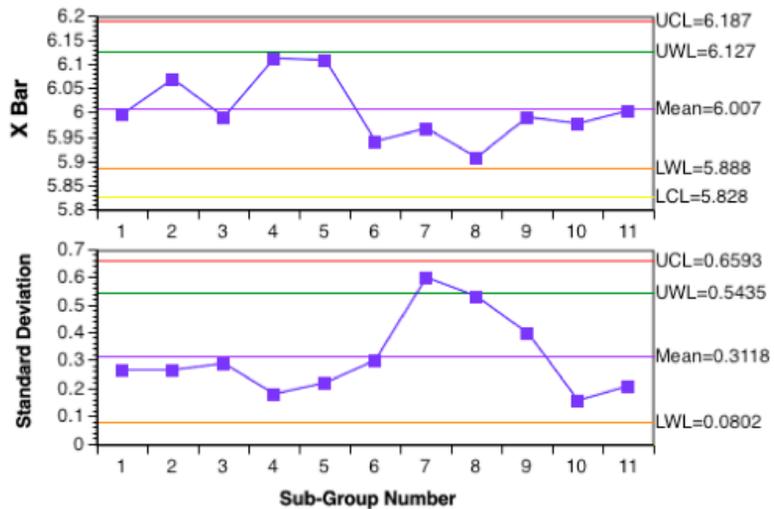


Two related charts will be plotted one above the other. The upper chart shows the mean (average), upper and lower control limits, and upper and lower warning limits. The lower chart shows the mean (average) range and control and warning limits.

X-S (X Bar-S) Chart

The X-S (X Bar-S) chart uses the measured values in each subgroup to compute both the average and standard deviation.

	Label	A	B	C	D	E	F
Label	Sub group No.	06:00:00 AM	10:00:00 AM	02:00:00 PM	06:00:00 PM	10:00:00 PM	Mean
1	1	6.1	5.95	6.11	5.99	5.84	6.00
2	2	6.23	6.01	6.13	5.96	6.03	6.07
3	3	5.89	6.02	6.08	5.84	6.13	5.99
4	4	6.12	6.19	6.11	6.01	6.14	6.11
5	5	6.21	5.99	5.99	6.17	6.19	6.11
6	6	5.92	5.84	5.86	6.14	5.95	5.94
7	7	6.31	5.71	5.85	6.1	5.87	5.97
8	8	6.13	5.6	5.91	5.9	6.01	5.91
9	9	6.2	5.9	6.01	5.8	6.05	5.99
10	10	6.04	6.02	5.94	5.88	6.01	5.98

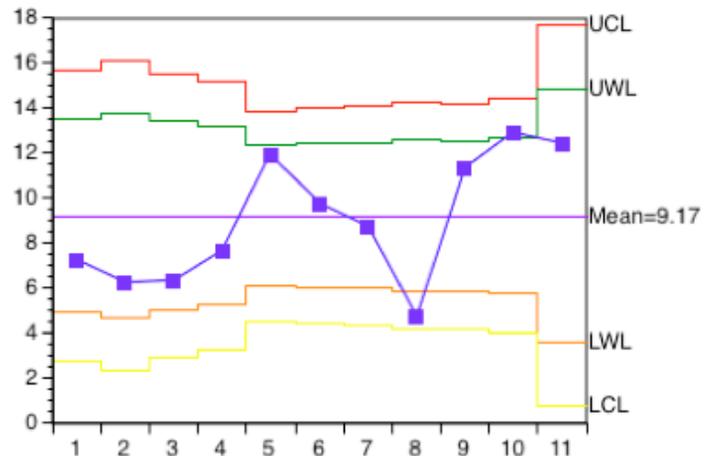


This chart type is very similar to the X-R chart except that the standard deviation, rather than the range of values in the data, is plotted. From a statistical standpoint this chart is more appropriate when the set of measured values is greater than ten (>10). You follow similar steps in preparing to make a X-R chart.

Fraction Defective (p) Chart

The Fraction Defective (p) chart uses the fraction of defective items in each sub- group.

	Label	Sub-group Size (n)	Number of Defectives (pn)
Sub-gr...	Sub-group No.	Sub-group Size (n)	Number of Defectives (pn)
1	1	180	13
2	2	160	10
3	3	190	12
4	4	210	16
5	5	345	41
6	6	330	32
7	7	320	28
8	8	295	14
9	9	300	34
10	10	280	36
11	11	105	13



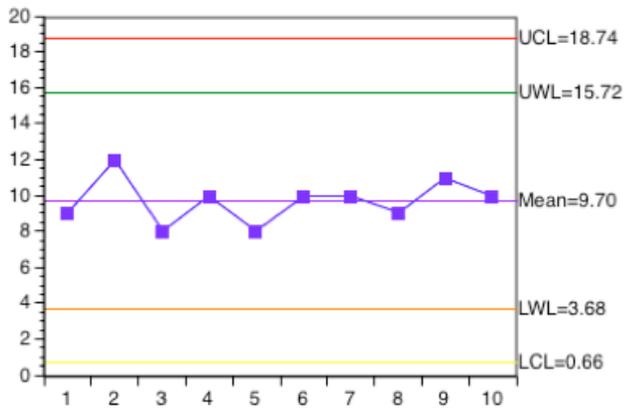
This chart may have variable subgroup sizes. The X axis is shown as the sub-groups or lot numbers, and the Y axis is shown in percentages (%).

The first column represents subgroup size. The second column is the number of nonconformities in the subgroup. If you select three columns, the first column will be interpreted as subgroup numbers or measured data.

Number of Defectives (pn) Chart

The Number of Defectives (pn) chart uses the number of defective items in each subgroup.

Label	Sub group No.	Sub group size	Number of defectives
1	1	150	9
2	2	150	12
3	3	150	8
4	4	150	10
5	5	150	8
6	6	150	10
7	7	150	10
8	8	150	9
9	9	150	11
10	10	150	10



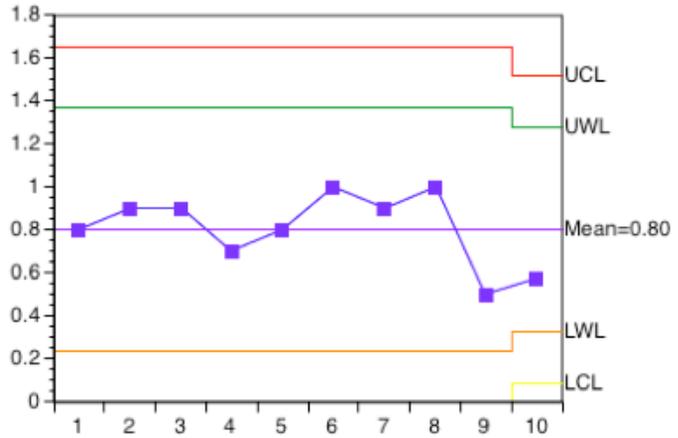
The input is similar to the Fraction Defective (p) chart except that all subgroups must have the same number of members. The X axis is shown as the subgroups or lot numbers, and the Y axis is shown as the number of defective items.

The only difference between a p and a pn chart is that a p chart uses a variable sub- group size, while a pn chart uses a constant subgroup size.

Defects Per Unit (u) Chart

The Defects Per Unit (u) chart shows the number of independent

defects per unit.

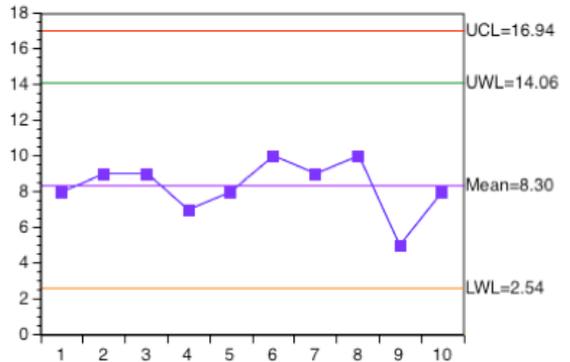


This chart is used for a complex assembly where many independent defects are possible and can be used when the subgroup size varies or is constant.

Number of Defects (c) Chart

The Number of Defects (c) chart shows the number of defects per subgroup.

Label	Sub group No.	A	B
		Ozs. meat product	No. of pollutants
1	1	10	8
2	2	10	9
3	3	10	9
4	4	10	7
5	5	10	8
6	6	10	10
7	7	10	9
8	8	10	10
9	9	10	5
10	10	10	8



This chart is similar to the u chart except that the sample sizes are the same. The only difference between a u and a c chart is that a u chart

uses a variable subgroup size, while a c chart uses a constant subgroup size.

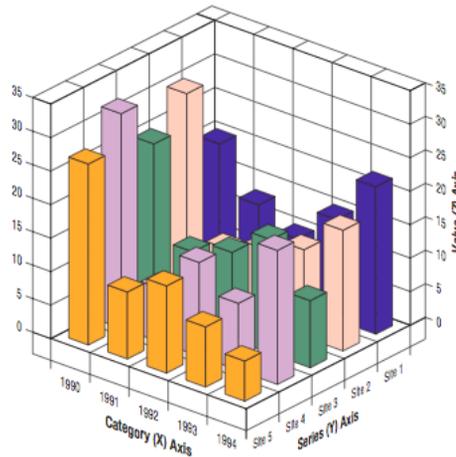
To learn more about...	Refer to...
Other chart options	“Quality Control Chart Options” in chapter 10

3-D Business Charts

3-D Column Chart

The 3-D Column chart is a variation of a 2-D Column chart. Use it to compare one item to another or to compare different items over a period of time. Column charts effectively show dramatic changes from one category to another.

	Label	A	B	C	D	E
Label		Site 1	Site 2	Site 3	Site 4	Site 5
1	1990	20	30	25	32	27
2	1991	13	9	11	8	10
3	1992	10	11	13	14	13
4	1993	15	13	17	10	9
5	1994	22	18	10	20	6



Each row of data corresponds to one set of bars for a given category. Each column of data corresponds to a data series. Each value in the Data page represents one column in a given category. The right or X axis shows categories, the left or Y axis shows the series, and the vertical or Z axis shows values.

NOTE  On a default 3-D chart, the axes are the three lines that intersect in the back of the chart. They are not the lines where the axis labels appear.

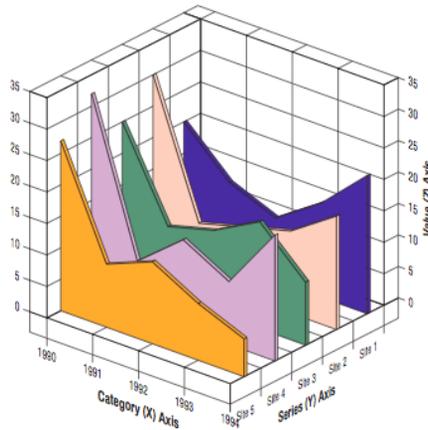
Row labels are used to name each category. Column labels are used to name each series.

To learn more about...	Refer to...
Other chart options	“3-D Column Chart Options” in chapter 10

3-D Area Chart

Use an Area chart to emphasize the volume or size of a data series, frequently over time. This chart is a variation of a 2-D Line or Area chart.

	Label	A	B	C	D	E
Label		Site 1	Site 2	Site 3	Site 4	Site 5
1	1990	20	30	25	32	27
2	1991	13	9	11	8	10
3	1992	10	11	13	14	13
4	1993	15	13	17	10	9
5	1994	22	18	10	20	6



Each column of data corresponds to a data series or a filled area on the chart. The right or X axis shows categories, the left or Y axis shows the series, and the vertical or Z axis shows values. Row labels are used to name each category. Column labels are used to name each

series.

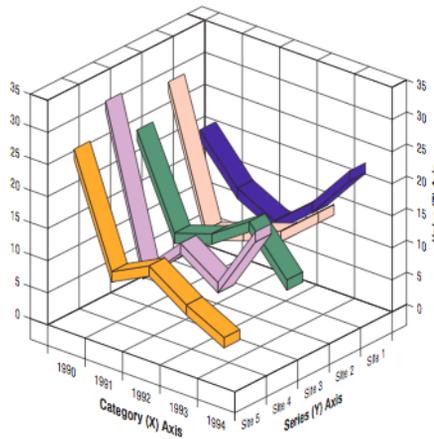
NOTE  On a default 3-D chart, the axes are the three lines that intersect in the back of the chart. They are not the lines where the axis labels appear.

To learn more about...	Refer to...
Other chart options	“3-D Area Chart Options” in chapter 10

3-D Ribbon Chart

Use a 3-D Ribbon chart to show trends.

	Label	A	B	C	D	E
Label		Site 1	Site 2	Site 3	Site 4	Site 5
1	1990	20	30	25	32	27
2	1991	13	9	11	8	10
3	1992	10	11	13	14	13
4	1993	15	13	17	10	9
5	1994	22	18	10	20	6



The 3-D Ribbon chart is a variation of a 2-D Line chart. Each column of data corresponds to one ribbon or data series on the chart. You can have more than one series per Data page. The right or X axis shows categories, the left or Y axis shows the series, and the vertical or Z

axis shows values. Row labels are used to name each category. Column labels are used to name each series.

NOTE  On a default 3-D chart, the axes are the three lines that intersect in the back of the chart. They are not the lines where the axis labels appear.

To learn more about...	Refer to...
Other chart options	“3-D Ribbon Chart Options” in chapter 10

3-D Technical Charts

3-D Scatter Chart

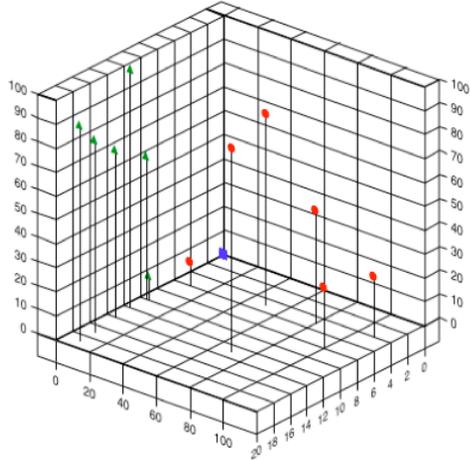
The 3-D Scatter chart plots data points created by the intersection of three different coordinate values. Those points are connected to one of the chart planes with a drop line. Each of the three values that make up a point corresponds to a particular axis in a 3-D grid. The left axis is X, the right axis is Y, and the vertical axis is Z.

NOTE  On a default 3-D chart, the axes are the three lines that intersect in the back of the chart. They are not the lines where the axis labels appear.

All of the axes on a 3-D Scatter chart measure values: the frequency, amplitude, and phase of an electrical signal, for example.

Each data series requires three columns of data. The first column produces the values for the X coordinate points, the second column produces the Y coordinate points, the third column produces the Z coordinate points. Each data point represents a measurement that is the intersection of the three values in a row. You can have more than one data series per Data page.

	Label	A	B	C	D	E	F	G	H	I
Label		X1	Y1	Z1	X2	Y2	Z2	X3	Y3	Z3
1		0	0	0	6	10	10	10	5	10
2		0.048	0.224	0.1	5	50	80	17	8	80
3		0.084	0.392	0.175	5	80	47	12	4	100
4		0.108	0.504	0.225	8	100	25	14	5	70
5		0.132	0.616	0.275	4	110	25	10	4	60
6		0.072	0.336	0.15	13	70	85	19	9	90



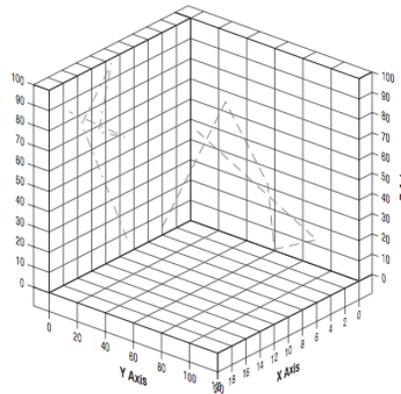
Each data series in a 3-D Scatter chart is represented by a different set of symbols with drop lines to one of the three chart planes. To label each data series, enter labels over the first column of each series in a Data page.

To learn more about...	Refer to...
Changing symbol shape and color	“Changing Chart Symbols” in chapter 9
Other chart options	“3-D Scatter Chart Options” in chapter 10

3-D Scatterline Chart

The 3-D Scatterline chart is a variation of the 3-D Scatter chart, except that it connects the data points by a line, as in “connect-the-dots.”

	Label	A	B	C	D	E	F	G	H	I
Label		X1	Y1	Z1	X2	Y2	Z2	X3	Y3	Z3
1		0	0	0	6	10	10	10	5	10
2		0.048	0.224	0.1	5	50	80	17	8	80
3		0.084	0.392	0.175	5	80	47	12	4	100
4		0.108	0.504	0.225	8	100	25	14	5	70
5		0.132	0.616	0.275	4	110	25	10	4	60
6		0.072	0.336	0.15	13	70	85	19	9	90



This chart measures something that moves in space as a function of time: a satellite orbiting earth, for example. The chart shows a path of contact points along an implied time line represented by the position of the points along the line.

All of the axes on a 3-D Scatterline chart measure values. The left axis is X, the right axis is Y, and the vertical axis is Z.

NOTE

On a default 3-D chart the axes are the three lines that intersect in the back of the chart. They are not the lines where the axis labels appear.

Each data series requires three columns of data. The first column produces the values for the X coordinate points, the second column produces the Y coordinate points, and the third column produces the Z coordinate points. Each data point represents a measurement that is the intersection of the three values in a row.

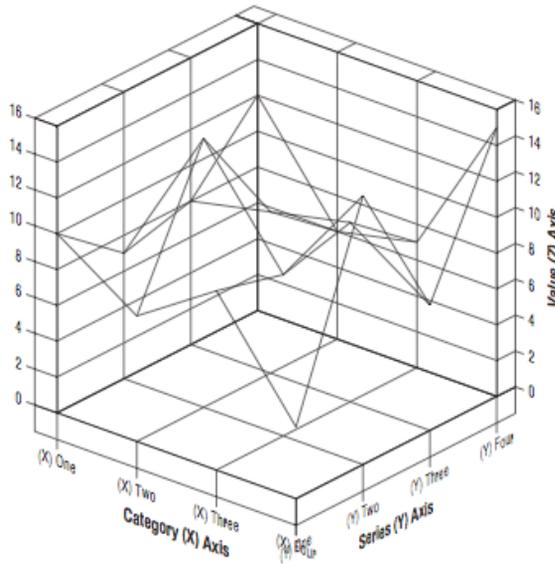
Each data series in a 3-D Scatterline chart is represented by a continuous line. To label the data series, enter a label for the first column of each series in a Data page.

To learn more about...	Refer to...
Changing symbol shape and color	“Changing Chart Symbols” in chapter 9
Other chart options	“3-D Scatter Chart Options” in chapter 10

3-D Wireframe Chart

The 3-D Wireframe chart is a variation of a Contour chart. Use a 3-D Wireframe chart to show surface variation based on two sets of evenly spaced values (such as latitude and longitude at 10° intervals), which can be entered as row and category labels, and a unique number (such as elevation at a given point). A Wireframe chart is suitable for showing three-dimensional changes in an object or over time.

	Label	A	B	C	D
Label	(X) One	(Y) One	(Y) Two	(Y) Three	(Y) Four
1	(X) One	10	7	8	12
2	(X) Two	7	15	9	6
3	(X) Three	10	9	10	7
4	(X) Four	4	15	7	15



There must be at least two series and two categories. The right (X) axis shows categories, the left (Y) axis shows the series, and the vertical (Z) axis shows values. Row labels are used to name each category. Column labels are used to name each series.

NOTE  On a default 3-D chart the axes are the three lines that intersect in the

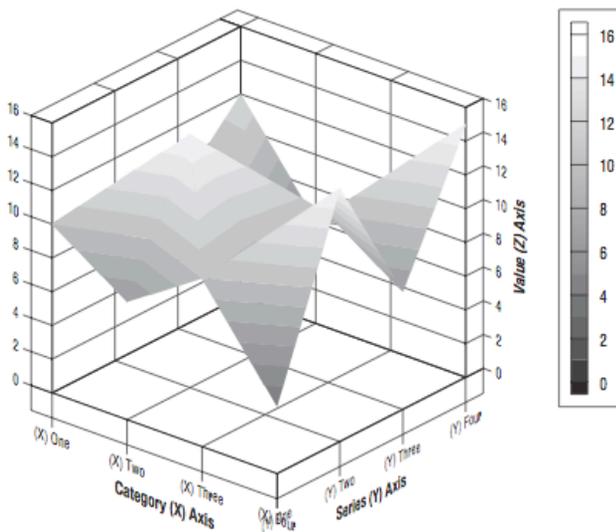
back of the chart. They are not the lines where the axis labels appear.

To learn more about...	Refer to...
Other chart options	“3-D Wireframe Chart Options” in chapter 10

3-D Surface Fill Chart

Use a 3-D Surface Fill chart to show surface variation based on two evenly spaced values (such as latitude and longitude at 10° intervals), which can be entered as row and category labels, and a unique number (such as elevation at a given point).

	Label	A	B	C	D
Label		(Y) One	(Y) Two	(Y) Three	(Y) Four
1	(X) One	10	7	8	12
2	(X) Two	7	15	9	6
3	(X) Three	10	9	10	7
4	(X) Four	4	15	7	15



There must be at least two series and two categories per chart. The right or X axis shows the categories, the left or Y axis shows series, and the vertical or Z axis shows values. Row labels are used to name each category. Column labels are used to name each series.

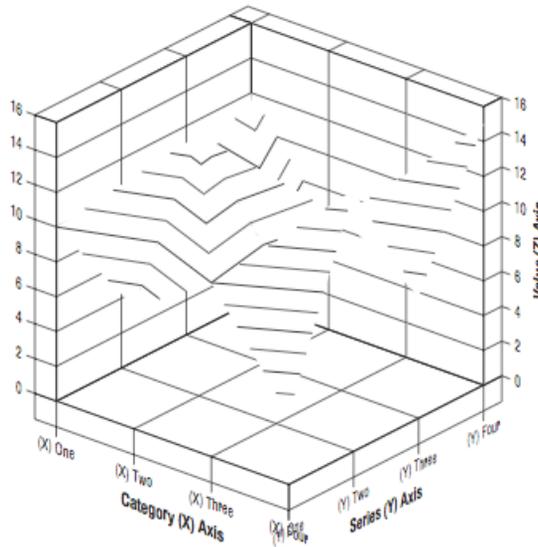
NOTE  On a default 3-D chart, the axes are the three lines that intersect in the back of the chart. They are not the lines where the axis labels appear.

To learn more about...	Refer to...
Other chart options	“3-D Surface Fill and 3-D Surface Line Chart Options” in chapter 10

3-D Surface Line Chart

Use a 3-D Surface Line chart to show surface variation based on two evenly spaced values (such as latitude and longitude at 10° intervals), which can be entered as row and category labels, and a unique number (such as elevation at a given point).

	Label	A	B	C	D
Label		{Y} One	{Y} Two	{Y} Three	{Y} Four
1	{X} One	10	7	8	12
2	{X} Two	7	15	9	6
3	{X} Three	10	9	10	7
4	{X} Four	4	15	7	15



There must be at least two series and two categories per chart. The right or X axis shows the categories, the left or Y axis shows series, and the vertical or Z axis shows values.

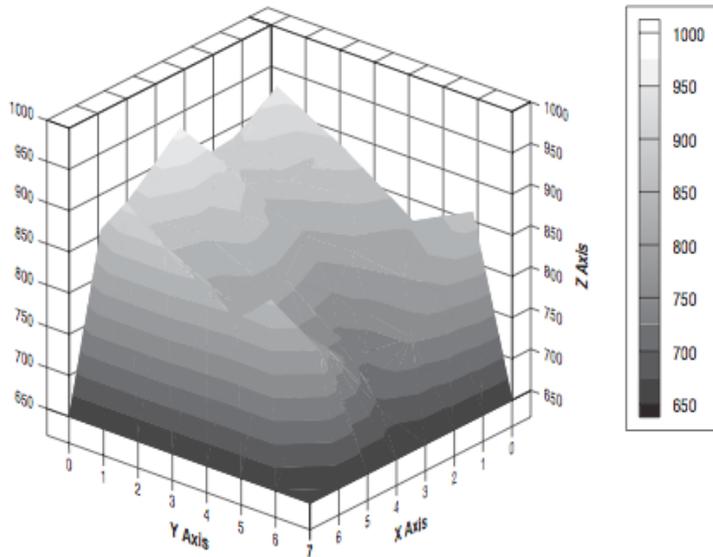
NOTE

On a default 3-D chart, the axes are the three lines that intersect in the back of the chart. They are not the lines where the axis labels appear.

Row labels are used to name each category. Column labels are used to name each series.

3-D XYZ Surface Fill Chart

Use a 3-D XYZ Surface Fill chart to show three dimensional data in which one quantity (plotted on the Z axis) varies depending on X and Y values. XYZ data are not evenly incremented like Surface Line or Fill data.



All of the axes on a 3-D XYZ Surface Fill chart measure values: the frequency, amplitude, and phase of an electrical signal, for example. The left axis is X, the right axis is Y, and the vertical axis is Z.

NOTE

On a default 3-D chart, the axes are the three lines that intersect in the back of the chart. They are not the lines where the axis labels appear.

Each data series requires three columns of data. The first column produces the values for the X coordinate points, the second column produces the Y coordinate points, and the third column produces the Z coordinate points. Each data point represents a measurement that is the intersection of the three values in a row. You are limited to 32,767 data points when creating an XYZ Surface Fill chart. Remember that the more data points the chart contains, the longer it takes to plot and

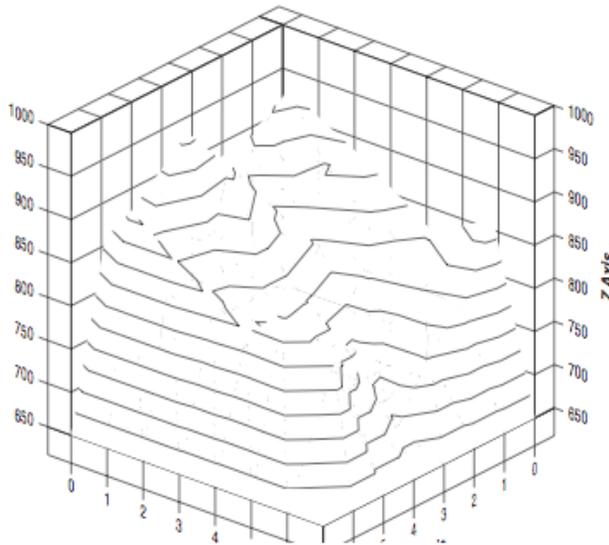
redraw.

To label each data series, enter labels in the first column of each series in a Data page.

To learn more about...	Refer to...
Other chart options	“3-D Surface Fill and 3-D Surface Line Chart Options” in chapter 10

3-D XYZ Surface Line Chart

Use a 3-D XYZ Surface Line chart to show three dimensional data in which one quantity (plotted on the Z axis) varies depending on X and Y values.



XYZ data are not evenly incremented like Surface Line or Fill data. Each series consists of three columns. You are limited to 32,767 data points when creating an XYZ Surface Line chart. Remember that the more data points the chart contains, the longer it takes to plot and redraw.

All of the axes on a 3-D Surface Line chart measure values: the frequency, amplitude, and phase of an electrical signal, for example. The left axis is X, the right axis is Y, and the vertical axis is Z.

NOTE  On a default 3-D chart, the axes are the three lines that intersect in the back of the chart. They are not the lines where the axis labels appear.

To learn more about...	Refer to...
Other chart options	“3-D Surface Fill and 3-D Surface Line Chart Options” in chapter 10

8 Plotting Data and the Chart View

This chapter focuses on creating charts and pictographs and working in the Chart view. It describes working in the Chart view, how to update and revise data, and how to use the Internal Command Language to automate the creating of charts from another application or from a text string.

This chapter covers the following:

- Plotting a chart
- Creating, deleting, and naming Chart pages
- Creating overlay and double-axis charts
- Plotting multiple charts in a Chart page
- Changing the type of chart in a Chart page
- Revising the data in a chart
- Using the Internal Command Language (ICL) to plot data

To learn more about...	Refer to...
Page orientation and size	“Setting Up the Document” in chapter 16

Setting Up a Chart

You can access the “Chart Setup” dialog box in the Data or the Chart view. If you are plotting data in the Data view, data must be selected. If you are in the Chart view and want to plot a chart, data does not need to be selected.

To access the “Chart Setup” dialog box, select **Chart Gallery** from the Data or Chart menu, depending on the view you are in.

There are two tabs in the “Chart Setup” dialog box, as follows:

- The Chart Gallery is primarily used to select a chart type to plot.
- The Chart Advisor assists you in selecting the right chart for your data.

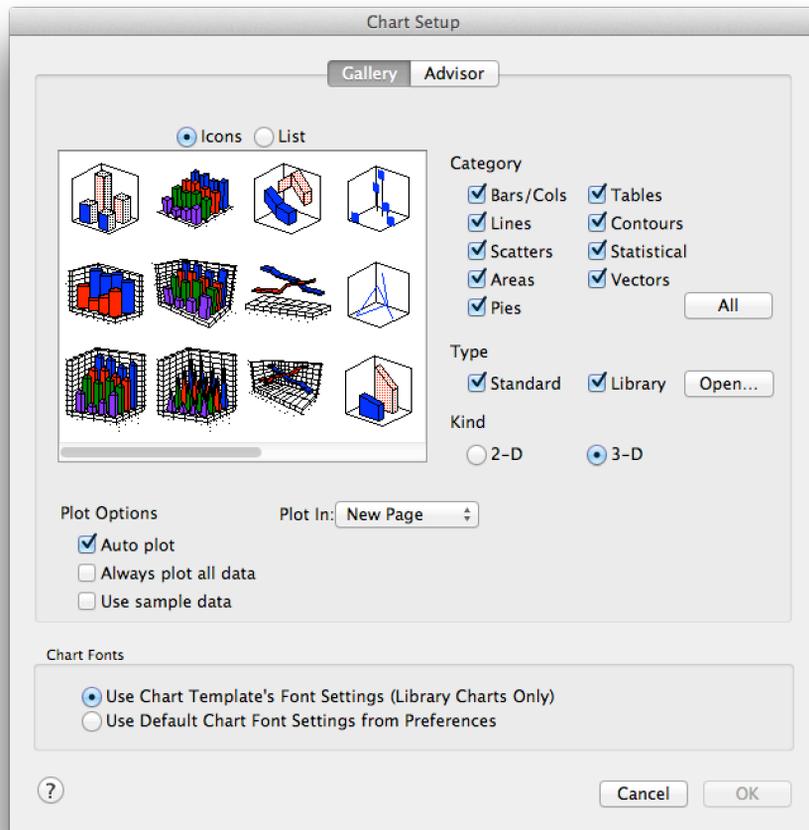
The Chart Gallery

The main purpose of the Chart Gallery is to select chart types for plotting. It lets you specify the type of chart you want, where you want it plotted (in a new or existing Chart page), and whether or not you want it plotted automatically. Delta- Graph also offers the option of using its own built-in sample data to plot a chart. This allows you to plot a sample chart, complete with data, to see what the chart looks like.

To use the Chart Gallery, do the following:

1. Select data if necessary. Data only needs to be selected if you are opening the
Chart Gallery in the Data view.
2. Choose **Chart Gallery** from the data or chart menu.

The “Chart Setup” dialog box appears with the Gallery tab selected.



3. Select options regarding the types of charts from which you want to choose from the right side of the tab. The window on the left displays all charts matching the options you have chosen.
4. Click the chart type you want to create.

You can scroll through the window to see other charts available in the categories you selected. When you place the mouse pointer over a chart icon, the chart type appears directly below the scroll bar.

In “Icons” view you can click the check box next to a chart category to select or deselect that item. For example, if you are

only interested in column and pie charts, you would deselect all other categories so that you do not have to sift through charts you will not use.

Once you have chosen the types you want to display, you can scroll through the chart types using the horizontal scroll bar below the chart icons.

5. To switch to “List” view, click **List**. All chart types now are displayed as a list with small icons. Category divisions are not available in “List” view.
6. Collapse or expand each group of chart types by clicking the small triangle next to the name.
7. To select a chart type, scroll through the list of charts using the vertical scroll bar. You can also select a chart type by typing the first few characters of its name.
8. To plot a chart, select the chart type and click **OK**, or double-click the chart type. The chart will plot using the options you have selected in the Chart Gallery. You can set plot options from “Icons” or “List” view.
9. To display two-dimensional or three-dimensional charts in “Icons” or “List” view, click **2-D** or **3-D**.

The next time you launch DeltaGraph it will appear with the Chart Gallery settings you selected the last time so you do not have to duplicate efforts.

Custom templates containing charts for any auto-loaded or open Custom Libraries appear mixed in with the various categories of charts. If you have a Standard Library, those charts also appear in the window.

If you click and hold on a chart icon, a brief explanation of the selected chart type is displayed.

10. Click the pop-up menu next to “Plot In” if you want the chart plotted in an existing Chart page.

If you are plotting in the Chart view, the page you were in appears as the selection. All Chart pages associated with the current document are listed in a pop-up menu on the Status bar at the bottom of the window. You can plot your chart in any Chart page

listed, regardless of whether or not it already contains other objects or charts.

11. Select from the following “Plot Options” as required.

Auto plot

Determines whether or not the chart is plotted automatically in the selected

Chart page. This gives you the option of drawing the chart to specific dimensions, which can be very helpful if you need to fit a special layout.

When selected, DeltaGraph automatically calculates the best dimensions for the chart and draws it in the specified Chart page as soon as you click **OK**.

When deselected and you click **OK**, DeltaGraph activates the specified Chart page and displays a chart icon attached to a cross hair cursor. Click and drag to create a box the size and shape you want your chart. When you release the mouse button, the chart appears.

NOTE  You may want to choose **Rulers & Grids** from the Draw menu, and select **Show Rulers** in the dialog box that appears before you start drawing your chart box.

“Auto Plot” always reverts to the default when you finish drawing your chart.

Always plot all data

This option applies to Data pages only. Select it if you want DeltaGraph to automatically plot all data from the open Data page. This option is useful when linking to an imported Excel file and you want to update the document using all of the data. It can also be used as a shortcut to updating a chart after you have revised the data. If this option was selected when you first plotted the chart, all you have to do to update the chart after making changes on the Data page is to resize an axis.

Use sample data

Plots the selected chart with sample data provided by DeltaGraph, allowing you to plot a sample chart without entering data. A new

Data page is created using the sample data. You can then review the Data page to learn how to enter data for the chart type you want to use.

12. Click **OK** to create the new chart. If you are plotting in the Data view, the chart appears in the specified Chart page. If you are plotting in the Chart view and did not specify sample data, you will be prompted to select data in the Data page.

To return to the previous view without plotting a chart, click **Cancel**.

To learn more about...	Refer to...
Plotting in the Chart view	“Creating a Chart in the Chart View” in chapter 8
Modifying your charts	Chapter 9 “Customizing Charts” and Chapter 10

The Chart Advisor

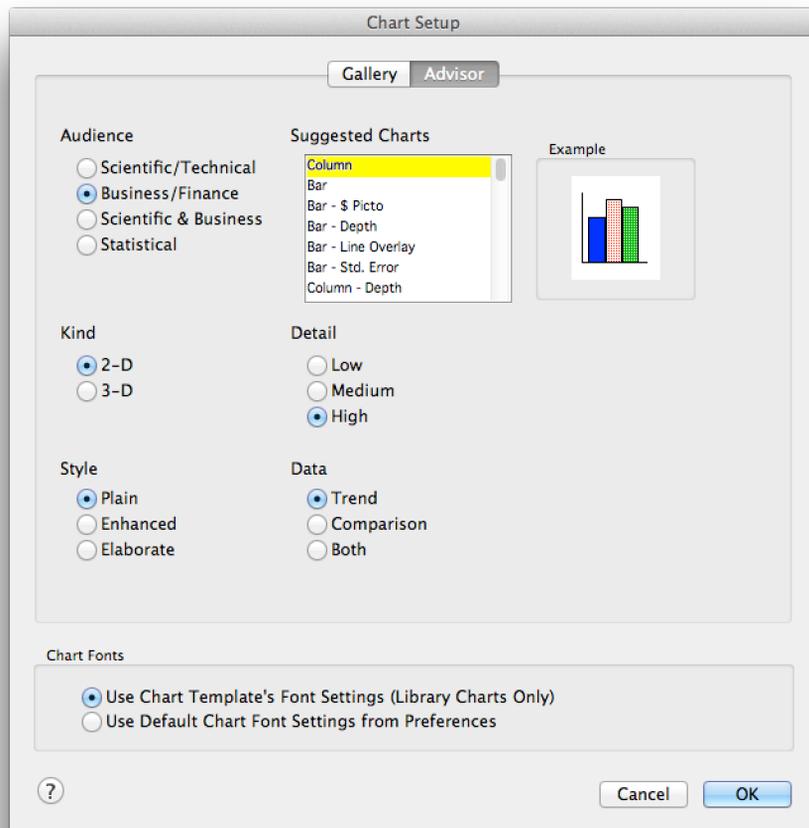
The Chart Advisor helps you decide the type of chart that will best suit your data. Data must be selected in the Data view before the Chart Advisor is available.

Based on the data you selected in the Data page and other selections you make in the Chart Advisor, DeltaGraph offers one or more appropriate choices for a chart type. If you decide to use one of the suggested chart types, you can plot the chart directly in the Chart Advisor.

The Chart Advisor presents chart selections from the standard DeltaGraph charts as well as from any open Custom Libraries, the Standard Library, or any files in the DeltaGraph “AutoLibrary” folder.

To use the Chart Advisor, do the following:

1. Select data in the Data view. Data must be selected to use the Chart Advisor.
2. Click the Plot icon on the Data view Command bar or press **cmd-G**. The “Chart Setup” dialog box appears.
3. Click the **Advisor** tab. You can also press the **option** key while clicking the Plot icon to automatically display the Chart Advisor.



Some of the defaults may be overridden by the Chart Advisor if the selected data has obvious characteristics that were not

reflected in the dialog box. For example, if 1000 data points were selected, the Chart Advisor would more likely choose “Scientific/Technical” than “Business/Finance.”

4. Select options important to the ideas you are trying to convey. Categories of topics are listed that are important to choosing the type of chart best suited to your data. Select one option from each category to best describe the ideas you want your chart to convey.
5. All of the suggested chart types appear in the “Suggested Charts” section. Select a chart to display an example in the “Example” box.
6. Click **OK** to save your changes as the new Chart Advisor default settings and to plot the chart. The chart is displayed in the Chart view. If you want to exit the dialog box without selecting a chart, click **Cancel**.

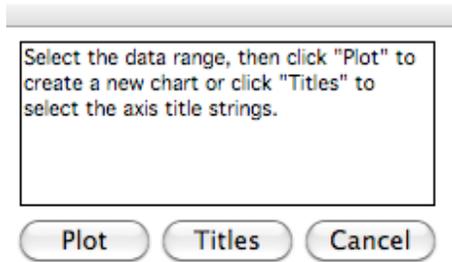
Creating Chart Axis Titles

After you click **OK** in the “Chart Setup” dialog box, you will be given the opportunity to select cells you want to use as axis titles. You can also wait until your chart is plotted, then double-click the axis you want to label.

To determine the type and location of axes of a particular chart, refer to Chapter 8, “Chart Types.”

To create an axis title, do the following:

1. Select data if necessary. Data only needs to be selected if you are opening the “Chart Setup” dialog box in the Data view.
2. Click the Plot icon on the Data or Chart view Command bar, choose **Chart Gallery** from the Data or Chart menu, or press **cmd-G**. The “Chart Setup” dialog box appears.
3. Select a chart in the Gallery tab. The name of the selected chart appears in the Status bar at the bottom of the window.
4. If you have accessed this dialog box in the Data view, you can assign cells in the Data page as titles by clicking **Select Cells**. A floating window appears in the Data page.



“Select Cells” is not available in the Chart view, because you have not yet set up your data.

5. Click a data cell, then click the appropriate **X Title**, **Y Title**, or **Z Title** button. The selected cell is identified to the right of the button.
6. When all of the necessary cells have been identified, click **Plot**. To exit the dialog box without making any changes, click **Cancel**.

Depending on the view you were in when the “Chart Setup” dialog box was displayed, the procedures are different for plotting your chart.

To learn more about...	Refer to...
Other ways to assign axis titles	“Creating and Positioning Axis Labels and Titles” in chapter 9

Creating a Chart

DeltaGraph gives you several options for plotting charts. Which one you choose will depend on the type of chart you need (numerical or text), the type of presentation you’re preparing, the DeltaGraph view you are most comfortable working in, and your own personal work style.

You may find it helpful to refer to Chapter 8, “Chart Types” which uses sample data sets to explain how to enter data for the specific chart types.

There are two ways to create a chart in DeltaGraph, as follows:

1. Plot a chart in the Data view. Plotting in the Data view is known as the “Charting mode.” It requires entering (or importing) and selecting data in the Data view before plotting the chart. Only numerical charts (2-D and 3-D), Table charts, and Time Lines are plotted in the Data view.
2. Plot a chart in the Chart view. If you plot a chart in the Chart view, you will be prompted to select a chart and data.

The “Preferences” dialog box (choose **Preferences** from the DeltaGraph menu) allows you to change the DeltaGraph default charting mode. When “For Charting” is selected as the “New Document Startup” option in the General tab, DeltaGraph opens all documents in the Data view..

To learn more about...	Refer to...
Working with Layout Sets	“Creating and Using Smart Layouts” in chapter 5
Setting preferences	“Setting General Defaults” in chapter 6
Different types of charts	Chapter 7, “Chart Types”

Using Smart Layouts

Smart Layouts are the easiest way to ensure that your charts and presentations have a consistent look. Smart Layouts consist mainly of placeholders, which can be applied to Chart pages before or after charts, text, and other objects have been added to the page. Placeholders appear after the layout has been applied to the page. They can be filled in the Data view, or the Chart view depending on the type of placeholder.

If you are using a layout that does not contain a placeholder for a chart, or if you do not need to plot a chart, you do not need to follow

the instructions for plotting a chart.

To learn more about...	Refer to...
Setting mode preferences	“Setting General Defaults” in chapter 6
Loading a Layout Set	“Loading a Layout Set” in chapter 5
Creating a Layout Set	“Creating and Using Smart Layouts” in chapter 5
Filling placeholders	“Filling Layout Placeholders” in chapter 5

Creating a Chart in the Data View

Creating charts in the Data view involves entering and selecting data in the Data view. You can select a Chart page in the Chart Gallery, or you can choose to plot the chart in a new page, a Chart page already containing charts or other objects, or a page using a Smart Layout. You can also use the Chart Advisor to assist you in selecting a chart for the type of data selected.

To create a chart in the Data view, do the following:

1. If the Data view is not displayed, click the Data View icon on the Command bar.
2. Enter data in the Data view. Numerical data can be imported from tab-, comma-, space-, and custom-delimited text or WKS, SYLK, and Excel for- mats. If you prefer, you may type or paste data in the Data page.
3. Select the data that you want to plot.
4. Choose **Chart Gallery** from the Data menu, or press **cmd-G**. The “Chart Setup” dialog box appears with the Gallery tab selected.
5. Select a chart type and destination window. See “Setting Up a Chart” in chapter 8 for more information.
6. Click **OK**. The chart appears in the upper left corner of the selected

Chart page. You can position the chart and add any Text or Draw objects as necessary.

If a Smart Layout has been applied to the page and contains a Chart placeholder, the chart appears in the size, position, and colors of the placeholder.

All changes to the new or existing Chart page can be seen in the Outliner view.

To learn more about...	Refer to...
Entering data in the Data view	“Entering Data” in chapter 4
Selecting data	“Selecting Data” in chapter 4

Creating a Chart in the Chart View

Charts can be plotted in the Chart view. The Chart Advisor, however, cannot be used when plotting charts from this view.

If you are using Smart Layouts, you can double-click the Chart placeholder to display the “Chart Setup” dialog box.

Bullet charts can be created in the Chart view only if a layout has been applied to the Chart page. You can edit Text and Bullet objects created in the Outliner view by clicking the object and making your corrections. When adding entries to a Bullet chart, you can press **tab** and **shift+tab** to adjust the hierarchy. “Edit Bullets” from the Text menu can also be used to change the bullet symbol, text and level spacing, tabs, and margins of the Bullet object.

To create a chart in the Chart view, do the following:

1. Create a new Chart page by clicking the Chart View icon on the Command bar and clicking the plus page icon. An empty Chart page is displayed. You can also select any other existing pages in the list.
2. Click the Chart icon on the Command bar, choose **Chart Gallery** from the Data menu, or press **cmd-G**. The “Chart Setup” dialog box appears.
3. Select a chart type and destination window in the Gallery tab. The

default destination window is the current Chart page. See “Setting Up a Chart” in chapter 8 for information on the other options available in this dialog box.

4. Click **OK**. The Data view appears.
5. Enter data in the Data view. Numerical data can be imported from tab-, comma-, space-, and custom-delimited text or WKS, SYLK, and Excel formats. (See “Entering Data” in chapter 4.)
6. Select the data that you want to plot and click **Plot**. The chart appears in the upper left corner of the original Chart page. You can position the chart and add any Text or Draw objects as necessary. (See Chapter 12, “Working with Objects in Chart View.”)

All changes to the new or existing Chart page can be seen in the Outliner view.

To learn more about...	Refer to...
Layouts	“Creating and Using Smart Layouts” in chapter 5

Deleting a Chart

There may be times you want to delete one or more charts from a Chart page. There are several ways to do this. You can undo any deletions using “Undo” from the Edit menu or by pressing **cmd-Z**.

To delete one or more charts, do the following:

1. Select the chart(s).
2. Choose **Cut** or **Clear** from the Edit menu, or press the **delete** key. The “Cut” command stores a copy of the deleted chart(s) on the clipboard so it can be pasted in a Chart page. “Clear” and the **delete** key do not.

NOTE 

Deleting a chart does not remove the Chart page. See “Deleting a Chart Page” in chapter 8

3. To empty a Chart page so you can reuse it, choose **Select All (cmd-A)** from the Edit menu and press the **delete** key, or choose **Cut (cmd-X)** or **Clear** from the Edit menu. “Cut” places a copy of the select object(s) on the Clipboard; the other options do not.

Creating or Adding a Chart Page

DeltaGraph creates a new Chart page every time you plot a chart unless you choose to plot in an existing Chart page in the Chart Gallery. There may be times, however, when you will want to create a Chart page without plotting a chart; for example, if you want to input data directly in the Chart page using a Smart Layout, or import a graphic to store in a Custom Library for convenient access from any Chart page.

There are three ways to create an empty Chart page, as follows:

1. Click the Add Page icon at the bottom of the Chart page.
2. Click and hold the Chart View icon on the Command bar and select **New Page** from the pop-up menu.
3. Choose **Chart View** from the View menu and select **New Page** from the submenu. The empty page appears with a default name (Page #1, Page #2, etc.) displayed in the Page Selector.

Displaying a Chart Page

Do one of the following to view a list of available Chart pages and to switch between Chart pages:

1. Click the Page Selector icon on the Navigational bar. A list of available Chart pages appears in the pop-up menu.
2. Click and hold the Chart View icon on the Command bar. A list of available Chart pages appears in the pop-up menu.

3. In the Chart Gallery, you can plot a chart in any page in the active document by selecting a page from the “Plot In” pop-up menu.

Naming a Chart Page

To help you keep track of the Chart pages in a document, DeltaGraph automatically assigns the default names “Page #1,” “Page #2,” and so forth. You can assign your own names to Chart pages to help identify their contents. All the Chart pages associated with a document can be displayed in the “Plot In” pop-up menu at the bottom of the Chart Gallery, by clicking and holding the Chart view icon on the Command bar, or by clicking and holding the Page Selector icon at the bottom of the page.

To name a Chart page, do the following:

1. Choose **Name Page** from the View menu. The “Page Title” dialog box appears with the default name selected.
2. Enter a new name. The new name overwrites the default name.
3. Click **OK** to rename the Chart page. The new name replaces the old name. You can see the new name in the Page Selector at the bottom of the page. To exit the dialog box without making any changes, click **Cancel**.

Deleting a Chart Page

If you want to delete a Chart page, you can use the “Delete Page” command on the View menu. This deletes the Chart page and all objects on the Chart page. You can delete multiple Chart pages in the Organizer view.

To delete the active Chart page, do the following:

1. Choose **Delete Page** from the View menu. A dialog box appears asking to confirm your selection.
2. Click **OK** to delete the Chart page. To exit the dialog box without making any changes, click **Cancel**.

To learn more about...	Refer to...
Deleting multiple Chart pages	“Deleting Pages” in chapter 15

Creating a Combination Chart

DeltaGraph gives you the option of combining two different types of numeric charts (plotted from the same Data page) so you can highlight relationships. For example, you can overlay a Line chart that represents corporate expenses on a Column chart that represents revenues to create a combination chart that clearly illustrates what percentage of your income is eaten up by expenses.

There are two parts to a combination chart. The first part is the *base* chart, which is the main chart type selected in the Chart Gallery when you first create a chart. The second part is the *overlay* chart. This is the chart type that you apply to your base chart using the “Overlay” command on the Chart menu. The data graphics of the overlay chart always go on top of the base chart.

Column, Stacked Column, Bar, Stacked Bar, Line, Step, Area, XY Line, Paired XY Line, Scatter, and Paired Scatter charts can all be used as a base.

Not all chart types can be used for combination charts. 3-D charts and non-rectangular 2-D charts do not work. A chart with values on both axes can only be overlaid with a chart that also has values on the X and Y axes. Overlay options that are not available or compatible are dimmed in the “Overlay” dialog box. Column, Stacked Column, Bar, Stacked Bar, Line, Step, and Area charts can be used together. XY Line, Paired XY Line, Scatter, and Paired Scatter charts can be used together.

The overlay chart uses data that is already part of the base chart. This means that when creating a base chart to which you later add an overlay, you must first select all of the data that you want to appear in the final chart. This includes the data for both the base chart and the overlay chart. Refer to the figure in chapter 8 for an example of an overlay chart.

NOTE  If your chart does not include all of the data you want, use the

Revise Data command to add more data to the chart. This works both before and after you add an overlay.

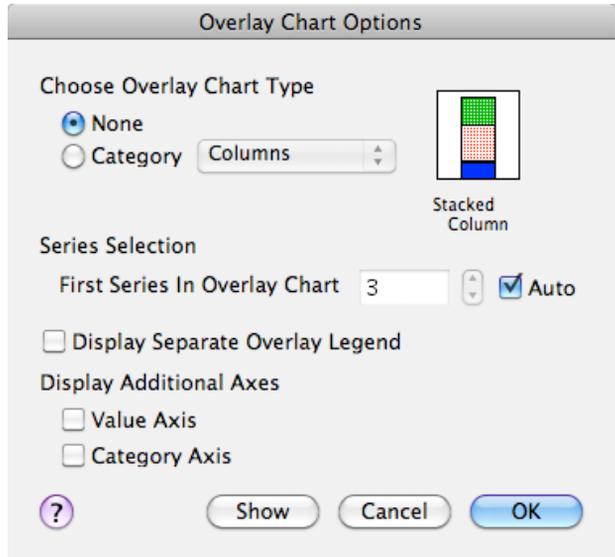
To create a combination chart, do the following:

1. Open the Data page that contains the data you need for your combination chart.

You can also create the chart in the Chart view or use Smart Layouts as previously described.

Only Column, Stacked Column, Bar, Stacked Bar, Line, Step, Area, XY Line, Paired XY Line, Scatter, and Paired Scatter charts can be used in combination charts.

2. Select the data you want plot. To add an overlay to a chart you must have two or more series of data.
3. Click the Plot icon on the Command bar, choose **Chart Gallery** from the Chart menu, or press **cmd-G**. The “Chart Setup” dialog box appears.
4. Choose the chart type you want as your base, or underlying, chart and the Chart page where you want it to be plotted.
5. Click **OK** to plot the chart as directed. The chart is automatically sent to a new Chart page unless you selected an existing Chart page from the pop-up menu in the “Plot Options” section of the dialog box. Click **Cancel** if you do not want to plot the chart, and you are returned to the Data view.
6. Select the base chart and choose **Overlay** from the Chart menu. A dialog box appears so you can select a chart type and other parameters for your overlay chart.



7. Click the Category pop-up menu in the “Choose Overlay Chart Type” section and choose a chart type for the overlay.
8. In the “Series Selection” area of the dialog box, select the first series you want to use in the overlay chart by typing in a number or clicking the direction arrows to scroll to the series you want. Only data that was selected to plot the base chart is available.

The series number you pick and all data series that follow are assigned to the overlay chart. For example, if you have five data series in your chart and you choose series 3 as the first series in your overlay chart, the third, fourth, and fifth series are displayed in the overlay chart, and the first and second series are displayed in the base chart.

The “Auto” check box automatically selects a number of series based on the total number selected.

9. To place the axis labels on an additional axis on your chart, click the appropriate check box in the “Display Additional Axes” section. If you are working with chart types that have values on both the horizontal (X) and vertical (Y) axes, your choices are “X Axis” and “Y Axis.”
10. Click **Show** to preview your changes without exiting the dialog box. This makes it easy to experiment with different effects. You

can move the dialog box out of the way by dragging the title bar.

11. When you have the results you want, click **OK** to implement the changes. To exit the dialog box without changing the chart, click **Cancel**.

After you have created a combination chart, the “Options” command in the Chart menu has a submenu so you can choose to change options for the base chart or the overlay chart.

Creating a Double-Axis Chart

In conjunction with the overlay feature, DeltaGraph also makes it possible to display additional axes on your charts. You can add a second horizontal (X) and/or vertical (Y) axis to your 2-D charts. These additional axes can be formatted independently of the original axes.

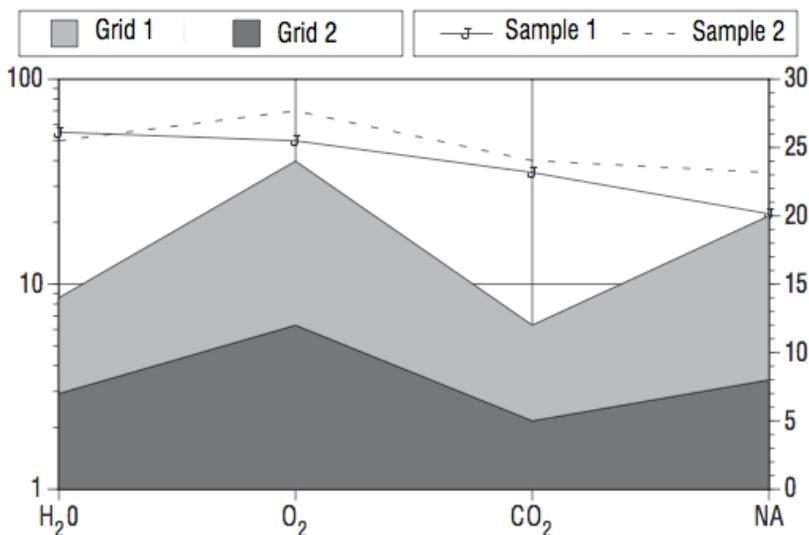
You can add an additional axis to a chart that does not include an overlay. For example, in a large chart, you may want to show your Y or X axis labels twice to increase the chart’s readability. If you have widely disparate data sets, you may choose to display additional axes to make the data easier to read. You do not need to overlay a different chart type simply to display an additional axis.

In most cases, however, you will probably add a second axis in conjunction with an overlay so that data sets are differentiated by both axis scales and chart types.

To create a chart with two independent axes, do the following:

1. Select the chart.
2. Following the steps in “Creating a Combination Chart” in chapter 8, create an overlay so that at least one series of data is part of an overlay. Typically, this data would be in a different range of values from the data in the base chart.
3. While in the “Overlay” dialog box, select which additional axis you want by clicking the appropriate check boxes in the “Display Additional Axes” section.

- Click **Show** to preview your changes without exiting the dialog box. This makes it easy to experiment with different effects. You can move the dialog box out of the way by dragging the title bar.
- When you have the results you want, click **OK** to implement the changes. Additional axes are created. Value axes are automatically scaled to fit the data that is part of the overlay. To exit the dialog box without changing the chart, click **Cancel**.



When a second X or Y axis is added to a chart it is also added to the submenus that appear when you select **Axis, Ticks and Grids**, or **Labels** from the Chart menu. This allows you to format the additional axis independent of the original axis.

Creating a Histogram

Histograms are used to show frequency or occurrence of data. Data for histograms can be created using the “Formula Builder” command on the Data menu. This method can be used for creating Histogram charts if plotting a standard Delta- Graph Histogram chart in the Chart Gallery does not provide the flexibility or type of histogram you desire.

To create a histogram using the Formula Builder, do the following:

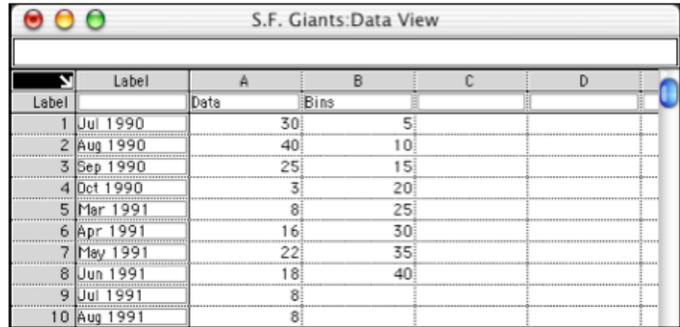
1. Enter the raw data in the Data page as described in “Entering Data” in chapter 4.

	Label	A	B	C	D	E	F
1	Label	Sample					
2		4					
3		0.5					
4		5					
5		7					
6		1					
7		8					
8		6					
9		5					
10		3					
11		8					
12		0.5					
13		6					
14		1					
15		6					
16		4					
17		2					
18		5					
19		7					
20		6					
21		4					
22		2					
23		3					
24		4					
25		0.5					
26		8					
27		7					
28		6					
29		6					
30		4					
31		1					
32		5					
33		3					
34		4					
35		1					
36		7					

2. Set up your bins in an empty column. In the example above, you would not want to plot a histogram reflecting each unique number, so you would set up bins, or ranges that the numbers will fall within, in column B. You do not have to set up bins if it is not necessary for your data.

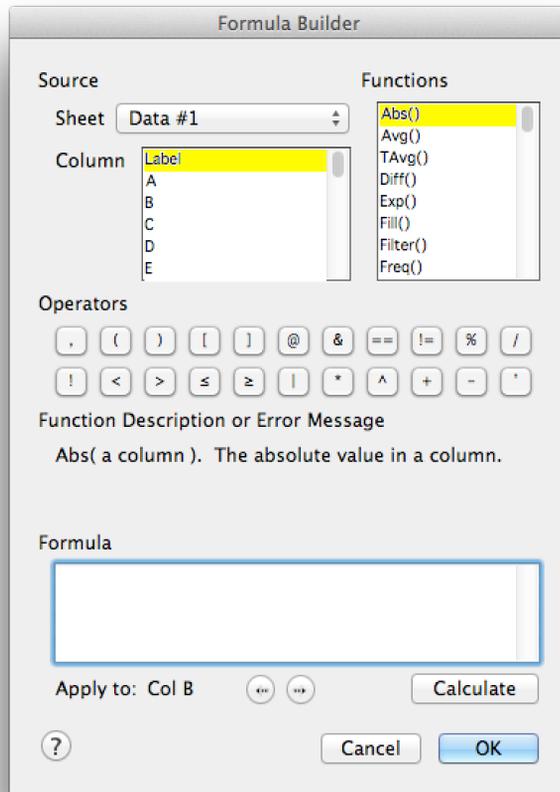
In the example, the lowest number in column A is 3, so you would start with 5 as the lowest bin and increase by 5. You can enter the bin numbers in column B as shown. Every number from

column A that is less than 5 will be counted in the first bin, numbers between 5–9 will fall in the second bin, etc.



	Label	A	B	C	D
		Data	Bins		
1	Jul 1990	30	5		
2	Aug 1990	40	10		
3	Sep 1990	25	15		
4	Oct 1990	3	20		
5	Mar 1991	8	25		
6	Apr 1991	16	30		
7	May 1991	22	35		
8	Jun 1991	18	40		
9	Jul 1991	8			
10	Aug 1991	8			

3. Double-click an empty column (e.g., column C in the example), select an empty column and click the Formula Builder icon on the Command bar, or choose **Formula Builder** from the Data menu. This selects the empty column as your destination column. The “Formula Builder” dialog box is displayed.



4. Scroll through the “Functions” window until “FreqL” is displayed.
5. Double-click **FreqL**. The formula shell appears in the “Formula” window, with the cursor blinking inside the parentheses. An explanation of the function appears directly above the “Formula” window. FreqL (Frequency Labels) provides labels for the calculations that will be performed.
6. You can either type the column labels (e.g., “A,B”) in the parentheses or double-click the column labels in the “Source Columns” window. The columns must be separated by a comma.
7. Click **Calculate Now**. The calculations appear in the destination

- column. These are used as labels when you plot the histogram.
8. Click **Next Col**. This selects the next empty column as the new destination column for the next calculation. The column name appears at the bottom of the dialog box.
 9. Double-click **Freq** in the “Functions” window.
 10. Enter the column labels in the parentheses.
 11. Click **OK**. The frequency of the data in the first source column (A), sorted into the bins defined in the second source column (B), is displayed in the destination column.

The first destination column (C) displays the labels for your chart. DeltaGraph uses “[” and “)” when generating the labels. [10,15) means “greater than or equal to 10 but less than 15.”

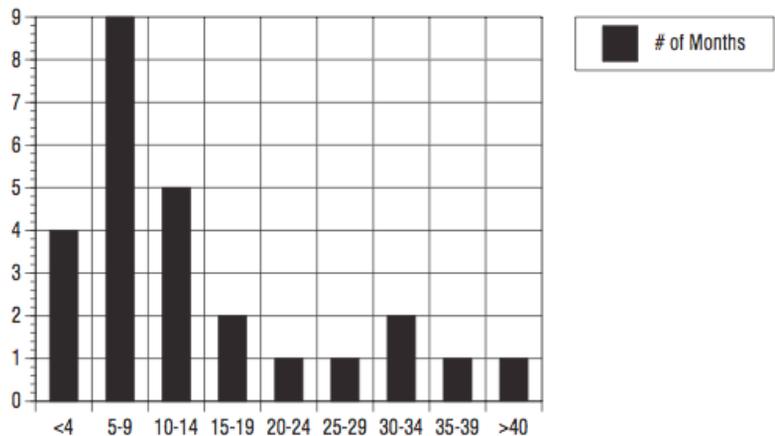
S.F. Giants:Data View						
	Label	A	B	C	D	E
Label		Data	Bins			
1	Jul 1990	30	5<5			4
2	Aug 1990	40	10[5,10)			9
3	Sep 1990	25	15[10,15)			5
4	Oct 1990	3	20[15,20)			2
5	Mar 1991	8	25[20,25)			1
6	Apr 1991	16	30[25,30)			1
7	May 1991	22	35[30,35)			2
8	Jun 1991	18	40[35,40)			1
9	Jul 1991	8	≥40			1
10	Aug 1991	8				

12. Change, enter, or delete labels as necessary. You can also enter column labels at the tops of the columns if desired.

	Label	A	B	C	D	E
Label	Data	Bins	# of Home Runs	# of Months		
1	Jul 1990	30	5	<5	4	
2	Aug 1990	40	10	[5,10)	9	
3	Sep 1990	25	15	[10,15)	5	
4	Oct 1990	3	20	[15,20)	2	
5	Mar 1991	8	25	[20,25)	1	
6	Apr 1991	16	30	[25,30)	1	
7	May 1991	22	35	[30,35)	2	
8	Jun 1991	18	40	[35,40)	1	
9	Jul 1991	8	≥40		1	
10	Aug 1991	8				

13. Select the labels and the calculated data in the two destination columns (C and D).

14. Click the Plot icon on the Command bar, select a Column chart from the Chart Gallery, and click **OK**. The chart is displayed in the Chart view. It can be modified using the same options available to other DeltaGraph charts.



To learn more about...	Refer to...
Histogram charts	“Histogram Chart” in chapter 7

Plotting Multiple Charts in the Same Page

There may be times you want to plot more than one chart in a Chart page. This can be an effective way to show side-by-side comparison, for example. You can also use this feature to replace a chart that has been deleted in the Chart view.

Since a Chart page can contain any combination of charts and/or objects, all you need to do when plotting a new chart is select an existing Chart page from the pop-up menu to “Plot In” near the bottom of the Chart Gallery. See “The Chart Gallery” in chapter 8 if you need help with this. If you need more pages to display the charts, choose **Number of Pages** from the Page menu so you can click to select the number of pages you need in the dialog box that appears.

To plot multiple charts, do the following:

1. Switch to the Data page that contains the data you want to plot.

If you want to plot directly from the active Chart page, start at step 3. You can disregard step 5 because the chart will automatically be plotted in the active Chart page.

2. Select the data you want to include in your chart.
3. Click the Plot icon on the Command bar, choose **Chart Gallery** from the Chart menu, or press **cmd-G**. The “Chart Setup” dialog box appears.
4. Click a chart type in the Gallery tab. The selected chart is highlighted.
5. Click the “Plot In” pop-up menu and select an existing Chart page.
6. Click **OK** to add the new chart to the selected Chart page. To exit the dialog box without making any changes, click **Cancel**.

If you need more pages to display the charts, choose **Number of Pages** from the Page menu. When the dialog box appears, click the grid to select additional pages.

Changing the Chart Type

After plotting a chart you may realize that a different type of chart

would be more appropriate for your data. There are two ways to change the type of chart: replot the data in the Data view, or use “Change Type” on the Chart menu.

Certain chart types are incompatible and cannot be interchanged. As explained in Chapter 8, “Chart Types,” the data for some charts is set up differently than it is for others. Charts must have the same data configuration, and they must be of the same general type (2-D, 3-D or Text) to be interchangeable. Incompatible chart types are dimmed in the “Change Chart Type” dialog box so that you cannot select them.

This option can also be used to abandon changes to a chart that does not come out the way you planned. “Change Type” allows you to reselect the same chart type with its original defaults, whereas selecting a different chart type retains all your formatting.

To change the chart type, do the following:

1. Select the chart.
2. Choose **Change Type** from the Chart menu. The “Change Chart Type” dialog box appears with a picture of the selected chart in the “Example” box.
3. Choose a chart type from the “Category” pop-up menu.
4. Select the following option if applicable:

Keep Size & Rotation

Maintains any size or rotation changes made to the existing chart. This option is only available if you are selecting the same chart type or selecting a chart from a Custom Library.

5. Click **Change** to change the chart type. To exit the dialog box without changing the chart, click **Cancel**.

Updating a Chart

The Update icon on the Command bar or the “Update” command in the Data menu can be selected in the Data view when you want to update *all charts* associated with any changed pages in the Data view. “Update” is also used if you are changing existing data but not adding any data points or sets to the existing Data page.

To add or remove data from a chart or to update only one chart, see “Revising Chart Data” in chapter 8

NOTE 

If you have turned on “Update Charts Automatically” in Preferences, you do not need to use the “Update” command. Any changes in the data will be reflected immediately in associated charts. Bear in mind, however, that you must use the

“Revise Data” command if you want to add or remove rows or columns of data from a chart’s data range.

To update all charts associated with a page, do the following:

1. Make changes to the data in the Data view. Changes can be entered manually in the Data page. Changes can also be imported or generated with calculations applied using the “Formula Builder” command.
2. Click the Update icon on the Command bar, choose **Update** from the Data menu, or press **cmd-=**. DeltaGraph automatically updates all associated charts without replotting the data.

NOTE 

If you use “Check Spelling” from the Edit menu to correct misspellings in one or more Data pages, DeltaGraph automatically displays a dialog box asking if you want to update any associated charts.

Revising Chart Data

Use the Revise Data icon on the Chart view Command bar or the “Revise Data” command on the Chart menu when you want to update *only the selected chart*.

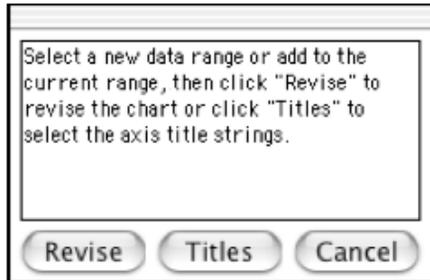
Revising is for when you want to add, remove, edit, or rearrange the data without affecting every chart generated from the data. This makes it simple to select different data sets for a chart, add new series, categories, or data points to a chart, or do comparisons of different segments of your data.

To update one chart only, do the following:

1. Select the chart you want to change.

2. Click the Revise Data icon on the Chart view Command bar, choose **Revise Data** from the Chart menu, or press **cmd-,** (comma). If the chart is not selected, the computer beeps to remind you.

DeltaGraph returns to the originating page in the Data view and displays a floating window in the lower-left corner to notify you that you are in the Revise Data mode. The existing data range for the chart you selected is high- lighted.



You can drag the floating window's Title bar to move it away from your viewing area.

3. Select the new data range.

When you are in the Revise Data mode, many other Data view features are active and available to you. You can enter or import new data, create a link to an Excel file, change the hierarchy of entries, switch to another page, or use the "Formula Builder" command to create new data. While in the Revise Data mode, you cannot plot a new chart or delete the current chart.

To add to the current data selection, hold down the **command** key, and select the additional data. To select a new range of data, deselect the current data by clicking in any cell, and then select a new range. You can select by column, row, or individual cells.

4. Click **Titles** in the floating window to assign axis titles.

Refer to "Creating Chart Axis Titles" in chapter 8 for information on assigning axis titles to data cells.

5. When you have selected the new data, click **Revise** in the floating window.

Your new data selection is applied to the selected chart only

and you are returned to the Chart view.

If you decide not to make any changes to your data selection, click **Cancel** in the floating window to exit the Revise Data mode and return to the Chart view.

Using the Internal Command Language (ICL)

DeltaGraph's use of the Internal Command Language lets you automate chart creation from another application or text string. Using programs such as Hyper-Card™, SuperCard™, Microsoft Excel, Microsoft Word, Lotus 1-2-3, or any other application that can generate a text string and send it to the clipboard, you can create Command Scripts that automatically bring in data, create charts, and copy them to the clipboard for transfer back to the original application.

Creating Command Script Formats

A Command Script is written in one of the programs described above. An example Command Script is shown below. There are three basic elements to each Command Script: header, command list, and data.

Header	Command List				
<code>DGRH;chart=Column;w=200;h=150;color;ps;quit</code>					
(Tab)	First Qtr.	Second Qtr.	Third Qtr.	Fourth Qtr.	Data
U.S.	11	15	21	22	
Europe	10	25	33	37	
Asia	44	49	42	52	

The Header and the Command List are always on the same line of text with no carriage returns. The total length of all parameters in the Header and the Command List cannot be greater than 255 characters.

The Command List is ended by a carriage return. The next line and all following lines of text make up the data to be used in creating the chart.

ICL Command Script Elements	
Command	Description
Header	Tells DeltaGraph that a command script follows. "DGRH" is the four-character Header and must be used at the beginning of every script. The Header is followed by a semi-colon (;) to separate it from the Command List.
Command List	Lists the chart type and formatting options available for the creation and formatting of the chart. Each of the individual commands must be separated by a semi-colon. The Command List does not need to be in any particular order. Refer to the table above for examples of individual commands.
Data	The Data must be in tab-delimited form with a carriage return at the end of each line of text. The chart will use the data just as it would if it were in the Data view. Any Series axis labels should appear in the first line of data. Any Category axis labels should appear in the first column of data.

Using Command List Options

There are two types of commands in the Internal Command Language. Some require you to enter a parameter and others only require the command name. Commands requiring you to enter a parameter have an equal sign (=) immediately after them. All commands except the Chart command are optional. If an available

command is not used in the script, the default chart setting is used when creating the chart. Also, if a command or parameter is misspelled, it is ignored. Commands are not case-sensitive.

ICL Command List Options	
Command	Description
<i>chart=chartname</i>	<p>Describes what type of chart you want the script to build. You can choose any DeltaGraph chart name or any chart from a Custom Library.</p> <p>Spelling must be exact. For 3-D charts, the name must include the dash between the “3” and the “D” and a space after the “D.”</p> <p>Example: chart=3-D Column</p>
<i>w=integer</i>	<p>Describes the width of the plot frame for 2-D charts and the width of the X and Y axes in 3-D charts. Width is measured in points (1 point is equal to 1/72 of an inch). The parameter entered can be any integer between 1 and 32767.</p> <p>Example: w=350</p>

h=integer	<p>Describes the height of the plot frame in 2-D charts and the height of the Z axis in 3-D charts. Height is measured in points (1 point is equal to 1/72 of an inch). The parameter entered can be any integer between 1 and 32767.</p> <p>Example: h=225</p>
font=fontname	<p>Describes the font you want used in your chart. You can use any font available in the Font menu. This entry will be overridden if a Custom Library chart is used in “chart” above.</p> <p>Example: font=Times</p>
size=fontsize	<p>Describes the font size for the text in your chart. You can enter any integer between 3 and 127. This entry will be overridden if a Custom Library chart is used in “chart” above.</p> <p>Example: size=18</p>
library=libraryfilename	<p>Describes the Custom Library name you want to open. The library must be in the same folder or directory as DeltaGraph. The named library will not open if there are already four Custom Libraries open (any auto-loaded libraries are opened first).</p> <p>Example: WRI Sales Library</p>
color	Tells DeltaGraph to draw the chart using color defaults.
quit	Tells DeltaGraph to quit after building the chart.

To create an ICL script, do the following:

1. Attach the Header and Command List to your tab-delimited data as shown in “Creating Command Script Formats” in chapter 8

2. Copy the Command Script.

3. If it is not already open, open DeltaGraph.

If the “quit” command is used, the chart is placed on the clipboard and Delta- Graph is closed. If the “quit” command is not used, the new chart appears in the Chart view.

9 Customizing Charts

This chapter describes ways you can increase the impact and legibility of your DeltaGraph charts by using commands from the Chart menu to modify individual chart elements. You can also use the tools in the Toolbox and commands on the Text menu to change the colors, patterns, line widths, and text attributes for an entire chart or selected elements.

This chapter covers the following information:

- Selecting a chart and chart elements
- Creating chart color schemes
- Changing the appearance of a chart's axes
- Formatting chart text
- Adding axis titles to a chart
- Changing the placement of axis labels and titles
- Adding value labels to data graphics
- Changing the shape, color, and size of chart symbols
- Showing and hiding chart grids
- Changing the direction and length of tick marks
- Changing the viewing angle of 3-D charts
- Adding depth to 2-D charts

To learn more about...	Refer to...
Modifying data in numeric charts	Chapter 4, "Organizing Data in the Data View"
Other ways to modify charts	Chapter 10, "Changing Chart Options"

To learn more about...	Refer to...
Adding error bars and curve fits	Chapter 12, “Adding Error Bars and Curve Fits”
Modifying chart lines, colors, and fills	“Changing the Attributes of a Draw, Text, or Chart Object” in chapter 11
Importing graphics	Chapter 13, “Importing and Exporting Graphics”

Selecting a Chart and Chart Elements

Before you can move, resize, or modify a chart, you must select it. To change the colors, patterns, line widths, or text attributes of individual chart elements, you must select the element. When initially plotted, charts are automatically selected so that you can have immediate access to the appropriate commands.

Although the legend and all labels are part of the chart, any one of them can be moved independently of the chart and the other elements if selected separately as a chart element. The legend can also be resized separately.

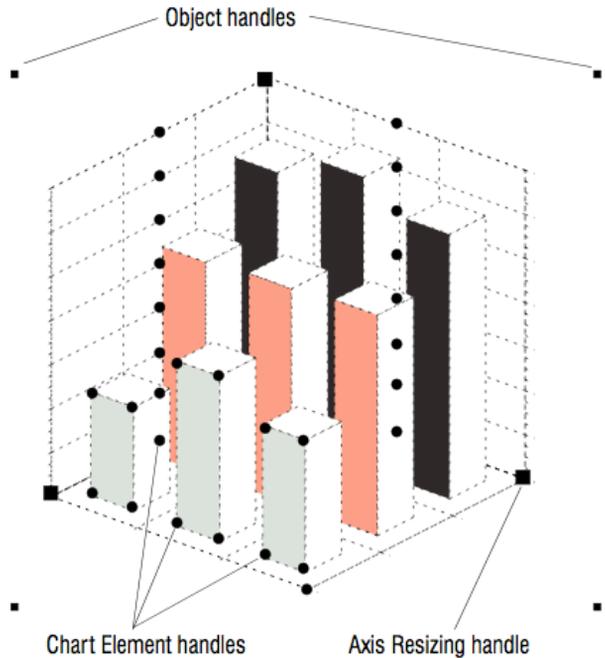
To select a chart, do the following:

1. Display the appropriate Chart page by clicking the Chart View icon on the Command bar and selecting a page from the pop-up menu.
2. Click the Pointer tool in the Toolbox if it is not already selected.
3. Click anywhere on the chart you want to select. Object handles (small squares) appear in the four corners of the chart to show it is selected. Axis resizing handles (large squares) also appear. 2-D charts have two axis resizing handles. 3-D charts have three axis

handles (see the figure below).

Any changes you make at this point to line widths, text attributes, patterns, or color will affect the entire chart. If you want to modify individual elements only, you must select them separately.

When the chart is selected, you can move it by placing the pointer in the chart and dragging it to a new location.



To select a chart element, do the following:

1. Make sure the whole chart is selected.
2. Click the chart element you want to select. (To select the legend, click its border.) Small circles appear to show that the element is selected (see the figure above). If the chart element you select is part of a group, such as axis labels, tick marks, legend text, or legend/data graphics, the whole group is selected.
3. To select only one element in a group, click again on the element.

4. To select multiple chart elements, hold down the **command** key when you click to select each element.

You can select the following chart elements:

- whole chart
- labels on an entire axis or a single label
- legend, all legend labels, or a single legend label
- a single legend graphic, with or without corresponding data graphics (bar, line, and so on)*
- a data graphic series (with corresponding legend graphic) or a single data graphic*
- an axis, axis grids, or axis tick marks
- chart back planes
- bottom or top depth plane or side depth plane (2-D charts)
- tops of data graphic series or a single data graphic* (3-D charts)
- right sides of data graphic series or a single data graphic* (3-D charts and 2-D

charts with depth added)

- left sides of data graphic series or a single data graphic* (3-D charts)

* When a data graphic is selected, the lines defining the graphic are also selected. To change the fill color or pattern, use the Fill palette. To change the line width, use the Line Width palette. To change the line color or pattern, use the Line palette.

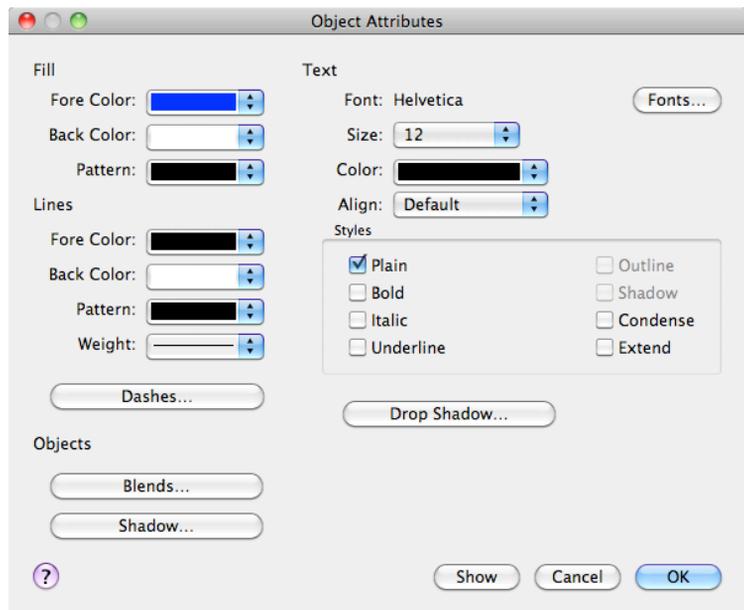
To learn more about...	Refer to...
Moving and resizing charts	“Moving and Resizing Objects” in chapter 11

Opening Dialog Boxes

Many of the dialog boxes described in this chapter can be displayed one of two ways:

- Double-click chart elements to display various dialog boxes (“Double-click on Charts” must be selected in Preferences; see “Setting Chart View Defaults” in chapter 6).
- Click and hold the mouse while holding the **control** key to display a pop-up menu of options available on the Chart menu.

General chart attributes such as text and colors can be changed by clicking the chart while pressing the **control** key. You can select the entire chart or an individual element. The “Object Attributes” dialog box is displayed



The options available in this dialog box work similarly to the tools, palettes, and commands available in DeltaGraph. This dialog box allows you to change a variety of attributes at the same time.

To learn more about...	Refer to...
Using Control -click or right mouse button	“Changing Attributes” in chapter 11

Color Schemes

A Color Scheme allows you to choose colors for ticks and grids, text shadows, chart labels, text, axis titles, page titles, backgrounds, bullets, data series, and so on, all at the same time. You can load an existing Color Scheme, edit a Color Scheme, or save a new Color Scheme. You can add DeltaGraph system colors or digital simulations of colors to a Color Scheme.

If “Scheme” is selected as the color default in the Preferences, General tab (see “Setting General Defaults” in chapter 6) and a Color Scheme is loaded, all charts in the active document use the colors in the scheme. If “Scheme” is not selected, you can manually apply scheme colors as you would any other color.

A loaded Color Scheme appears at the bottom of the DeltaGraph color palette, and, if you created a custom color palette, it appears just above the Color Scheme palette. Color Schemes are also stored in Layout Sets. When you load a Layout Set in the current document, you have the option of using the Color Scheme included with the set. If you open a new Color Scheme or change the existing scheme, all objects in the current document reflect the changes. You can also override the Color Scheme palette selections by manually changing objects or elements to non- scheme colors.

Multiple open documents can have separate Color Schemes. If the current document has a Color Scheme, a Layout Set saved for the document will be saved with the document’s Color Scheme.

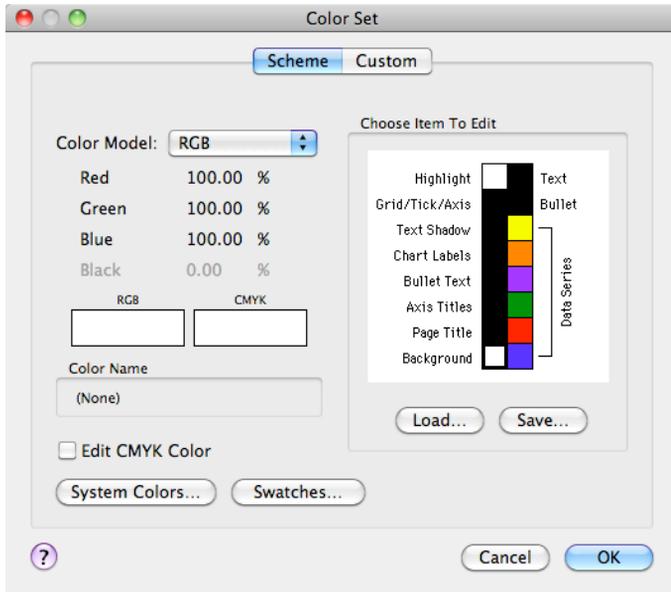
Loading a Color Scheme

You can load a Color Scheme in the active document to apply the colors in the Color Scheme to all objects and elements in the charts in the document. When you load a new Color Scheme palette, it replaces

the existing palette, changing the colors in all objects in the active document. If multiple documents are open, the Color Scheme only applies to the active document.

To load a Color Scheme, do the following:

1. Choose **Colors** from the Edit menu. The “Color Set” dialog box appears with the Scheme tab selected.



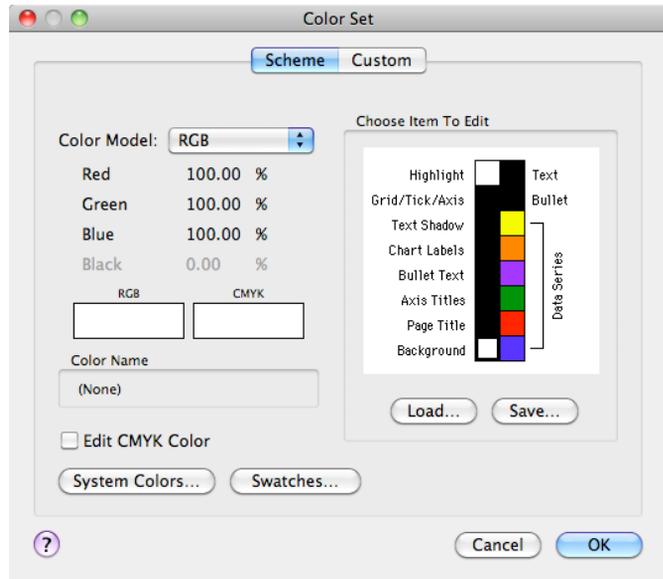
2. Click **Load**. A standard “Open” dialog box appears. Only Color Scheme palettes appear in the dialog box.
3. Select a Color Scheme palette from the dialog box and click **Open**. The palette appears in the Scheme tab. You can edit the colors as necessary (refer to the next section).
4. Click **OK** to load the Color Scheme in the active document. Colors in the selected palette are applied to all objects and charts in the document.

Editing or Creating a Color Scheme

You can edit the Color Scheme that is loaded in the active document, or you can create a new Color Scheme by editing an existing Color

Scheme and saving it with a new name. To edit or create a new Color Scheme, do the following.

1. Choose **Colors** from the Edit menu. The “Color Set” dialog box appears with the Scheme tab selected.



The Color Scheme for the active document is displayed. You can edit it, or you can load a different Color Scheme to edit (refer to “Loading a Color Scheme” in chapter 9).

2. Select from the following options to edit the Color Scheme:

Choose Item to Edit

Displays the available objects and Chart elements and the colors assigned to them in the Color Scheme palette. Click the item whose color you want to edit. The selected colors are applied to each item as described below.

Highlight

Not applied automatically, can be manually applied to a selected object.

Grid/Tick/Axis

Determines the color of all axis ticks and grids on numerical charts.

Text Shadow

Not applied automatically, can be manually applied to a selected object.

Chart Labels

Determines the color of all axis labels on numerical charts.

Bullet Text

Determines the color of text in a Bullet chart.

Axis Title

Determines the color of all axis titles on numerical charts.

Page Title

Determines the color of text contained in a Title placeholder in a Smart Layout.

Background

Determines the color of the Master Background rectangle element.

Bullet

Determines the color of bullets in a Bullet chart.

Text

Determines the color of text contained in a Text placeholder in a Smart Layout.

Data Series

Determines the color of up to six data series elements in numerical charts.

Color Model

Shows the color model of the selected color,

as follows:

RGB

Shows the percentages of red, green, and blue.

CMY

Shows the percentages of cyan, magenta, and yellow.

CMYK

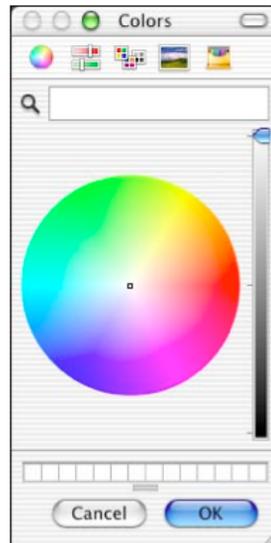
Shows the percentages of the four process colors: cyan, magenta, yellow, and black.

HSL

Shows the percentages of hue, saturation, and light.

3. Click **System Colors** or **Swatches** to select a new color for the selected item, as follows:

System Colors



To select a DeltaGraph system color, click **System Colors**, and the “Colors” dialog box is displayed.

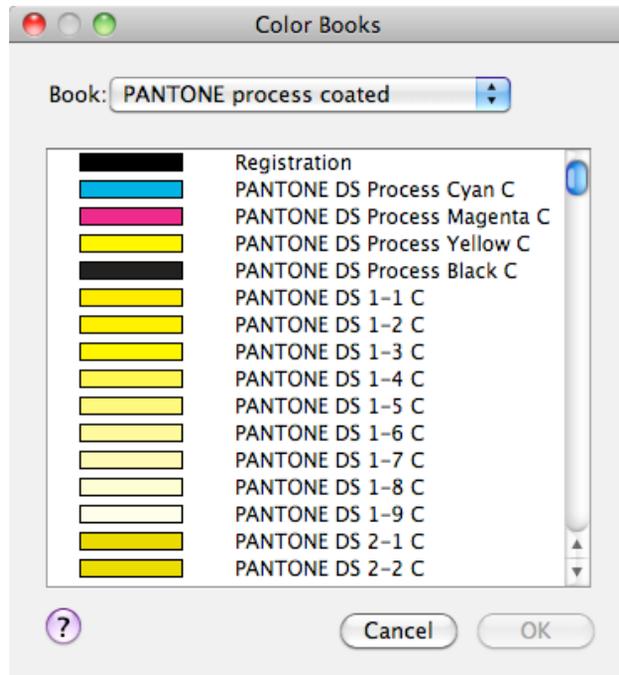
Display colors using one of the five options at the top of the box, as follows:

- Color Wheel (shown in the image)
- Color Sliders
- Color Palettes
- Image Palettes
- Crayons

Move the pointer over an icon to display a message that describes its function. You can use any of the methods to select a color. For example, to use the Color Wheel method, click a location in the color wheel to select a color. Change it by clicking a different location. Click **OK** to apply the color.

Colors from a swatch file

To select a color from a swatch, click **Swatches**, and the “Color Books” dialog box is displayed.



Click a color to select it.

4. To save the changes to the loaded Color Scheme, click **Save** to open a “Save” dialog box, select the name of the Color Scheme, and click **Save** to save the Color Scheme and return to the “Color Set” dialog box.

To save the edited Color Scheme with a new name (to create a new Color Scheme), click **Save** to open the “Save” dialog box. Enter a name for the new Color Scheme, and click **Save** to return to the “Color Set” dialog box.

NOTE  To apply the edited Color Scheme to the active document *without* saving the changes, do not click **Save**.

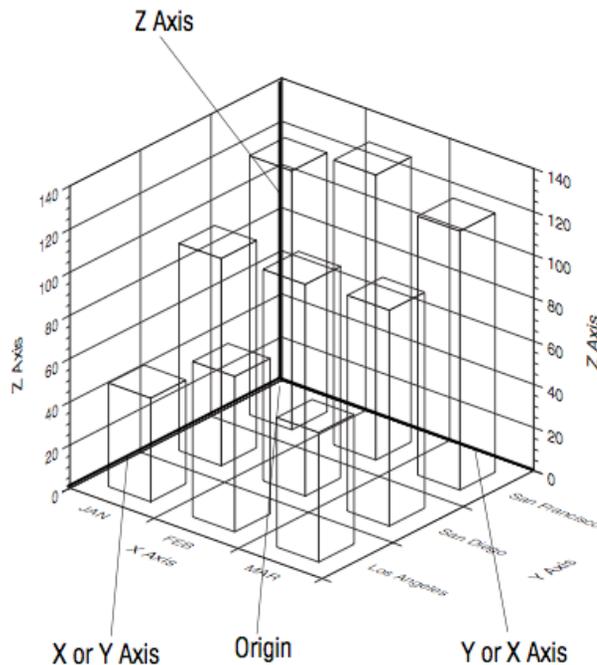
5. Click **OK** to apply the Color Scheme and return to the Chart view. The new colors are applied to all objects and charts in the active document. To exit the dialog box without applying the new Color Scheme, click **Cancel**.

If you saved the edited Color Scheme, you can load it in any document. To do so, select **Colors** from the Edit menu to open the “Color Set” dialog box, click **Load**, and select the Color Scheme.

To learn more about...	Refer to...
Creating custom colors	“Working with Custom Colors” in chapter 11
Setting preferences	Chapter 6, “Setting Preferences”
Loading a Layout Set	“Loading a Layout Set” in chapter 5

Reformatting a Chart's Axes

A chart's axes are the lines creating the frame of the chart. They are marked at each end by axis resizing handles (large squares), which appear when you select the chart. 3-D charts have three axes: an X, Y, and a Z axis (see the figure below). 2-D charts have only two axes: an X and a Y. The function and the name of each axis varies depending on the type of chart.



Pie, Table, Time Line, Polar, Spider, Ternary, Organizational, and Bullet charts are unique in that some do not have axes (Organizational, Bullet, Pie, and Table charts), the axis names are unique to the chart type (Time Line, Spider, Ternary, and Polar charts), or the axes cannot be reformatted (Polar chart).

For those charts containing axes, at least one of the axes is a Value axis. Most charts also have a Series and/or a Category axis, but some charts such as the Spider chart, may have two or more Value axes.

DeltaGraph creates the axes for each chart you plot according to the type of chart and basic parameters of the data. For example, it calculates a “correct” length for each axis, determines the best position for each axis and its components, and displays labels on each axis as appropriate.

You can select the Axis icon on the extended Command bar or choose **Axis** from the Chart menu to open a dialog box to change these and many other attributes of a chart’s axis. The “Set All” command on the Chart menu allows you to change more than one axis at a time.

To learn more about...	Refer to...
Identifying the axes in a chart	Chapter 7, “Chart Types”

Changing the Value Axis

DeltaGraph automatically computes appropriate values for the beginning and end of each Value axis and for the incremental placement of tick marks along the axis. These values are based on the range of data used to plot the chart.

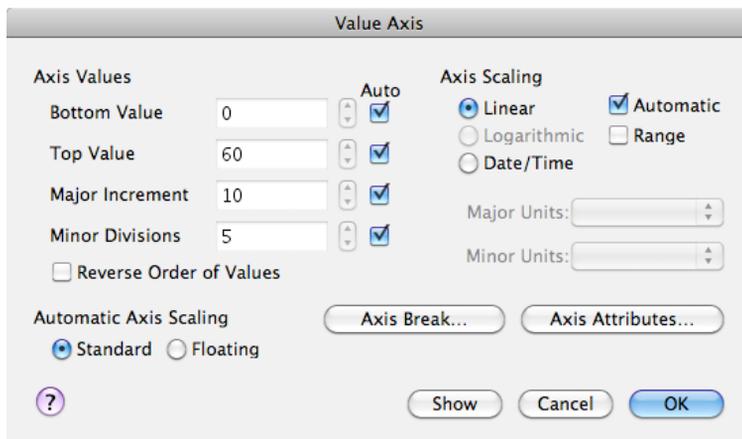
To change these values, and other attributes of the Value axis, click the Axis icon on the extended Command bar, or choose **Axis** from the Chart menu, and select a

Value axis from the submenu (axes listed by names such as “X Axis,” or “Z Axis” are always Value axes). This opens a dialog box with options and defaults specific to the chart selected. For charts with two or more Value axes, you must change each axis separately.

The procedure is similar for changing the Value axes of both 2-D and 3-D charts. To change a Value axis, do the following:

1. Select the chart.
2. Click the Axis icon on the extended Command bar, choose **Axis** from the Chart menu and select a Value axis from the submenu, or double-click the chart’s

Value axis. The “Value Axis” dialog box is displayed.



NOTE  If double-clicking does not bring up the dialog box, make sure “Double-click on Charts” is selected in the “Chart View” tab in Preferences. For information, refer to “Setting Chart View Defaults” in chapter 6.

The options available depend on the chart type selected. The values displayed depend on the data used to plot the chart.

3. Make your selections and enter data as needed. Each “Value Axis” dialog box includes some of the following options:

Axis Values

Set the minimum/maximum values and the major/minor increments for marking them on the Value axis. Depending on the chart type selected, the minimum/maximum values appear at the “Bottom/Top,” “Inner/Outer,” or “Left/ Right” edges of the Value axis. You can type in new values to extend or shorten the axis.

If you change any of the axis values, the corresponding “Auto” check box(es) and the “Automatic” check box on the right side become deselected. To automatically change an axis back to its default value, click the applicable “Auto” check box. To change *all* the axes back to their original values, select **Automatic**.

Major Increment

Sets the divisions for labels, major ticks, and major grids on the Value axis. Enter a value or click the direction arrows to scroll the options.

Minor Divisions

Sets the divisions for minor ticks and grids on the Value axis. Enter a value or click the direction arrows to scroll the options.

Reverse Order of Values

Some charts allow you to flip them over on their Value (Y) axis so that the Category (X) axis appears at the top of the chart with the data flowing downwards. This option is also available on Value-Value charts, such as Scatter charts. In these cases, the other axis placement is not affected.

Axis Scaling

Determines the axis-scaling algorithm. DeltaGraph automatically computes values for the three algorithms as described below, but you can enter new values in the “Axis Values” section of the dialog box. You have the following axis-scaling options:

Linear

Scales the chart based on graduated values computed from the data in the Data view.

Automatic

DeltaGraph automatically calculates appropriate incremental divisions for the axis, as well as minimum/maximum values. If you enter new values for any or all of the options under “Axis Values,” this option is deselected. To automatically reset all values to their default, re-select this option.

Logarithmic

Scales the chart based on powers of ten. This option does not apply to Stacked charts, Build-up charts, Ternary charts, High charts, Contour Line charts, Contour Fill charts, or Grid Vector charts.

Range

This option allows you to specify start and end values for axes that fall between the major increments while displaying the rest of the axis labels at normal increments. For example, the labels for a normal axis with a starting value of 2.4 and a

major increment of 5 would be 2.4, 7.4, 12.4, and so on. With this option, the axis labels would be 2.4, 5, 10, and so on.

Date/Time

Scales the chart based on units of time measurement, which is useful only if your data consists of dates or times.

If you choose the “Date/Time” option, “Minor Divisions” (in the “Axis Values” section) changes to “Minor Increment.” You may also have to format your Value axis labels in the Chart view to reflect the times or dates you want to display.

The “Major/Minor Units” pop-up menus offer the following options:

Seconds

Minutes

Hours

Days

Weeks

Months

Quarters

Years

Decades

Centuries

Automatic Axis Scaling

Determines the start and end values of the axis based on the values of the data plotted.

If “Standard” is selected, then the items in the “Axis Values”

section (Top/Left Value, Bottom/Right Value, Major Interval) will be changed so that zero is either on or between the top/left value and bottom/right value. “Floating” attempts to optimize any of the first values without requiring zero to lie between the extremes. “Automatic” needs to be selected in the “Axis Scaling” group box in order for “Standard” or “Floating” to operate.

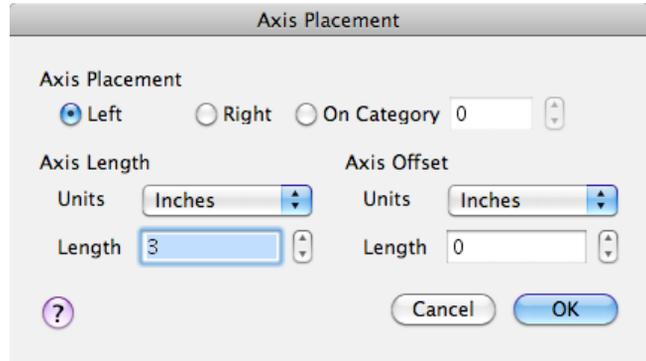
Axis Break

Displays the “Axis Break” dialog box so you can break the value axis and customize its width, range of the break, and the symbols you want to use. See “Creating Axis Breaks” in chapter 9

Axis Attributes

Displays a dialog box so you can change the placement and length of the Value axis.

The following dialog box appears when setting axis attributes for 2-D charts.



Axis Placement

Determines the location of the selected Value axis. The available selections (Left/Right or Top/Bottom) depend on the type of chart selected and the orientation of the Value axis. In a chart consisting of two or more Value axes, this feature is particularly useful when plotting both positive and negative

numbers.

Left

Displays the selected Value axis on the left side of the chart.

Right

Displays the selected Value axis on the right side of the chart.

Top

Displays the selected Value axis at the top of the chart.

Bottom

Displays the selected Value axis at the bottom of the chart.

On Category/On Value

Controls the placement of the selected Value axis and its tick marks on the Category or Value axis grid. The placement of the Value axis labels does not change. You can enter the Category or Value axis grid number on which you want the selected Value axis to appear or click the direction arrows to scroll the options.

Axis Length

Determines the length of the Value axis and which measuring unit is used.

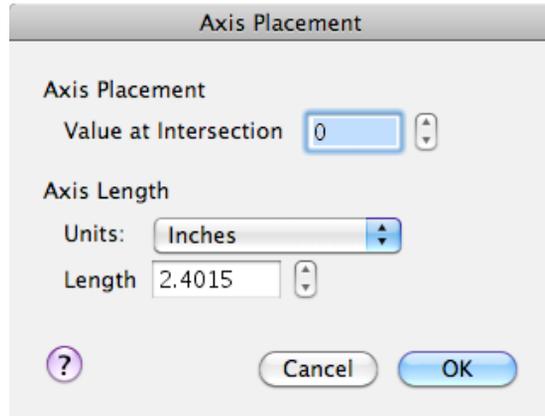
Click the pop-up menu to choose from inches, centimeters, points, or picas. You can type in a new length or click the direction arrows to scroll the numbers in 36-point (half-inch) increments.

Axis Offset

You can use this group box to explode, or move an axis away from the chart. For more details on offsetting axes, see

“Changing Axis Offset” in chapter 9.

The following dialog box appears when setting the axis attributes for 3-D charts.



Axis Placement

Controls where the Value axis intersects the Category axis. The placement of the Category labels does not change. You can enter the value on the Value axis at which you want the Category and Series axes to intersect it. On XYZ charts, you enter the value at which you want the perpendicular axis (or axes) to intersect the current Value axis.

In a chart consisting of two or more Value axes, this feature is particularly useful when plotting both positive and negative numbers.

Axis Length

Determines the length of the Value axis and which measuring unit to use.

Click the pop-up menu to choose from inches, centimeters, points, or picas. You can type in a new length or click the direction arrows to scroll the numbers in 36-point (half-inch) increments.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.

5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

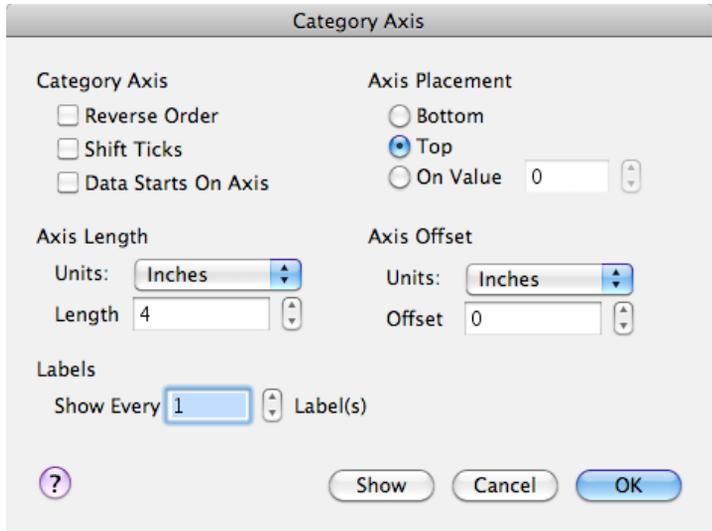
To learn more about...	Refer to...
Changing the angle axis of a Polar chart	"Changing Axis Offset" in chapter 9

Changing Category and Series Axes

Many of the DeltaGraph defaults for Category and Series axes, including the number of labels showing, the order of the data series, and the length and location of the Category and Series axes in 2-D charts, are easily changed. Click the **Axis** icon on the extended Command bar, or choose **Axis** from the Chart menu and select the axis you want to change from the submenu. This opens a dialog box whose options and defaults are specific to the chart and axis selected. Remember, charts consisting of all Value axes do not have Category or Series axes.

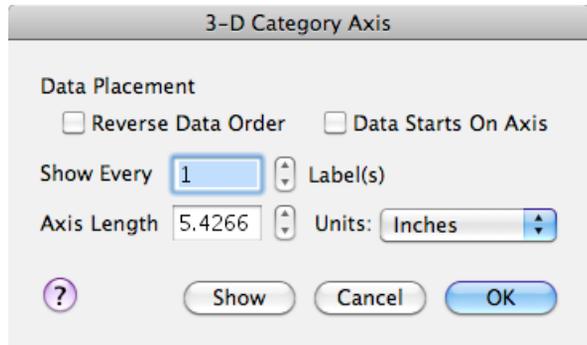
To change the Category and Series axes, do the following:

1. Select a chart.
2. Click the **Axis** icon on the extended Command bar, choose **Axis** from the Chart menu and select the axis you want to change from the submenu, or double click one of the chart's axes. The "Category Axis" or "Series Axis" dialog box is displayed.



NOTE  If double-clicking does not bring up the dialog box, make sure “Double-click on Charts” is selected in the “Chart View” tab in Preferences. For information, refer to “Setting Chart View Defaults” in chapter 6

The options available depend on the chart type selected. The values displayed in each dialog box depend on the data used to plot the chart. The “3-D Series Axis” dialog boxes are set up in the same manner as the “3-D Category Axis” dialog boxes.



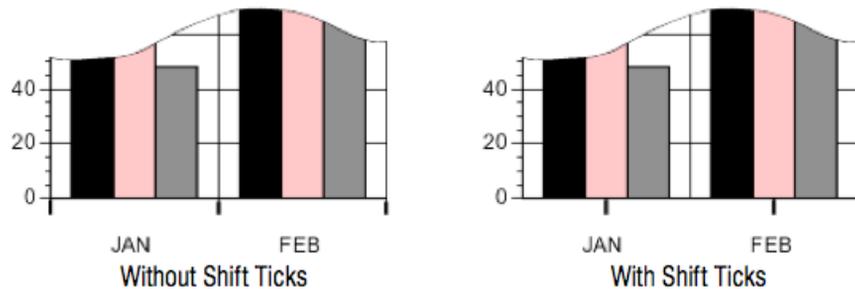
3. Make your selections and enter data as needed. Each dialog box includes some of the following options:

Reverse Data Order

(Not for every chart) Reverses the order of the selected axis. Also shifts labels and ticks so that every data graphic, label, and tick falls on a major grid.

Shift Ticks

(Category charts only) Positions the Category axis ticks between the Category axis grid marks (rather than at the grid marks) centering them over the Category axis labels as shown below.



Data Starts On Axis

Puts the first data point on top of the Y-axis.

Data Starts On Axis

(Not for every chart) Extends the data graphics to the edges of the Category axis.

Labels

Controls at what interval the axis labels are displayed. For example, 1 = show every axis label, 2 = show every other axis label, and so on. You can enter a label interval in the text box or click the direction arrows to scroll the options.

Axis Placement

(2-D charts only) Determines the location of the chart's Category axis. The available selections (Left/Right or Top/Bottom) depend on the type of chart selected and the orientation of the Value axis.

Left

The axis inserts at the left side of the chart.

Right

The axis inserts at the right side of the chart.

Bottom

The axis inserts at the bottom of the chart.

Top

The axis inserts at the top of the chart, creating “hanging data graphics.”

On Value

Controls the placement of the selected Category axis and tick marks on

the Value axis grid. The placement of the Category axis labels does not change. You can enter the Value axis grid number on which you want the selected Category axis to appear or click the arrows to scroll the options.

Axis Length

Determines the length of the Category/Series axis and which measuring unit to use. Click the pop-up menu to choose from inches, centimeters, points, or picas. You can type in a new length or click the direction arrows to scroll the numbers in 36-point (half-inch) increments.

Axis Offset

Allows you to move the Category axis a specified distance from the data and can be applied in inches, centimeters, picas, points, or ciccros. Setting a negative value places the axis inside the chart.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

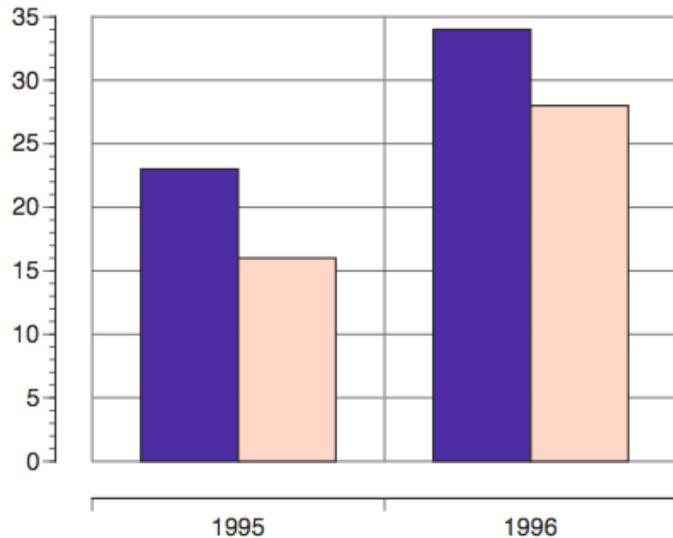
Changing Axis Offset

Changing axis offset applies to any two-dimensional charts that have value, category, overlay, or broken axes. This feature allows you to grab and drag an axis. Dragging is constrained to one direction. You can also specify axis offset in the axis options dialog box. This feature does not apply to Spider, Radar, Polar, Ternary, Pie, Multiple Pie, Stacked Pie, Time Line, Table, or 3-D charts.

Axes on 2-D charts can be exploded, or moved some distance away from the chart, by dragging or by using axis options.

To change axis offset by dragging, do the following:

1. Select a chart.
2. Click and hold an axis and drag it in the direction it is to be offset. Horizontal axes can only be dragged vertically. Vertical axes can only be dragged horizontally. An offset axis is shown in the figure below.



NOTE  When moving an axis, any items associated with the axis, such as ticks and axis labels, are moved as well.

To specify axis offset using axis options, do the following:

1. Select the chart, choose **Axis** from the Chart menu, and select an axis from the submenu.

If you select a value axis, the “Value Axis” dialog box appears. If you select a category axis, the “Category Axis” dialog box appears.

2. For a Value axis, click the **Axis Attributes** button. In this dialog box there is an “Axis Offset” group, which allows you to offset the axis in inches, centimeters, points, picas, or ciceros.

Both the Value dialog box and the Category dialog box allow you to specify the offset in 0.05 inch increments as the default.

3. Enter an offset setting as required.

NOTE 

A positive offset is away from the axis, regardless of the orientation. When an axis is displayed on the opposite of its “natural” side, a positive offset is still away from the chart.

Changing the Axes of a Polar Chart

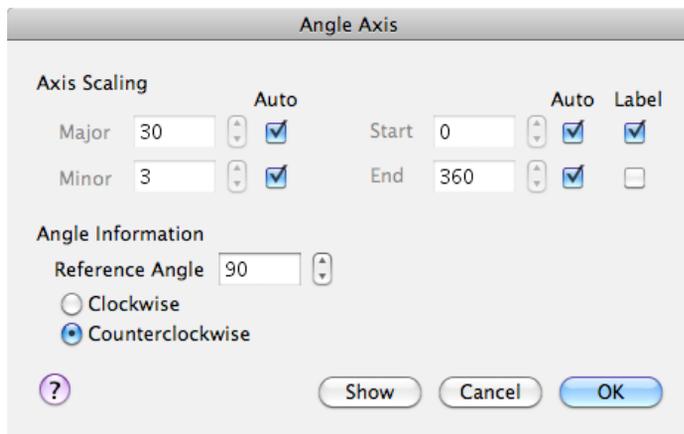
Polar charts have two axes: the Radius axis and the Angle axis. Changing the Radius axis is the same as changing the Value axis on a 2-D chart; refer in chapter 9 for information.

The Angle axis of a Polar chart can also be modified. You can change the start and end points of the axis, whether the angle increases in a clockwise or counterclockwise direction, the number of tick marks on the axis, and several other axis-related attributes.

To change the Angle axis of a Polar chart, do the following:

1. Select a Polar chart.
2. Click the Axis icon on the extended Command bar, or choose **Axis** from the Chart menu and select **Angle** from the submenu.

The “Angle Axis” dialog box appears.



3. Make your selections and enter data as needed. You have the following options:

Axis Scaling

Controls the start/end points of the Angle axis and how many degrees apart the labels and tick marks are along the axis.

Major

Sets the major tick marks and degree labels by interval. You can enter a degree interval or use the direction arrows to scroll the options. If you enter “60,” for example, the chart angles are divided and marked every 60°. If “Auto” is selected, the degree interval reverts to the default.

Minor

Controls how many divisions there are between the major tick marks. You can enter any number between 1 and 200 or use the direction arrows to scroll the options in increments of 5. If “Auto” is selected, the degree interval reverts to the default, which is 3. This means that each of the chart’s major intervals (specified above) is subdivided into three minor intervals.

Start

Controls at what degree the chart starts. You can enter a number between 0° and 359° or click the direction arrows to scroll the numbers in 5° increments. The starting angle must be smaller than the ending angle. If “Label” is selected, the

starting degree is displayed. If “Auto” is selected, the chart reverts to the default and begins at 0°.

End

Controls at what degree the chart ends. You can enter a number between

1° and 360° or click the direction arrows to scroll the numbers in 5° increments. The ending angle must be larger than the starting angle. If “Label” is selected, the ending degree is displayed. If “Auto” is selected, the chart reverts to the default and ends at 360°.

Angle Information

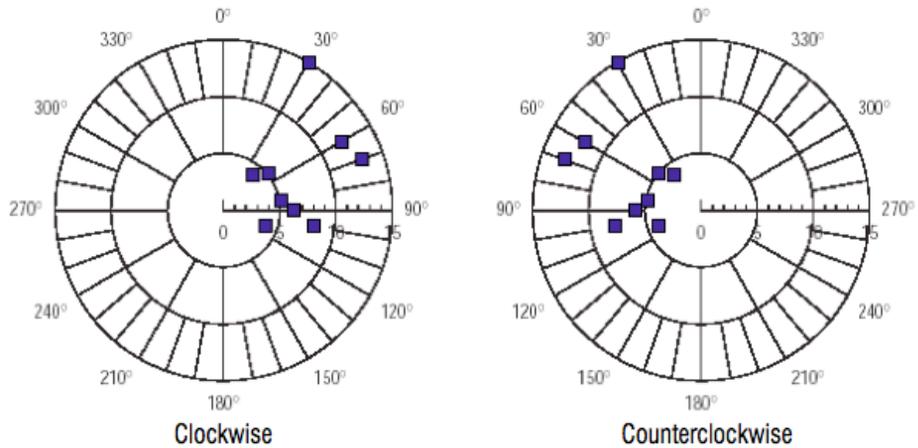
Sets the angle from which the chart is viewed.

Reference Angle

Rotates the chart by the number of degrees entered. You can enter a number between -360° and 360° or click the direction arrows to scroll the numbers in 5° increments.

Increasing (Clockwise/Counterclockwise)

Determines whether the chart angle increases clockwise or counterclockwise. This selection also affects the position of the data series, as shown in the following example.



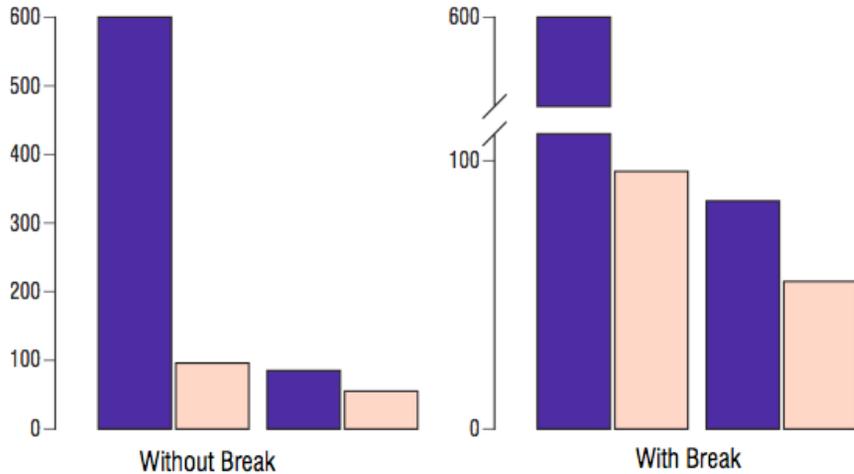
4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.

5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

To learn more about...	Refer to...
Polar chart options	“Polar Chart Options” in chapter 10

Creating Axis Breaks

Broken axis support provides several benefits. It offers the ability to skip a portion of an axis and indicate breaks in data markers. It also allows you to manage proportions of a graph so that series that vary dramatically from each other can be illustrated without affecting the readability of the graph. Accordingly, it allows certain charts to scale each side of an axis break separately.



Broken axis charts are built twice, once with each axis, then clipped to draw the two pieces around the break value. Axis breaks apply to all vector charts and all 2-D chart types except for Ternary, Spider, Polar, Pies, Contour Fill and Line, XYZ Contour Fill and Line, and Quality Control charts. Axis breaks are not supported for 3-D charts.

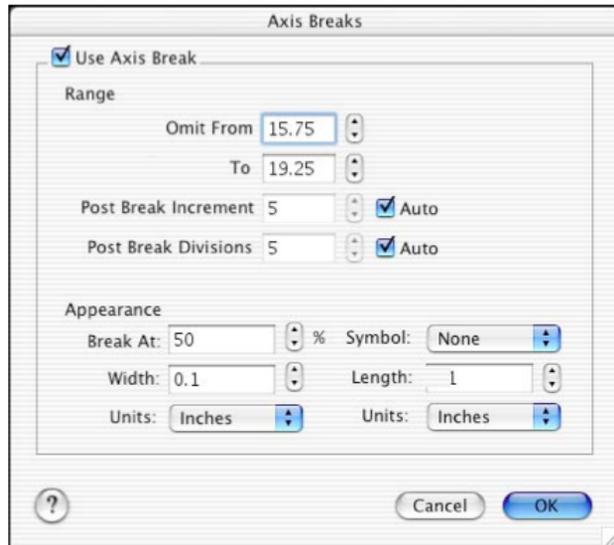
In XY charts (such as Scatter and XY Line), support is given on both axes but only one break per axis is allowed. However, this break can be placed anywhere along the axis, it can omit as much of the axis as you wish, and you can insert a break of any size, using either a straight, slant, or squiggly break symbol. You can specify major divisions and minor tick increments independently for each side of the break. Only Value axes can be broken, not Category axes.

An axis break can occur on any axis scaling type (linear, log, or date/time). The scaling method has to be the same on both sides of the break (in other words, if the first part of an axis is log, then the second must also be log). If the scaling method is changed on the axis, both sides of the break are affected.

To create an axis break, do the following:

1. Select a chart.
2. Click the Axis icon on the extended Command bar, choose **Axis** from the Chart menu and select a Value axis from the submenu, or double-click the chart's Value axis. This brings up the "Value Axis" dialog box (see "Changing the Value Axis" in chapter 9).

3. Click the **Axis Break** button in the lower right-hand corner. The “Axis Breaks” dialog box is displayed.



4. Make your selections and enter data as needed. You have the following options:

Use Axis Break

Select this option to turn on the Axis Break function. The default is “on,” and most dialog box options are activated.

Range

This section contains options for the range of the break and the major increments and minor divisions to be used on the second section of the axis, if different from the first section. Default values are based on the data you have already set for the chart. The box includes the following options:

Omit From

Allows you to omit part of the axis. It specifies the start of the range to omit from the axis.

To

Sets the end of the range to omit from the axis.

Post Break Increment

Specifies the major increments for the portion of the axis that occurs after the break if you want them to be different from the increments before the break. DeltaGraph calculates the default value. This, and the next option, are not highlighted. Turn off “Auto” to highlight them.

Post Break Divisions

This option specifies the minor divisions you want to use after the break if they are different from before the break. For example, you may want increments of 100 before the break, but 10 after the break. Again, to highlight this box, deselect “Auto.”

Auto

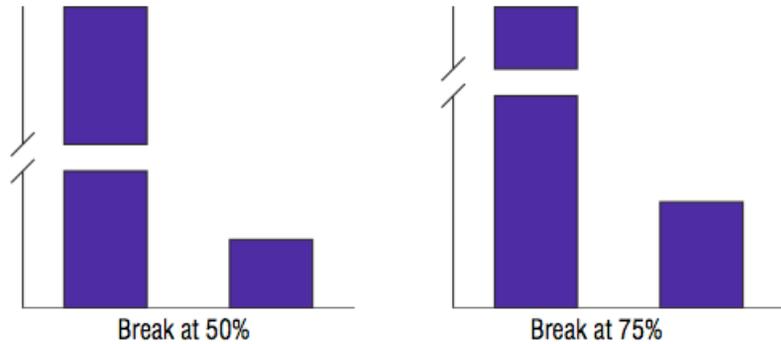
The two “Auto” check boxes are on by default. They allow DeltaGraph to automatically determine both the post break major increments and post break minor divisions. You only need to deselect “Auto” if you want to have different increments and divisions after the break than before it.

Break

This section contains options for the position and appearance of the break.

Break At

A percentage is written into this option to indicate the position at which the axis break appears on the chart. Specifying 50% places the break exactly in the middle of the axis. Specifying 75% places the break three-quarters of the way to the higher-value end of the axis, as shown below.



Width

This option sets the width of the gap in the axis. The units are specified in the “Units” option directly below.

Units

A pop-up menu is provided to choose the units to be used for the gap width. Choices include inches, centimeters, points, picas, and cicerós.

Symbol

This pop-up menu contains symbols to be used for the break, including “None.” If the currently-selected axis is vertical, then vertical break symbols appear. If it is horizontal, horizontal break symbols appear. The symbols include **Straight**, **Slant**, and **Squiggle**.

Length

This option specifies the length of the selected symbol. The units specified are entered in “Units” below.

Units

This is a pop-up menu for choosing the units of length of the selected gap symbol. Choices include inches, centimeters, points, picas, and cicerós.

The chart is drawn in two overlapping positions in the Chart page, suitably clipped to either side of the break.

Selecting a Break Symbol

Axis break symbols can be selected in the same manner as other DeltaGraph elements. The first click selects the chart. The second click (on the axis break symbol) selects all break symbols for the selected axis. Axis breaks are made up of lines. As such, their line colors, patterns, and weights can be edited from the Tool- box Color/Pattern/Thickness palettes. Double-clicking a break's symbol brings up the "Axis Break" dialog box independently of the "Value Axis" dialog box.

Show Values

Values are shown in typical fashion. If the data symbol (i.e., column) ends inside the break range and "Show Value" is set for "Outside," the value is clipped (not shown). Data values can remain or be hidden at your discretion. Showing values in the middle of bars or columns places values on both sides of the break.

Curve Fits

Curve fits are drawn with breaks in the same manner as normal data elements (such as lines) with breaks.

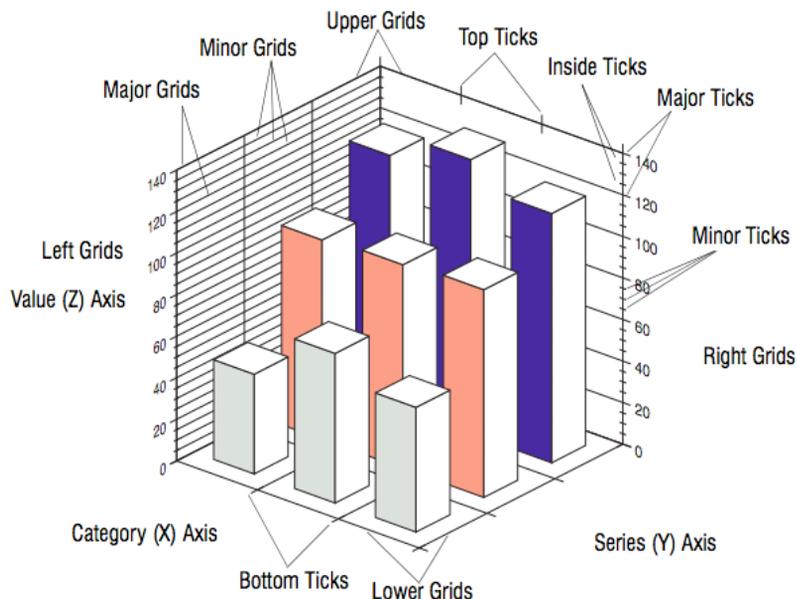
Changing Tick Marks and Chart Grids

Tick marks are short lines on a chart's axis that show units of measurement. Major tick marks represent the principal increments of the scale. Minor tick marks represent the secondary divisions.

Chart grids are the lines that span the axes. They extend the measurement markings and make the chart easier to read. Value axes, such as the Z axis in the figure below, have both major and minor grids. Category and Series axes have no minor grids. Major grids coincide with the major increments and tick marks on the axis, minor grids with the minor divisions and tick marks.

You can turn tick marks and chart grids on and off for each axis. You can also specify where on the selected axis you want tick marks to appear and how long you want them to be. In 3-D charts, you have the additional option of being able to set tick marks at right angles to the selected axis. The "Set All" command on the Chart menu allows you to change more than one axis at a time.

The figure below displays the types of tick marks and grids available to each axis. The name of each axis varies depending on the type of chart plotted.



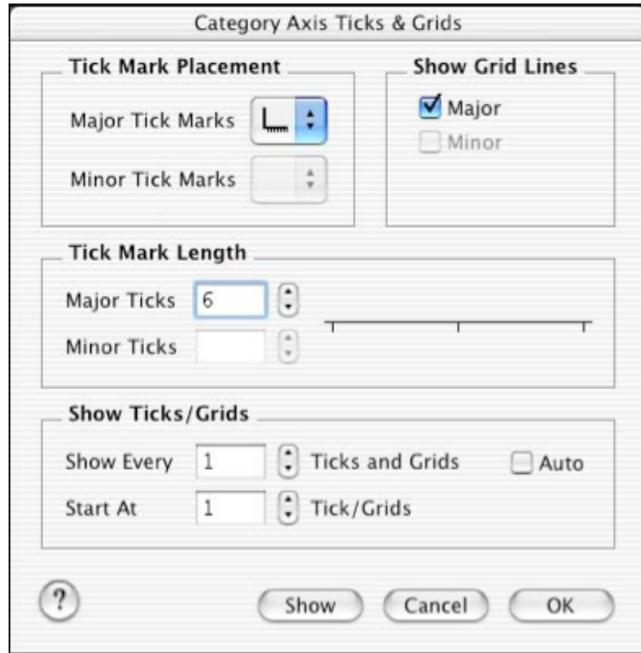
To change ticks and grids on a 2-D chart, do the following:

1. Select a 2-D chart that uses ticks and grids. Pie and Table charts do not use ticks and grid. Ticks for a Time Line chart are discussed directly after this procedure.
2. Click the Ticks & Grids icon on the extended Command bar, choose **Ticks and Grids** from the Chart menu and select an axis from the submenu, or double-click a chart axis tick or grid.

NOTE 

If double-clicking does not bring up the dialog box, make sure “Double-click on Charts” is selected in the “Chart View” tab in Preferences. For information, refer to “Setting Chart View Defaults” in chapter 6

A “Value” or “Category” “Axis Ticks & Grids” dialog box is displayed.



3. Make your selections and enter data as needed. The mini-axis in the middle of the dialog box reflects all the changes you make to tick settings. You have the following options for showing ticks and grids:

Tick Mark Placement

Determines how you want the tick marks displayed on the axis.

Major/Minor Tick Marks

Displays a pop-up menu with the following options:

- Inside the axis
- Outside the axis
- On both sides of the axis
- No tick marks

Grids

Turns major or minor chart grids on or off.

Tick Mark Length

Sets the length of major and minor tick marks in points. You can enter a value between 0 and 50 points or click the direction arrows to scroll the options.

Show Every

(Category axis only) Controls at what interval the major ticks and grids are displayed. For example, 1 = show every major tick/grid on the axis, 2 = show every other major tick/grid on the axis, and so on. Enter an interval number in the text box or click the direction arrows to scroll the options.

Start At

(Category axis only) You can also specify where on the axis you want to begin displaying the ticks and grids. If “Auto” is selected, the chart reverts to the default and displays all major ticks and grids on the axis.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

To change Category ticks on a Time Line chart, do the following:

1. Select a Time Line chart.
2. Click the Ticks & Grids icon on the extended Command bar, or choose **Ticks and Grids** from the Chart menu and select **Category** from the submenu. The “Time Line Event Ticks” dialog box is displayed.
3. Make your selections and enter data as needed. You have the following options for showing ticks and grids:

Tick Mark Length

Changes the length of the Category ticks. To change the length of a

segment, enter a point size or click the direction arrows to scroll through the values. The mini-axis on the left side of the dialog box reflects changes you make to tick settings.

Tick Mark Placement

Displays a pop-up menu so you can display the series labels either above or below the Time Line.

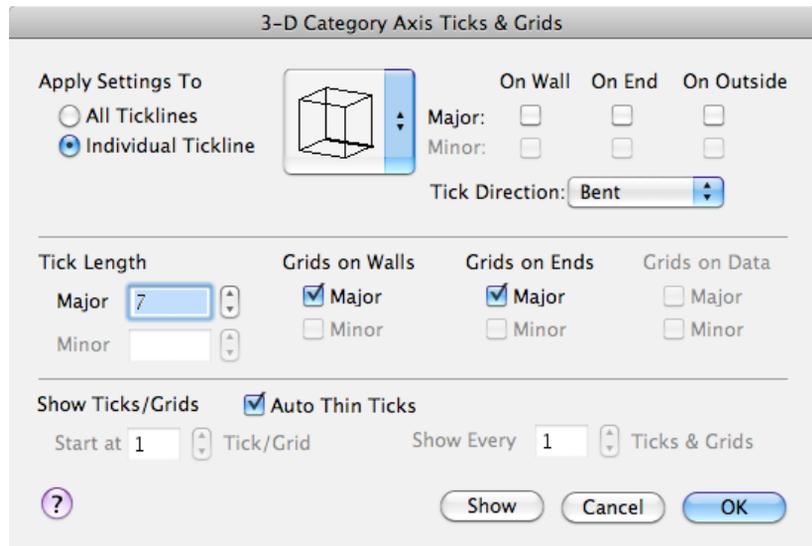
To change ticks and grids on a 3-D chart, do the following:

1. Select a 3-D chart.
2. Click the Ticks & Grids icon on the extended Command bar, choose **Ticks and Grids** from the Chart menu and select an axis from the submenu, or double click a chart axis tick or grid

NOTE

If double-clicking does not bring up the dialog box, make sure “Double-click on Charts” is selected in the “Chart View” tab in Preferences. For information, refer to “Setting Chart View Defaults” in chapter 6

The “3-D Axis Ticks & Grids” dialog box is displayed.



3. Make your selections and enter data as needed. You have the following options for showing ticks and grids:

Apply Settings To

Determines which ticklines associated with the axis chosen are affected by changes made to the tick direction in this section of the dialog box. You can choose to change all of the ticklines or choose a single tickline from the pop-up menu. This option has no effect on the “Tick Length,” or “Show Ticks/Grid” options in the lower half of the dialog box.

On Wall

Displays major and minor tick marks on the inside of the chart wall for tick- lines selected in “Apply Changes To.” Only the Value axis has minor tick marks and grids.

On End

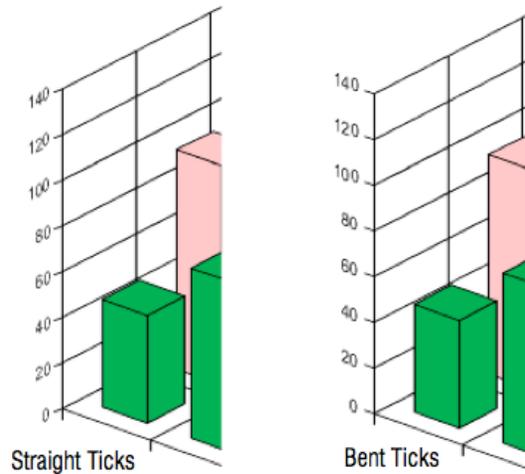
Displays major and minor tick marks on the edge of the chart axis for ticklines selected in “Apply Changes To.” The backplane must have a depth greater than 0 for this option to be seen. Only the Value axis has minor tick marks and grids.

Outside

Displays major and minor tick marks on the outside of the chart wall for tick- lines selected in “Apply Changes To.” Only the Value axis has minor tick marks and grids.

Tick Direction

Displays pop-up menus so you can change the angle of the ticks relative to the axis for the left and right sides of a 3-D chart. Choose from **Straight**, **Bent**, or **Auto**. In some circumstances the “Bent” direction cannot be seen and the option reverts to “Straight.”



Tick Length

Sets the length of major and minor tick marks in points. You can enter a value between 0 and 50 points or click the direction arrows to scroll the options.

Show Ticks/Grids

(Category and Series axis only) Controls at what interval the major ticks and grids are displayed. For example, 1 = show every major tick/grid on the axis, 2 = show every other major tick/grid on the axis, and so on. Enter an interval number in the text box or click the direction arrows to scroll the options.

You can also specify where on the axis you want to begin displaying the ticks and grids. If “Auto” is selected, the chart reverts to the default and displays all major ticks and grids on the axis.

Grids On Walls

(Not all charts) Displays grids on the inside of the chart wall.

Grids On Ends

(Not all charts) Displays grids on the edge of the chart wall.

The backplane must have a depth greater than 0 for this option to be seen.

Grids On Data

(Not all charts) Displays grids on the chart's data graphics.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

To learn more about...	Refer to...
The names of chart axes	Chapter 7, "Chart Types"
Changing the tick increments	"Reformatting a Chart's Axes" in chapter 9

Creating and Positioning Axis Labels and Titles

3-D charts can have labels and titles on three axes, whereas 2-D charts can only have labels and titles on two axes (the Z axis or Series sometimes appears as a leg- end).

Axis labels are text or numbers that identify what is measured on each axis of a chart. Labels are entered in the originating Data page. Their location on the Data page depends on the type of chart you are plotting. You can move and reformat axis labels from the Chart view, but you can edit them in the Data view only.

Axis titles, which are used to name a chart's axis, are created and edited in the Chart view.

When DeltaGraph draws a chart, it automatically calculates the space

required for the axis labels and positions them to provide the best fit and legibility.

You can change the default (“Auto”) orientation and rotation of all the labels on the selected axis. (Each axis must be changed separately.) You can also create and position axis titles. The “Set All” command on the Chart menu allows you to change more than one axis at a time.

If you want to change the default size, font, style, or alignment of chart text (which may change the “Auto” orientation and rotation of a chart’s labels and titles), choose **Preferences** from the DeltaGraph menu, and click the **Chart** tab (see “Setting Chart Defaults” in chapter 6).

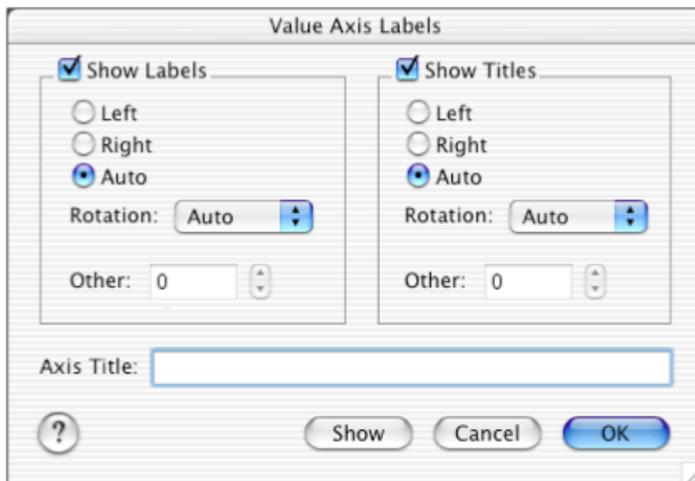
To change labels and titles for 2-D charts, do the following:

1. Select a 2-D chart. Some charts (such as Polar, Pie, or Table charts) may not have labels you can change.
2. Click the Labels icon on the extended Command bar, choose **Labels** from the Chart menu and select the appropriate axis from the submenu, or double-click an axis label or title.

NOTE 

If double-clicking does not bring up the dialog box, make sure “Double-click on Charts” is selected in the “Chart View” tab in Preferences. For information, refer to “Setting Chart View Defaults” in chapter 6.

The “Axis Labels” dialog box is displayed. The options available depend on the chart type selected. The default selections always say “Auto,” but the meaning of “Auto” depends on the type of chart selected and the length of the axis’ title or longest label. Rotation is typically 0° unless a title or more of the labels will not fit on one line.



3. Make your selections as needed. You have the following options:

Show Labels/Show Titles

Displays or hides axis labels/titles. Do not show labels/titles if you are outputting to a PostScript device.

Determine the position (left or right, top or bottom) of the labels or title for the axis selected using the following options:

Left/Bottom

Displays axis labels/titles on the left/bottom axis.

Right/Top

Displays axis labels/titles on the right/top axis.

Auto

Displays the labels/titles in the default orientation and rotation selections for the type of chart selected.

Rotation

Displays a pop-up menu to define the position of labels/titles, as follows:

0°

Displays normal right-side-up position.

90°

Rotates clockwise 90° from the 0° position.

180°

Rotates clockwise 180° from the 0° position (upside down).

270°

Rotates clockwise 270° from the 0° position.

Auto

Default position for the chart selected. (The space required for the axis labels/titles is automatically calculated and they are oriented to provide the best fit and legibility.) If you select another option and a label or title will not fit on one line, the text wraps as needed. Resizing the chart or changing the text attributes may change the “Auto” orientation.

Other

Allows you to enter a specific degree for labels/title rotation.

Other

If you selected “Other” from the “Rotation” pop-up menu, enter the degree of rotation of the labels/titles in 1° increments.

Axis Title

Enter a name for the axis in the text box.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. Click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

To change labels and titles for 3-D charts, do the following:

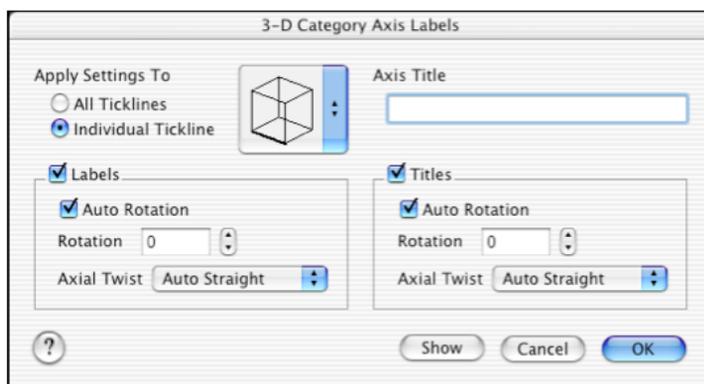
1. Select a 3-D chart.

2. Click the Labels icon on the extended Command bar, choose **Labels** from the Chart menu and select the appropriate axis from the submenu, or double-click an axis label or title.

NOTE 

If double-clicking does not bring up the dialog box, make sure “Double-click on Charts” is selected in the “Chart View” tab in Preferences. For information, refer to “Setting Chart View Defaults” in chapter 6.

The “3-D Axis Labels” dialog box is displayed. The options available depend on the chart type selected. The default selections depend on the type of chart selected and the length of the axis’ title or longest label. If “Use Perspective Labels” is not enabled in Preferences (Chart tab) the rotation default is 0°.



3. Make your selections and enter data as needed. You have the following options:

Apply Settings To

Determines which ticklines associated with the axis chosen are affected by the changes made in this dialog box. You can choose to change all of the ticklines or choose an individual tickline from the pop-up menu.

Labels/Titles

Determines the position and rotation of the labels or title for the selected axis.

On

Determines if the labels/title are visible on the selected axis and ticklines.

Auto Rotation

Default position for the chart selected (DeltaGraph automatically calculates the space required for the axis labels/titles and orients them to provide the best fit and legibility). If you select another option and a label or title will not fit on one line, the text wraps to add more lines as needed. Resizing the chart or changing the text attributes may change the “Auto” orientation.

Rotation

Determines the degree of clockwise rotation of the labels/title in 1° increments. Press the up/down arrow to change the entry in 5° increments.

Axial Twist

Displays a pop-up menu so you can define the bottom to top rotation on the axis like a spit on a rotisserie.

Auto Straight

Displays the labels/title parallel to the axis.

Auto Bent

Displays the labels/title perpendicular to the axis.

0°

This position varies depending on the axis.

90°

Flips 90° bottom to top from the 0° position.

180°

Flips 180° bottom to top from the 0° position.

270°

Flips 270° bottom to top from the 0° position.

Axis Title

Enter a name for the axis in the text box.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

To learn more about...	Refer to...
The names of chart axes	Chapter 7, “Chart Types”
Changing chart defaults	“Setting Chart Defaults” in chapter 6

Formatting Chart Text

While in Chart view, DeltaGraph uses a fully Unicode text editor. You can change the font, size, style, and color of any selected chart label(s) or axis title(s) with commands in the Text menu. (The default for chart text, unless you change it in Preferences, is 12-point Helvetica, plain, black.)

You can also use Text menu commands to add a shadow (an offset duplicate image) to selected text, realign text in a Table chart, or temporarily hide selected chart labels or axis titles.

To edit the wording or spelling of a label, you must change it in the originating Data page, then update the chart. To edit the wording of an axis title, double-click it, and make the change in the “Labels” dialog box that appears.

To format chart text, do the following:

1. Select a chart. If you want to make the same change(s) to all the chart text, skip to step 3.
2. Click the axis title or any label in a group of labels you want to change. If you want to change just one label in a group of labels, click again on the label to select it.
3. Select commands from the Text menu as needed and make your choices from the submenus that appear.

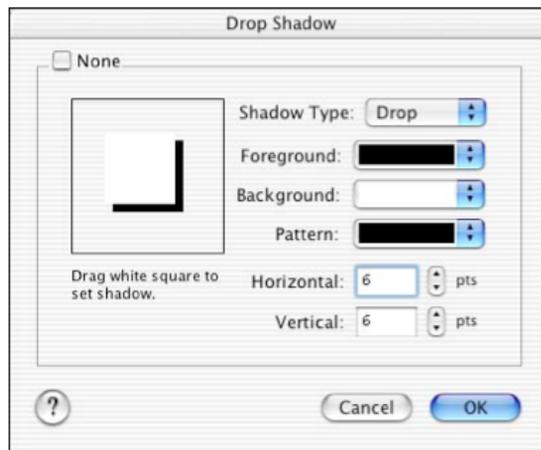
The selected text changes according to your choice. You can also use the font icons on the Command bar to perform a variety of options. In addition to the standard “Font,” “Size,” and “Style,” commands that also are available on the Command bar, the following commands are available from the Text menu:

Alignment

Changes text placement in Table charts only.

Shadow

Displays a dialog box so you can apply an offset duplicate image of selected text. This option also appears as “Drop Shadow” in the “Set All” dialog box.



To create a shadow, click the white square on the left side of the dialog box and drag it, enter a point size, or click the direction arrows to scroll through the values. To select a color for the shadow, click the pop-up menu next to “Color” to display a color

palette. When you select a color, the palette disappears. Click **OK** to add the shadow to the text and exit the dialog box.

Hidden

Hides selected text (a label or series of labels, for example) in a Chart object.

This is useful when you do not want to delete the label but do not want it displayed or printed.

Set All

Displays a dialog box so you can set several text attributes in one step for one or more selected elements.

To learn more about...	Refer to...
Changing chart defaults	“Setting Chart Defaults” in chapter 6
Creating axis titles	“Creating and Positioning Axis Labels and Titles” in chapter 9
The Preferences dialog box	Chapter 6, “Setting Preferences”
Editing data in the Data view	“Editing Data” in chapter 4

Showing Values on a 2-D Chart

Occasionally you will want to label the data graphics in a chart. For example, you might want to add numeric values and/or percentages to each piece of a Pie chart, to show what percentage of the whole each column in a Column chart represents, or to add category labels to a chart that has no Category axis.

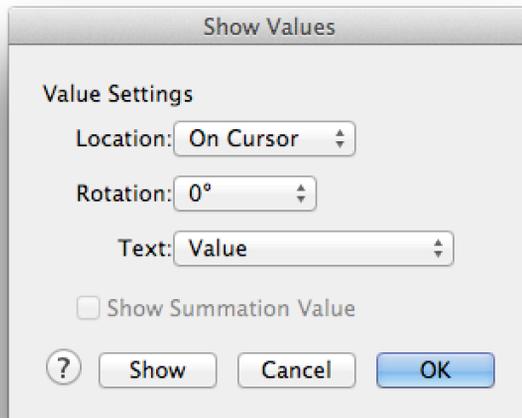
The “Show Values” command on the Chart menu displays a dialog box so you can automatically add labels that reflect information entered in the Data view to the data graphics in any of the following 2-D charts: Column, Stacked Column, Bar, Stacked Bar, all Build-Up, Floating Bar and Column, all Segmentation, Line, Step, all Pie, Scatter, Paired Scatter, XY Line, Paired XY Line, XYZ Contour

Line, Bubble, Polar, Ternary, Spider, Histogram, Pareto, and Ogive.

To show values on a chart, do the following:

1. Select one of the charts listed above.
2. Choose **Show Values** from the Chart menu.

The “Show Values” dialog box is displayed. The available options and default values displayed depend on the type of chart selected.



3. Make your selections and enter data as needed using the following options:

Location

Displays a pop-up menu so you can specify where the labels appear in relation to the data graphics. The options vary according to the type of chart selected. You should note that the size of the label can affect its location. If the location is set for inside a column (at the start, middle, or end) but the label won't fit inside, it will be placed outside.

For all Column (except XY Column) and Bar, all Build-Up, and

Floating Bar and Column charts, the options are:

None

No labels showing.

At Start

Places labels at the start of each data graphic.

Middle

Places labels in middle of each data graphic.

At End

Places labels at the end of each data graphic.

Outside

Places labels outside each data graphic at the far end. For Pie, Stacked Pie, and Multiple Pie charts, the options are:

None

No labels showing.

Inside

Places labels inside each data graphic.

Outside

Places labels outside each data graphic.

For Line, Step, Scatter, Paired Scatter, XY Line, Paired XY Line, XY Column, Bubble, Ternary, Polar, and Survival charts, the options are:

None

No labels showing.

Above

Places labels above each data symbol.

Below

Places labels below each data symbol.

Left

Places labels to the left of each data symbol.

Right

Places labels to the right of each data symbol.

On

Places labels directly on each data symbol. For best results when using this option on any chart but a Bubble chart, deselect **Show Symbols** in the “Options” dialog box (select **Options** from the Chart menu).

On Cursor

On mousing over a chart element, the value represented is shown in a small floating window next to the cursor.

Rotation

Displays a pop-up menu so you can specify the orientation of the data graphic labels. You have the following options:

0°

Labels are in default position, typically horizontal, as in normal text orientation.

90°

Rotates labels 90° from 0°, typically vertical and reading from top to bottom.

180°

Rotates labels 180° from 0°, typically upside-down.

270°

Rotates labels 270° from 0°, typically vertical and reading from bottom to top.

Text

Displays a pop-up menu so you can format the text. You have the following options:

Value

(Default for all except Pie charts) The numeric value of each data graphic as entered in the Data view.

Percent

The numeric value of each data graphic translated into its percentage of the whole.

Category

(Default for all Pie charts) The row labels from the Data view.

Value (Percent)

The numeric value of each data graphic and its percentage of the whole.

Category (Value)

The row labels from the Data view and their numeric values.

Category (Percent)

The row labels from the Data view and their numeric values translated into a percentage of the whole.

Stacked Column and Bar, Stacked Column and Bar Segmentation, and Stacked

Build-Up charts also have the following three options:

Summations

Shows the cumulative values of the series as they climb the columns or proceed along the bars.

Summations (Percent)

Shows the cumulative values and the cumulative percentages (in

parentheses) of the columns and bars.

Category (Summation)

Shows the category names and (in parentheses) the cumulative values of the columns or bars.

4. Click **Show** to preview your changes without exiting the dialog box. This makes it easy to experiment with different effects. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

The default fill color for value labels is white. You can apply a different fill color (or “None”) to a selected label from the Fill palette.

Changing Chart Symbols

In DeltaGraph, symbols are used to represent data or data series in Line, High-Low, Range, Step, Scatter, Paired Scatter, XY Line, Paired XY Line, Ternary, Ternary Percent, Polar, Bullet, Box Plot, Ogive, 3-D XYZ Scatter, 3-D Scatter, 3-D Scatterline, XY Column, Survival, and 3-D Surface Line charts. The “Symbols” command on the Chart menu displays a dialog box so you can choose different font symbols, the built-in DeltaSymbol font, or pictographics from an open Custom Library. You can also change the symbols’ size and color.

Using DeltaSymbol

DeltaSymbol is a special symbol font included with DeltaGraph that is automatically loaded during installation.

DeltaSym is the corresponding printer font and is copied to your System/Fonts folder during installation. This font is required for DeltaSymbols to print correctly.

When the DeltaSymbol font is installed in your system, these symbol characters are automatically generated for each chart that uses symbols. If the DeltaSymbol font is not in your System/Fonts folder,

the default symbol font becomes a “Built-in DeltaSymbol.” “Built-in DeltaSymbol” is a set of built-in drawing objects that represent all of the symbols available in the DeltaSymbol font, allowing you to display DeltaSymbol objects even if the DeltaSymbol font is missing.

A PostScript version of DeltaSymbol is automatically loaded during installation for printing to a PostScript printer.

To change chart symbols, do the following:

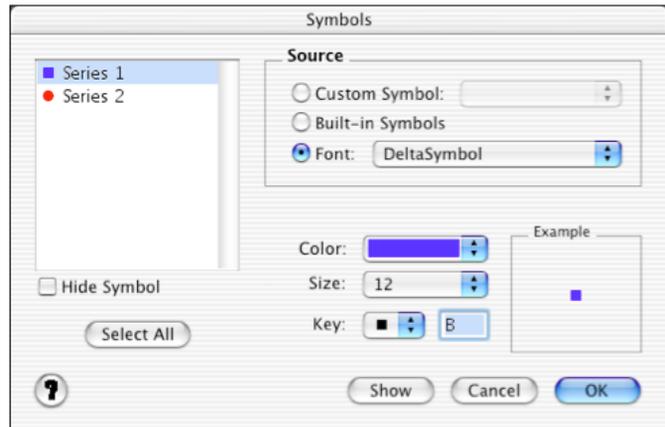
1. Select a chart that uses symbols.

2. Choose **Symbols** from the Chart menu, or double-click a chart symbol.

NOTE 

If double-clicking does not bring up the dialog box, make sure “Double-click on Charts” is selected in the “Chart View” tab in Preferences. For information, refer to “Setting Chart View Defaults” in chapter 6

The “Symbols” dialog box appears showing the default symbol (and its size and color) for each data series.



3. Select the symbol/data series you want to change from the list on the left side of the dialog box. To make all the symbols the same, click **Select All**.
4. Make your selections as needed. You have the following options:

High/Low/Middle

(High-Low and Range charts only) Allows you to change the symbols for the different ranges in each data series separately. Click **High** (the default), **Low**, or **Middle** (for Range charts only) to select which range of symbols you want to change.

Custom Symbols

Displays a graphic pop-up menu so you can apply a pictographic image from an open Custom Library to a selected data series.

Built-In DeltaSymbol

Displays DeltaSymbol as a built-in drawing object that represents all of the symbols available in the DeltaSymbol font. This provides an advantage over using the font itself in that the chart will not need the DeltaSymbol font to display the symbols. The built-in DeltaSymbols however, are much smaller and do not provide the visual clarity of the font. There is no difference between the two when printing.

Font

Displays a pop-up menu so you can select a font for the selected symbol. You can choose from all the fonts in your System/Fonts folder. The default font, if installed, is “DeltaSymbol.”

Color

Displays a color palette so you can select a color for the selected symbol.

Size

Displays a pop-up menu so you can select a size for the selected symbol or pictographic. The “Other” option displays a dialog box so you can enter a non-standard point size for the font or pictographic.

Key

Displays a pop-up menu so you can select a symbol. Every available symbol is displayed. The symbols on the right side of the menu are opaque symbols. The standard alphabet character representing the selected symbol appears in the text box next to the menu.

No Symbol

Select this check box if you do not want a symbol for the selected data series.

Example box

Displays the selected symbol for the selected data series.

5. Repeat steps 3 and 4 for each symbol you want to change. If you have more than eight data series, use the scroll bar to move through the selections.

6. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
7. When you have the results you want, click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

To learn more about...	Refer to...
Editing Bullet chart bullets	"Creating Layouts" in chapter 5

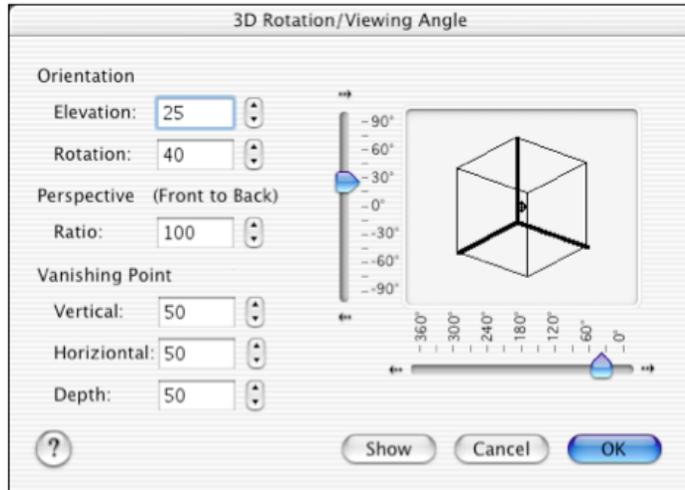
Working with 3-D View

If you want to change the orientation, perspective, and/or vanishing point of a 3-D chart, select **3-D View** from the Chart menu. This opens a dialog box that includes an interactive graphic display so you can visualize your changes as you make them. Click the **Show** button to experiment with different settings.

Once you have implemented a change, you can use the "Change Type" command on the Chart menu to change the chart back to its default settings. Just choose the same chart type from the dialog box that appears.

To change the view of a 3-D chart, do the following:

1. Select any 3-D chart.
2. Choose **3-D View** from the Chart menu. The "3-D Rotation / Viewing Angle" dialog box is displayed.



3. Make your selections and enter data as needed. As you change these values, the graphic cube on the right side of the dialog box changes to reflect your choices. You have the following options:

Orientation

(Measured in degrees) Controls the chart's vertical viewing angle (Elevation) and horizontal viewing angle (Rotation) relative to the eye.

To change either setting, enter a number from -90° to 90° (Rotation) or 0° to 360° (Elevation), click the direction arrows to scroll through the values in 5° increments, drag the vertical and horizontal slide markers in the adjusting bar next to the graphic cube, or click the arrows at each end of the adjusting bar to change the elevation.

Perspective

(Measured in percents) Controls the perceived distance of the back of the chart relative to the front. At 100% (default), the size of the back is equal to the size of the front. At 50%, the size of the back is one-half the size of the front.

To change the perspective, enter a number from 20% to 100%, or click the direction arrows to scroll through the values in 5% increments.

Vanishing Point

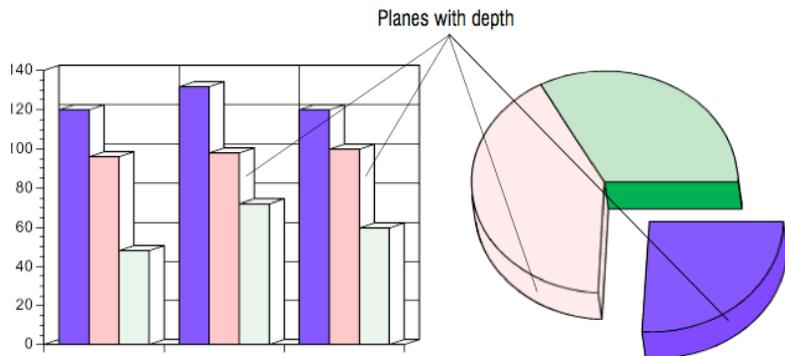
(Measured in percents) Controls the point on the chart that the eye is looking through. The default settings for the vertical, horizontal, and depth vanishing points are always 50, the middle of the chart, but the effect that these settings have on the chart is relative to the “Orientation” and “Perspective” settings.

To change the vanishing point, enter a number from 0% to 100% or click the direction arrows to scroll through the values in 5% increments.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

Adding Depth to a 2-D Chart

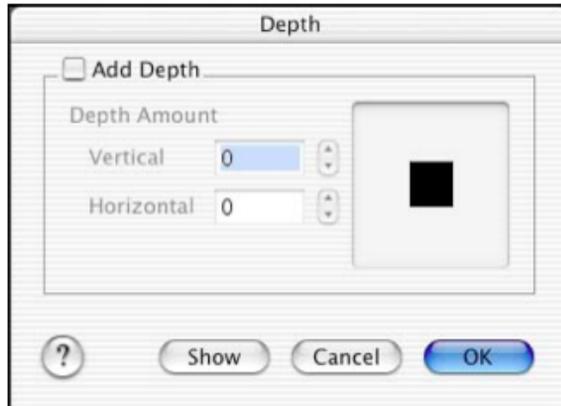
You can add depth to planes on the data graphics of a Column, Stacked Column, Bar, Stacked Bar, Area, Pie, or Multiple Pie chart.



To add depth to a 2-D chart, do the following:

1. Select one of the 2-D charts listed above.
2. Choose **Depth** from the Chart menu. The “Depth” dialog box is

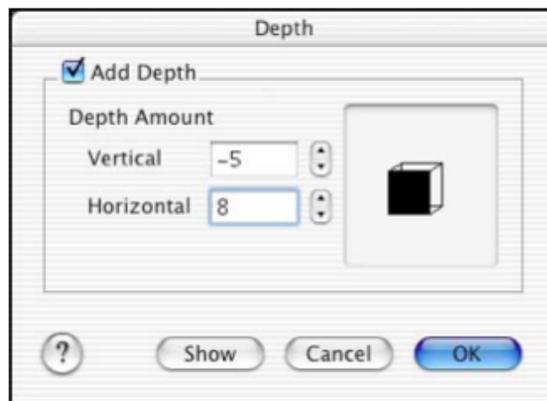
displayed.



The black box on the right is part of a cube that represents the chart's data graphic.

3. Click **Add Depth**.
4. Enter any number from -250 to 250 points in the text boxes next to "Vertical" and "Horizontal," click the direction arrows to scroll the options, or drag the graphic cube itself to the desired position.

When you change the depth settings, the black box changes to show the rest of the cube. The outline represents the depth.



To remove depth from a 2-D chart, deselect the **Add Depth** option.

5. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
6. When you have the results you want, click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

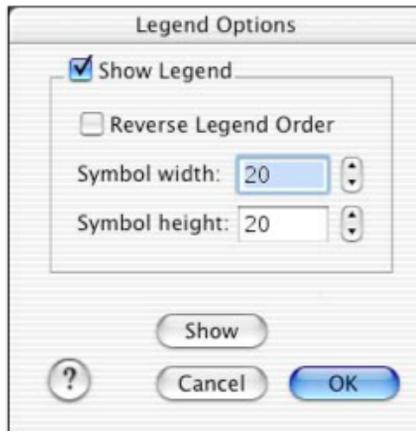
Using Legends

A legend is a combination of text and graphics used to associate additional data with the chart. Depending on the type of chart you plotted, charts may be plotted with or without a legend. Row and column labels in the Data page determine the legend labels.

The “Legend” command allows you to add to or remove chart legends. You can also reverse the direction of the data in the legend.

To add a legend to a chart, do the following:

1. Select the chart.
2. Choose **Legend** from the Chart menu. The “Legend Options” dialog box is displayed.



3. Click **Show Legend** to turn the chart legend on.

4. Make selections as needed from the following options:

Reverse Legend Order

Reverses the order of elements in the legend.

Symbol Width/Height

Determines the size of the graphic elements in the legend. This option does not affect the font size of the legend labels.

5. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
6. When you have the results you want, click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

10 Changing Chart Options

The “Options” command (press **cmd-Y**, or click the Options icon on the Command bar) on the Chart menu makes it easy to customize your charts. Available only when you have a chart selected, this command displays a dialog box that offers numerous options for changing the appearance and/or organization of the selected chart. The options available in the dialog box depend on the selected chart. Each dialog box has a **Show** button, which allows you to experiment with different options without permanently changing the chart.

This chapter covers the following:

- Showing/hiding grids, frames, and symbols
- Adjusting the width of and space between bars in Bar and Column charts
- Rotating elements in charts
- Switching axes
- Repositioning labels
- Removing axis planes from 3-D charts
- Adjusting the wall thickness on 3-D charts
- Sizing bubbles on Bubble charts
- Creating and removing projected ticks and labels
- Dropping lines from symbols to the base of the chart
- Clipping off data outside of the chart grid

- Changing the direction of Ternary and Polar charts
- Creating margins in Organizational charts

These are just a few of the options available for the charts in DeltaGraph.

2-D Business Chart Options

Bar and Column Chart Options

To set options for a Bar and Column chart, do the following:

1. Select a Bar or Column chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Percentage

Changes the value axis and shows each data graphic as a percentage of the whole. The top value changes to 1.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Connect Between Series

Draws connecting lines between all the data points of the same series in the color of those data series.

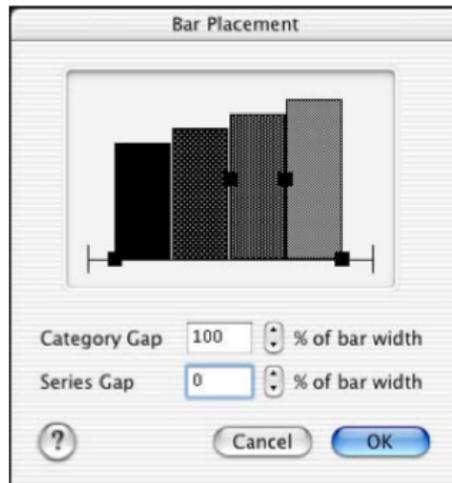
Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the

plot frame.

Bar Placement

Opens the “Bar Placement” dialog box so you can set the width and position of the data graphics. The dialog box graphic reflects the number of data series in your chart.



Category Gap

Controls the space between data graphics and grid lines on the category axis based on a percentage of the bar width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

Series Gap

Controls the space between each data graphic based on a percentage of the bar width. To change the Series Gap, drag the upper bar-sizing handles (squares) in the dialog box graphic, enter any number between -100 and 1,000, or click the direction arrows to scroll through the percentage options.

Click **OK** to save the changes, close the dialog box, and return to the

“Options” dialog box.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

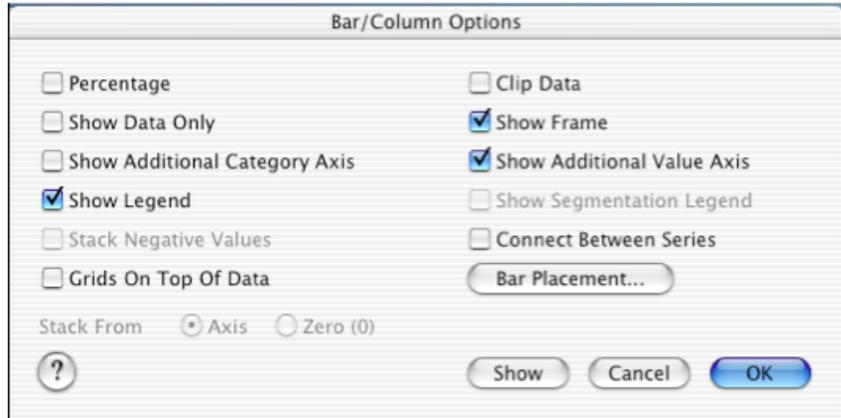
Bar with Line Overlay Chart Options

Do the following to set options for a Bar with Line Overlay chart:

1. Select the chart.
2. For a Base Chart or an Overlay Chart, choose **Options** from the Chart menu, and a submenu is displayed. For a Base Chart only, you can click the Options icon on the Command bar, or press **cmd-Y**.
3. From the sub-menu, select **Base Chart** to modify the bars or columns. Select **Overlay Chart** to modify the line overlay.
4. Refer to “Base Chart Options” below for information on changing bars and/or columns. Refer to “Overlay Chart Options” below for information on changing the line overlay.
5. Click **Show** to preview your changes without exiting a dialog box. You can move the dialog box out of the way by dragging the Title bar.
6. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Base Chart Options

The dialog box for the Base Chart contains the following options.



Percentage

Changes the value axis and shows each data graphic as a percentage of the whole. The top value changes to 1.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Connect Between Series

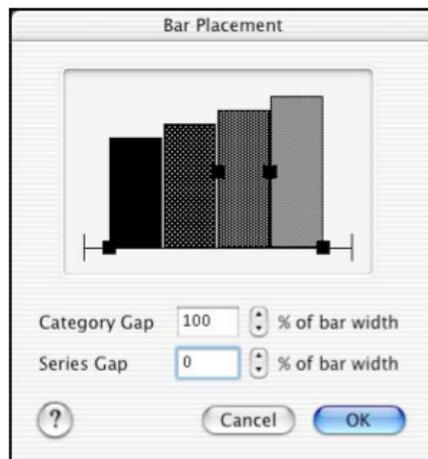
Draws connecting lines between all the data points of the same series in the color of those data series.

Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Bar Placement

Opens the “Bar Placement” dialog box so you can set the width and position of the data graphics. The dialog box graphic reflects the number of data series in your chart.



Category Gap

Controls the space between data graphics and grid lines on the category axis based on a percentage of the bar width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

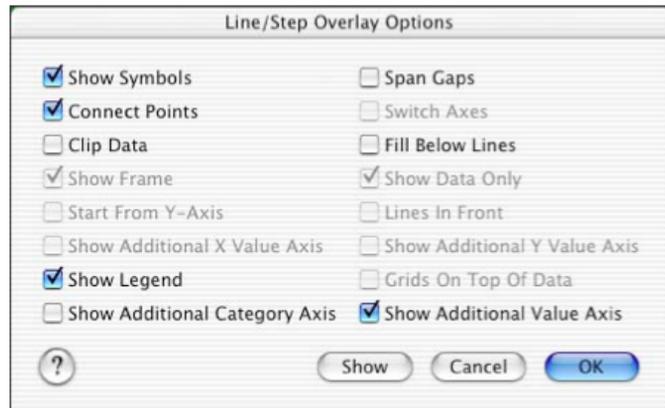
Series Gap

Controls the space between each data graphic based on a percentage of the bar width. To change the Series Gap, drag the upper bar-sizing handles (squares) in the dialog box graphic, enter any number between -100 and 1,000, or click the direction arrows to scroll through the percentage options.

Click **OK** to save the changes, close the dialog box, and return to the “Options” dialog box.

Overlay Chart Options

The dialog box for the Overlay Chart contains the following options.



Show Symbols

Allows you to use symbols to mark the chart’s data points.

Span Gaps

Draws connecting lines through any missing data points. Each line is drawn from the last data point *before* the missing data to the first data

point *after* the missing data. It is automatically deselected if “Connect Points” is turned off or if “Fill Below Lines” is selected.

Connect Points

Draws a line between all the data points of the same series.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Fill Below Lines

A filled polygon is drawn for each data series. It fills the space between the line data graphic and the category axis, similar to a 3-D Area chart. This option can be used in conjunction with “Lines in Front.”

Lines in Front

Draws lines on top of bars or columns.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

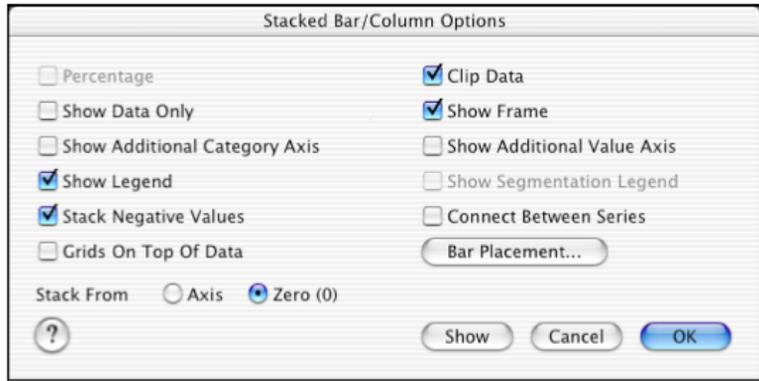
Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Stacked Bar and Column Chart Options

To set options for Stacked Bar and Column charts, do the following:

1. Select a Stacked Bar or Column chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Percentage

Changes the value axis and shows each data graphic as a percentage of the whole. The top value changes to 1. This option is available only when “Stack Negative Values” is deselected.

Clip Data Only

Hides or “clips off” any data plotted outside the chart grids.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern

or color or use a shadow.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Stack Negative Values

Includes negative values on the value axis. If deselected, the “Percentage” option becomes available.

Connect Between Series

Draws connecting lines between all the data points of the same series in the color of those data series.

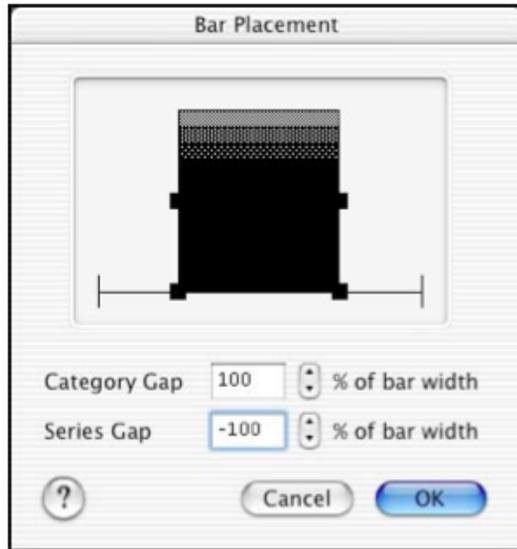
Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Bar Placement

Opens the “Bar Placement” dialog box so you can set the width and position of the data graphics. The dialog box graphic reflects the

number of data series in your chart.



Category Gap

Controls the space between data graphics and grid lines on the category axis based on a percentage of the bar width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

Series Gap

Controls the space between each data graphic based on a percentage of the bar width. To change the Series Gap, drag the upper bar-sizing handles (squares) in the dialog box graphic, enter any number between -100 and 1,000, or click the direction arrows to scroll through the options.

Click **OK** to save the changes, close the dialog box, and return to the

“Options” dialog box.

Stack From

The values displayed in a stacked chart are running sums of each category of input data. The initial value of the running sum can be zero if “Zero (0)” is selected or the value at the category intersection if “Axis” is selected. If “Zero (0)” is selected, the data graphics do not move with the axis when the axis placement is changed.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Stacked Bar and Column with Line Overlay Chart Options

Do the following to set options for a Stacked Bar with Line Overlay or Stacked

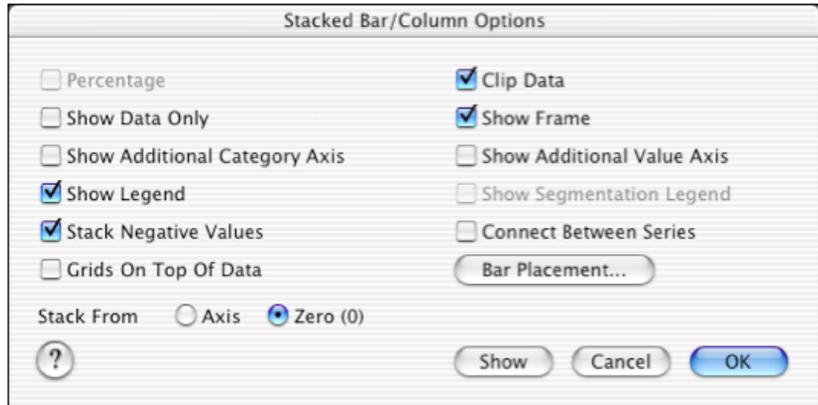
Column with Line Overlay chart:

1. Select the chart.
2. For a Base Chart or an Overlay Chart, choose **Options** from the Chart menu, and a submenu is displayed. For a Base Chart only, you can click the Options icon on the Command bar, or press **cmd-Y**.
3. From the sub-menu, select **Base Chart** to modify the bars or columns. Select **Overlay Chart** to modify the line overlay.
4. Refer to “Base Chart Options” below for information on changing bars and/or columns. Refer to “Overlay Chart Options” below for information on changing the line overlay.
5. Click **Show** to preview your changes without exiting a dialog box. You can move the dialog box out of the way by dragging the Title bar.
6. When you have the results you want, click **OK** to implement the

changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Base Chart Options

The dialog box for the Base Chart contains the following options.



Percentage

Changes the value axis and shows each data graphic as a percentage of the whole. The top value changes to 1. This option is available only when “Stack Negative Values” is deselected.

Clip Data

Hides or “clips off ” any data plotted outside the chart grids.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Stack Negative Values

Includes negative values on the value axis. If deselected, the “Percentage” option becomes available.

Connect Between Series

Draws connecting lines between all the data points of the same series in the color of those data series.

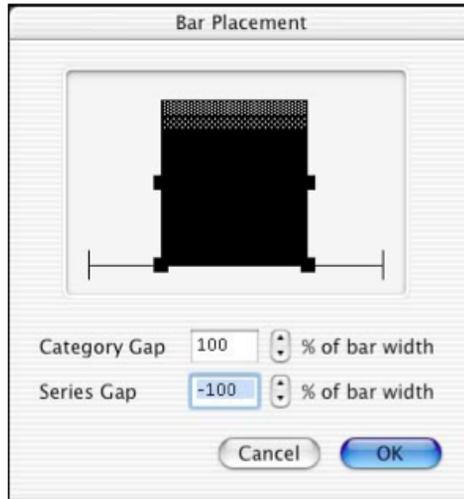
Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured.

This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Bar Placement

Opens a dialog box so you can set the width and position of the data graphics. The dialog box graphic reflects the number of data series in your chart.



Category Gap

Controls the space between data graphics and grid lines on the category axis based on a percentage of the bar width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

Series Gap

Controls the space between each data graphic based on a percentage of the bar width. To change the Series Gap, drag the upper bar-sizing handles (squares) in the dialog box graphic, enter any number between -100 and 1,000, or click the direction arrows to scroll through the percentage options.

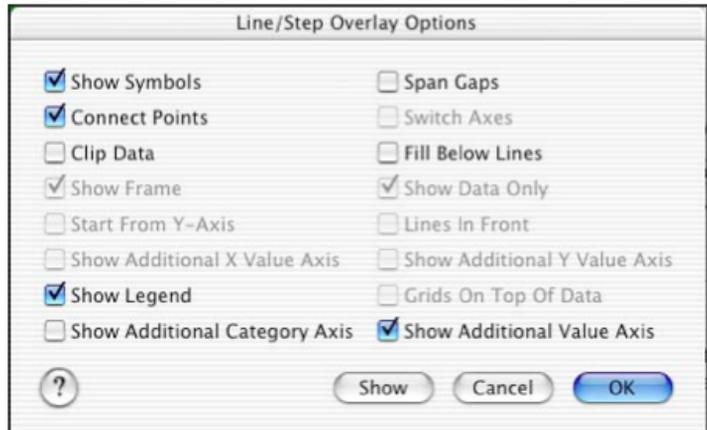
Click **OK** to save the changes, close the dialog box, and return to the “Options” dialog box.

Stack From

The values displayed in a stacked chart are running sums of each category of input data. The initial value of the running sum can be zero if “Zero (0)” is selected or the value at the category intersection if “Axis” is selected. If “Zero (0)” is selected, the data graphics do not move with the axis when the axis placement is changed.

Overlay Chart Options

The dialog box for the Overlay Chart contains the following options.



Show Symbols

Allows you to use symbols to mark the chart's data points.

Span Gaps

Draws connecting lines through any missing data points. Each line is drawn from the last data point *before* the missing data to the first data point *after* the missing data. It is automatically deselected if "Connect Points" is turned off or if "Fill Below Lines" is selected.

Connect Points

Draws a line between all the data points of the same series.

Clip Data

Hides or "clips off" any data plotted outside the chart grids.

Fill Below Lines

A filled polygon is drawn for each data series. It fills the space between the line data graphic and the category axis, similar to a 3-D

Area chart. This option can be used in conjunction with “Lines in Front.”

Lines in Front

Draws lines on top of bars or columns.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

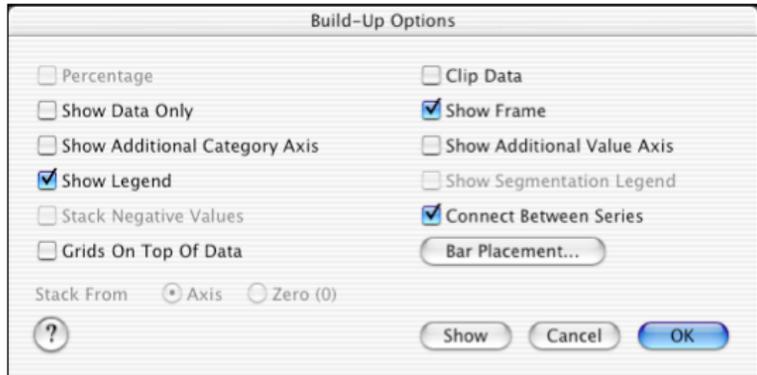
Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Build-Up and Stacked Build-Up Chart Options

To set options for a Build-up or Stacked Build-up chart, do the following:

1. Select a Build-up chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Percentage

Changes the value axis and shows each data graphic as a percentage of the whole. The top value changes to 1. If a Stacked Build-up chart, this option is available only when “Stack Negative Values” is deselected.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Frame

Used to turn frame on and off. It provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart

menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Stack Negative Values

(Stacked Build-up chart) Includes negative values on the value axis. If deselected, the “Percentage” option becomes available.

Connect Between Series

Draws connecting lines between all the data points of the same series in the color of those data series

Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

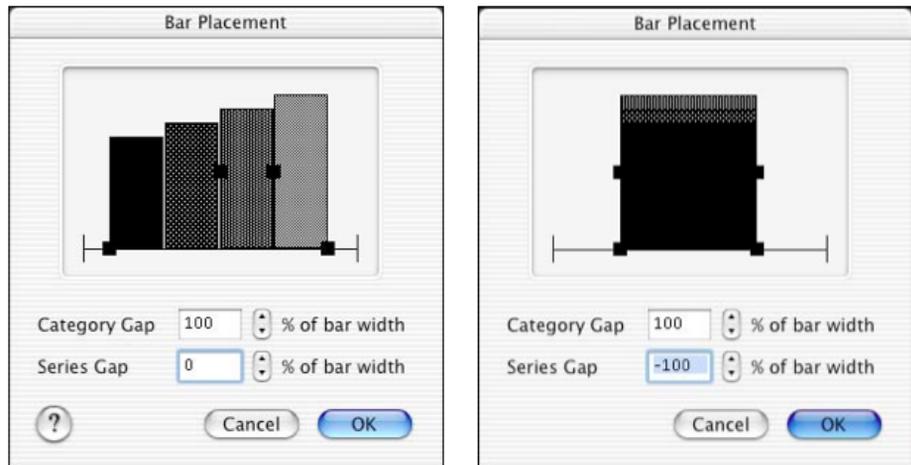
Stack From

(Stacked Build-up chart) The values displayed in a stacked chart are running sums of each category of input data. The initial value of the running sum can be zero if “Zero (0)” is selected or the value at the category intersection if “Axis” is selected. If “Zero (0)” is selected, the data graphics do not move with the axis when the axis placement is changed.

Bar Placement

Opens the “Bar Placement” dialog box so you can set the width and position of the data graphics. The dialog box graphic reflects

whether the chart is a Build-up or Stacked Build-up chart, as well as the number of data series in the chart.



Category Gap

Controls the space between data graphics and grid lines on the category axis based on a percentage of the bar width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

Series Gap

Controls the space between each data graphic based on a percentage of the bar width. To change the Series Gap, drag the upper bar-sizing handles (squares) in the dialog box graphic, enter any number between -100 and 1,000, or click the direction arrows to scroll through the percentage options.

Click **OK** to save the changes, close the dialog box, and return to the

“Options” dialog box.

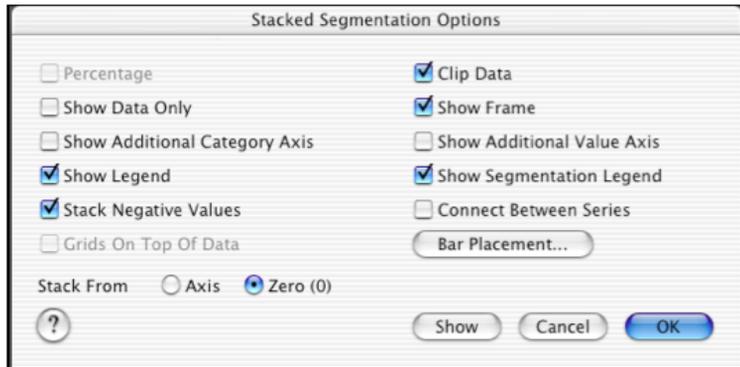
4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.

5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Bar and Column Segmentation Chart Options

To set options for Bar, Column, Stacked Bar, and Stacked Column Segmentation charts, do the following:

1. Select a Segmentation chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Percentage

Changes the value axis and shows each data graphic as a percentage of the whole. The top value changes to 1. This option is available only when “Stack Negative Values” is deselected.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Data Only

Displays only the data graphics, hiding all other chart elements,

including the frame and labels.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Show Segmentation Legend

Displays the segmentation legend. In segmentation charts, there are two columns per row. One plots the axis data, the other the segmentation data. The segmentation legend quantifies the relationship between them.

Stack Negative Values

(Stacked Bar and Column Segmentation charts only) Includes negative values on the value axis. If deselected, the “Percentage” option becomes available.

Connect Between Series

Draws connecting lines between all the data points of the same series in the color of those data series.

Grids on Top of Data

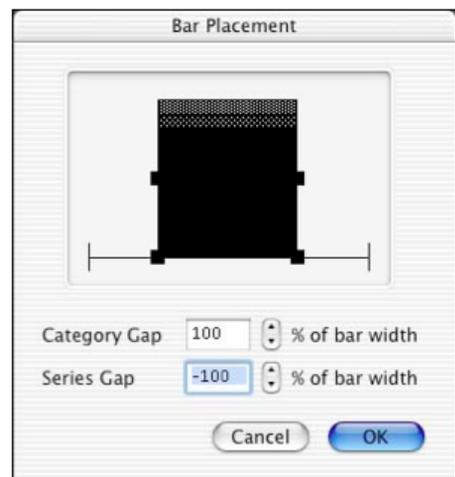
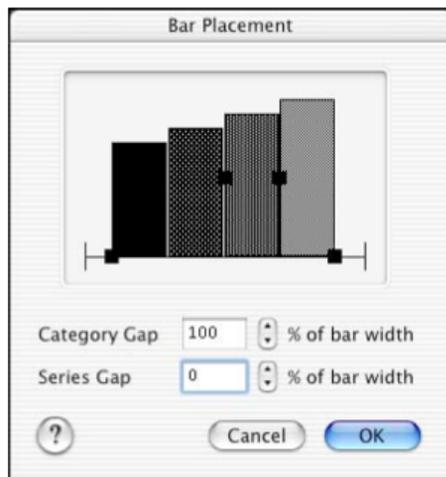
Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Stack From

The values displayed in a stacked chart are running sums of each category of input data. The initial value of the running sum can be zero if “Zero (0)” is selected or the value at the category intersection if “Axis” is selected. If “Zero (0)” is selected, the data graphics do not move with the axis when the axis placement is changed.

Bar Placement

Opens the “Bar Placement” dialog box so you can set the width and position of the data graphics. The dialog box graphic reflects whether the chart is a Bar/ Column or a Stacked Bar/Column Segmentation chart, as well as the number of data series in the chart.



Category Gap

Controls the space between data graphics and grid lines on the category axis based on a percentage of the bar width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options. Note that changes to the Category gap affect the Segmentation axis.

Series Gap

Controls the space between each data graphic based on a percentage of the bar width. To change the Series Gap, drag the upper bar-sizing handles in the dialog box graphic, enter any number between -100 and 1,000, or click the direction arrows to scroll through the percentage options.

Click **OK** to save the changes, close the dialog box, and return to the

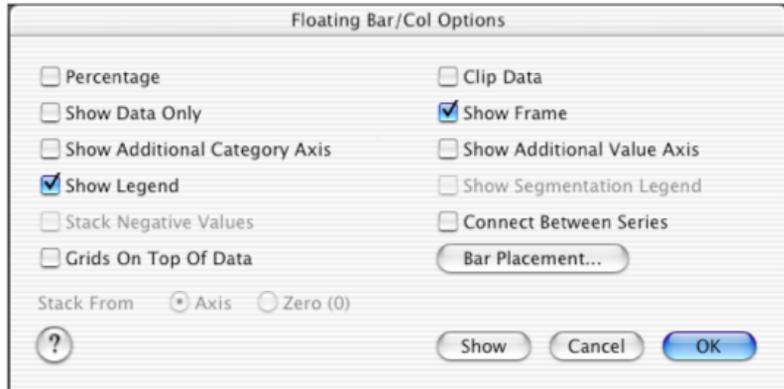
“Options” dialog box.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Floating Bar and Column Chart Options

To set options for Floating Bar and Column charts, do the following:

1. Select a Floating Bar or Floating Column chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Percentage

Changes the value axis and shows each data graphic as a percentage of the whole. The top value changes to 1.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Connect Between Series

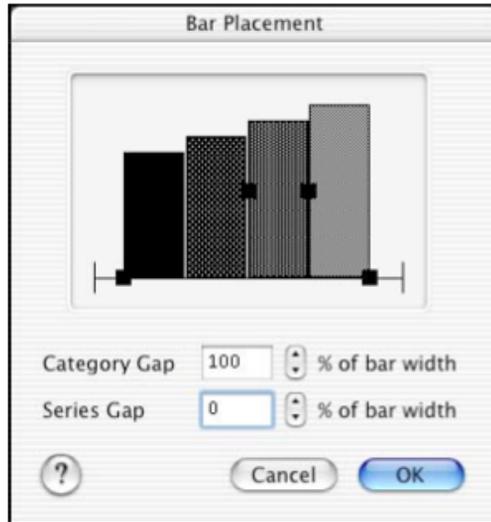
Draws connecting lines between all the data points of the same series in the color of those data series.

Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Bar Placement

Opens the “Bar Placement” dialog box so you can set the width and position of the data graphics. The dialog box graphic reflects the number of data series in your chart.



Category Gap

Controls the space between data graphics and grid lines on the category axis based on a percentage of the bar width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

Series Gap

Controls the space between each data graphic based on a percentage of the bar width. To change the Series Gap, drag the upper bar-sizing handles (squares) in the dialog box graphic, enter any number between -100 and 1,000, or click the direction arrows to scroll through the percentage options.

Click **OK** to save the changes, close the dialog box, and return to the “Options” dialog box.

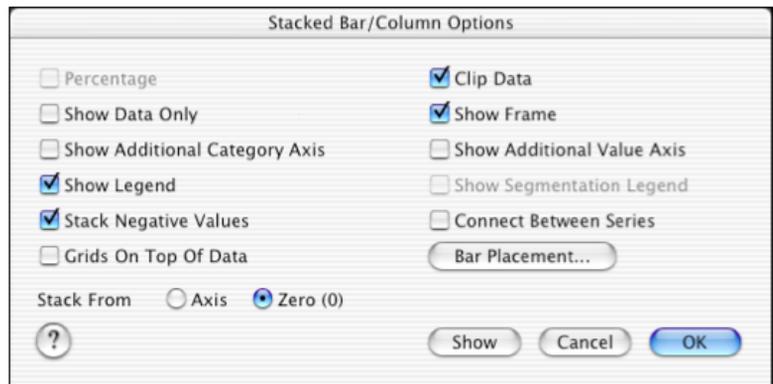
4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the

dialog box without changing the chart, click **Cancel**.

Floating Stacked Bar and Column Chart Options

Do the following to set options for Floating Stacked Bar and Column charts:

1. Select a Floating Stacked Bar or Floating Stacked Column chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options.

Percentage

Changes the value axis and shows each data graphic as a percentage of the whole. The top value changes to 1. This option is available only when “Stack Negative Values” is deselected.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Stack Negative Values

Includes negative values on the value axis. If deselected, the “Percentage” option becomes available.

Connect Between Series

Draws connecting lines between all the data points of the same series in the color of those data series.

Grids on Top of Data

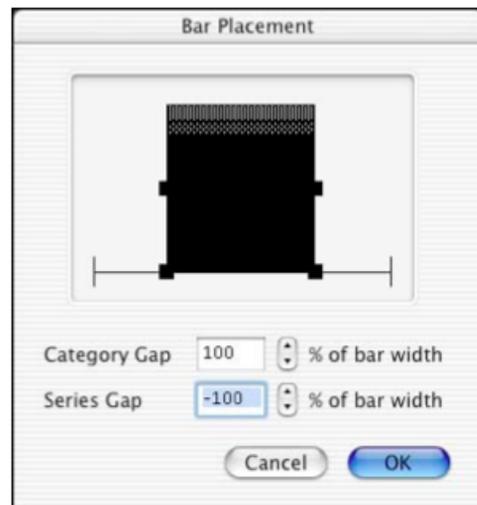
Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Stack From

The values displayed in a stacked chart are running sums of each category of input data. The initial value of the running sum can be zero if “Zero (0)” is selected or the value at the category intersection if “Axis” is selected. If “Zero (0)” is selected, the data graphics do not move with the axis when the axis placement is changed.

Bar Placement

Opens the “Bar Placement” dialog box so you can set the width and position of the data graphics. The dialog box graphic reflects the number of data series in your chart.



Category Gap

Controls the space between data graphics and grid lines on the category axis based on a percentage of the bar width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

Series Gap

Controls the space between each data graphic based on a

percentage of the bar width. To change the Series Gap, drag the upper bar-sizing handles (squares) in the dialog box graphic, enter any number between -100 and 1,000, or click the direction arrows to scroll through the percentage options.

Click **OK** to save the changes, close the dialog box, and return to the

“Options” dialog box.

4. Click “Show” to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Floating Stacked Bar/Column with Line Overlay Chart Options

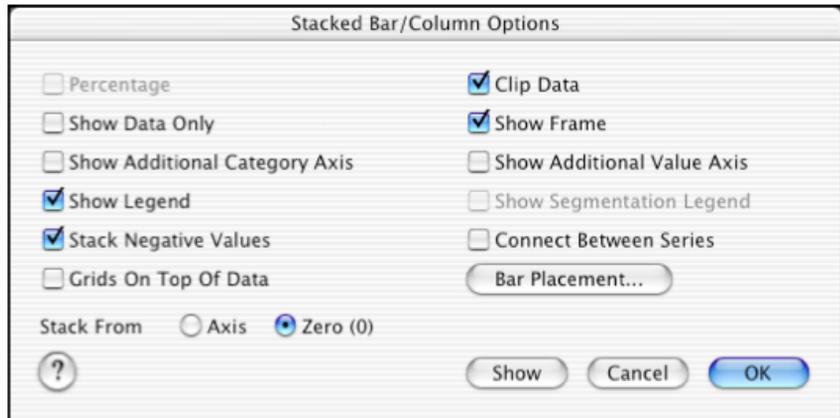
Do the following to set options for a Floating Stacked Bar with Line Overlay or a Floating Stacked Column with Line Overlay chart:

1. Select the chart.
2. For a Base Chart or an Overlay Chart, choose **Options** from the Chart menu, an a submenu is displayed. For a Base Chart only, you can click the Options icon on the Command bar, or press **cmd-Y**.
3. From the sub-menu, select **Base Chart** to modify the bars or columns. Select **Overlay Chart** to modify the line overlay.
4. Refer to “Base Chart Options” below for information on changing bars and/or columns. Refer to “Overlay Chart Options” below for information on changing the line overlay.
5. Click **Show** to preview your changes without exiting a dialog box. You can move the dialog box out of the way by dragging the Title bar.

6. When you have the results you want, click **OK** to implement the changes and return to the Chart view. To exit without changing the chart, click **Cancel**.

Base Chart Options

The dialog box for the Base Chart contains the following options.



Percentage

Changes the value axis and shows each data graphic as a percentage of the whole. The top value changes to 1. This option is available only when “Stack Negative Values” is deselected.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Stack Negative Values

Includes negative values on the value axis. If deselected, the “Percentage” option becomes available.

Connect Between Series

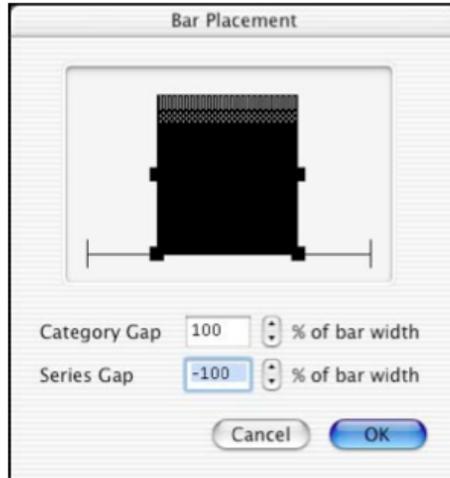
Draws connecting lines between all the data points of the same series in the color of those data series.

Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Bar Placement

Opens a dialog box so you can set the width and position of the data graphics. The dialog box graphic reflects the number of data series in your chart.



Category Gap

Controls the space between data graphics and grid lines on the category axis based on a percentage of the bar width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

Series Gap

Controls the space between each data graphic based on a percentage of the bar width. To change the Series Gap, drag the upper bar-sizing handles (squares) in the dialog box graphic, enter any number between -100 and 1,000, or click the direction arrows to scroll through the percentage options.

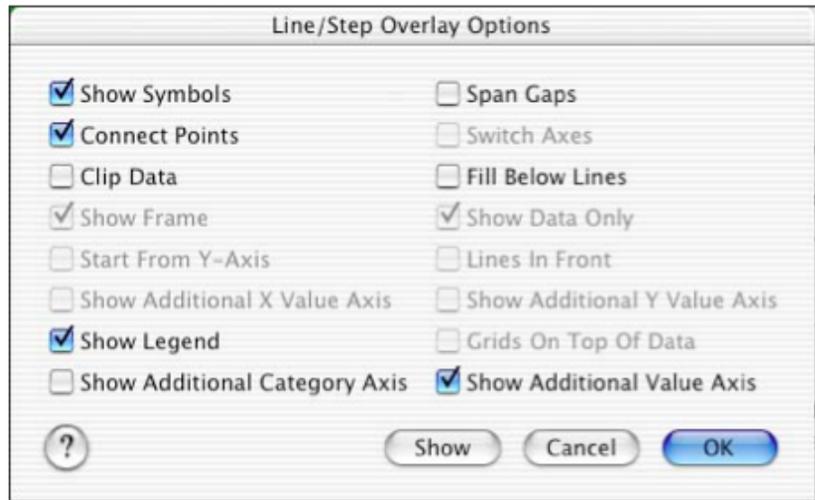
Click **OK** to save the changes, close the dialog box, and return to the “Options” dialog box.

Stack From

The values displayed in a stacked chart are running sums of each category of input data. The initial value of the running sum can be zero if “Zero (0)” is selected or the value at the category intersection if “Axis” is selected. If “Zero (0)” is selected, the data graphics do not move with the axis when the axis placement is changed.

Overlay Chart Options

The dialog box for the Overlay Chart contains the following options.



Show Symbols

Allows you to use symbols to mark the chart's data points.

Span Gaps

Draws connecting lines through any missing data points. Each line is drawn from the last data point *before* the missing data to the first data point *after* the missing data. It is automatically deselected if "Connect Points" is turned off or if "Fill Below Lines" is selected.

Connect Points

Draws a line between all the data points of the same series.

Clip Data

Hides or "clips off" any data plotted outside the chart grids.

Fill Below Lines

A filled polygon is drawn for each data series. It fills the space between the line data graphic and the category axis, similar to a 3-D

Area chart. This option can be used in conjunction with “Lines in Front.”

Lines in Front

Draws lines on top of bars or columns.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

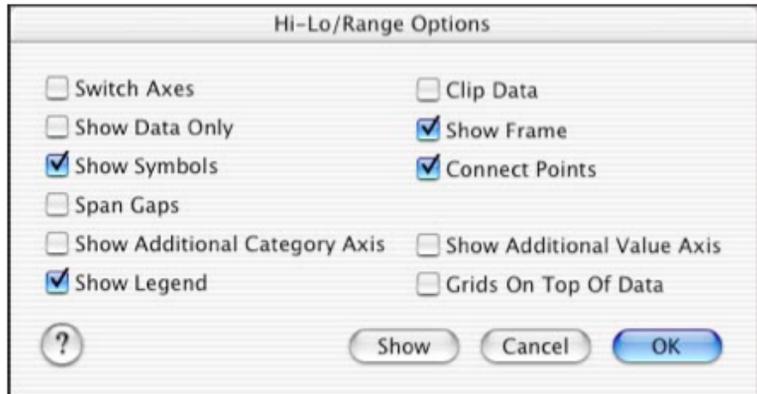
Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

High-Low and Range Chart Options

To set options for High-Low and Range charts, do the following:

1. Select a High-Low or Range chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Switch Axes

Reverses the position of the two axes.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Symbols

Uses symbols to mark the chart’s data points.

Connect Points

Connects all data points of the same series from one end of the axis to the other. This option must be selected to activate “Span Gaps.”

Span Gaps

Draws connecting lines through any missing data points. Each line is drawn from the last data point *before* the missing data to the first data point *after* the missing data. It is automatically deselected if “Connect Points” is turned off.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Connect Points

(Range charts only) Connects all data points of the same series from one end of the axis to the other.

Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

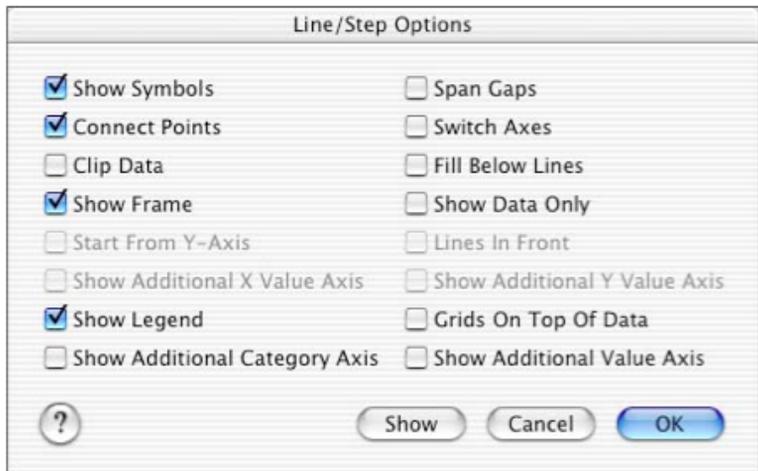
4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.

5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Line and Step Chart Options

To set options for Line and Step charts, do the following:=-

1. Select a Line or Step chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Show Symbols

Uses symbols to mark the chart’s data points.

Span Gaps

Draws connecting lines through any missing data points. Each line is drawn from the last data point *before* the missing data to the first data point *after* the missing data. It is automatically deselected if “Connect Points” is turned off or if “Fill Below Lines” is selected.

Connect Points

Connects all data points of the same series from one end of the axis to the other. This option must be selected to activate “Span Gaps.”

Switch Axes

Switches the X and Y axes. Deselecting switches them back again.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Fill Below Lines

A filled polygon is drawn for each data series. It fills the space between the line data graphic and the category axis, similar to a 3-D Area chart. This option can be used in conjunction with “Lines in Front.”

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Lines in Front

The line data graphics in the chart are drawn in front of the line fills. This prevents the fills from obscuring any portion of the lines. This option is available only when “Fill Below Lines” is selected.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is

not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Show Additional Category Axis

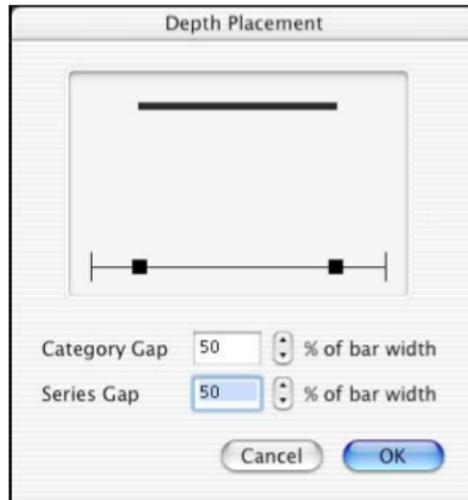
Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Depth Placement

This button is only available if the depth of the chart has been changed using “Depth” on the Chart menu. Opens the “Depth Placement” dialog box so you can set the width and position of the data graphics.



Category Gap

Controls the width and position of the data graphics based on a percent- age of the bar width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

Click **OK** to save the changes, close the dialog box, and return to the

“Options” dialog box.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Open High Low Close Chart Options

To set options for Open High Low Close charts, do the following:

1. Select an Open High Low Close chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Switch Axes

Reverses the position of the two axes.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Open/Close Legend

Displays a legend showing which side of the High Low line is open and which side is closed.

Hide Open

Hides the Open tick.

Switch Open/Close

Reverses the Open and Close ticks on either side of the High Low line.

Hide Close

Hides the Close tick.

Show Additional Category Axis

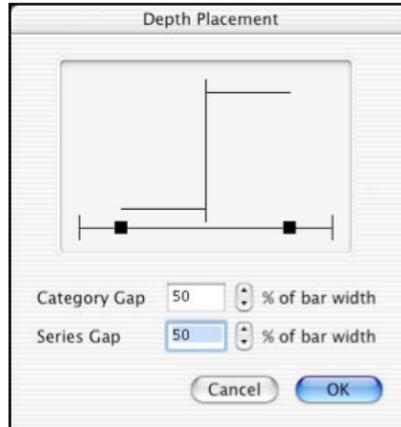
Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Object Placement

Opens the “Depth Placement” dialog box so you can set the length of the Open Close ticks.



Category Gap

Controls the length of the Open Close ticks based on a percentage of the tick width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and

1,000, or click the direction arrows to scroll through the percentage options.

Click **OK** to save the changes, close the dialog box, and return to the “Options” dialog box.

Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Candlestick Chart Options

To set options for Candlestick charts, do the following:

1. Select a Candlestick chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Switch Axes

Reverses the position of the two axes.

Show Frame

Provides a backplane to the chart but does not affect the grid. This

option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Candle Legend

Displays a legend showing the colors associated with increasing and decreasing candles on the chart.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

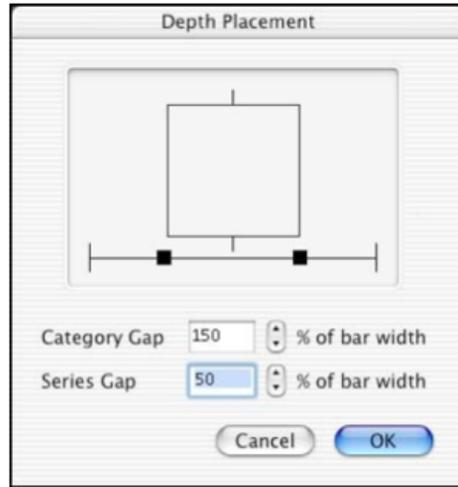
Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Object Placement

Opens the “Depth Placement” dialog box so you can set the width of and distance between the candlesticks.



Category Gap

Controls the width of and distance between the candlesticks based on a percentage of the candlestick width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

Click **OK** to save the changes, close the dialog box, and return to the

“Options” dialog box.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Bubble Chart Options

To set options for a Bubble chart, do the following:

1. Select a Bubble chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Clip Data

Hides or “clips off” any bubble whose center extends outside the chart grids. This option will not clip off part of the bubble.

Switch Axes

Reverses the position of the two axes.

Bubble Size Legend

Controls features of the Bubble chart’s legend.

Type

Determines the type of legend created. You can choose between an axis with ticks or a legend containing sample bubbles. “Align Bubble Centers” is available only when “With Bubble Samples” is selected and aligns the centers of the sample bubbles in the legend.

Direction

Rotates the Bubble axis legend horizontally or vertically.

Label Position

Determines the position of the labels in the legend.

Size

Displays a pop-up menu so you can size the chart’s bubbles linearly (size is proportionate to the data value), by volume, or by area.

Auto Frame

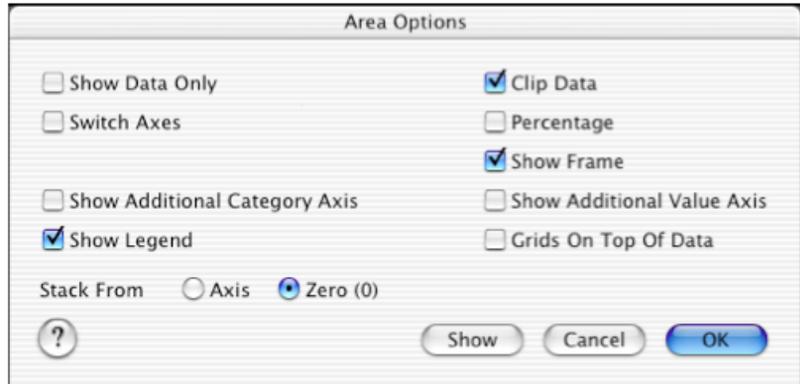
Auto-sizes the frame around the Bubble size legend when you resize the bubble axis or sample bubbles. If the legend has been manually re-sized, this option is deselected. Reselecting this option resets the Bubble legend frame to the default size.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Area Chart Options

To set options for Area charts, do the following:

1. Select an Area chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Switch Axes

Reverses the position of the two axes.

Percentage

Changes the value axis and shows each data graphic as a percentage of the whole. The top value changes to 1. This option creates an Area Percent chart.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You

can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Stack From

The values displayed in an Area chart are running sums of each category of input data. The initial value of the running sum can be zero if “Zero (0)” is selected or the value at the category intersection if “Axis” is selected. If “Zero (0)” is selected, the data graphics do not move with the axis when the axis placement is changed.

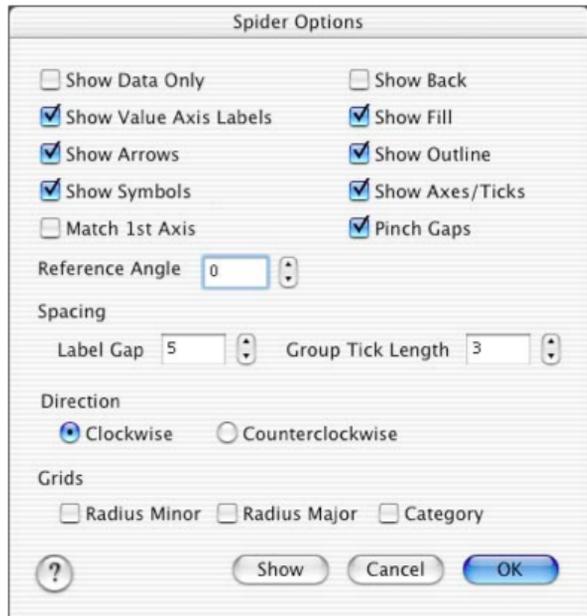
4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Spider Chart Options

Some of the options available for Spider charts are designed to create Radar charts. An example of a Radar chart can be found below.

To set options for a Spider chart, do the following:

1. Select a Spider chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



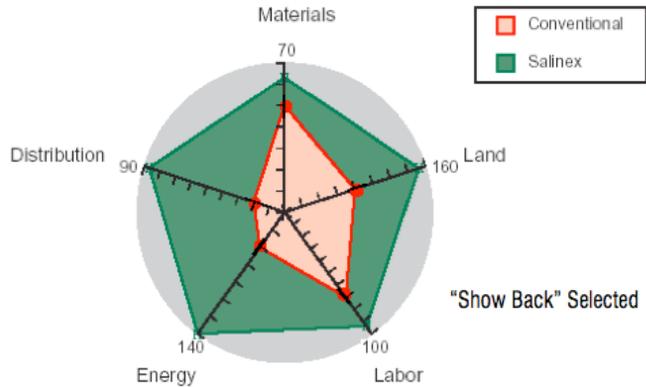
3. Make your selections as needed. You have the following options:

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Back

Displays an oval-shaped “back” in the chart.



The back can be selected by clicking first on the chart and then on the oval surrounding the category axes. The line or the fill of the back can be modified using the palettes in the Toolbox.

Show Value Axis Labels

Displays the Value labels at the end of each axes.

Show Fill

Displays the fill in each data graphic for all series.

Show Arrows

Displays arrows on the circular arcs used to annotate the categories contained in a group. Categories are grouped in the Data page.

Show Outline

Displays the outline or boundary of each data graphic for all series.

Show Symbols

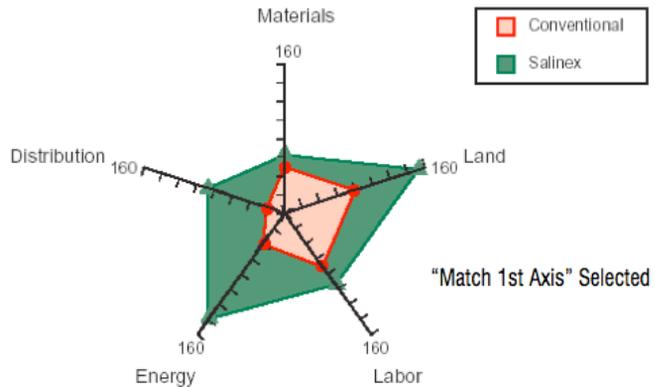
Uses symbols to mark the chart's data points.

Show Axes/Ticks

Displays all of the data series axes. These axes can be thought of as the spokes of the chart. If this option is off, the spokes become invisible.

Match 1st Axis

Scales all of the value axes equally.



The largest axis value determines the ending value. When this option is selected, any changes made to the first axis are also made to the rest of the axes. The various axis dialog boxes for the other axes are ignored unless “Match 1st Axis” is deselected.

Pinch Gaps

Draws connecting lines through any missing data points. Each data point is drawn from the last data point before the missing data to the center of the chart and then to the first data point after the missing data.

Reference Angle

Rotates the chart by the number of degrees entered. To change the reference angle, you can enter a number between -360° and 360° , or click the direction arrows to scroll the numbers in 10° increments.

Spacing

Label Gap

Controls the distance or gap between the Value, Category,

and Group labels proportionately to the point size entered. To change this distance, you can enter a number between 0 to 32768 points, or click the direction arrows to scroll the numbers in one-point increments.

Group Tick Length

Controls the length of the tick between the Group arrows.

Direction

Reverses the direction of the chart.

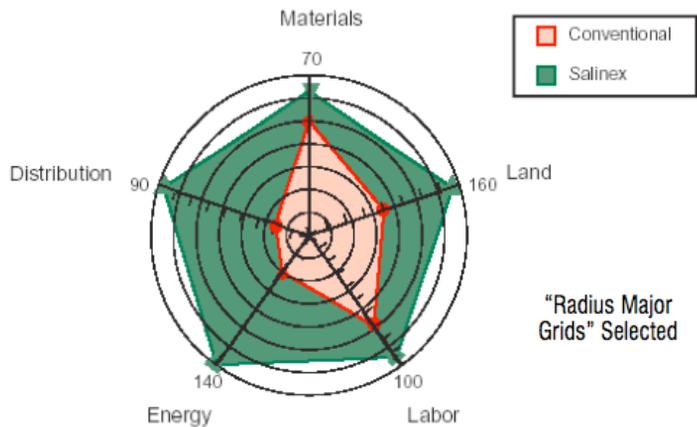
Grids

Radius Minor

Displays the minor radial grids for the minor grids of the first category axis.

Radius Major

Displays the major radial grids for the major grids of the first category axis.



Category

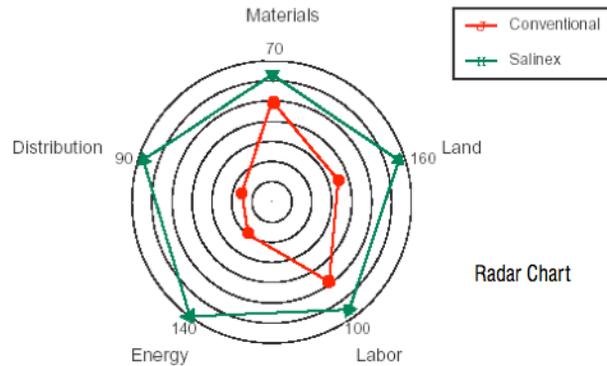
Creates an additional spoke between each category axis.

For a Radar chart, make the following selections in the “Options” dialog box:

Show Fill Off

Show Axes/Tick Off

Radius Major On



4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

To learn more about...	Refer to...
Creating group labels on a Spider chart	“Area Chart Options”

Pie and Stacked Pie Chart Options

Some of the options available for Pie charts are designed to create Donut charts. To set options for a Pie or Stacked Pie chart, do the following:

1. Select a Pie or Stacked Pie chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



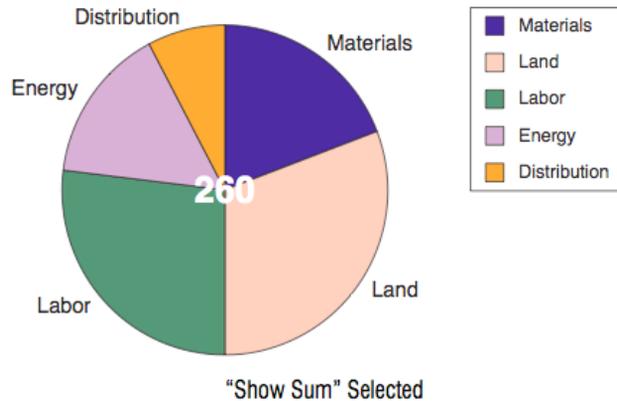
3. Make your selections and enter data as needed. You have the following options:

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Sum

(Pie chart only) Displays the sum of the chart's data series. You can select, change the attributes of, and move this number as you would any label. The new "label" first appears in the center of the pie. Use the commands on the Text menu to change text attributes and the Fill Color or Fill Pattern palette to add a color or pattern to the number's background.

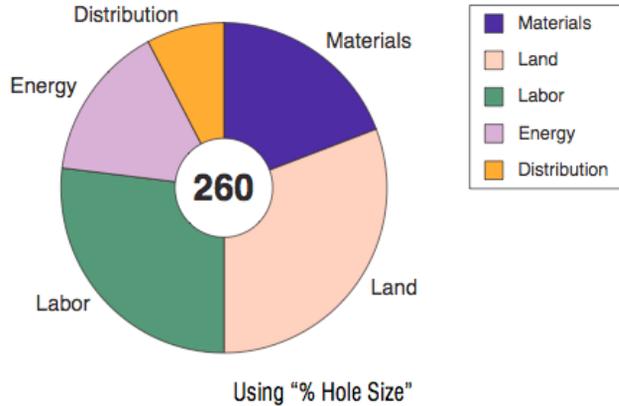


Donut

(Pie charts only) Creates a "hole" in the middle of the Pie chart. You can change the size of the hole with the "% Hole Size" option. This option must be selected to activate "% Hole Size."

% Hole Size

(Pie charts only) Determines the size of the donut hole. To change the hole size, enter a value between 0% and 100%, or click the direction arrows to scroll the numbers in 5% increments. This option is available only when "Donut" is selected.



Reference Angle

Rotates the pie by the number of degrees entered. To change the reference angle, enter a value between -360° and 360° , or click the direction arrows to scroll the numbers in 10° increments.

Series Labels

(Stacked Pie charts only) Displays a pop-up menu so you can position the Series axis labels in reference to the pie. Options are **Upper Right**, **Lower Right**, **Lower Left**, **Upper Left**, and **None**.

Show Legend

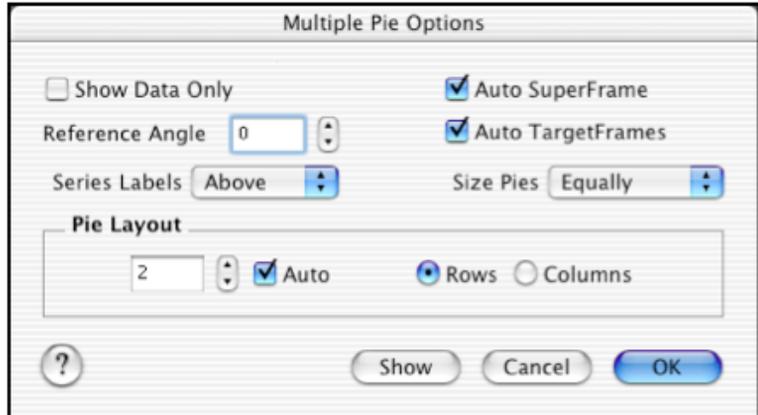
Displays the chart legend. Deselect this option to hide the legend.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Multiple Pie Chart Options

To set options for a Multiple Pie chart, do the following:

1. Select a Multiple Pie chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections and enter data as needed. You have the following options:

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Auto SuperFrame

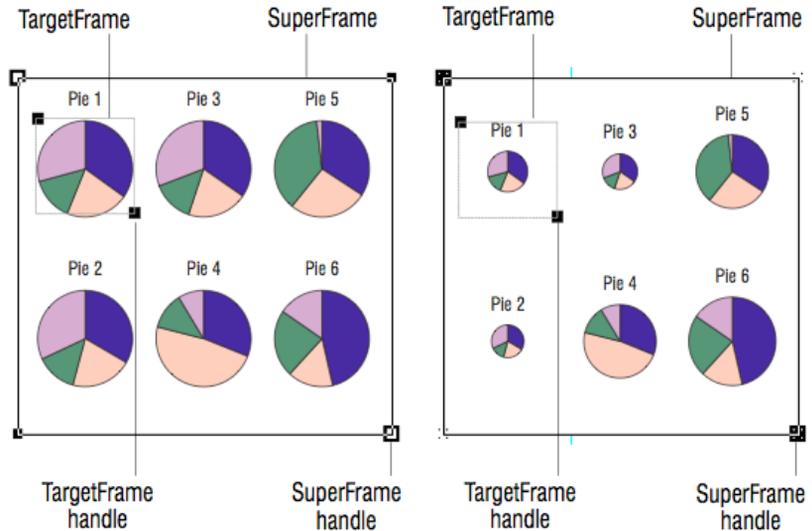
DeltaGraph automatically sizes the grid structure containing all the pies (the SuperFrame) so that it is as close as possible to a square. If you resize the SuperFrame by dragging one of the sizing handles (large box at the upper-left and lower-right corner), this option (and “Auto TargetFrames”) is deselected. To revert the frame back to its original size, reselect this option and “Auto TargetFrames.”

Reference Angle

Rotates all pies by the number of degrees entered. To change the reference angle, you can enter a value between -360° and 360° or click the direction arrows to scroll the numbers in 10° increments.

Auto TargetFrames

DeltaGraph automatically determines the size of the grid structure containing each pie (a TargetFrame) based on the size of the largest pie. To change the size of the pies, click the TargetFrame handle and drag. All of the pies are resized proportionally. To constrain the pie shape to a square, use **shift-Drag**. To revert the TargetFrame(s) back to original size, reselect this option.



Series Labels

Displays a pop-up menu so you can position the Series axis labels in reference to each pie. Options are **Above**, **Below**, or **None**.

Size Pies

Displays a pop-up menu so you can size the pies, as follows:

Equally

Every pie is the same size (illustration on the left).

By Radius

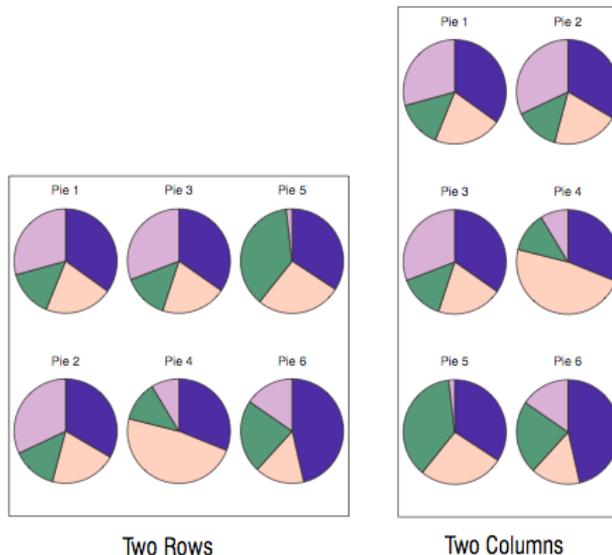
Pies are scaled proportionately based on the radius of the largest pie (illustration on the right).

By Area

Pies are scaled proportionately based on the area of the largest pie.

Pie Layout

Controls how the pies are arranged in the chart. You can choose to display the pies in rows or columns, then enter the number of rows or columns you want. “Auto” arranges the pies in as many rows as needed to accommodate the number of pies in the chart while as close as possible to a square for the Super- Frame. Reselecting “Auto” and “Rows” after trying other arrangements reverts the pies to their original grouping.

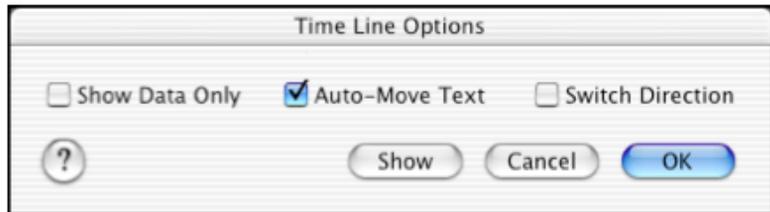


4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Time Line Chart Options

To set options for a Time Line chart, do the following:

1. Select a Time Line chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Auto-Move Text

DeltaGraph automatically positions chart labels for optimum legibility. If you reposition any or all of the labels manually, this option is deselected. To revert all of the chart labels back to their original positions, reselect this option.

Switch Direction

Rotates the viewing angle of the chart. The chart is displayed in the horizontal position unless “Switch Direction” is selected. This rotates the chart to the vertical position.

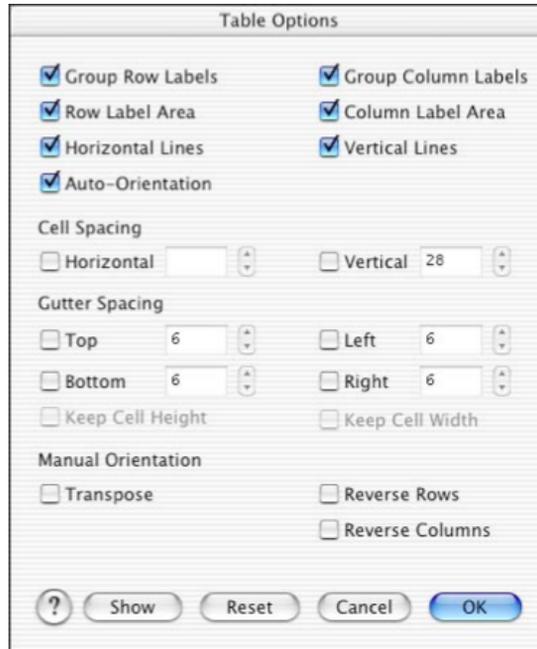
4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the

dialog box without changing the chart, click **Cancel**.

Table Chart Options

To set options for Table charts, do the following:

1. Select a Table chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections and enter data as needed. You have the following options:

Group Row Labels

Removes the horizontal lines between the row labels. Deselect this option if you want the chart's row labels separated by lines.

Group Column Labels

Removes the vertical lines between the column labels. Deselect this option if you want the chart's column labels separated by lines.

Row Label Area

Displays the row labels and the column that contains them. You can deselect this option if your table does not have row labels or if you want to remove the labels from your chart.

Column Label Area

Displays the column labels and the row that contains them. You can deselect this option if your table does not have column labels or if you want to remove the labels from your chart.

Horizontal Lines

Displays horizontal lines in the body of the chart.

Vertical Lines

Displays vertical lines in the body of the chart.

Auto-Orientation

Determines the order of row and column data and formats according to the default chart settings. If you make any changes to cell or gutter spacing default values, or to the size of the chart itself, you can click this button to make *all* spacing options revert to their original positions. If the Table chart is attached to a chart already on the Chart page, this option makes the orientation of the two charts the same. This option overrides all options in the "Manual Orientation" section.

Cell Spacing

Controls the horizontal and vertical dimensions of the cells in the chart as measured in points (1 point = 1/72"). To change cell spacing, you can enter a value between 0 and 32767 or click the direction arrows to scroll through the available options.

Gutter Spacing

Controls the amount of space between the text and the table's grid lines as measured in points (1 point = 1/72"). To change the gutter spacing, you can enter a value between 0 and 16383 (half the "Cell Spacing" maximum) or click the direction arrows to scroll through the available options. You must select the options in the "Gutter Spacing" section to activate "Keep Cell Height" or "Keep Cell Width."

Top and Bottom

Increases/decreases the space above and below the text in each row.

Left and Right

Increases/decreases the space to the left and the right of the text in each column.

Keep Cell Height/Width

Prevents the cell size from being changed by other gutter spacing options. Changing the gutter spacing automatically changes the size of the cells unless "Keep Cell Height" and "Keep Cell Width" are selected. In that case, the cell size remains the same. These options are available only after selecting one of the corresponding "Gutter Spacing" options.

When a Table chart is attached to another chart ("Attach Table" on the Chart menu), one or the other of these options is disabled. This is because the category widths on an attached Table chart match exactly the widths between the tick marks of the original chart's categories.

Manual Orientation

Controls the position of row and columns of data in the Table chart. This option does not affect the Data page. When this option is selected, "Auto-Orientation" is deselected.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the

dialog box without changing the chart, click **Cancel**.

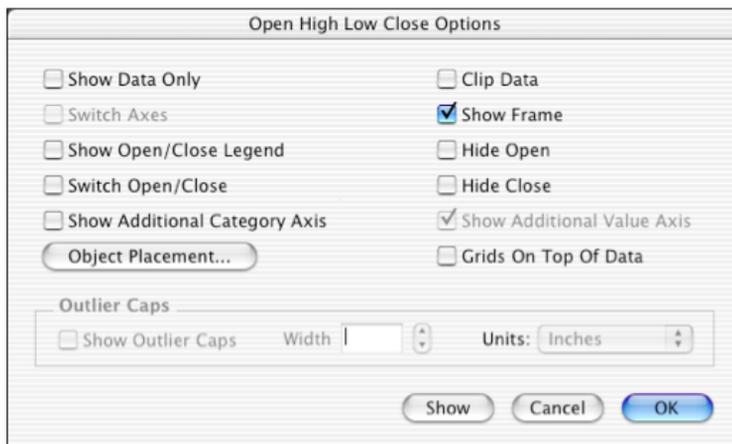
To learn more about...	Refer to...
Attaching a Table chart	"Table Chart Options"

Volume Open High Low Close and Volume High Low Close Chart Options

Do the following to set options for a Volume Open High Low Close or Volume

High Low Close chart:

1. Select the chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The "Options" dialog box appears.



3. Make your selections as needed. You have the following options.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Open/Close Legend

Displays a legend showing which side of the High Low line is open and which side is closed.

Hide Open

Hides the Open tick.

Switch Open/Close

Reverses the Open and Close ticks on either side of the High Low line.

Hide Close

Hides the Close tick.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

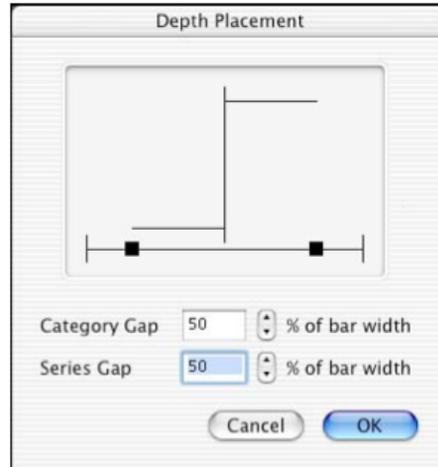
Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the

plot frame.

Object Placement

Opens the “Depth Placement” dialog box so you can set the length of the Open Close ticks.



Category Gap

Controls the length of the Open Close ticks based on a percentage of the tick width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

Click **OK** to save the changes, close the dialog box, and return to the

“Options” dialog box.

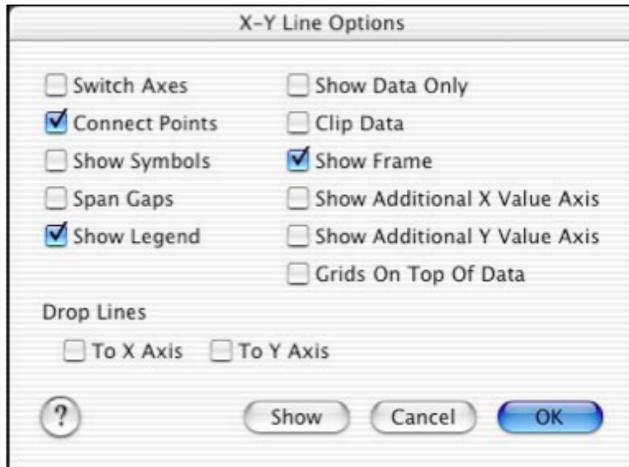
4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

2-D Technical Chart Options

Scatter and XY Line Chart Options

To set options for a Scatter, Paired Scatter, XY Line, or Paired XY Line chart, do the following:

1. Select the chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options.

Switch Axes

Reverses the position of the two axes.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Connect Points

Connects all data points of the same series. This option must be selected to make “Span Gaps” available. In Scatter charts, the data points are connected in the order selected from the Data view. In XY Line charts, the data points are connected from one end of the axis to the other.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Symbols

Uses symbols to mark the chart’s data points.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Span Gaps

Draws connecting lines through any missing data points. Each line is drawn from the last data point before the missing data to the first data point after the missing data. This option is available only when “Connect Points” is selected.

Show Additional X Value Axis

Displays an additional X value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Additional Y Value Axis

Displays an additional Y value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Grids On Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Drop Lines

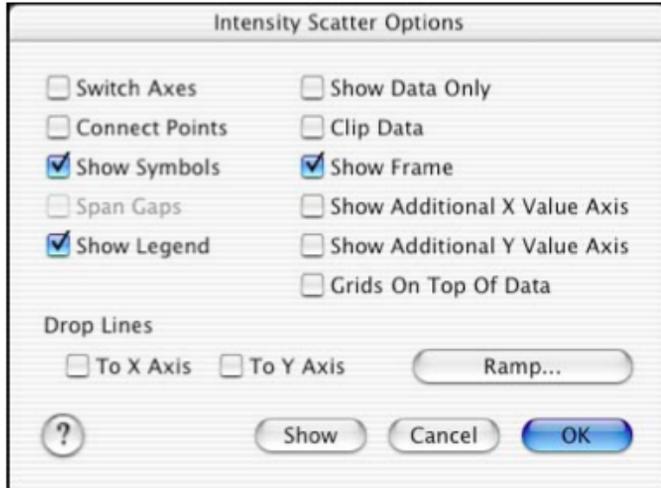
Drops a line from each data symbol to the X and/or Y axis.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Intensity Scatter and Paired Intensity Scatter Chart Options

Do the following to set options for a Paired Intensity or Intensity Scatter chart:

1. Select the chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options.

Switch Axes

Reverses the position of the two axes.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Connect Points

Connects all data points of the same series. This option must be selected to make “Span Gaps” available. In Scatter charts, the data points are connected in the order selected from the Data view.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Symbols

Uses symbols to mark the chart’s data points.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Span Gaps

Draws connecting lines through any missing data points. Each line is drawn from the last data point before the missing data to the first data point after the missing data. This option is available only when “Connect Points” is selected.

Show Additional X Value Axis

Displays an additional X value axis opposite the original value axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Additional Y Value Axis

Displays an additional Y value axis opposite the original value axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Grids On Top of Data

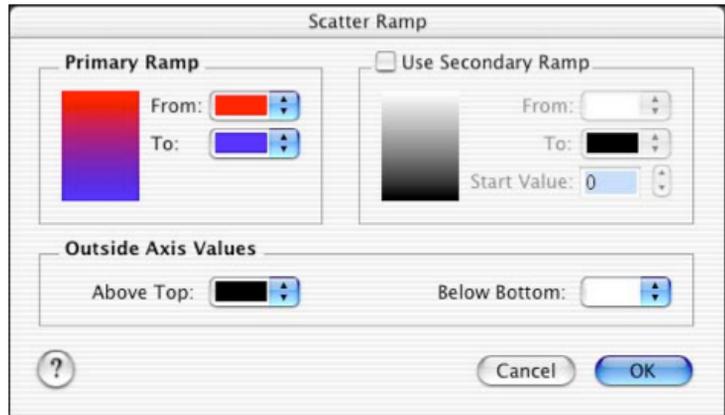
Draws the chart grid on top of the data markers so the grid is not obscured. This can help maintain a perspective of the data values when data markers cover large areas of the plot frame.

Drop Lines

Drops a line from each data symbol to the X and/or Y axis.

Ramp

Displays a dialog box so you can create a smooth color/gray scale blend for representing Z-axis intensity values on the chart.



Primary Ramp

Each of the selections displays a color palette you can use to select a start and end color or gray scale for your data graphic and legend. Changes are made from the top of the data graphic to the bottom. Changes to the ramp appear in the example box to the left.

Use Secondary Ramp

Works the same as the Primary Ramp. “Use Secondary Ramp” must be selected to activate these options. To determine where the secondary ramp begins, enter a value in the “Start Value” box.

Outside Axis Values

Each of the selections displays a color palette you can use to select a color or gray scale tint for data graphics that extend above or below the value axis.

Click **OK** to save the changes, close the dialog box, and return to the

“Options” dialog box.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

XY Column Chart Options

To set options for XY Column charts, do the following:

1. Select an XY Column chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Show Symbols

Allows you to use symbols to mark the chart's data points.

Switch Axes

Switches the X and Y axes. Deselecting switches them back again.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Frame

Is used to add or remove the chart frame. It provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Start From Y Axis

Draws a line from the Y axis to the first data point.

Show Additional X Value Axis

Displays an additional X value axis opposite the original value axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Additional Y Value Axis

Displays an additional Y value axis opposite the original value axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Grids on Top of Data

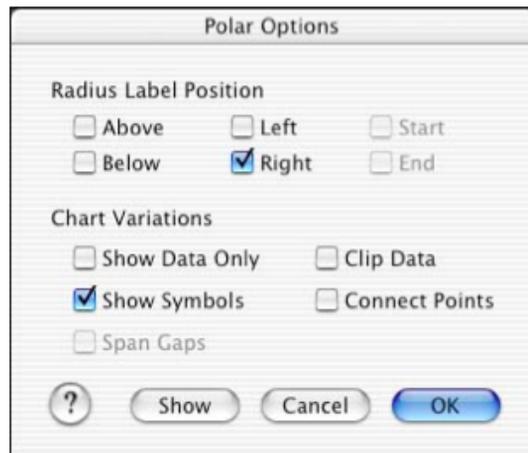
Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Polar Chart Options

To set options for a Polar chart, do the following:

1. Select a Polar chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.

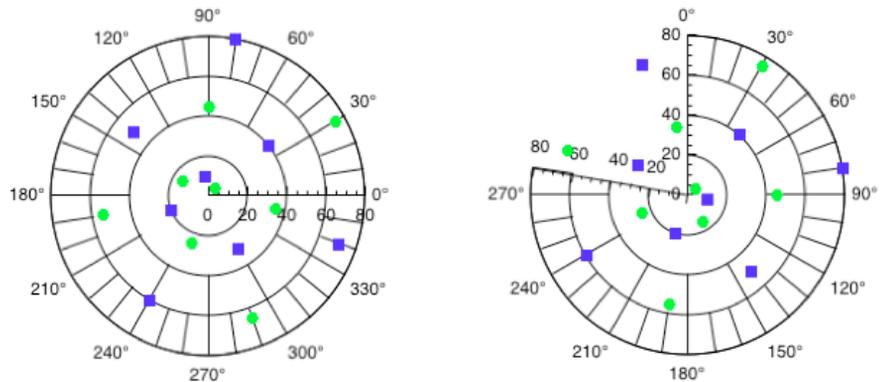


3. Make your selections as needed. You have the following options:

Radius Label Position

Places labels along the radius in each of the positions selected. You can select one or more options.

The “Start” and “End” options are available only if you have scaled your chart to less than 360° with the “Angle Axis” dialog box. To access the “Angle Axis” dialog box, choose **Axis** from the Chart menu and select **Angle** from the submenu. See “Changing Axis Offset” in Chapter 9.



Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Symbols

Uses symbols to mark the chart’s data points.

Connect Points

Connects all data points of the same series. This option must be selected to activate “Span Gaps.”

Span Gaps

Draws connecting lines through any missing data points. Each line

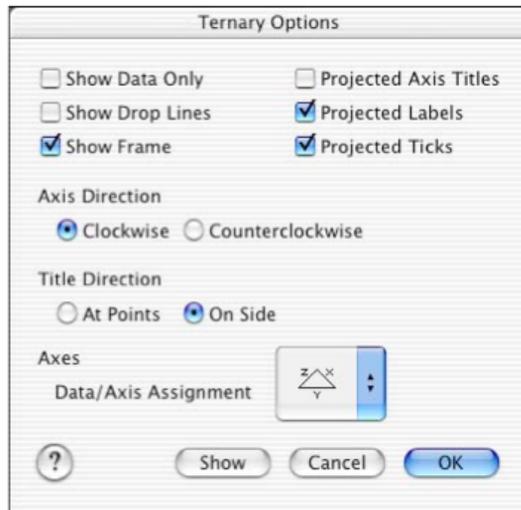
is drawn from the last data point before the missing data to the first data point after the missing data. This option is available only when “Connect Points” is selected.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Ternary and Percent Ternary Chart Options

To set options for Ternary or Percent Ternary charts, do the following:

1. Select a Ternary or Percent Ternary chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Projected Axis Titles

Draws axis titles in perspective to the axis.

Show Drop Lines

Drops a line from each data symbol to each of the three axis planes.

Projected Labels

Draws labels in perspective to the grid lines.

Projected Ticks

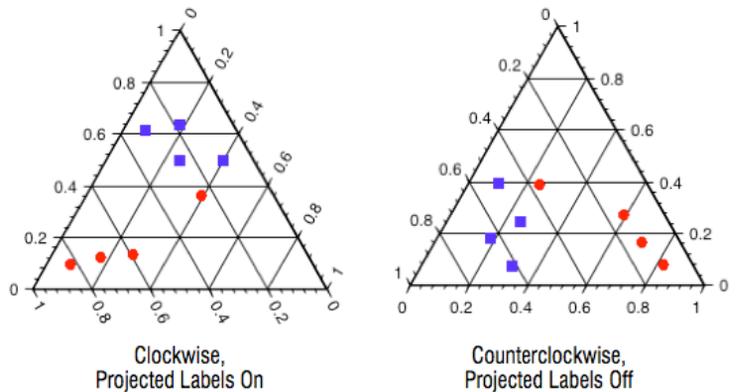
Draws ticks in perspective to the grid lines.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Axis Direction

Rotates the chart axes clockwise or counterclockwise, as shown below.



Title Direction

Places the axis titles on the side of each axis or at the points of the triangle.

Data/Axis Assignment

Displays a pop-up menu so you can choose the location of each of the three value axes. The values for the X-axis typically come from column A. If you plotted non-adjacent data, however, it is the first column you selected.

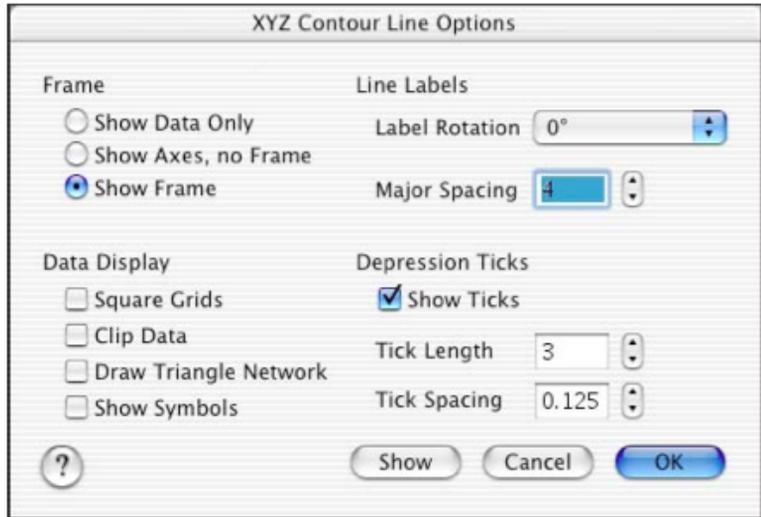
4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

To learn more about...	Refer to...
Creating axis titles	“Creating and Positioning Axis Labels and Titles” in Chapter 9

Contour Line Chart Options

To set options for Contour Line and XYZ Contour Line charts, do the following:

1. Select the chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections and enter data as needed. You have the following options:

Frame

Select one of the following:

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Axes, No Frame

Displays the X and Y axes but does not display the chart frame.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Line Labels

Controls the placement of the elevation labels on the contour line.

Label Rotation

Displays a pop-up so you can choose the rotation of elevation labels. Options are **0°**, **90°**, **180°**, **270°**, **Tangent**, and **Off**.

“Tangent” rotates the labels at the same angle as the contour lines. “Off” hides the labels.

Major Spacing

Controls the spacing between labels on the contour lines. Unit of measure is determined in “Rulers & Grids” on the Draw menu. To change the spacing between labels, you can enter a value or click the direction arrows to scroll through the available options.

Data Display

Controls the following display options:

Square Grids

Changes the grid pattern into squares where the grid lines for the X and Y axes intersect.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Draw Triangle Network

(XYZ Contour Line chart only) Connects data points together in a triangular pattern on the surface of the chart.

Show Symbols

(XYZ Contour Line chart only) Uses symbols to mark the chart’s data points.

Depression Ticks

Controls the attributes of depression ticks, which indicate a depression (such as a hole or volcano) in the elevation relief.

Show Ticks

Displays depression tick marks.

Tick Length

Controls the length of the depression ticks in points. To change tick length, you can enter a value or click the direction arrows to scroll through the available options.

Tick Spacing

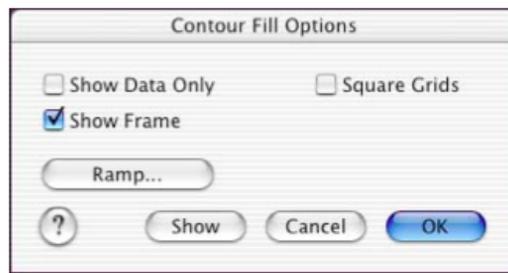
Controls the distance between depression ticks. Unit of measure is determined in “Rulers & Grids” on the Draw menu. To change tick spacing, you can enter a value or click the direction arrows to scroll through the available options.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Contour Fill Chart Options

To set options for Contour Fill and XYZ Contour Fill charts, do the following:

1. Select the chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Square Grids

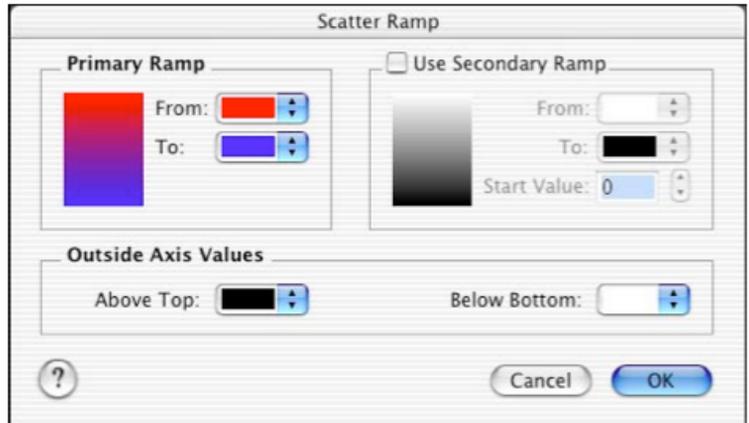
Changes the grid pattern into squares where the grid lines for the X and Y axes intersect.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Ramp

Displays a dialog box so you can create a smooth color/gray scale blend in the chart's data graphics and legend.



Primary Ramp

Each of the selections displays a color palette you can use to select a start and end color or gray scale for your data graphic and legend. Changes are made from the top of the data graphic to the bottom. Changes to the ramp appear in

the example box to the left.

Use Secondary Ramp

Works the same as the Primary Ramp. “Use Secondary Ramp” must be selected to activate these options. To determine where the secondary ramp begins, enter a value in the “Start Value” box.

Outside Axis Values

Each of the selections displays a color palette you can use to select a color or gray scale tint for data graphics that extend above or below the value axis.

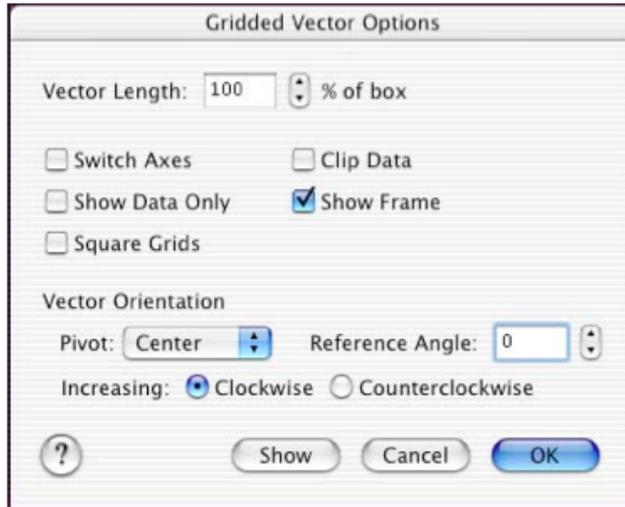
Click **OK** to save the changes, close the dialog box, and return to the “Options” dialog box.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Gridded Vector Chart Options

To set options for a Gridded Vector chart, do the following:

1. Select a Gridded Vector chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections and enter data as needed. You have the following options:

Vector Length

Adjusts the vector line length as a percentage of the space between the adjacent horizontal grid lines. If the “Pivot” point orientation (see below) is “Head” or “Tail,” the vector orientation is a percentage of one half the distance between the adjacent horizontal grid lines.

Switch Axes

Reverses the position of the two axes.

Clip Data

Hides or “clips off ” any data plotted outside the chart grids.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Square Grids

Changes the grid pattern into squares where the grid lines for the X and Y axes intersect.

Vector Orientation

These options determine the position and orientation of the vector (arrow) data graphic.

Pivot

Determines the pivot point of the vector graphic, or the point of connection from which the vector swings: from the **Head** of the arrow, from the **Center** of the arrow, or from the **Tail** of the arrow.

Reference Angle

Rotates the vector by the number of degrees entered. To change the reference angle, you can enter a number between -360° and 360° or click the direction arrows to scroll the numbers in 5° increments.

Increasing

Determines whether the vector angle increases in a clockwise or a counterclockwise direction.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

R/A Gridded Vector and XY Vector Chart Options

To set options for an R/A Vector Gridded or XY Vector chart, do the

following:

1. Select an R/A Gridded Vector or XY Vector chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections and enter data as needed. You have the following options:

Data Type

Displays a pop-up so you can select a data type method for determining the vector ending point. All three methods use column one (X coordinate) and column two (Y coordinate) of each data series to determine the starting point of the vector based on the X and Y axes scaling. The ending point of the vector is determined by one of the following three methods:

Delta (Change)

(XY Vector chart only) The sum from column one and column three gives the X coordinate based on the X axis. The sum of column two and column four gives the Y coordinate based on the Y axis.

End Point

(XY Vector chart only) The third column gives the value of the X coordinate based on the X axis. The fourth column gives the value of the Y coordinate based on the Y axis.

Radius/Angle

The third column gives the value of the vector's radius length. On an R/A Gridded Vector chart, the maximum length can be adjusted using the "Vector Length" option. On the XY Vector chart, the maximum length of the vector is determined by the Vector Legend, which can be dragged to adjust this length. The fourth column gives the value of the angle in degrees. In an XY Vector chart, this option must be selected to activate "Show Legend" and the "Vector Orientation" options.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Clip Data

Hides or "clips off" any data plotted outside the chart grids.

Square Grids

(R/A Gridded Vector chart only) Changes the grid pattern into squares where the grid lines for the X and Y axes intersect.

Switch Axes

Reverses the position of the two axes.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Vector Length

(R/A Gridded Vector chart only) Adjusts the vector line length as a percentage of the space between the adjacent horizontal grid lines. If the “Pivot” point orientation (see below) is “Head” or “Tail,” it is a percentage of one half the distance between the adjacent horizontal grid lines.

Vector Radius Legend

Controls the appearance of the vector legend. The legend represents the maximum vector length. In the XY Vector chart legend, you can drag the vector to alter the length on the Radius/Angle data type.

Show Legend

Displays the chart legend. In an XY Vector chart, this option is available only when “Radius/Angle” is selected on the “Data Type” pop-up menu. “Show Legend” must be selected to activate the rest of the options in the “Vector Radius Legend” section of the dialog box.

Auto Frame

Resizes the vector legend to fit the current size of the legend object. In an XY Vector chart, this option is available only when “Radius/Angle” on the “Data Type” pop-up menu and “Show Legend” are selected.

Direction

Determines if the vector legend is drawn horizontally or vertically. In an XY Vector chart, this option is available only when “Radius/Angle” on the “Data Type” pop-up menu and “Show Legend” are selected.

Label Position

Determines the position of the labels in the legend. In an XY Vector chart, this option is available only when “Radius/Angle” on the “Data Type” pop-up menu and “Show Legend” are selected.

Vector Orientation

These options determine the position and orientation of the vector (arrow) data graphic. In an XY Vector chart, this option is available only when “Radius/ Angle” on the “Data Type” pop-up menu is selected.

Pivot

Determines the pivot point of the vector graphic, or the point of connection from which the vector swings: from the **Head** of the arrow, from the **Center** of the arrow, or from the **Tail** of the arrow.

Reference Angle

Rotates the vector by the number of degrees entered. To change the reference angle, you can enter a number between -360° and 360° or click the direction arrows to scroll the numbers in 5° increments.

Increasing

Determines whether the vector angle increases in a clockwise or a counterclockwise direction.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

2-D Statistical Chart Options

Histogram Chart Options

To set options for Histogram charts, do the following:

1. Select a Histogram chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog

box appears.



3. Make your selections as needed. You have the following options:

Percentage

The heights of the data series represent the count in a bin as a percentage of the total count of all bins. With this method, the sum of all the heights of the bins add up to 1 (i.e., 100%). This scaling of data in a histogram is commonly known as “relative frequency.” This is the most convenient form for comparing the frequency counts of some data to a known probability density function.

Clip Data

Hides or clips off any data plotted outside the chart grids.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Ogive

Displays the “cumulative frequency” with the frequency counts. It

is displayed as a line data graphic. At each category boundary, the running sum of all the “previous” categories is plotted. This option must be selected to activate “Running Sum Increases.”

Switch Axes

Reverses the position of the two axes.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Running Sum increases

Controls the direction of the Ogive data graphic. If “Switch Axes” is selected, the choices shown below change to “To the top” and “To the bottom” respectively. This option is available only when “Show Ogive” is selected.

To the right

The running sum increases from left to right on the chart.

To the left

The running sum increases from right to left on the chart.

Binning

Displays a dialog box so you can specify how data is grouped or “binned” for counting and how the counted data is labeled.



Bin Method

When plotting any of the charts that require the binning of the data, select either **Count Data** or **Use Range**. “Count Data” is used when each unique value in the data set needs to be given a bin of its own. This is only useful if the data are repetitive, that is, the same data values appear more than once. “Use Range” is used when the desired bins are equal length intervals of numbers. The controls for “Use Range” are very similar to those in a “Value Axis” dialog box.

Count Data

Sizes of the bins are chosen to be just big enough to correspond to exactly one data value and there is one bin for each data value. Consequently, no bin is ever empty.

Use Range

Each bin corresponds to a range of numbers. Even if there is no repetition in the data, some bins may correspond to several data values and some bins correspond to no values. The fields correspond to fields in a value axis dialog box, as follows:

Max = Top Value

Min = Bottom Value

Inc = Major Increments

Auto check boxes = Auto check boxes

Automatic scaling = Standard or Floating scaling

To determine the bin boundaries, the same logic is used as that to determine where the major ticks are placed along an axis. Given the same corresponding inputs in the “Binning” dialog box and “Value Axis” dialog boxes, the values of the bin boundaries correspond exactly to the values of the major ticks along an axis. When counting frequency, a data value is counted towards a particular bin if the value is between the values of its bin boundaries.

Include End Effects

Determines if two extra bins are created for a “Use Range” bin method. One bin is used to count all the values beyond the “Min” value and the other bin is used to count all the values beyond the “Max” value.

Data Between Bins

Determines which bin a data value falls into if it is equal to a bin boundary. If “Move Higher” is selected, the value is added to the next highest bin. If “Move Lower” is selected, the value is added to the next lowest bin.

Label Positions

Determines the position of the bin boundary labels. “On Bin Edge,” the category axis labels correspond to bin boundary values. “In Bin Center,” the category axis labels can have three different forms, as follows:

[min, max)

The low and high bin boundary values are placed in the label. Each boundary value is separated by a list separator and a space and surrounded with either “[...]” or “[...]” depending on whether “Move Higher” or “Move Lower” is selected, respectively. If “Include Ends” is selected, the low end label and the high end label look something like “(-×, max]” or “(min, ×].”

mid-point

The arithmetic mean of the two bin boundaries is placed in the label.

If “Include Ends” is on, no labels are generated for the end bins.

min ≤ x < max

The low and high bin boundary values are placed in the label. Each boundary value is separated by “≤ x <” or “< x ≤” depending on whether “Move Higher” or “Move Lower” is selected, respectively. If “Include Ends” is on, the labels created for the end bins look something like “x≤0” or “100<x.”

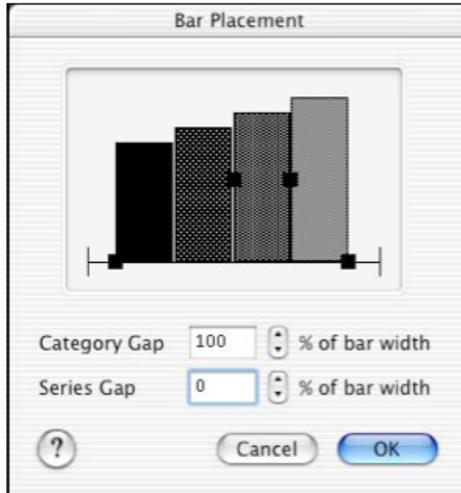
The use of “min” and “max” on the pop-up refers to the minimum and maximum bin boundary values for each bin, not the “Min” and “Max” number items in the “Use Range” section of the dialog box.

Click **OK** to save the changes, close the dialog box, and return to the

“Options” dialog box.

Bar Placement

Opens the “Bar Placement” dialog box so you can set the width and position of the data graphics. The dialog box graphic reflects the number of data series in your chart.



Category Gap

Controls the space between data graphics and grid lines on the category axis based on a percentage of the bar width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

Series Gap

Controls the space between each data graphic based on a percentage of the bar width. To change the Series Gap, drag the upper bar-sizing handles (squares) in the dialog box graphic, enter any number between -100 and 1,000, or click the direction arrows to scroll through the percentage options.

Click **OK** to save the changes, close the dialog box, and return to the

“Options” dialog box.

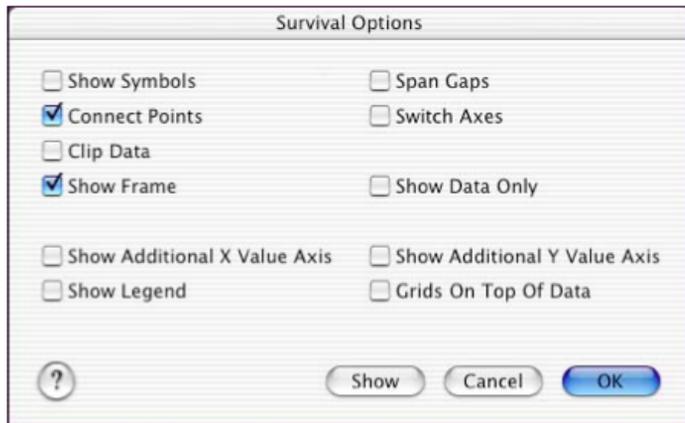
4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the

changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Survival Chart Options

To set options for Survival charts, do the following:

1. Select a Survival chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Show Symbols

Allows you to use symbols to mark the chart’s data points.

Span Gaps

Draws connecting lines through any missing data points. Each line is drawn from the last data point before the missing data to the first data point after the missing data. It is automatically deselected if “Connect Points” is turned off or if “Fill Below Lines” is selected.

Connect Points

Connects all data points of the same series from one end of the axis to the other. This option must be selected to activate “Span Gaps.”

Switch Axes

Switches the X and Y axes. Deselecting switches them back again.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Additional X Value Axis

Displays an additional X value axis opposite the original value axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Additional Y Value Axis

Displays an additional Y value axis opposite the original value axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured.

This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Pareto Chart Options

To set options for a Pareto chart, do the following:

1. Select a Pareto chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections and enter data as needed. You have the following options:

Percentage

Determines if the height of the column represents the number of data items that are less than or equal to the current bin boundary as a percentage of the total count of all bins. With this method, the position of the column on the value axis starts at 0% on one end of the chart and ends at 1 or 100% on the other end. This scaling of data in a Pareto chart is called “relative.” This is the most convenient form for comparing the cumulative frequency counts of some data to a known probability distribution function.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Ogive

Displays the “cumulative frequency” with the frequency counts. It is displayed as a line data graphic. At each category boundary, the running sum of all the “previous” categories is plotted. This option must be selected to activate “Running Sum Increases.”

Switch Axes

Reverses the position of the two axes.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Sort Increases

Displays a pop-up menu so you can choose the direction in which to sort the bins. If “Switch Axes” is selected, the choices shown below change to “To the bottom” and “To the top” respectively.

To the left

The column sizes increases in size from right to left.

To the right

The column sizes increases in size from left to right.

Running Sum Increases

Controls the direction of the Ogive data graphic. If “Switch Axes” is selected, the choices shown below change to “To the top” and “To the bottom” respectively. This option is available only when “Show Ogive” is selected.

To the right

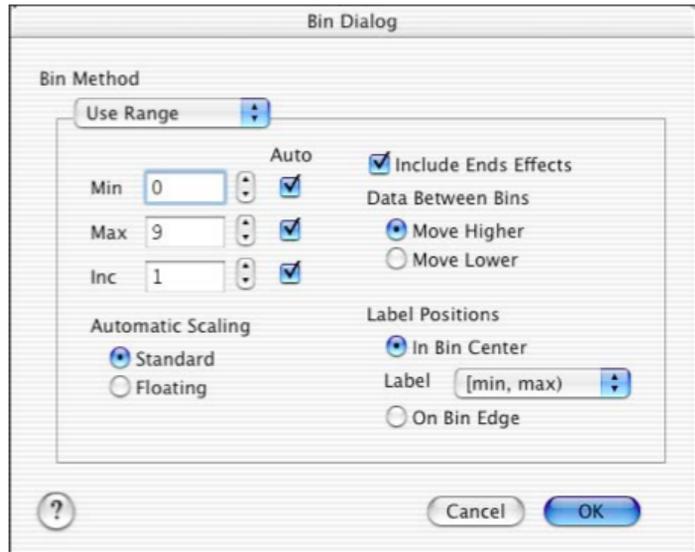
The running sum increases from left to right on the chart.

To the left

The running sum increases from right to left on the chart.

Binning

Displays a dialog box so you can specify how data is grouped or “binned” for counting and how the counted data is labeled. In a Pareto chart, the bins are sorted according to the frequency count for each bin.



Bin Method

When plotting charts that require the binning of data, select either **Count Data** or **Use Range**. Select **Count Data** if each unique value in the data set requires a bin of its own. This is only useful if the data are repetitive (i.e., the same data values appear more than once). Select **Use Range** if the desired bins are equal length intervals of numbers.

Count Data

Bin sizes are chosen to correspond to one data value and there is one bin for each data value. Consequently, no bin

is ever empty.

Use Range

Each bin corresponds to a range of numbers. Even if no data are repetitive, some bins may correspond to several data values and some to no values. The fields correspond to fields in a value axis dialog box, as follows:

Max = Top Value

Min = Bottom Value

Inc = Major Increments

Auto check boxes = Auto check boxes

Automatic scaling = Standard or Floating scaling

To determine the bin boundaries, the same logic is used as that to determine where the major ticks are placed along an axis. Given the same corresponding inputs in the “Binning” dialog box and “Value Axis” dialog boxes, the values of the bin boundaries correspond exactly to the values of the major ticks along an axis. When counting frequency, a data value is counted towards a particular bin if the value is between the values of its bin boundaries.

Include End Effects

Determines if two extra bins are created for a “Use Range” bin method. One bin is used to count all the values beyond the “Min” value and the other bin is used to count all the values beyond the “Max” value.

Data Between Bins

Determines which bin a data value falls into if it is equal to a bin boundary. If “Move Higher” is selected, the value is added to the next highest bin. If “Move Lower” is selected, the value is added to the next lowest bin.

Label Positions

Determines the position of the bin boundary labels. “On Bin Edge,” the category axis labels correspond to bin boundary values. “In Bin Center,” the category axis labels can have three different forms, as follows:

[min, max)

The low and high bin boundary values are placed in the label. Each boundary value is separated by a list separator and a space and surrounded with either “[...]” or “[...]” depending on whether “Move Higher” or “Move Lower” is selected, respectively. If “Include Ends” is selected, the low end label and the high end label look something like “(-x, max]” or “(min, x].”

mid-point

The arithmetic mean of the two bin boundaries is placed in the label. If “Include Ends” is on, no labels are generated for the end bins.

min ≤ x < max

The low and high bin boundary values are placed in the label. Each boundary value is separated by “≤ x <” or “< x ≤” depending on whether “Move Higher” or “Move Lower” is selected, respectively. If “Include Ends” is on, the labels created for the end bins look something like “x≤0” or “100<x.”

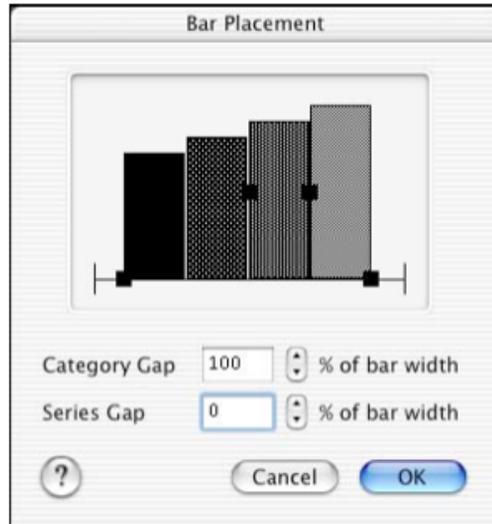
The use of “min” and “max” on the pop-up refers to the minimum and maximum bin boundary values for each bin, not the “Min” and “Max” number items in the “Use Range” section of the dialog box.

Click **OK** to save the changes, close the dialog box, and return to the

“Options” dialog box.

Bar Placement

Opens the “Bar Placement” dialog box to set the width and position of the data graphics. The dialog box graphic reflects the number of data series in the chart.



Category Gap

Controls the space between data graphics and grid lines on the category axis based on a percentage of the bar width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

Series Gap

Controls the space between each data graphic based on a percentage of the bar width. To change the Series Gap, drag the upper bar-sizing handles in the dialog box graphic, enter any number between -100 and 1,000, or click the direction arrows to scroll through the percentage options.

Click **OK** to save the changes, close the dialog box, and return to the “Options” dialog box.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the

dialog box without changing the chart, click **Cancel**.

Ogive Chart Options

To set options for an Ogive chart, do the following:

1. Select an Ogive chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections and enter data as needed. You have the following options:

Percentage

Determines if the height of the line represents the number of data items that are less than or equal to the current bin boundary as a percentage of the total count of all bins. With this method, the position of the line on the value axis starts at 0% on one end of the chart and ends at 1 or 100% on the other end. This scaling of data in an Ogive chart is called “relative.” This is the most convenient form for comparing the cumulative frequency counts of some data to a known probability distribution function.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Connect Points

Connects all data points in the same series from one end of the axis to the other.

Switch Axes

Reverses the position of the two axes.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Show Additional Category Axis

Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Show Legend

Displays the chart legend. Deselect this option to hide the legend.

Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Running Sum Increases

Controls the direction of the Ogive data graphic. If you select “Switch Axes,” the options change to “To the right” and “To the left” respectively.

To the right

The running sum increases from left to right on the chart.

To the left

The running sum increases from right to left on the chart.

Binning

Displays a dialog box so you can specify how data is grouped or “binned” for counting and how the counted data is labeled.



Bin Method

When plotting any of the charts that require the binning of the data, select either **Count Data** or **Use Range**. “Count Data” is used when each unique value in the data set needs to be given a bin of its own. This is only useful if the data are repetitive, that is, the same data values appear more than once. “Use Range” is used when the desired bins are equal length intervals of numbers. The controls for “Use Range” are very similar to those in a “Value Axis” dialog box.

Count Data

Sizes of the bins are chosen to be just big enough to correspond to exactly one data value and there is one bin for each data value. Consequently, no bin is ever empty.

Use Range

Each bin corresponds to a range of numbers. Even if there is no repetition in the data, some bins may correspond to several data values and some bins correspond to no values. The fields correspond to fields in a value axis dialog box, as follows:

Max = Top Value

Min = Bottom Value

Inc = Major Increments

Auto check boxes = Auto check boxes

Automatic scaling = Standard or Floating scaling

To determine the bin boundaries, the same logic is used as that to determine where the major ticks are placed along an axis. Given the same corresponding inputs in the “Binning” dialog box and “Value Axis” dialog boxes, the values of the bin boundaries correspond exactly to the values of the major ticks along an axis. When counting frequency, a data value is counted towards a particular bin if the value is between the values of its bin boundaries.

Include End Effects

Determines if two extra bins are created for a “Use Range” bin method. One bin is used to count all the values beyond the

“Min” value and the other bin is used to count all the values beyond the “Max” value.

Data Between Bins

Determines which bin a data value falls into if it is equal to a bin boundary. If “Move Higher” is selected, the value is added to the next highest bin. If “Move Lower” is selected, the value is added to the next lowest bin.

Label Positions

Determines the position of the bin boundary labels. “On Bin Edge,” the category axis labels correspond to bin boundary values. “In Bin Center,” the category axis labels can have three different forms, as follows:

[min, max)

The low and high bin boundary values are placed in the label. Each boundary value is separated by a list separator and a space and surrounded with either “[...]” or “[...]” depending on whether “Move Higher” or “Move Lower” is selected, respectively. If “Include Ends” is selected, the low end label and the high end label look something like “(-x, max]” or “(min, x].”

mid-point

The arithmetic mean of the two bin boundaries is placed in the label. If “Include Ends” is on, no labels are generated for the end bins.

min ≤ x < max

The low and high bin boundary values are placed in the label. Each boundary value is separated by “≤ x <” or “< x ≤” depending on whether “Move Higher” or “Move Lower” is selected, respectively. If “Include Ends” is on, the labels created for the end bins look something like “x≤0” or “100<x.”

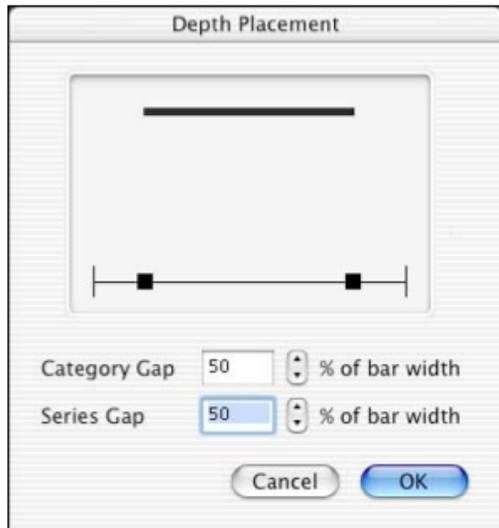
The use of “min” and “max” on the pop-up refers to the minimum and maximum bin boundary values for each bin, not the “Min” and “Max” number items in the “Use

Range” section of the dialog box.

Click **OK** to save the changes, close the dialog box, and return to the “Options” dialog box.

Depth Placement

This button is only available if the depth of the chart has been changed using “Depth” on the Chart menu. Opens the “Depth Placement” dialog box so you can set the width and position of the data graphics.



Category Gap

Controls the width and position of the data graphics based on a percentage of the bar width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

Click **OK** to save the changes, close the dialog box, and return to the “Options” dialog box.

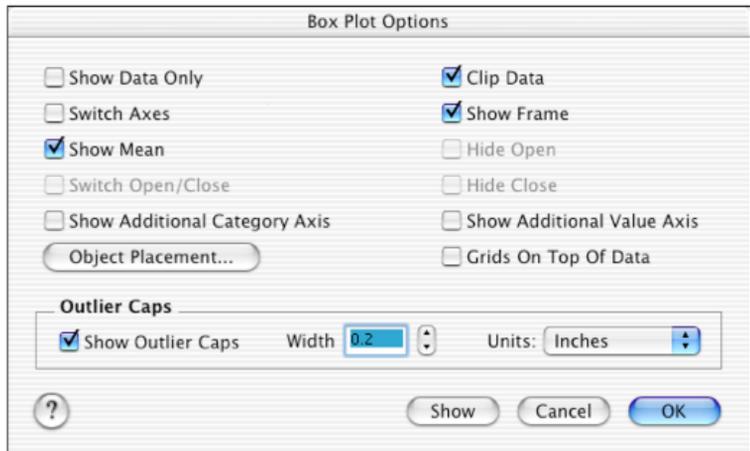
4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.

- When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Box Plot Chart Options

To set options for a Box Plot chart, do the following:

- Select a Box Plot chart.
- Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



- Make your selections as needed. You have the following options:

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Switch Axes

Reverses the position of the two axes.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Show Mean

Draws a symbol for the mean of each category. The symbol is centered over the category in the category axis dimension. It is drawn at the arithmetic mean of all the data in the category in the value axis dimension.

Show Additional Category Axis

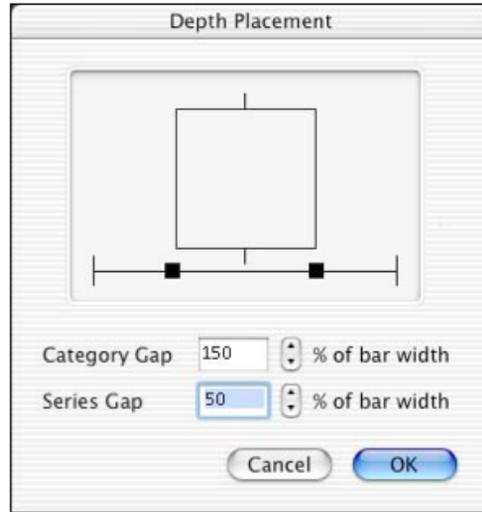
Displays an additional category axis opposite the original axis. You can format the additional axis independently from the original axis and set different font styles for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional category axis.

Show Additional Value Axis

Displays an additional value axis opposite the original value axis. You can format the additional axis independently from the original axis. You can also set different font styles, and so on, for each set of axis labels. The additional axis can also be dragged and offset. Turning on this option is the same as choosing “Overlay” from the Chart menu and turning on an additional value axis.

Object Placement

Opens the “Depth Placement” dialog box so you can set the width and position of the data graphics.



Category Gap

Controls the width and position of the box based on a percentage of the bar width. To change the Category Gap, drag the lower bar-sizing handles (squares) in the dialog box graphic, enter any value between 0 and 1,000, or click the direction arrows to scroll through the percentage options.

Click **OK** to save the changes, close the dialog box, and return to the “Options” dialog box.

Grids on Top of Data

Draws the chart grid on top of the data markers so that the grid is not obscured. This can help to maintain a perspective on your data values when you have data markers that cover large areas of the plot frame.

Show Outlier Caps

Lets you either show or hide outlier caps and customize their width. The default is set to show the caps at 0.2 inches. Width can be specified in inches, centimeters, points, picas, or ciceros.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging

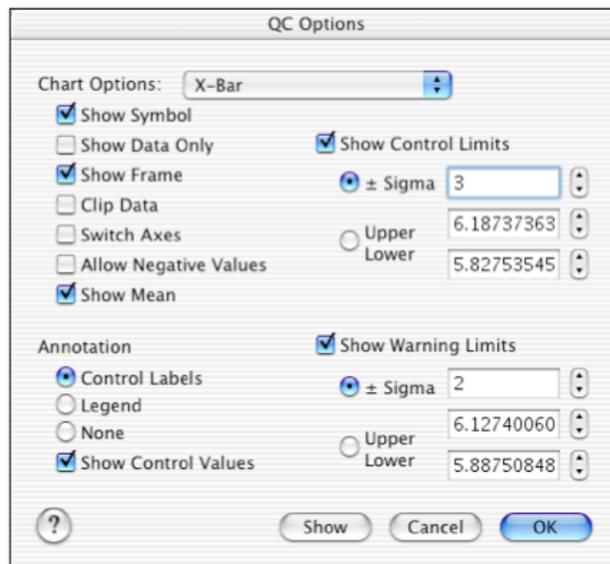
the Title bar.

5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

Quality Control Chart Options

To set options for a X-R (X Bar-R), X-S (X Bar-S), Fraction Defective (p), Number of Defectives (pn), Defectives Per Unit (u), or Number of Defects (c) chart, do the following:

1. Select a Quality Control chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections and enter data as needed. You have the following options:

Chart Options

Select the type of QC chart. The choices that appear will vary

depending on the type of QC chart you selected from the chart gallery. For example, for an X- Bar you can change the lower chart from Range (X Bar-R) to Standard Deviation (X Bar-S).

Show Symbols

Allows you to use symbols to mark the chart's data points.

Show Data Only

Displays only the data graphics, hiding all other chart elements, including the frame and labels.

Show Frame

Provides a backplane to the chart but does not affect the grid. This option must be selected if you want to fill the chart with a pattern or color or use a shadow.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Switch Axes

Reverses the position of the two axes.

Allow Negative Values

Allows negative control limits. When you plot a QC chart, the upper and lower warning and control limits are automatically calculated based on your data. These can be negative, as they often are when used, for example, to measure defects in a flow process.

Show Mean

The mean is calculated from the sample data and plotted on the chart as the central line.

Show Control Limits

The options in this group box set the upper and lower control limits on a QC chart, indicating when sampled data is outside the control range and requires investigation. You have the choice of having DeltaGraph automatically calculate the control limits based on the

sigma value or manually applying an upper and lower control limit in the dialog box.

Sigma Limits

DeltaGraph sets the upper and lower control or warning sigma limits (standard deviations) above and below the central line. When selected, these limits are calculated automatically. When the subgroup size is constant, control limits result in a straight line. When they are variable, they are represented as a stepped line. By default, DeltaGraph applies a sigma value of 3 for control limits above and below the central line and 2 for warning limits above and below the central line.

Annotation

This group box allows you to set display attributes for each QC chart. You can show or hide control labels, the legend, and control values.

Show Warning Limits

This group box sets upper and lower warning limits on a QC chart, indicating when sampled data is outside the control range and requires investigation. You have the choice of having DeltaGraph automatically calculate the warning limits based on the sigma value or manually applying an upper and lower warning limit in the dialog box.

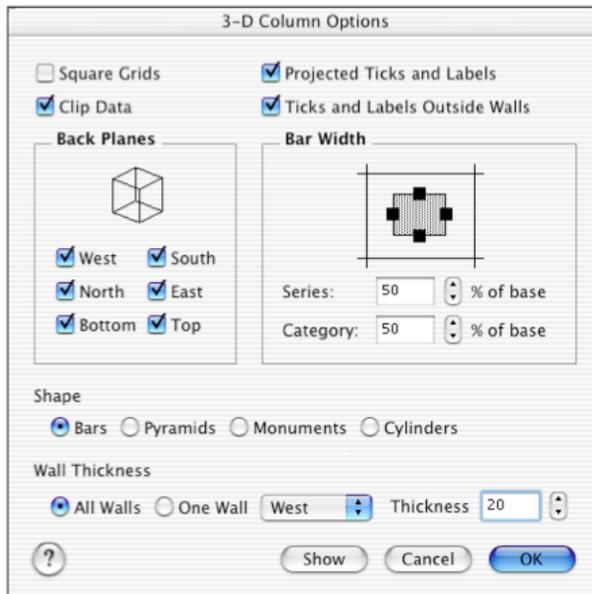
4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

3-D Business Chart Options

3-D Column Chart Options

To set options for a 3-D Column chart, do the following:

1. Select a 3-D Column chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections and enter data as needed. You have the following options:

Square Grids

Changes the grid pattern into squares on the bottom plane of the chart.

Projected Ticks and Labels

Draws ticks and labels in perspective to the grid lines.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Ticks and Labels Outside Walls

Extends the ticks slightly beyond the chart walls and places the labels outside the walls at the same perspective as the ticks.

Back Planes

Turns any or all six backplanes on or off. (Backplanes are the “walls” of the chart.) West, North, and Bottom planes represent the left, right, and bottom planes on a default chart. When you click one of the check boxes, the respective axis on the sample box is highlighted.

South, East, and Top planes in a default chart represent the invisible sides and top of the chart. The South, East, and Top plane options are only effective if the rotation of the chart has been changed using “3-D View” from the Chart menu.

Bar Width

Controls the width of the chart’s data graphics using the category and series axis grids as a boundary and based on a percentage of the base grid size.

To change the width of the data graphics, you can drag the sizing handles vertically (resizes the graphics along the series axis) or horizontally (resizes the graphics along the category axis), enter a value between 1% and 100%, or click the direction arrows to scroll through the options.

Shape

Determines the shape of the data graphics. You can choose from bars, pyramids, monuments, and cylinders.

Wall Thickness

Controls the thickness of one or all backplanes on the chart as measured in points (1 point = 1/72"). To change the wall thickness,

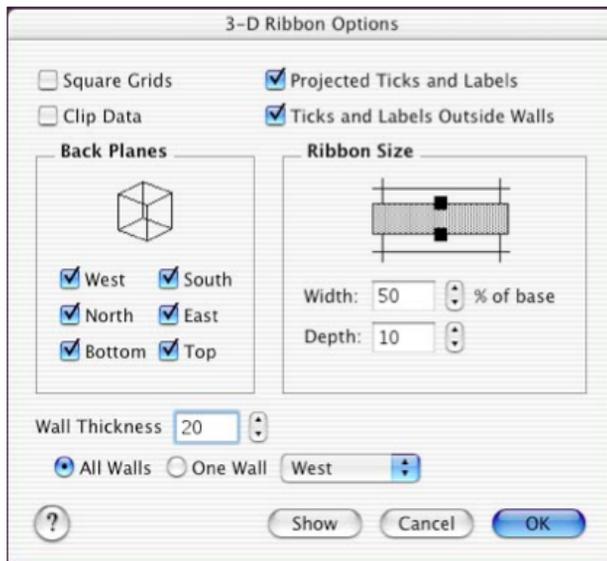
enter a point size in the “Thickness” text box, or click the direction arrows to scroll through the values.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

3-D Ribbon Chart Options

To set options for a 3-D Ribbon chart, do the following:

1. Select a 3-D Ribbon chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections and enter data as needed. You have the following options:

Square Grids

Changes the grid pattern into squares on the bottom plane of the chart.

Projected Ticks and Labels

Draws ticks and labels in perspective to the grid lines.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Ticks and Labels Outside Walls

Extends the ticks slightly beyond the chart walls and places the labels outside the walls at the same perspective as the ticks.

Back Planes

Turns any or all six backplanes on or off. (Backplanes are the “walls” of the chart.) West, North, and Bottom planes represent the left, right, and bottom planes on a default chart. When you click one of the check boxes, the respective axis on the sample box is highlighted.

South, East, and Top planes in a default chart represent the invisible sides and top of the chart. The South, East, and Top plane options are only effective if the rotation of the chart has been changed using “3-D View” from the Chart menu.

Ribbon Size

Controls the width and depth of the chart’s data graphics. The width of the ribbon is based on a percentage of the grid size, the depth is measured in points (1 point = 1/72”).

To change the ribbon width, you can drag the sizing handles up or down, enter a value between 0% and 100%, or click the direction arrows to scroll through the options.

To change the depth, you can enter a point size between 0 and 250, or click the direction arrows to scroll through the point sizes.

Wall Thickness

Controls the thickness of one or all backplanes on the chart as measured in points (1 point = 1/72"). To change the wall thickness, enter a point size in the

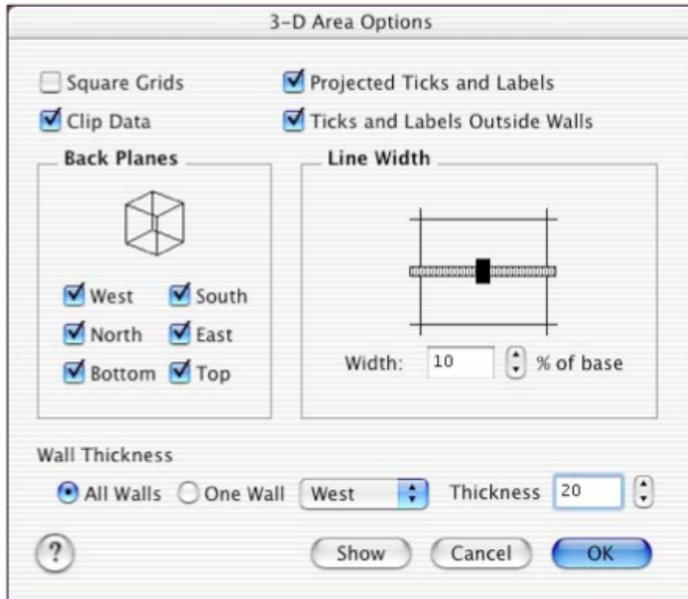
“Thickness” text box, or click the direction arrows to scroll through the values.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

3-D Area Chart Options

To set options for a 3-D Area chart, do the following:

1. Select a 3-D Area chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections and enter data as needed. You have the following options:

Square Grids

Changes the grid pattern into squares on the bottom plane of the chart.

Projected Ticks and Labels

Draws ticks and labels in perspective to the grid lines.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Ticks and Labels Outside Walls

Extends the ticks slightly beyond the chart walls and places the labels outside the walls at the same perspective as the ticks.

Back Planes

Turns any or all six backplanes on or off. (Backplanes are the

“walls” of the chart.) West, North, and Bottom planes represent the left, right, and bottom planes on a default chart. When you click one of the check boxes, the respective axis on the sample box is highlighted.

South, East, and Top planes in a default chart represent the invisible sides and top of the chart. The South, East, and Top plane options are only effective if the rotation of the chart has been changed using “3-D View” from the Chart menu.

Line Width

Controls the width of the chart’s data graphics based on a percentage of the grid size. To change the line width, you can drag the sizing handles up or down, enter a value between 0% and 100%, or click the direction arrows to scroll through the options.

Wall Thickness

Controls the thickness of one or all backplanes on the chart as measured in points (1 point = 1/72"). To change the wall thickness, enter a point size in the “Thickness” text box, or click the direction arrows to scroll through the values.

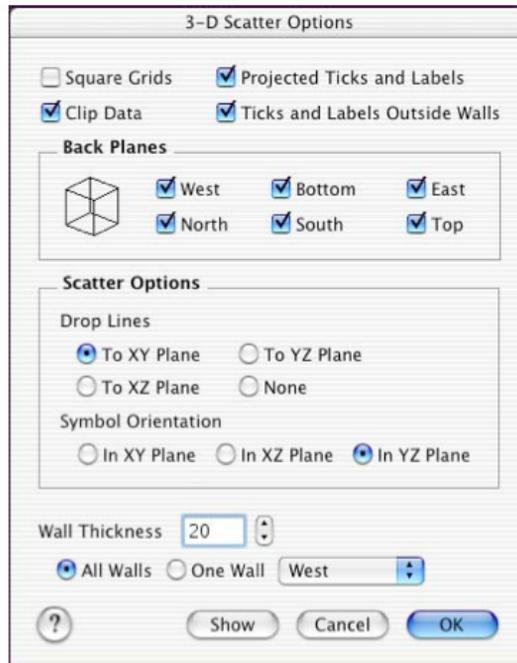
4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

3-D Technical Chart Options

3-D Scatter Chart Options

To set options for a 3-D Scatter chart, do the following:

1. Select a 3-D Scatter chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections and enter data as needed. You have the following options:

Square Grids

Changes the grid pattern into squares on the bottom plane of the

chart.

Projected Ticks and Labels

Draws ticks and labels in perspective to the grid lines.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Ticks and Labels Outside Walls

Extends the ticks slightly beyond the chart walls and places the labels outside the walls at the same perspective as the ticks.

Back Planes

Turns any or all six backplanes on or off. (Backplanes are the “walls” of the chart.) West, North, and Bottom planes represent the left, right, and bottom planes on a default chart. When you click one of the check boxes, the respective axis on the sample box is highlighted.

South, East, and Top planes in a default chart represent the invisible sides and top of the chart. The South, East, and Top plane options are only effective if the rotation of the chart has been changed using “3-D View” from the Chart menu.

Drop Lines

Drops a line from each data symbol to the selected plane. You can choose from XY Plane, XZ Plane, YZ Plane, or None.

Symbol Orientation

Draws the data symbols in the selected plane, which changes the symbols’ orientation. You can choose the XY, XZ, and YZ plane.

Wall Thickness

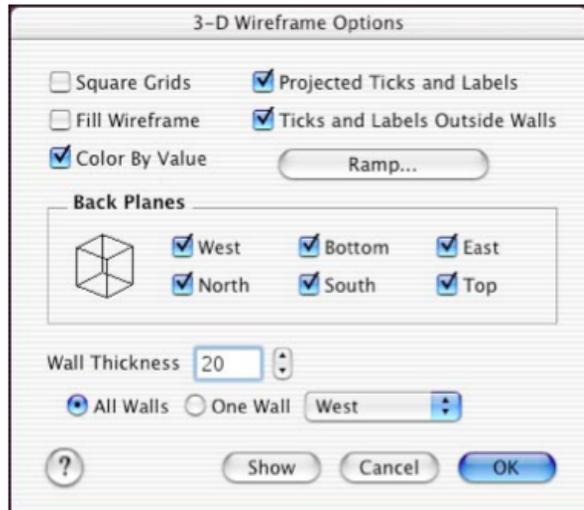
Controls the thickness of one or all backplanes on the chart as measured in points (1 point = 1/72"). To change the wall thickness, enter a point size in the “Thickness” text box, or

- click the direction arrows to scroll through the values.
- Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
 - When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

3-D Wireframe Chart Options

To set options for a 3-D Wireframe chart, do the following:

- Select a 3-D Wireframe chart.
- Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



- Make your selections and enter data as needed. You have the following options:

Square Grids

Changes the grid pattern into squares on the bottom plane of the chart.

Projected Ticks and Labels

Draws ticks and labels in perspective to the grid lines.

Fill Wireframe

Fills in the wireframe so the data graphic is opaque and you can add colors and fill patterns.

Ticks and Labels Outside Walls

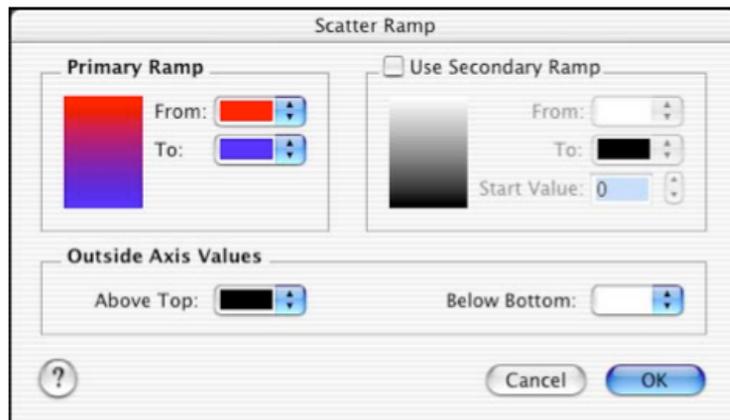
Extends the ticks slightly beyond the chart walls and places the labels outside the walls at the same perspective as the ticks.

Color by Value

Assigns colors to each series based on the Z axis value. “Fill Wireframe” must be selected to use this option.

Ramp

Displays a dialog box so you can create a smooth color/gray scale blend in the chart’s data graphics and legend.



Primary Ramp

Each of the selections displays a color palette you can use to

select a start and end color or gray scale for your data graphic and legend. Changes are made from the top of the data graphic to the bottom. Changes to the ramp appear in the example box to the left.

Use Secondary Ramp

Works the same as the Primary Ramp. “Use Secondary Ramp” must be selected to activate these options. To determine where the secondary ramp begins, enter a value in the “Start Value” box.

Outside Axis Values

Each of the selections displays a color palette you can use to select a color or gray scale tint for data graphics that extend above or below the value axis.

Click **OK** to save the changes, close the dialog box, and return to the “Options” dialog box.

Back Planes

Turns any or all six backplanes on or off. (Backplanes are the “walls” of the chart.) West, North, and Bottom planes represent the left, right, and bottom planes on a default chart. When you click one of the check boxes, the respective axis on the sample box is highlighted.

Wall Thickness

Controls the thickness of one or all backplanes on the chart as measured in points (1 point = 1/72"). To change the wall thickness, enter a point size in the “Thickness” text box, or click the direction arrows to scroll through the values.

South, East, and Top planes in a default chart represent the invisible sides and top of the chart. The South, East, and Top plane options are only effective if the rotation of the chart has been changed using “3-D View” from the Chart menu.

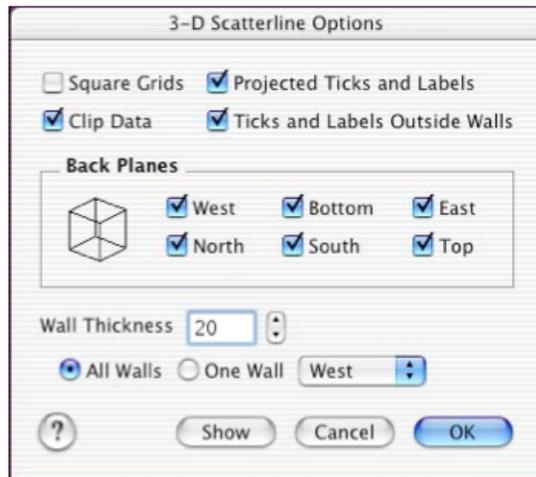
4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.

5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

3-D Scatterline Chart Options

To set options for a 3-D Scatterline chart, do the following:

1. Select a 3-D Scatterline chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections and enter data as needed. You have the following options:

Square Grids

Changes the grid pattern into squares on the bottom plane of the chart.

Projected Ticks and Labels

Draws ticks and labels in perspective to the grid lines.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Ticks and Labels Outside Walls

Extends the ticks slightly beyond the chart walls and places the labels outside the walls at the same perspective as the ticks.

Back Planes

Turns any or all six backplanes on or off. (Backplanes are the “walls” of the chart.) West, North, and Bottom planes represent the left, right, and bottom planes on a default chart. When you click one of the check boxes, the respective axis on the sample box is highlighted.

South, East, and Top planes in a default chart represent the invisible sides and top of the chart. The South, East, and Top plane options are only effective if the rotation of the chart has been changed using “3-D View” from the Chart menu.

Wall Thickness

Controls the thickness of one or all backplanes on the chart as measured in points (1 point = 1/72"). To change the wall thickness, enter a point size in the “Thickness” text box, or click the direction arrows to scroll through the values.

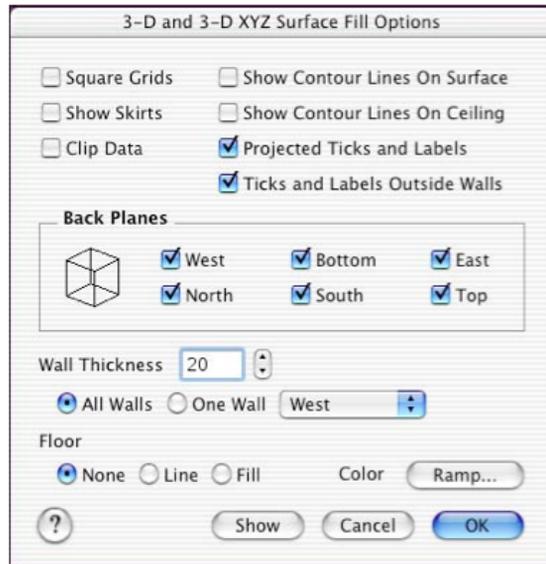
4. Click **Show** to preview your changes without exiting the dialog box.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

3-D Surface Fill and 3-D Surface Line Chart Options

To set options for 3-D Surface Fill, 3-D Surface Line, 3-D XYZ Surface Fill, and

3-D XYZ Surface Line charts, do the following:

1. Select the chart.
2. Click the Options icon on the Command bar, choose **Options** from the Chart menu, or press **cmd-Y**. The “Options” dialog box appears.



3. Make your selections as needed. You have the following options:

Square Grids

Changes the grid pattern into squares on the bottom plane of the chart.

Show Contour Lines on Surface

(3-D Surface Fill and 3-D XYZ Surface Fill charts only) Displays the contour lines on the data graphic surface.

Show Skirts

Fills the area between the bottom of the plotted data and the base of the chart creating a skirt around the data graphic. This option must be deselected to activate the “Floor” options.

Show Contour Lines on Ceiling

(3-D Surface Fill and 3-D XYZ Surface Fill charts only) Displays the contour lines on the chart ceiling.

Clip Data

Hides or “clips off” any data plotted outside the chart grids.

Projected Ticks and Labels

Draws ticks and labels in perspective to the grid lines.

Ticks and Labels Outside Walls

Extends the ticks slightly beyond the chart walls and places the labels outside the walls at the same perspective as the ticks.

Back Planes

Turns any or all six backplanes on or off. (Backplanes are the “walls” of the chart.) West, North, and Bottom planes represent the left, right, and bottom planes on a default chart. When you click one of the check boxes, the respective axis on the sample box is highlighted.

South, East, and Top planes in a default chart represent the invisible sides and top of the chart. The South, East, and Top plane options are only effective if the rotation of the chart has been changed using “3-D View” from the Chart menu.

Wall Thickness

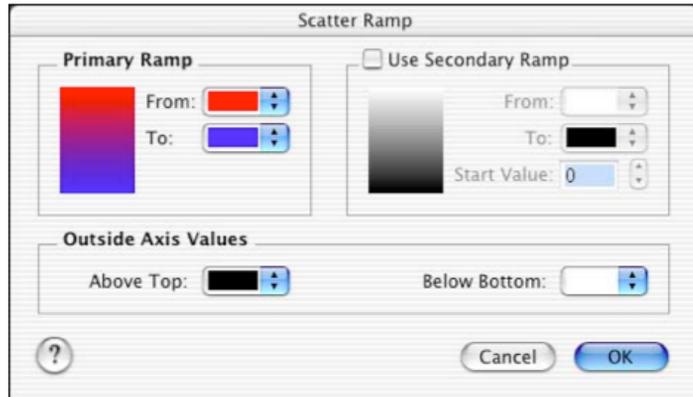
Controls the thickness of one or all backplanes on the chart as measured in points (1 point = 1/72"). To change the wall thickness, enter a point size in the “Thickness” text box, or click the direction arrows to scroll through the values.

Floor

(Available for 3-D Surface Line and 3-D XYZ Surface Line charts only when “Fill” is selected.) You can select “Line” or “Fill” to project a 2-D representation of the chart (in the form of a line or fill shadow of the data graphic) onto the chart floor. This option is available only when “Show Skirts” is deselected.

Ramp

(Available for 3-D Surface Line and 3-D XYZ Surface Line charts only when “Fill” is selected) Displays a dialog box so you can create a smooth color/gray scale blend in the chart’s data graphics and legend.



Primary Ramp

Each of the selections displays a color palette you can use to select a start and end color or gray scale for your data graphic and legend. Changes are made from the top of the data graphic to the bottom. Changes to the ramp appear in the example box to the left.

Use Secondary Ramp

Works the same as the Primary Ramp. “Use Secondary Ramp” must be selected to activate these options. To determine where the secondary ramp begins, enter a value in the “Start Value” box.

Outside Axis Values

Each of the selections displays a color palette you can use to select a color or gray scale tint for data graphics that extend above or below the value axis.

Click **OK** to save the changes, close the dialog box, and

return to the “Options” dialog box.

4. Click **Show** to preview your changes without exiting the dialog box. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. If you want to exit the dialog box without changing the chart, click **Cancel**.

11 Working with Objects in Chart View

This chapter explains how to use the tools in the Chart view's Toolbox to generate text (Text objects) and graphics (Draw objects) that you can use to enhance your charts. You will learn how to edit these objects and the text in Text objects, how to use the commands in the Draw menu to manipulate the four types of objects you can have in a Chart page, and how to use the Line, Color, and Pattern palettes in the Toolbox to embellish Chart, Draw, and Text objects.

This chapter covers the following:

- Identifying objects in a Chart page
- Using tools in the Chart view Toolbox
- Selecting, moving, and resizing objects
- Copying and deleting objects
- Creating and editing Draw and Text objects
- Editing and formatting the text in Text objects
- Composing equations with the Equation Editor
- Adding color, patterns, and special fills to objects
- Changing chart and object color, lines, and text attributes
- Manipulating objects with commands from the Draw menu
- Creating pictographics

Identifying Objects

There can be four types of objects in a Chart page, all of which must be selected with the Pointer tool before being deleted, copied, moved, modified, or manipulated with menu commands. A selected object—whether a Chart, Draw, or Text object created in the Chart view, or a graphic imported from another application—displays four object handles that define its boundaries (see the figure below).

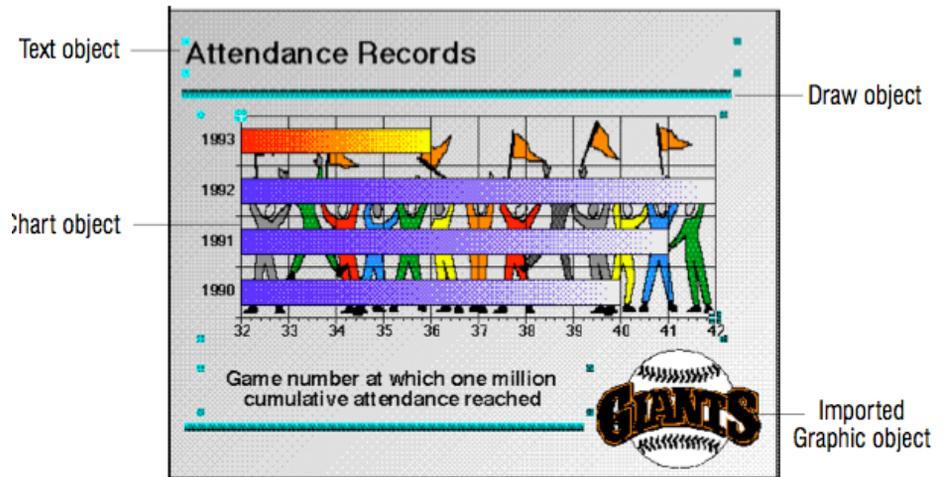


Chart object

Any numerical or text chart, A Chart object contains many chart elements, including labels and titles.

Draw object

Created with one or more of DeltaGraph's drawing tools, it can be a simple line or a detailed drawing.

Text object

Created with the Text tool. In addition to having all the attributes of a Draw object, a Text object contains text that is manipulated with commands from the Edit and Text menus.

Imported Graphic object

Any graphic imported from another application.

To learn more about...	Refer to...
Creating charts	Chapter 7, “Setting Preferences”
Draw objects	“Creating and Editing Draw Objects” below
Text objects	“Creating a Text Object” below
Imported Graphic objects	Chapter 13, “Importing and Exporting Graphics”

The Toolbox

The Toolbox appears automatically when you switch to the Chart view. You use the tools from the Toolbox in much the same way that you use traditional art tools, you have to pick them up before you start to draw. You “pick up,” or select, a tool from DeltaGraph’s Toolbox by clicking it before drawing in the document page.

After using a tool, the cursor reverts back to the Pointer tool (Bezier Curve, Polygon tool, and Magnifying Glass are the only exceptions). If you double-click a tool when selecting it, the tool remains active until you select another tool. Press the spacebar to recall the last tool selected.

You can move the Toolbox around the screen by clicking anywhere in the Title bar, holding down the mouse button, and dragging to a new location. You can hide the Toolbox by clicking the Close box or by selecting **Hide Toolbox** from the Draw menu. To open a closed Toolbox, select **Show Toolbox** from the Draw menu. When you quit DeltaGraph, the position of the Toolbox in the window is saved.

Tools fall into the following four categories according to their functions:

- Function tools — Pointer, Eyedropper, Blend, and Shadow tools, and Magnifying glass
- Text tool

- Draw tools — Line, Rectangle, Rounded Rectangle, Bezier Curve, Arc, Oval, Freehand, Polygon, and Arrow
- Palette tools — Fill palettes, Line palettes, and Line Width palette.

The Toolbox Tools and Palettes	
Tool	Function
	The Pointer tool selects, moves, and resizes objects.
	The Text tool creates Text objects and must be selected to enter, edit, or format text in the object.
	The Line tool creates lines.
	The Bezier Curve tool creates Bezier curves.
	The Arc tool creates arcs.
	The Freehand tool creates freeform shapes.
	The Arrow tool creates lines with arrows on one or both ends.
	Click and hold the Rectangle tool to display a pop-up menu of tools. You can create rectangles and squares with the Rectangle tool or use the Rounded Rectangle tool to create rectangles and squares with rounded corners.
	The Polygon tool creates polygons.
	The Oval tool creates ovals and circles.
	The Magnifying Glass enlarges or reduces the viewing size of the Chart page.
	Click and hold the Eyedropper tool to display a pop-up menu of tools. You can use the Empty Eyedropper tool to select and copy the current attributes of any Draw or Text object or any element in a chart. The Full Eyedropper tool selects objects and drops the attributes copied with the Empty Eyedropper tool into the selected object(s).
	The Blend tool selects objects and applies the last blend created (“Blends” command) to those objects.

The Toolbox Tools and Palettes (continued)	
Tool	Function
	The Shadow tool selects objects and applies the last shadow created (“Shadow” command) to those objects, including color and pattern.
	The Fill palettes change the foreground (upper left icon) and background (upper right icon) color of object fills as well as the fill pattern (lower icon).
	The Line palettes change the foreground (upper left icon) and background (upper right icon) color of object lines as well as the line pattern (lower icon).
	The Line Width palette changes an object’s line width.
	The Transparency tool applies transparency to the selected object(s).

To learn more about...	Refer to...
Each tool	“Creating and Editing Draw Objects” below

Manipulating Objects with the Pointer Tool

Because the Pointer tool is selected in the Toolbox when you first open Delta- Graph, it is considered the default tool. Also, you will notice that most other tool selections revert to the Pointer tool as soon as you release the mouse button. (The Bezier Curve and Polygon tools, both of which create multi-segmented objects, and the Magnifying Glass are the only exceptions, they remain active until you select another tool.) If you double-click a tool when selecting it, the tool remains active until you select another tool.

The Pointer is used to select, move and resize objects in the Chart view. In addition, when an object is selected, you can copy, duplicate, and delete it, as well as apply commands from the Draw

menu.

You can click *once* on any object in the Chart view with the Pointer while holding the **control** key to change various attributes. Click *and hold* the mouse button while holding the **control** key to display a dialog box so you can change general object attributes. A pop-up menu appears so you can display the previously described dialog box or change attributes specific to the type of object selected.

To learn more about...	Refer to...
Selecting and manipulating elements in a chart object	Chapter 9, "Customizing Charts"

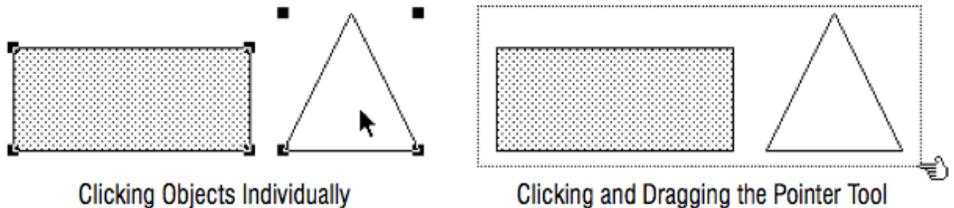
Selecting Objects

There are two simple techniques for selecting one or more objects in a Chart page, as follows:

1. Use the Pointer tool to click the objects one at a time, holding down the **shift** key when selecting more than one object.
2. Use the Pointer tool to click and drag a selection rectangle around the object(s) you want selected

Object handles appear around each object to indicate that it is selected.

To select multiple elements of a Chart object, press the **command** key, and click the element(s).



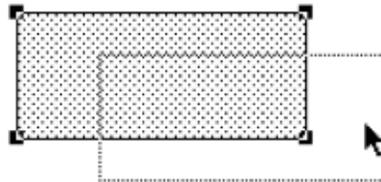
Moving and Resizing Objects

Once an object is selected, you can move or resize it. The table below contains several key combinations you may find useful when creating, moving, and resizing objects in the Chart view. If you move or resize an object in error, you can cancel the action by choosing **Undo** from the Edit menu or pressing **cmd-Z**.

Key Combination	Description
cmd-Drag	Temporarily disables the "Snap to Grid" option when drawing, resizing, or moving objects.
shift+Drag	Constrains the boundaries of an object to a square when drawing or resizing.
option+Drag	Copies the object being moved.

To move an object, do the following:

1. Select the Pointer tool and position it over the object you want to move. If you are moving a Draw object with no fill, you must click a boundary line.
2. Click and hold the mouse button while you drag the object to its new location. As you drag, an outline the same size and shape as the object appears. A semi-transparent, reduced-size image is centered within the outline.

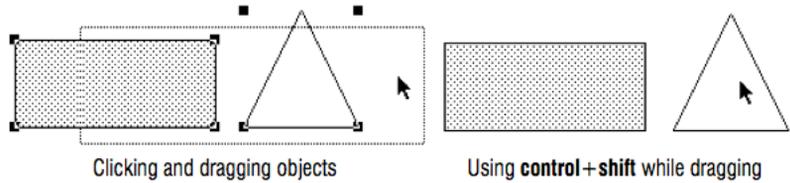


To move more than one object at a time, do the following:

1. Holding down the **shift** key, select the objects you want to move.
2. Click any one of the selected objects and hold down the mouse

button while you drag the objects to a new location. The objects move as a group, maintaining the same spatial relationships.

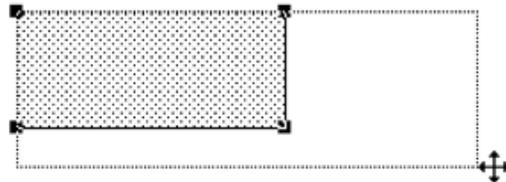
Use the **control+shift** key combination if you want to see the objects as you move them.



NOTE  See “Grouping and Ungrouping Objects” below for another way to move objects as a group.

To change the size or shape of an object, do the following:

1. Select the object you want to resize. The object handles appear.
2. Click and drag a handle until the object is the size or shape you want. When you drag a handle, the pointer changes to a crosshair with arrows.



NOTE  This does not change the size of the text in a Text object, it changes the size of the object only.

Copying Objects

The “Copy” command makes a copy of any selected object(s), leaving the original(s) intact. It is most useful when you want to copy something to another Chart page in the same DeltaGraph document, another document, the Clipboard, or another application. The copy is

saved to the Clipboard where it replaces the previous contents. (See “Duplicating Objects” below to learn the most efficient way to copy objects for use in the same Chart page.)

You can copy a Chart object to the Clipboard to be pasted in another application as a PICT object. If you paste the object back in a Chart page, a PICT or PDF version (depending on the application) appears.

If you hold down the **Option** key while choosing **Copy** from the Edit menu, an EGO (Edit Graphic Object) image is placed on the Clipboard. Some Macintosh applications support this format. Refer to Chapter 18, “AppleScript Commands” for more information.

To copy one or more objects, do the following:

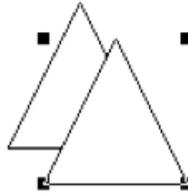
1. Select the object(s) you want to copy.
2. Choose **Copy** from the Edit menu or press **cmd-C**.
3. De-select the object by clicking outside it.

A copy of the object is now on the Clipboard, ready to paste anywhere you like. (See “Pasting Objects” below.)

Duplicating Objects

If you want an exact replica of one or more selected objects for placement in the *same* Chart page, choose **Duplicate** from the Edit menu or press **cmd-D**. The duplicate object appears slightly offset from the original with its object handles visible to show that it is selected and ready for placement on the page.

If the duplicated object is a chart, the duplicate uses the same data as the original. The duplicated chart is fully functional and remains independent, that is, it can be modified in any way available to the original object without affecting the original.



If you want an exact replica of one or more objects to use in a *different* document, drag the object(s) into a Chart page of a second open DeltaGraph document. This leaves the original object(s) intact and still selected. If a chart is copied from another document, a Data page is added, containing data for the duplicate chart.

Deleting Objects

To delete one or more objects, do the following:

1. Select the object(s) you want to delete.
2. Choose **Cut** or **Clear** from the Edit menu, or press the **delete** key.

“Cut,” which can also be invoked by pressing **cmd-X**, places a copy of the object on the Clipboard; “Clear” and the **delete** key do not.

Pasting Objects

You can use “Paste” from the Edit menu to place the most recently cut or copied Draw, Text, or Imported Graphic objects in the same or a different Chart page, DeltaGraph document, or another application.

To paste one or more objects, do the following:

1. Use the **Copy** or **Cut** command on the object(s) you want to paste. This places a copy of the object(s) on the Clipboard.
2. If necessary, activate a different DeltaGraph Chart page, open another Delta- Graph document, or open another application.
3. Choose **Paste** from the Edit menu or press **cmd-V**. The pasted

object(s) appear centered in the active page. You can paste the copy anywhere you like as many times as you like.

Changing the View Size

You can change the view size of the active Chart page, Organizer view (Thumbnail view only), or Layout mode using any of the following methods:

- Type the keyboard equivalents for magnifying.
- Click the Magnifying Glass in the Toolbox (Chart view and Layout mode only).
- Select **Scale** from the View menu.
- Select the **Fit To View** option.

DeltaGraph lets you view the Chart view anywhere between 1% and 400% of actual size. This allows you to edit Chart pages either from an overall perspective or from a detailed perspective. It also allows you to more efficiently use the screen space in which you have to work.

You can use the Magnification Controls to do any of the following:

- Switch back and forth between selected magnification and 100%.
- Click the Counter Item to select the required magnification.

To change the view size with the Magnifying Glass, do the following:

1. Select the Magnifying Glass from the Toolbox. The pointer changes to a magnifying glass with a “+” (plus sign) in the middle.
2. To increase the viewing size of the active Chart page, click the Chart page.
3. To decrease the viewing size of the active Chart page, hold down the **option** key while clicking the Chart page. The “+” (plus sign) in the middle of the glass changes to a “-” (minus sign), which signifies that it will decrease the viewing size when it is applied. The viewing size of the Chart page decreases.

To use the “Fit To View” option, do the following:

1. Click and hold the Magnification control icon on the Command bar. The Magnification pop-up menu appears.
2. Choose **Fit To View**. The Chart page scales to fit to in the document window.

Creating and Editing Draw Objects

The more time you spend experimenting with the tools — especially the Polygon, Bezier Curve, and Freehand tools — and techniques, the better you will understand and be able to take advantage of their capabilities.

Once you have created a Draw object, you can use commands on the Draw menu to manipulate it and to add some interesting special effects (dashed lines, special fills, and drop shadows). You can also use the palettes in the Toolbox to change the object’s line widths and to add color or patterns to the object’s line or fill.

To learn more about...	Refer to...
Changing line width, color, or pattern	“Changing the Attributes of a Draw, Text, or Chart Object” below.
Changing the line width	“Creating Dashed Lines” below

Creating and Editing a Line

To create a line, do the following:

1. Select the Line tool from the Toolbox. The pointer changes to a crosshair.
2. Click and hold down the mouse button to begin your line.
3. Drag the mouse in the direction you want your line to follow. When you release the mouse, the line appears with object handles on each end to show it is selected.

4. While a line is selected, you can increase or decrease its length or change its direction by dragging a handle. When you drag a handle or move the line, the pointer changes to a crosshair with arrows.

Creating and Editing a Rectangle, Rounded Rectangle, Square, Circle, or Oval

The Rectangle tool displays a pop-up containing the Rectangle tool as well as the Rounded Rectangle tool. Use the Rectangle tool to make a rectangle and the Rounded Rectangle tool to make a rounded rectangle. Use the Oval tool to make an oval or circle.

To create a rectangle, rounded rectangle, square, circle, or oval, do the following:

1. Select the Rectangle, Rounded Rectangle, or Oval tool from the Toolbox. The pointer changes to a crosshair.
2. Click and hold down the mouse button to begin the object.
3. Drag the mouse diagonally in any direction until the object is the size and shape you want. Hold down the **shift** key while dragging to constrain the object to a perfect square, square with rounded corners, or circle, depending on which tool you are using.
4. Release the mouse button. The object appears with object handles around it to show it is selected.

You can move, resize, and modify a rectangle, rounded rectangle, square, circle, or oval as explained in other sections. You can also use “Edit Round Corners” on the Draw menu to modify the curvature of the corners in a rounded rectangle.

To change the corners of a rounded rectangle, do the following:

1. Select the rounded rectangle (its object handles should be visible).
2. Choose **Edit Round Corners** from the Draw menu. All but the bottom right selection handle disappears.
3. Click the bottom right selection handle, and drag down and away

from the rectangle to make the corners more round.

4. Drag up and into the rectangle to make the corners more square.



5. Release the mouse button when the object is the shape you want.
6. Click outside the rectangle to de-select it and end the edit.

Creating and Editing a Bezier Curve

You can use the Bezier Curve tool to create very complex Draw objects. Like the Polygon and Freehand tools, the Bezier Curve tool creates irregularly shaped, multi-sided objects; however, you can change the segments between each point into curved lines. Also like a polygon and freehand object, a Bezier curve can be closed (the first and last segments are joined) or open (first and last segments are not joined).

A Bezier curve can be transparent and consist of the line only, or it can be filled with a color or pattern like other Draw objects.

Holding down the **command** key while creating or resizing a Bezier curve con- strains each tangent to a straight line in the original direction of movement from the drawing point.

Because the smoothness of a Bezier curve depends on the exact placement of its points, a Bezier curve does not “Snap to Grid.”

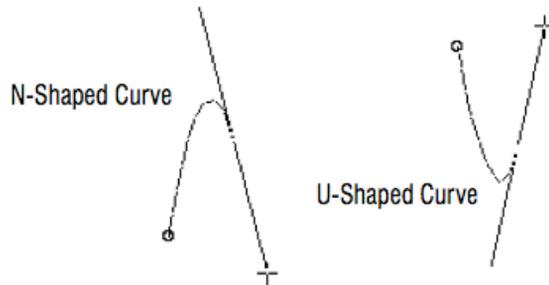
To create a simple or compound curve, do the following:

1. Select the Bezier Curve tool from the Toolbox. The pointer changes to a crosshair.
2. Click the mouse once where you want your curve to begin. A small circle marks the starting point.
3. Move the mouse until the crosshair pointer is where you want the

first segment of your curve to end, then click again and hold down the mouse button.

If you release the mouse, a straight line appears between the first and second points.

If you hold down the mouse button and drag, a tangent line appears (as shown below) that allows you to drag the curve into the shape you want. Drag down to make an n-shaped curve. Drag up to make a u-shaped curve.



4. Release the mouse button. The tangent line disappears, and object handles appear around the curve to show it is selected.
5. Continue creating more points and setting the angle and shape of the curves with the tangent lines until your curve is complete. DeltaGraph automatically connects the curve segments.
6. Click the Pointer tool or any other tool in the Toolbox to de-select the Bezier Curve tool when your shape is complete.

You can move, resize, or modify a Bezier curve as explained in other sections. You can also use “Edit Bezier Curve” from the Draw menu to change the position of each segment point and the shape of each curve segment. If a segment in a Bezier curve is straight, there is no tangent line and you can change only the position of the segment point.

You can delete a segment point by holding down the **option** key while clicking the segment point.

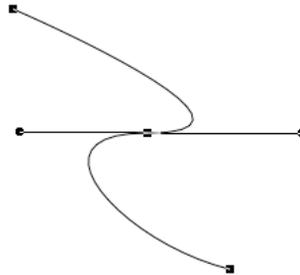
To edit a Bezier curve, do the following:

1. Select your Bezier curve (its object handles should be visible).

2. Choose **Edit Bezier Curve** from the Draw menu or press **cmd-E**. Square object handles appear at each segment point.



3. Select the handle of the segment point you want to change and drag it to a new position.
4. Release the mouse when you have repositioned the segment point where you want it. A tangent line with round handles at each end appears tangent to the curve. These object handles can be dragged to control the size and shape of the curves.



5. Select either end of the tangent line and drag to edit the shape of the curve. The curve is reshaped or stretched in the direction you move the tangent line handle. Select and drag the opposite handle of the tangent if you want the curve to be reshaped in the other direction.



6. Repeat steps 3-5 as needed.
7. Click outside the curve's boundaries to de-select it and end the edit.

Creating and Editing an Arc

The Arc tool creates an arched line from one point to another. The curvature and angle of the arc are controlled by the position, direction, and distance of the second point in relation to the first. An arc can be transparent and consist of the line only, or it can be filled with a color or pattern like other Draw objects.

To create an arc, do the following:

1. Select the Arc tool from the Toolbox. The pointer changes to a crosshair.
2. Click and hold down the mouse button to begin your arc, then drag the mouse diagonally in any direction until the arc is the shape you want.

When you release the mouse, the arc appears with object handles around its boundaries to show it is selected.

You can move, resize, and modify an arc as explained in other sections. You can also use “Edit Arc” from the Draw menu to move the two endpoints.

To edit the angle of an arc, do the following:

1. Select your arc (its object handles should be visible).
2. Choose **Edit Arc** from the Draw menu. Object handles appear at each end of the arc.
3. Drag the handles to change the angle of the arc. A line appears to show you the angle the arc is creating.
4. When you have repositioned the endpoints as needed, click outside the arc's boundaries to de-select it and end the edit.

Creating and Editing a Freehand Object

The Freehand tool creates a freeform line consisting of numerous Bezier curves. Like the polygon and Bezier curve, a freehand object can be closed (the first and last segments are joined) or open (first and last segments are not joined). A free-hand object can be transparent and consist of the line only, or it can be filled with a color or pattern like other Draw objects.

To edit a Freehand object, refer to the instructions for editing a Bezier curve. Holding down the **command** key while resizing a Bezier curve in the free-hand object constrains each tangent to a straight line in the original direction of movement from the drawing point.

To create a Freehand Object, do the following:

1. Select the Freehand tool from the Toolbox. The pointer changes to a crosshair.
2. Click the mouse and drag to create your object.
3. Release the mouse button. Object handles appear around the object to show it is selected.

Creating and Editing a Polygon

The Polygon tool creates irregularly shaped, multi-sided objects. A polygon is made up of multiple segments that are joined together by segment endpoints. Like a Bezier curve, and a freehand object, a polygon can be closed (the first and last segments are joined) or open (first and last segments are not joined).

To create a polygon, do the following:

1. Select the Polygon tool from the Toolbox. The pointer changes to an **x**.
2. Click the mouse where you want the polygon to begin. A small circle marks the starting point.
3. Move the mouse until the **x** is where you want the first segment of the polygon to end, then click again. A dotted or solid line appears. You can drag this point to get it just where you want it before releasing the mouse button. The first segment of the polygon appears when you release the mouse button.
4. Move the mouse and click again to create the second segment. At this point object handles appear to indicate the boundaries of the object.
5. Continue moving and clicking the mouse until you have created the number of segments you want in the polygon.

You can close the polygon by clicking the first point, but you do not have to close the polygon to finish it.

6. Click the Pointer tool or any other tool in the Toolbox to de-select the Polygon tool when your shape is complete.

You can move, resize, and modify a polygon as explained in other sections. You can also use “Edit Polygon” from the Draw menu to change the position of each of the segment points in your polygon.

To edit the segment points of a polygon, do the following:

1. Click the Pointer tool, then select your polygon.
2. Choose **Edit Polygon** from the Draw menu or press **cmd-E**. The object handles disappear, and round handles appear at each segment point of the polygon.
3. Place the pointer over each segment point you want to move and drag until the point is positioned where you want it.

When you drag, a dotted line appears to show you the new shape. DeltaGraph automatically reconnects the line segments that were connected in the original polygon. Segments that were not connected can be moved farther apart or closer together.

4. When you have repositioned all the segment points you want moved, click out- side the polygon to de-select it and end the edit.

Creating and Editing an Arrow

Creating and editing an Arrow is similar to working with lines. In addition, a DeltaGraph arrow can have an arrowhead at either or both ends. “Edit Arrow” on the Draw menu controls the position and dimensions of the arrowhead(s).

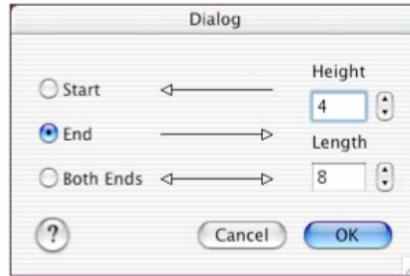
To create an arrow, do the following:

1. Select the Arrow tool from the Toolbox. The pointer changes to a crosshair.
2. Click and hold down the mouse button to begin your arrow, then drag the mouse in the direction you want your arrow to point. When you release the mouse, the arrow appears with object handles on each end. While the arrow is selected, you can increase or decrease its length or change its direction by dragging the handles. When you drag a handle or move the arrow, the pointer changes to a crosshair with arrows.

You can move, resize, and modify an Arrow as explained in other sections. The shaft of an arrow has no area to fill, but the arrowhead has a fill area whose pattern and colors can be edited. You can also use “Edit Arrow” from the Draw menu to add arrowheads to either or both ends of the arrow and to change the length and height of the arrowhead.

To edit an arrow, do the following:

1. Select your arrow (its object handles should be visible).
2. Choose **Edit Arrow** from the Draw menu. The following dialog box appears.



3. Click the **Start**, **End**, or **Both Ends** option button, depending on where you want arrowhead(s).
4. Enter a height from 3 to 30 points and a length from 4 to 40 points in the text boxes. The arrows in the dialog box change with the numbers to show you the results of your settings.
5. When you have the results you want, click **OK** to implement the change and return to the Chart page. To exit the dialog box without changing the arrow, click **Cancel**.

To learn more about...	Refer to...
Object lines or fills	“Changing the Attributes of a Draw, Text, or Chart Object” below
Dashed lines	“Creating Dashed Lines” below

Working with Text Objects

Occasionally you may want to create extra text that is separate from the text displayed in the Data view— a title or some additional explanatory text for a chart perhaps. This is done in a Chart page.

NOTE  Unlike placeholder text, text objects are independent and not dynamically linked to other views.

If you are using Smart layouts, it is recommended that you use placeholders to enter text in your Chart page. Text entered in placeholders is displayed in the Outliner view. Smart Layouts help

maintain consistency between multiple Chart pages.

To learn more about...	Refer to...
Using Smart Layouts	“Creating and Using Smart Layouts” in Chapter 5

Creating a Text Object

Before you can add extra text to a Chart page, you need to create a Text object to contain it. In a Text object, DeltaGraph feels as familiar as any word processor. The key to creating and working with Text objects is the Text tool from the Tool- box.

A Text object can contain up to 32,000 characters. When selected with the Text tool, this text can be edited and formatted, like all DeltaGraph text, with commands from the Edit and Text menus utilizing full Unicode.

Whenever a Text object’s insertion point is active, a Text ruler is visible across the top of the object. As in most word processors, this ruler controls tabs and margins, line and paragraph spacing, and text alignment.

The Text object itself has the same attributes as a Draw object, object handles that are visible when the object is selected, object boundary lines, which remain invisible unless you specify a new line width, and an object fill area.

When selected with the Pointer tool, a Text object can be moved, sized, cut, copied, and deleted like any other object in a Chart page. You can also use the palettes in the Toolbox and most of the commands on the Draw menu to enhance and manipulate your Text objects.

To learn more about...	Refer to...
Manipulating Text objects	“Manipulating Objects with the Pointer Tool” below

Changing object attributes	“Changing the Attributes of a Draw, Text, or Chart Object” below
----------------------------	--

To enter text in a Chart page, do the following:

1. Select the Text tool from the Toolbox. The pointer changes to an I-beam.
2. Click and hold down the mouse button to begin your Text object.
3. Drag a rectangle area with the mouse to contain your text. To help you draw the Text object in the appropriate size, a box appears as you drag the mouse.
4. Release the mouse button. Object handles appear to show the boundaries of your Text object. A Text ruler is visible just over the Text object and a cursor is blinking at the insertion point in the upper left-hand corner of the text block.
5. Type your text. You can enter up to 32,000 characters per Text object. As you type, the insertion point moves to the right and automatically jumps down to the beginning of the next line when it reaches the right boundary of the Text object. When you reach the bottom boundary, the text block expands vertically to accommodate your text.
6. When you are done entering text, click outside the Text object to de-select it. The object handles and the Text ruler disappear, leaving only the text.
7. If you want to resize the Text object, use the Pointer tool to re-select it and drag one of the object handles until you have the size and shape you want. Resizing the Text object has no effect on the size of the type, although the text rewraps to fit the new size and shape.

Formatting and Editing Text in a Text Object

Each character in a Text object can be a different font, size, style, and/or color. When you set alignment, however, it affects all the text in the object.

You can set text attributes one at a time for one or more selected Text objects with commands from the Text menu, or you can set any or all attributes for selected text only from the “Set All” dialog box that appears when you choose “Set All” from the Text menu.

To edit text in a Text object, do the following:

1. Double-click the text block you want to change, or select the Text tool from the Toolbox and click the text to position the insertion point. The Text ruler appears above the text, and you can see the insertion point blinking.
2. Perform the following actions as needed:
 - Select text.
 - Use the **delete** key to erase mistakes.
 - Type in new text.
 - Use the commands on the Edit menu as you would in any word processor.

To change text attributes in a Text object, do the following:

1. Select the text you want to format. You can select text by clicking and dragging, double-clicking a particular word, or choosing **Select All (cmd-A)** from the Edit menu.

If you want to change all the text in one or more Text objects, select the object(s) themselves.

2. Use the Styles drop down menu in the Unicode.editor to change how the text appears along with all options from the Text menu.

With the exception of the “Alignment” command, which affects all the text in a Text object regardless of what is selected, these commands apply to selected text only.

“Font,” “Size,” and “Style,” work exactly as they would in any word processor. Color options are explained below.

The “Set All” command on the Text menu displays a dialog box so you can set all the attributes for selected text in a Text object at the same time.

3. When you are finished formatting your text, click outside the Text object to de- select it.

Using the Text Ruler

Whenever the insertion point is active in a Text object, DeltaGraph displays a ruler across the top of the text (see the figure below). This Text ruler has simple settings that let you reset tabs and margins, text alignment, and spacing between lines of text and paragraphs. These settings affect all text in the object.

Setting Margins and Paragraph Indents

DeltaGraph's Text ruler has markers that make it easy to change margins and the setting for paragraph indents. Like the other functions of the Text ruler, these set- tings affect everything in the selected Text object.

NOTE  When you resize a Text object, the margins and any specified paragraph indent move by a corresponding amount.

Left Margin and Indent marker

This icon is a combination of two markers, which start out lined up together with the left edge of the Text object. These markers are moved separately.

Left Margin marker

All left-aligned text, with the exception of indented first lines, lines up with this marker. Drag the marker (the top half of the combination icon shown above) along the ruler to change the setting.

Indent marker

Controls only the first line of each paragraph. Drag the marker (the bottom half of the combination icon shown above) along the ruler to change the setting. Position it to the right of the Left Margin marker to create a standard paragraph indent. Position it to the left of the Left Margin marker to create a hanging indent. Line it up with the Left Margin marker if you want no indent at all.

Right margin marker

Sets the limitations for the right edge of each line of text. Drag the marker along the ruler to change the setting.

Setting Tabs

Move the Tab icons to set the tab stops for all text in the object. To select a tab stop, click the Tab icon of your choice and drag it into the Tab bar.

Left align

Aligns the left margin of tabbed text to the tab.

Center align

Aligns the center of tabbed text to the tab.

Right align

Aligns the right margin of tabbed text to the tab.

Decimal align

Aligns the decimal point of tabbed text to the tab.

Changing Text Alignment

You can click the Alignment icons on the Text ruler instead of using the “Alignment” command on the Text menu to change alignment for all text in the selected object.

Flush left

Every line of text aligns with the left margin.

Centered

Every line of text centers in the object’s margins.

Flush right

Every line of text aligns with the right margin.

Justified

Adjusts each line of text to fill the space between margins or paragraph indents.

Changing Spacing Between Lines and Paragraphs

DeltaGraph makes it possible for you to adjust the spacing, often referred to as leading, between lines and paragraphs in one-point increments. (A point is a type- setter or printer's measurement equal to 1/72 of an inch.)

Line Spacing Menu

Distributes space proportionally above and below each line in a paragraph. The center of the button shows the current setting. To decrease the spacing, click to the left. To increase the spacing, click to the right.

Paragraph Spacing button

Clicking Other in the line spacing menu allows you to change the paragraph spacing, which distributes space proportionally above and below each paragraph in a text object

Inserting Math Equations with Equation Editor

Equation Editor in DeltaGraph is a special version of Design Science MathType™. If you frequently create print or Web documents with equations, you may find MathType is better suited to your needs. MathType is as easy to use as Equation Editor and has many extra features to help you save time, create a wider range of equations, and publish equations on the Web.

MathType is available in English, Japanese, German and French. For further information about purchasing MathType, contact your

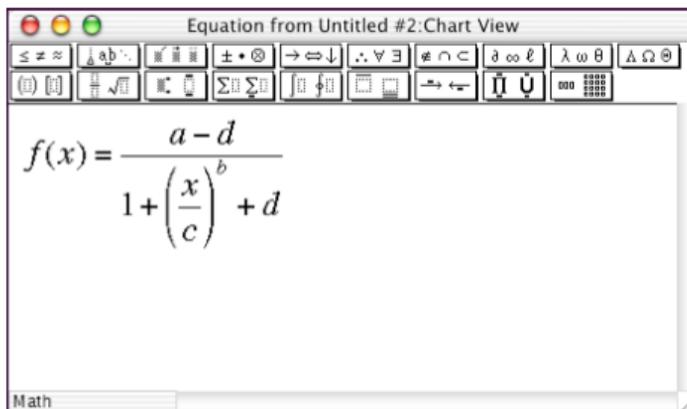
software dealer or Design Science directly, as follows:

Design Science, Inc.
4028 Broadway
Long Beach, CA 90803
USA
Toll free: 800-827-0685
International: 562-433-0685
Fax: 562-433-6969
Email: sales@dessci.com
Web: <http://www.dessci.com>

Equation Editor allows you to insert mathematical equations in your Chart pages. This lets you clearly illustrate, with textbook-quality equations, formulas used in your charts and graphs.

To insert an equation in a Chart page, do the following:

1. Choose Open Equation Editor from the Edit menu.
Equation Editor is launched.



2. Use Equation Editor's controls to compose an equation. For information and instructions, refer to Equation Editor's documentation or Help file.
3. Copy and paste your composed equation into the Text Editor.

Changing the Attributes of a Draw, Text, or Chart Object

The Fill, Line, and Line Width palettes in DeltaGraph's Toolbox make it easy to add special design flourishes to any Draw, Text, or Chart object. You can change the following attributes with the appropriate palettes:

- Foreground and background fill colors
- Fill pattern of an object (the default is black for Draw and Chart objects, "N," or none, for Text objects)
- Foreground and background line colors
- Line pattern of an object (the default is plain, black for Draw and Chart objects, "N," or none, for Text objects)
- Line width of an object's boundary lines (the default is 1 point)

NOTE 

Although the attributes of Imported Graphic objects cannot be changed in Delta- Graph, you can sometimes get around this by drawing an outline of the object in DeltaGraph. This creates a Draw object that you can modify in any of the ways described in this section and then layer with the original graphic to create the desired effect.

To learn more about...	Refer to...
Changing lines to dashed lines	"Creating Dashed Lines" below
Adding special blends to objects	"Adding Special Blends to Objects" below
Placing a drop shadow behind and object	"Adding Drop Shadows to Objects" below

Changing Line Widths

DeltaGraph line widths are set in points (one point is 1/72 of an inch). The line width, color, and pattern of each line can be changed individually or as a group.

Use the Line Width palette in the Toolbox to change line widths of the following:

- Chart axes
- Chart grids
- Chart tick marks
- Chart data graphics
- Lines
- Arrows
- Any Draw, Text, or Chart object's boundary lines

To edit the line width of one or more objects, do the following:

1. Select the object(s) you want to change.
2. Click the Line Width palette icon in the Toolbox to display the pop-up menu.

The Line Width palette is displayed. You see a choice of line widths including "None," "Very Thin" (0.25 points), "Thin" (0.5 points), 1 through 5 points represented graphically, and "Custom."

To specify a custom width, select **Custom** from the palette. DeltaGraph displays the "Set Pen Weight" dialog box. Enter a whole number or decimal from 0 to 8, or use the direction arrows to scroll through the standard options. (The smallest pen weight is 1/256 of a point or 0.003906.)

To close the dialog box without changing the line size, click off or away from the palette.

3. Drag the Pointer tool across the options and release the mouse. The selected line(s) change accordingly.

Applying Patterns

The icons at the bottom of both the Fill and Line palettes control the patterns of any Chart or Draw object.

The pattern palettes always display the current pattern for the selected object. If multiple objects are selected, the default pattern (white) is displayed. If no objects are selected, black is displayed.

NOTE  Gray scales print faster than patterns when outputting to a PostScript printer.

To change the fill or line pattern of one or more objects, do the following:

1. Select the object(s) you want to change.
2. Click the Fill or Line Pattern palette in the Toolbox and hold down the mouse button. The palette pops up to display the available choices.

Both pattern palettes contain 64 patterns that can be applied to any Draw or Text object. The top two rows contain patterns. The bottom two rows contain PostScript gray scale patterns. If you are using a PostScript printer, any of these selections yields a very smooth gray pattern in your printed document.

To close the dialog box without applying a pattern or gray scale, click off or away from the palette.

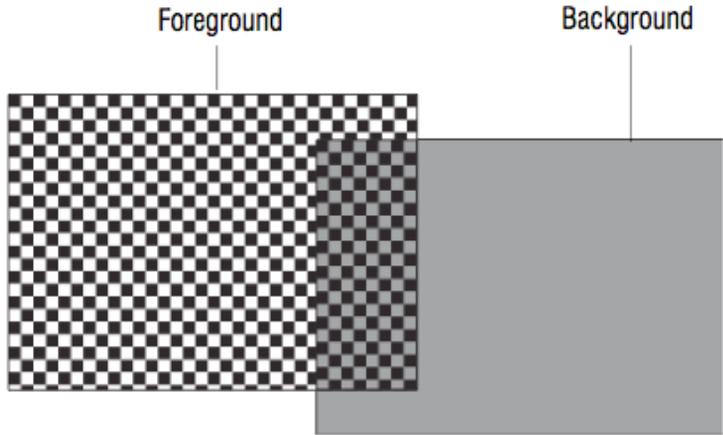
3. Drag the Pointer tool across the patterns and release the mouse to make your selection. The palette closes and the selected object(s) reflect your change.

Applying Colors

The overlapping icons in both the Fill and Line palettes control the color of any Chart or Draw object. The Foreground square (upper left) is for setting foreground color. The Background square (upper right) is for setting background color.

The foreground color can be thought of as the pattern itself, such as checks or lines. The background color is what the pattern rests

on.



Initially, the default foreground color is black (any part of an object that is black is part of the foreground), and the default background color is white (any part of the object that is white is part of the background).

When you select an element that is set to a different foreground or background color, that color appears in the appropriate palette of the Toolbox.

To change the foreground color of an object or line, do the following:

1. Select the object(s) you want to change.
2. Click the Foreground square of one of the color palettes in the Toolbox. The palette pops up to display the available color choices.

The color palette includes 90 different colors, including black and white, and up to 16 custom colors. The current Custom Color and Color Scheme palettes are located at the bottom of the Color palette.

3. Drag the Pointer tool across the colors and release the mouse to make your selection. The selected object(s) reflect your change.

NOTE  To make a solid color, be sure that “Black” in the Fill Pattern palette

is selected. If “White” is selected, choosing a color automatically changes the selected object to solid black.

To change the background color of an object or line, do the following:

1. Select the object(s) you want to change.
2. Click the Background square from one of the color palettes in the Toolbox. The palette pops up to display the available color choices.
3. Drag the Pointer tool across the colors and release the mouse to make your selection. The color appears in the background portion of the pattern, creating an effect that is a combination of the foreground and background colors. By selecting a 50% gray pattern in the Fill Pattern palette, you can create “new” colors by combining a foreground and a background color.

NOTE  Background color shows on a selected element only when the element’s fill pattern is not solid.

To learn more about...	Refer to...
Setting color preferences	“Setting General Defaults” in Chapter 6

Working with Custom Colors

You can create a set of “custom” colors, which can be used for any DeltaGraph object to which color may be applied. You can use either DeltaGraph system colors or digital simulations of colors to create a custom color palette.

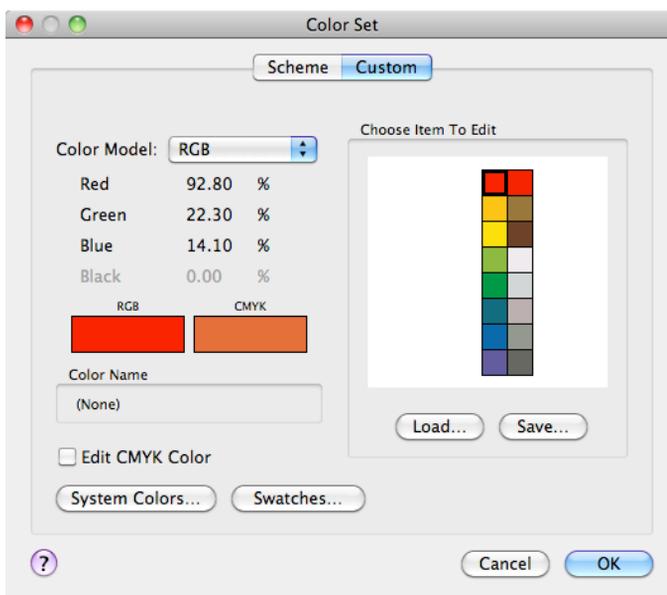
The “Colors” command on the Edit menu displays a dialog box so you can create up to 16 custom colors. Once created, these colors appear at the bottom of every color palette in DeltaGraph so you can select and apply them as you would any other color.

DeltaGraph includes numerous color palettes which can be loaded, edited, and saved as necessary. Any Custom Color palettes created can be saved, named, and opened from other DeltaGraph documents. Only one Custom Color palette can be open at one time.

Loading a Custom Color Palette

Custom Color palettes can be saved from, and loaded in, any DeltaGraph document. To load a Custom Color palette, do the following:

1. Choose **Colors** from the Edit menu. The “Color Set” dialog box appears with the Scheme tab selected.
2. Click the **Custom** tab.

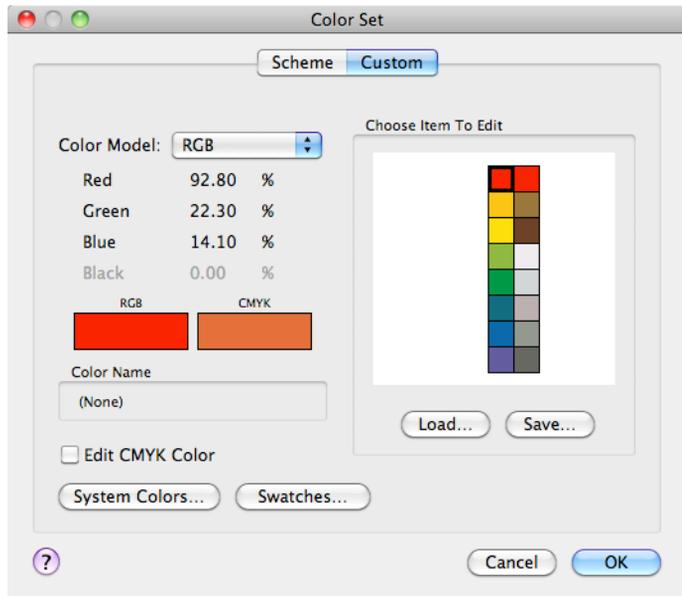


3. Click **Load**. A standard “Open” dialog box appears. Only Custom Color palettes appear in the dialog box.
4. Select a Custom Color palette from the dialog box and click **Open**. The palette appears in the Custom tab. You can edit the colors as necessary (refer to the next section).
5. Click **OK** to load the Custom Color palette in the active document. Colors in the palette can be applied to all objects and charts in the document.

Creating and Editing a Custom Color Palette

To edit an existing color palette or to create a new color set, do the following:

1. Choose **Colors** from the Edit menu. The “Color Set” dialog box appears.
2. Click the **Custom** tab.



The currently loaded custom color palette is displayed. You can edit it, or you can load a different custom color palette to edit (refer to “Loading a Custom Color Palette”).

3. Select from the following options to create or edit a custom color set:

Choose Item to Edit

Displays the colors in the custom color palette that is loaded. Click a color to edit it, or click an empty box to add a color.

Color Model

Shows the color model of the selected color, as follows:

RGB

Shows the percentages of red, green, and blue.

CMY

Shows the percentages of cyan, magenta, and yellow.

CMYK

Shows the percentages of the four process colors: cyan, magenta, yellow, and black.

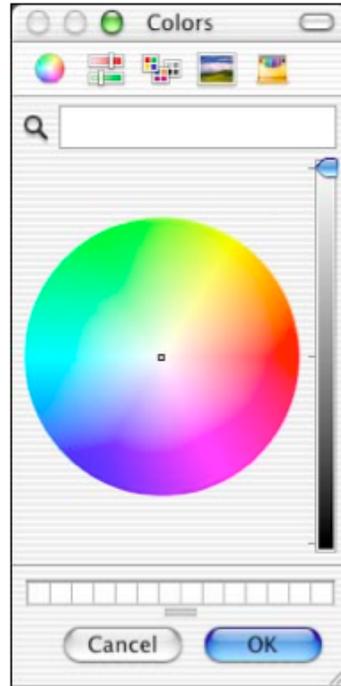
HSL

Shows the percentages of hue, saturation, and light.

4. Click **System Colors** or **Swatches** to select a new color, as follows:

System Colors

To select a DeltaGraph system color, click **System Colors**, and the “Colors” dialog box is displayed.



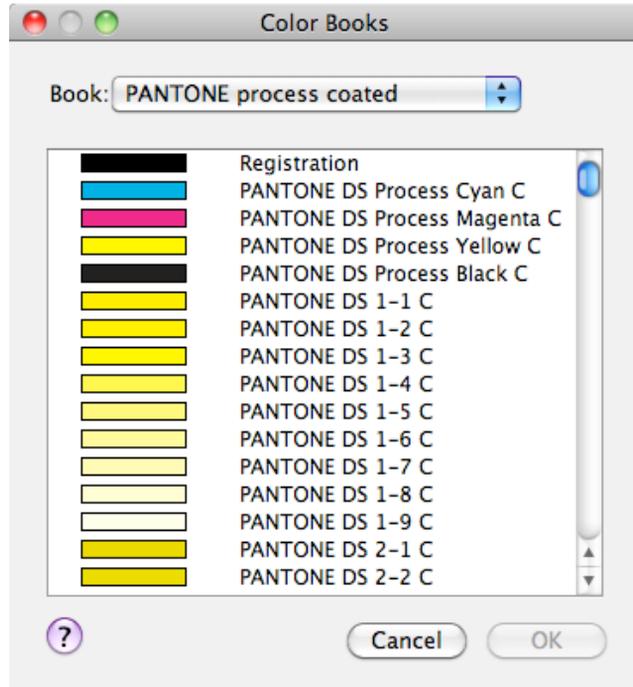
You can display colors using one of the five options at the top of the box:

- Color Wheel (shown in the image)
- Color Sliders
- Color Palettes
- Image Palettes
- Crayons

Move the pointer over an icon to display a message that describes its function. You can use any of the methods to select a color. For example, to use the Color Wheel method, click a location in the color wheel to select a color. Change it by clicking a different location. Click **OK** to apply the color.

Swatches

To select a color from a swatch file, click **Swatches**, and the “Color Books” dialog box is displayed. The swatch files that have been included in Color Swatches folder inside the DeltaGraph folder will be listed in the Book pop up menu:



Click a color to select it.

5. To save the changes to the loaded custom color palette, click **Save** to open a “Save” dialog box, select the name of the color palette, and click **Save** to save the palette and return to the “Color Set” dialog box.

To save the edited custom color set with a new name (to create a new custom color palette), click **Save** to open the “Save” dialog box. Enter a name for the new color set, and click **Save** to return to the “Color Set” dialog box.

NOTE  To load the edited custom color palette without saving the changes, do not click **Save**.

6. Click **OK** to load the new custom color palette and return to the Chart view. The new colors can be applied to all objects and charts

in the active document. To exit the dialog box without loading the new Custom Color palette, click **Cancel**.

If you saved the edited Custom Color palette, you can load it at any time and use your custom colors in any chart. To load the new Custom Color palette, select **Col-ors** from the Edit menu to open the “Color Set” dialog box, click the **Custom** tab, click **Load**, and select the color palette.

To learn more about...	Refer to...
Creating chart color schemes	“Color Schemes” in Chapter 9

Using the Eyedropper Tools

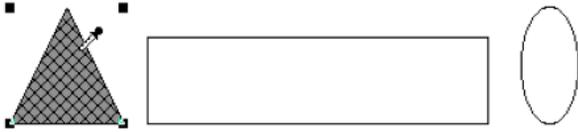
The Eyedropper tool contains a pop-up with an Empty Eyedropper and a Full Eye- dropper tool. The eyedroppers work together to select, copy, and change fore- ground and background colors and patterns of Draw or Text objects, pictographics, shadows, line size, color, style, blend, or any elements in a chart. In Text objects, the eyedropper tools work on the object fill and the color and pattern of the text itself.

Any attributes that can be changed using “Object Attributes” from the Draw menu can be copied and duplicated by the Eyedropper tools.

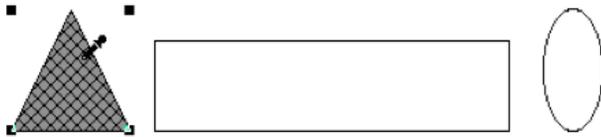
Once you have selected an object and copied its characteristics using the Empty Eyedropper, you can use the Full Eyedropper to apply those same colors and pat- terns to one or more selected objects at the same time.

To copy object attributes, do the following:

1. Click the Eyedropper tool. The Empty Eyedropper tool is selected and the pointer becomes an eyedropper.
2. Select the object containing the pattern/color with the Eyedropper.



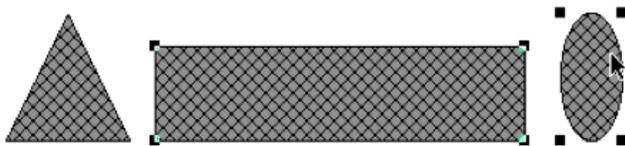
3. Double-click on the selected object with the tip of the eyedropper to copy the object's attribute(s). The attributes are copied, the Full Eyedropper tool is automatically selected, and the pointer changes to a full eyedropper.



4. With the full eyedropper, select any object(s) you want to contain the copied attribute(s). To select multiple objects, hold down the **shift** key while clicking the objects.



5. Double-click any one of the selected object(s) to apply the attribute(s). All selected objects are filled with the copied attribute(s). You can apply these same attributes at any time by using the Full Eyedropper tool.



The pattern/color copied with the Empty Eyedropper tool can be used over and over again at any time by selecting the Full Eyedropper tool. The pattern/colors remain until new attributes are copied.

To apply a copied pattern/color, do the following:

1. Click the Eyedropper tool and select the Full Eyedropper tool from the pop-up.

The pointer becomes a full eyedropper.

2. Select any object(s) you want to contain the copied attribute(s). To select multiple objects, hold down the **shift** key while clicking the objects.

3. Double-click any one of the selected object(s) to apply the attribute(s). All selected objects are filled with the copied attribute(s).

To learn more about...	Refer to...
“Object Attributes” command	“Changing Attributes” below

Using the Draw Menu

The Draw menu contains commands that help you manipulate objects in the Chart view and add some nifty graphic effects to your Draw, Text, and Chart objects.

To learn more about...	Refer to...
Editing Draw objects	“Creating and Editing Draw Objects” below

Changing Attributes

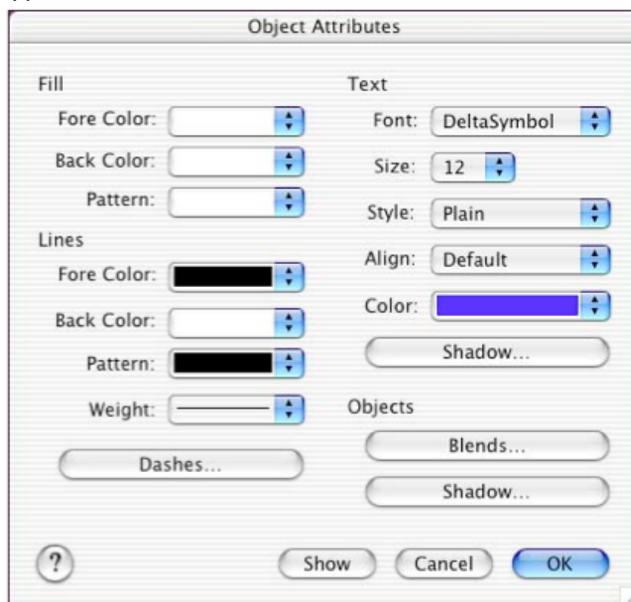
You can click any object in the Chart view with the Pointer tool while holding the **control** key to change various attributes. Click once to change general object attributes, click and hold the mouse to change attributes specific to the type of object selected.

You can click any Draw object with the Pointer tool while holding the **control** key to change blends, shadows, the fill and line color,

pattern and weight, and text color, font, style size, and alignment.

To change general object attributes, do the following:

1. Hold down the **control** key and click the object, or choose **Object Attributes** from the Draw menu. The following dialog box appears.



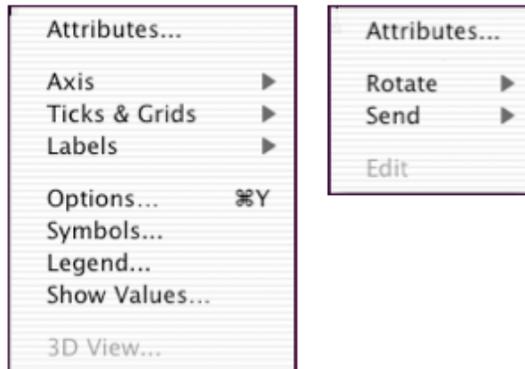
2. Change attributes as necessary. You can change the fill and line color, and pattern, line width and style, text size, color, font, style, alignment, object and text shadow, and blends.
3. Click **Show** to preview your changes without exiting the dialog box. This makes it easy to experiment with different effects. You can move the dialog box out of the way by dragging the Title bar.
4. When you have the results you want, click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

To change specific object attributes, do the following:

1. Press the **control** key, and click and hold the mouse button on the object.

Depending on the object selected, one of the following pop-up

menus appears.



2. Choose any of the commands from the pop-up menu as needed. Depending on the type of object selected, some of the commands may not be available. These commands work the same as the commands on the Chart and Draw menus. “Attributes” displays the “Object Attributes” dialog box.

Applying Pictographs

Clip art images, pictures, and even DeltaGraph Draw objects may be applied to any chart element or Draw object created in DeltaGraph that can be filled. Select the columns for a series in a Column chart, for example, and pick a picture from an open Custom Library. Simply drag the picture from the library, drop it onto a selected object, and the “Pictograph” dialog box is displayed.

The picture can be stretched, tiled, stacked, scaled proportionally, and stacked proportionally. The pictograph may also be “anchored” to the plotframe, which is useful for applying textures of different types to different series, for making graphic objects look like they are windows exposing a background scene, or simply for clipping one graphic to another.

A background color can also be applied to an object or chart element containing a pictographic using the Background Color palette.

Pictographics can be stored in a Custom Library, or if you import an image, you must first copy it, select the object or element, then use the **Paste Pictographic** command from the Edit menu. The same

dialog box appears.

Following are the rules for applying pictographics:

- Pictographics themselves may contain objects which contain pictographics or blends.
- You cannot have a blend and a pictographic in an object at the same time.
- Objects containing pictographics can contain a pattern or color.
- Pictographics may consist of any collection of objects except for charts, Quick- Time movies, and placeholders.
- Pictographics can be pasted into any rectangle, rounded rectangle, arc, bezier, polygon, oval, or any of these objects inside a chart.
- Pictographics can be applied to any object or chart element that a blend can be applied to.
- Any image that can be imported into DeltaGraph, or created in DeltaGraph, can be used as a pictographic.

To apply a pictographic, do the following:

1. Open a Library containing images that can be used as pictographics.
2. Click the Library icon on the Command bar, or choose **Libraries** from the File menu to open a Library.

or

Import or create and copy an image that can be used as a pictographic.

Any image that can be imported into DeltaGraph can be used as a pictographic. You can press **cmd-C** or choose **Copy** from the Edit menu to copy an object.

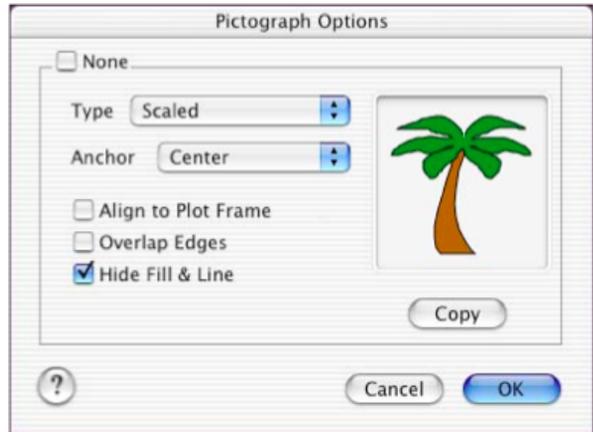
3. Select Draw object(s) or chart element(s) in the Chart view. Selection handles appear around the selected object(s) or element(s).
4. Click the image you want to use as a pictographic and drag it into

the selected object/element.

or

Choose **Paste Pictographic** from the Edit menu, press **shift** and choose **Paste** from the Edit menu, or press **shift+cmd-V**.

A variation of the following dialog box appears.



5. Make your selections as needed. You have the following options:

Type

Determines the type of scaling used to display the image in the selected object/element.

Original Size

Draws the pictographic the same size as the source image when it is pasted or dropped in the object/element.

Scaled

Draws the Pictographic scaled to fit inside the destination object/element.

Scaled Proportional

Draws the pictographic scaled to fit inside the destination object/element but with all proportions kept the same as the

original image.

Tiled

Draws the pictographic in its original size but tiled to completely cover the destination object/element's area. If the image is larger than the selected object, you will not see any tiling.

Stretched

The selected image must be comprised of two or three separate ungrouped sections to be used as a stretched pictographic. With a two-section image, the top image remains the same size while the bottom image is stretched to fill the selected object. With a three-section image, the middle image is stretched. If the image is taller than wide, then the resulting pictographic is drawn vertically inside the destination object, otherwise it will be stretched horizontally. The destination object does not determine which orientation is chosen.

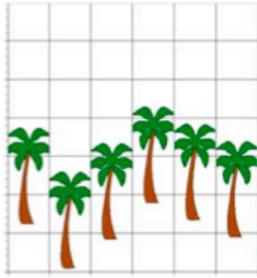
For additional information in creating and using stretched pictographics, refer to "Creating Graphics for a Stretch Pictographic" below.

Stacked

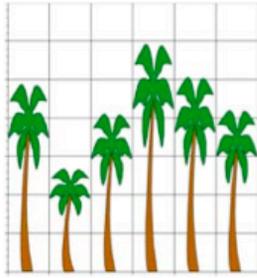
Stacks the image disproportionately with each image representing major tick increments on the value axis. This only works effectively on Column and Bar charts and is only available if the image is being pasted or dropped into a chart element.

Stacked Proportional

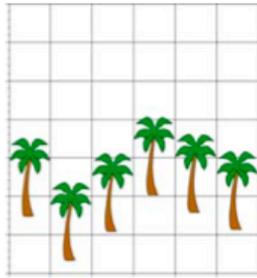
Stacks the image proportionately with each image representing major tick increments on the value axis. This only works effectively on Column and Bar charts and is only available if the image is being pasted or dropped into a chart.



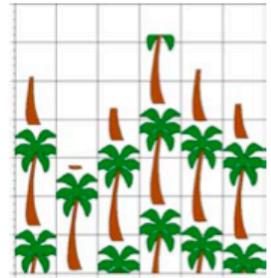
Original Size



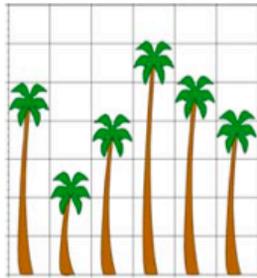
Scaled



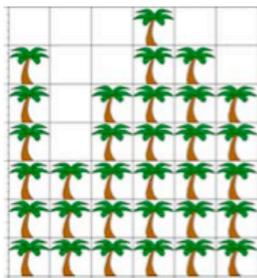
Scaled Proportional



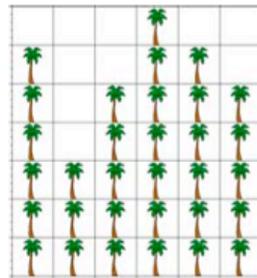
Tiled



Stretched



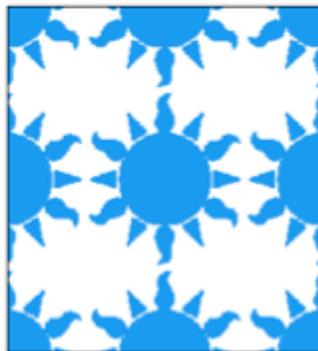
Stacked



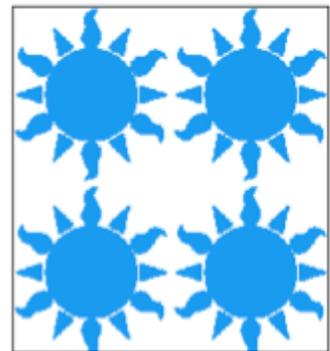
Stacked Proportional

Anchor

Determines the starting point for tiling, or alignment of scaled images. You can align the pictographic image in the center, top left, top, top right, left, right, bottom left, bottom, or bottom right of the selected element or object.



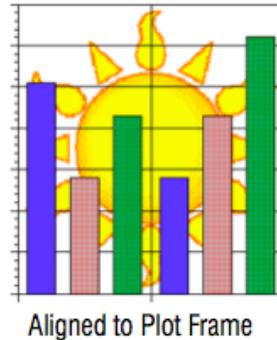
Anchored Center



Anchored Top Left

Align to Plot Frame

This option is only available if the image is being pasted or dropped into a chart element. Aligns the image to the plot frame of any 2-D chart or to the actual bounding box of 3-D charts.



Overlap Edges

Controls whether the image is overlapped in the object or chart element. If this option is on, the image is tiled or scaled including any pen width. If it is not on, the pen width is ignored, and the images overlap each other.

Hide Fill & Line

Controls whether the destination object/element lines and fills are displayed when the pictographic is applied.

Copy

Allows you to copy a pictographic image applied to an object/element. This is helpful if the original image is not available but the image is applied to an object in the Chart view. You can copy the image, exit the dialog box, select a new object/element, and press **shift+cmd-V**, to paste the pictographic.

6. Click **OK**. The image is placed in the selected object or chart element.

Creating Graphics for a Stretch Pictographic

There are some images in the “Picto Graphics” library in the “Clip Art” folder that are designed for use as a stretched pictographic. These objects are identified in the library by an “(s)” after the object name.

Images for stretched pictographics must be imported into DeltaGraph as two or three separate ungrouped sections.



With a two-section image, the top image remains the same size while the bottom image is stretched to fill the selected object. With a three section image, the middle image is stretched. Make sure that when the image is created, the middle image is sent to the back before it is used as a stretched pictograph.

If the image is taller than it is wide, then the resultant pictographic is drawn vertically inside the destination object, otherwise it is stretched horizontally. The destination object does not determine which orientation is chosen.

In the figure above, the eraser is the top or first image, the point of the pencil is the bottom or third image, and the pencil body is the middle image. When this image is applied to a series of columns in a Column chart, the middle portion of the pencil is stretched, and the point and eraser remain the same size in each column.

If you create or import images for use as a stretched pictographic,

create or import each section separately. You can only use images that contain two or three separate elements.

NOTE  For best results when applying a stretched pictographic, resize your pictographic so that it is no wider than the element or object to which it is being applied.

To prepare a stretched pictographic, do the following:

1. Create or import two or three separate graphic elements to comprise the image.

If the image is a single object, you may be able to separate it if it is a PICT image and “Import PICTs as multiple objects” is selected in the “Preferences” dialog box.

2. Align the separate graphic elements so they appear as one complete object.

3. Select all of the graphic elements. *Do not* group the elements together.

4. Drag the selected elements into a Custom Library.

You can now drag the entire pictographic into any selected element/object in the Chart window.

To learn more about...	Refer to...
Exporting pictographics	“Exporting Graphics” in Chapter 13

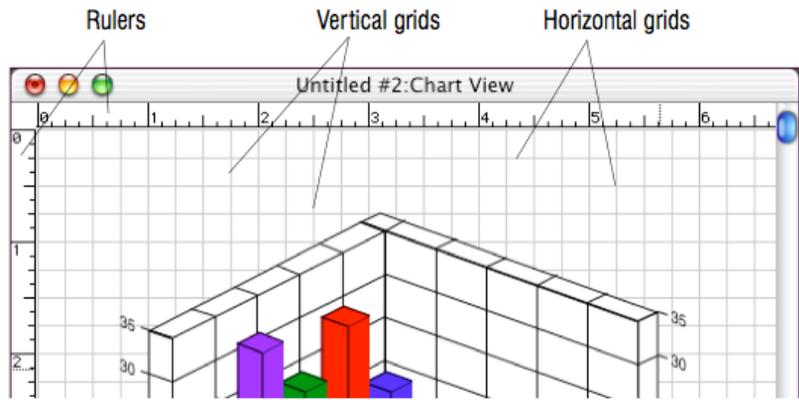
Changing Rulers and Grids

DeltaGraph’s Chart view has an underlying grid for aligning objects. Select **Rulers**

& Grids from the Draw menu to display a dialog box that lets you show or hide this grid, snap to it, or change its size.

The dialog box also has an option for showing/hiding the rulers along the top and left side of the Chart view (see the figure below). You can

alter the units these rulers use choosing from inches, centimeters, points, picas, or ciceros.

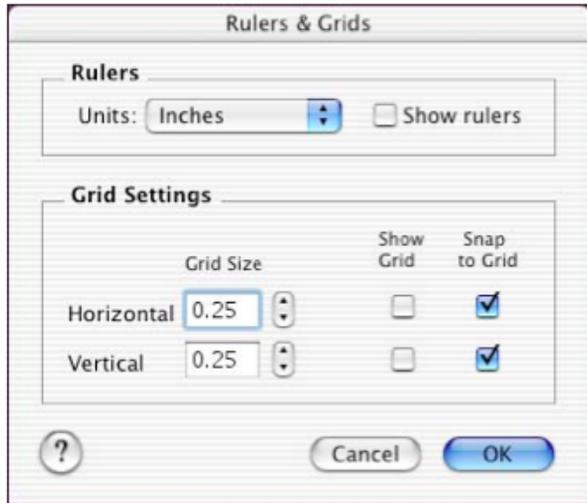


The “Snap to Grid” option, when selected, compels all objects to align to the Chart view’s underlying grid (whether visible or not) when you create, resize, or move them. You can override this command temporarily by holding down the **option** key while manipulating objects.

You can specify defaults for rulers and grids by choosing **Prefs** from the Edit menu and modifying the Chart view preferences.

To turn the grid and the “Snap to Grid” option on and off, do the following:

1. Choose **Rulers & Grids** from the Draw menu. The following dialog box appears.



2. Make your selections as needed. You have the following options:

Rulers

Controls the features of the rulers, which can be displayed in the Chart view.

Units

Controls the measurement scale of the rulers displayed in the Chart view.

Click the pop-up menu and select one of the following:

Inches

Centimeters

0.39 inches or
25/64 of an inch

Points

1/72 of an inch

Picas

12 points or

1/6 of an inch

Ciceros

European measurement system similar to pica. 12 points, or 11/64 of an inch.

Show rulers

Determines whether or not the rulers appear in the Chart view.

Grid Settings

Determines the size for the horizontal and/or vertical grid lines in the Chart view. The grid measurement scale is determined by the measurement scale specified for the ruler.

Grid Size

You can enter new settings, from a minimum of 0.1" to a maximum of 2", or click the direction arrows to scroll through the values.

Show Grid

Determines whether or not the horizontal and/or vertical grids are displayed in the Chart view.

Snap to Grid

Determines whether or not all objects in the Chart view align automatically to the horizontal and/or vertical grid lines when being created, moved, or resized. You can temporarily override "Snap to Grid" by holding down the **option** key while manipulating objects.

3. Click **OK** to implement the changes and return to the Chart page. To exit the dialog box without making any changes, click **Cancel**.

To learn more about...	Refer to...
Default ruler and grid	"Setting Chart View Defaults" in

Aligning Objects

Use the “Align” option to line up selected objects along their edges, their centers, and/or the drawing grid. All objects are aligned by the object handles that define their boundaries.

There are also shortcuts to align objects, chart, and placeholders on the page. If you select only one object before displaying the “Align” dialog box, the selected object is aligned in the page.

To align objects to each other, do the following:

1. Select the objects you want to align.
2. Choose **Align** from the Draw menu or press **cmd-M**. The following dialog box appears.



3. Make your selections as needed. You have the following options:

Align Edges

Aligns the selected objects along their top, bottom, left, or right edges.

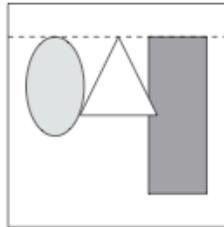
Align Centers

Aligns the selected objects along a horizontal center point (Up/Down) or a vertical center point (Left/Right).

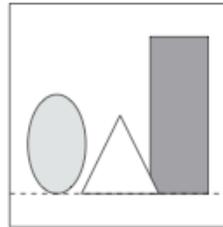
Align to Grid

Click this button to align the selected objects to the drawing grid.

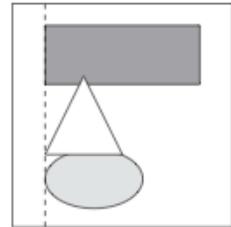
Examples of alignment options:



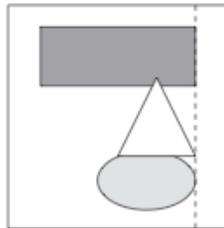
Top Edges Aligned



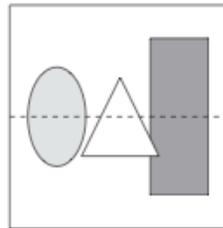
Bottom Edges Aligned



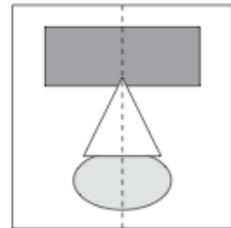
Edges of Left Side Aligned



Edges of Right Side Aligned



Up/Down Center Aligned



Left/Right Center Aligned

4. Click **OK** to implement the changes and return to the Chart page. To exit the dialog box without making any changes, click **Cancel**.

Rotating Draw and Text Objects

“Rotate” allows you to rotate a Draw or Text object 90° to the left or right, or flip a Draw object 180° vertically or horizontally. If you press the **control** key, click the object, and hold down the mouse button, a pop-up menu displays the “Rotate” commands.

You can rotate or flip charts or imported graphics to the right, to the

left, vertically, or horizontally.

Select **Other** to display the following dialog box. This lets you customize the rotation. Rotation is clockwise. This option is only available for Text objects.



NOTE  You can type only whole numbers for degrees in the “Rotate Text” dialog box.

To edit a text object that has been rotated, double-click it. The text will be temporarily rotated to 0° while you edit it. When you de-select the text object, it will return to its original rotation.

Layering Objects

Layering allows you to place one or more selected objects on top of or underneath another object. Use the “Send” command to reorganize your objects to produce different effects.

To move any object up or down layers, do the following:

1. Select the object(s) you want to layer
2. Choose **Send** from the Draw menu, and select one of the options from the sub- menu that appears. If you press the **control** key, click the object, and hold down the mouse button, a pop-up menu displays the “Send” command.

NOTE  DeltaGraph remembers layers in the same order that you created or placed each object. If it appears that an object is not moving, apply the command again; you might have drawn an object in another part of your document that is inserting a layer between the objects you are trying to move.

Grouping and Ungrouping Objects

Grouping allows you to treat several individual elements as one object. This is useful if you want to move several objects and maintain their relative spacing.

NOTE  Charts cannot be placed in a Library if they are grouped with other objects.

To group objects, do the following:

1. Select the objects you want to group. Object handles appear around each selected object.
2. Choose **Group** from the Draw menu. The objects are now marked by one set of object handles, showing that they are being treated as one object.

To ungroup objects, do the following:

1. Select the grouped object you want to ungroup.
2. Choose **Ungroup** from the Draw menu. Object handles appear around each object, showing that the objects are returned to their individual state.

Locking and Unlocking Objects

Use the “Lock” command to keep an object from being moved, deleted, resized, or edited.

To lock one or more objects, select the object(s) you want to lock, then choose **Lock** from the Draw menu. To unlock selected object(s), choose **Unlock** from the Draw menu.

Adding Special Blends to Objects

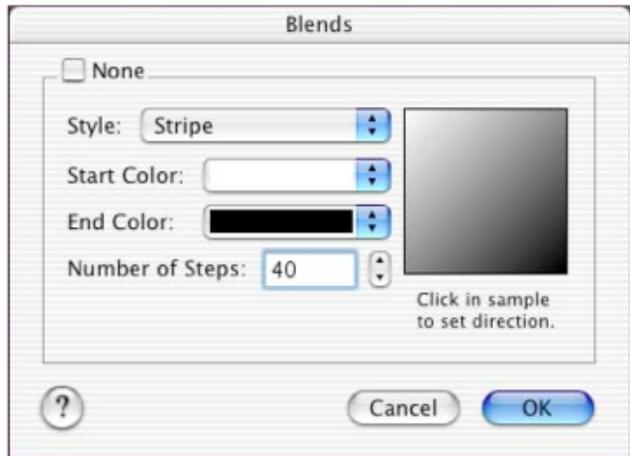
You can use the “Blends” command on the Draw menu to create some remarkable effects with patterns and colors. You can choose from six different blending patterns to blend two colors in a specified number of steps. You can apply these blends to Draw, Text,

and Chart objects. In a Text object, the blends work only on the object fill, not on the text itself.

You can use the Blend tool to apply the last blend created to an object. If you have a 16-color machine and are using blends, make sure the “Better Color Blends” option in the “Preferences” dialog box is off. This option is for 256 colors.

To apply a special blend, do the following:

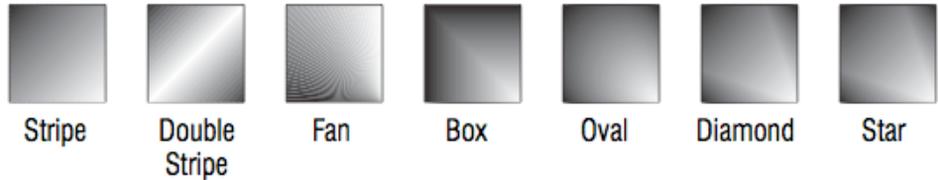
1. Select the object(s) you want to change.
2. Choose **Blends** from the Draw menu. The following dialog box appears.



3. Make your selections and enter data as needed. The square on the right side of the dialog box changes as you make your selections so you can see how they will affect your selected object. You can click the square to change the focal point of the blend. You have the following options:

Style

Changes the blending pattern. The default is “Stripe.” Select a blending pattern from the pop-up list. The following blending patterns are available:



Start Color/End Color

Selects the starting and ending colors of the blend. To select a color, click the pop-up menu next to the option to display a Color palette. You can also choose from any existing custom colors.

Number of Steps

Changes the degree of the blend. The larger the number, the more gradual the blend. The more gradual the blend, the longer it will take your chart to redraw when the screen refreshes. You can enter a number or use the direction arrows to change this setting.

None

Turns the blending function on or off.

4. Click **OK** to apply the blend and return to the Chart page. To exit the dialog box without applying a blend, click **Cancel**.

NOTE  To remove a blend, select **None** from the dialog box.

The blend created in the “Blends” dialog box can be used over and over again at any time by selecting the Blend tool. The blend will remain until a new blend has been created.

To apply only the blend and not the color, press the **control** key while double-clicking an object to fill.

To use the Blend tool, do the following:

1. Select the Blend tool from the Toolbox. The pointer becomes two paint buckets.
2. Select any object(s) you want to contain the blend. To select

- multiple objects, hold down the **shift** key while clicking the objects.
3. Double-click any one of the selected object(s) to apply the blend. All selected object(s) now contain the last blend created using the “Blends” command.

Creating Dashed Lines

You can format any line in your charts or drawing objects or the boundary lines of any Draw, Text, or Chart object with special PostScript dash patterns. To modify the color, pattern, or width of these special dashed lines, use the appropriate palettes in the Toolbox.

To change solid lines to dashed lines, do the following:

1. Select the object(s) you want to change.
2. Choose **Dashes** from the Draw menu.
3. Make your selections as needed. The line in the “Example” window changes to reflect your selections. You have the following options:

Dash Pattern

Select a dash pattern from the pop-up list.

Scale

Elongates or reduces the dash in the pattern to create different versions of the same pattern. You can set the scale of the dash pattern to **Double**, **Normal**, or **Half- sized**.

Dash Caps

Rounds one end of the selected line.

4. Click **OK** to apply the dash pattern and return to the Chart page. To exit the dia- log box without applying dashes, click **Cancel**.

Adding Drop Shadows to Objects

The “Shadows” command places a drop shadow behind any Draw, Text, or Chart object in the Chart view. In a Text object, the shadow applies to the entire object not just the text. Inset shadows can be applied to any selected line.

Colors and patterns for the shadows are selected from palettes in the “Shadows” dialog box. These palettes are identical to those in the Toolbox.

You can use the Drop Shadow tool to select any object(s) and apply the last shadow created to those object(s).

To place a drop shadow behind an object, do the following:

1. Select the object(s) you want to change.
2. Choose **Shadows** from the Draw menu. The following dialog box appears.
3. Make your selections and enter data as needed. The square on the left of the dialog box changes to reflect your selections. You have the following options:

Shadow Type

Displays a pop-up menu so you can select a shadow type. A drop shadow casts a shadow on any Draw object. An inset shadow creates a stripe one half the width of the selected line. This shadow can be applied to any Draw object.

Foreground and Background

Displays a Color palette so you can choose foreground and background colors for the shadow or pattern in the shadow.

Pattern

Displays a pattern palette so you can select a pattern or gray scale to use as the inset or drop shadow.

Horizontal and Vertical

Sets the offset of a drop shadow only. You can drag the white box

on the left, type in any number from -15 to 15 points, or click the direction arrows to change the shadow size.

None

Turns the shadow function on or off.

4. Click **OK** to apply the shadow and return to the Chart page. To exit the dialog box without applying a shadow, click **Cancel**.

The shadow created in the “Shadow” dialog box can be used over and over again at any time by selecting the Shadow tool. The shadow will remain until a new shadow has been created.

To use the Shadow tool, do the following:

1. Select the Shadow tool from the Toolbox. The pointer becomes a shaded triangle.
2. Select the object(s) to which you want to apply the shadow. To select multiple objects, hold down the **shift** key while clicking the objects.
3. Double-click any one of the selected object(s) to apply the shadow. All selected object(s) now contain the last shadow created using the “Shadow” command.

12 Adding Error Bars and Curve Fits

This chapter gives you basic information on how to apply and define Error Bars and Curve Fits. It also explains how to define your own curve fit function.

This chapter covers the following:

- Adding error bars to a chart
- Understanding the types of curves
- Applying a curve fit
- Assigning curve specifications to the curve fit
- Applying a Spline curve
- Creating user-defined curve fits

Adding Error Bars to a Chart

Error bars allow you to graphically illustrate actual errors, the statistical probability of errors, or a general approximation or “spread” in your data. Examples might include experimental errors in measurement or atypical data points in comparison to the rest of the data.

You can add error bars to the following 2-D charts: Bar, Column, Bar and Column Segmentation, Floating Bar and Column, Line, Step, XY Column, Scatter, Paired Scatter, XY Line, and Paired XY Line. You can choose error bar options for *all* series or for an *individual* series with different parameters for the upper and lower error bars.

Error bars appear as two short dashes for the upper and lower values of the spread with a line connecting the two dashes at their centers. These three parts of the error bar are treated as one chart element in the chart, so you can, for example, make an all-red error bar, but you cannot make red dashes with a blue connecting line.

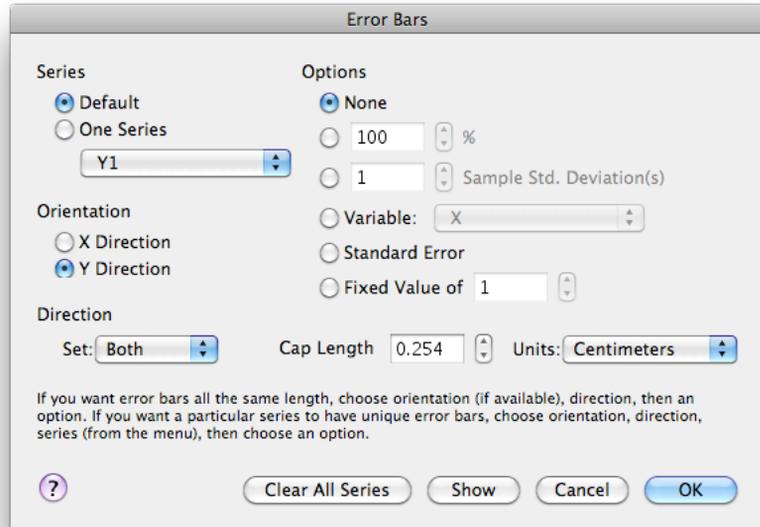
NOTE  If you need more graphic formatting control, and the underlying data are best represented as a line chart, use the “Formula Builder” command on the Data menu, or do the calculations outside of DeltaGraph and make a Range chart with high and low components instead of a Line chart with error bars.

To add error bars to a chart, do the following:

1. Select the chart to which you want to add error bars.

Error bars can be added to Bar, Column, Bar and Column Segmentation, Floating Bar and Column, Line, Step, XY Column, Scatter, Paired Scatter, XY Line, and Paired XY Line.

2. Click the Error Bars icon on the extended Command bar, or choose **Error Bars** from the Chart menu. A variation of the “Error Bars” dialog box appears.



3. Make your selections and enter data as needed. The ends of each error bar are determined by making selections or typing values in the “Error Bar” dialog box. You have the following options:

Series

Sets error bars for all or one data series. “Default” affects all data series. To set error bars for an individual data series, select the series name from the pop-up menu below “One Series.” This automatically selects the “One Series” option.

Once you have specified different parameters for a particular series, changes you make while you’re in the default mode will not affect it. Changes made in the “Options” and “Direction” sections affect only the series that are selected. Help for the “Series” section appears below the “Options” selections.

Orientation

(Scatter, XY Column, and XY Line charts only) When using error bars with a Scatter chart, each X component and Y component can independently have error bars of any variety, including “None.” Switch back and forth between components by clicking the buttons under “Orientation.” When analyzing the data to determine where the error bars are placed, the above explanations are valid as long as “data value” is replaced with “X component of the data value” or “Y component of the data value,” as appropriate.

Direction

Sets the orientation of the error bars (Both, Plus, or Minus). You can have different error bar parameters for the Plus or Minus bar. For example you might use the standard error for the Plus but use a percentage for the Minus. You can also use the direction settings in combination with individual series settings.

Options group box

Lists the types of error bars you can add to your chart as follows:

None

No error bars are drawn.

Standard Error

The placement of each end of the error bar corresponds to the standard error of the data point. The standard error is computed as follows:

$$StandardError = \sqrt{sumSquare \div ((count - 1)(count))}$$

where:

sumSquare = sum of the squares of the data values
minus the data series average

count = number of valid data values plotted.

%

Each end of the error bar is placed at the specified percentage times the value of the data point. The percentage number is based on the scale of the axis. You can type in any value greater than or equal to zero or use the direction arrow to scroll the options.

Fixed Value

Each end of the error bar is placed a distance from the data value equal to the number entered. That number is based on the scale of the axis. You can type in any value greater than or equal to zero or use the direction arrow to scroll the options.

Sample Standard Deviation(s)

Each end of the error bar is placed at a distance $N \cdot SD$ in user scale units from the computed value. M . N can be any number greater than or equal to zero. You can type in the appropriate value for N or use the direction arrows to scroll the options. SD is the sample standard deviation computed as follows:

$$SD = \sqrt{\text{sumSquare} \div (\text{count} - 1)}$$

where:

sumSquare and count are defined as above and

M = sum of all valid data values for all series selected
divided by count (i.e., the arithmetic mean)

This computation places the mean of all the series at the center of each error bar, rather than placing the data values at the center of each error bar. So the position of the ends of each error bar measured along the Value axis

is the same for each category (such as a Line chart or Step chart) or each data value (such as a Scatter chart). That is, all the error bars “line up” instead of being “staggered” with the data.

Variable

Each end of the error bar is placed at a certain distance from the data value, the distance being different for each point of the series. The variable errors must be placed in a column of the Data page where the data to be plotted reside. Choose the name of the column from the “Variable” pop-up menu. For more information on creating variable error bars, see “Creating Variable Error Bars” below.

Cap Length

Sets the length of the end caps (whiskers) on the error bars. The default is set to 0.1 inches, but can also be set to picas, points, centimeters, or ciceros. This will affect all error bars in the selected series.

Clear One Series/Clear All Series

Changes the settings of the selected series back to the default setting. Select the series, then click the **Clear** button.

4. Click **Show** to preview your changes without exiting the dialog box. This makes it easy to experiment with different effects. You can move the dialog box out of the way by dragging the Title bar.
5. When you have the results you want, click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

Creating Variable Error Bars

Variable error bars are used when you want an individual error for each point on a series. If you have your own calculated errors, imported data, or data calculated by the Formula Builder, create variable error bars.

To create variable error bars, do the following:

1. Input both the data and variable error data in a Data page.

	Label	A	B	C	D
Label		Series 1	Series 2	Error 1	Error 2
1		10	5	0.5	0.48
2		20	10	0.65	0.15
3		30	15	0.418	0.7
4		40	20	0.13	5
5		50	25	0.32	0.156

2. Select and plot only the data for the chart, not the variable error data.
3. Click the chart you plotted.
4. Click the Error Bars icon on the Command bar, or choose **Error Bars** from the Chart menu. The “Error Bars” dialog box appears.
5. Click the pop-up menu in the “Series” section of the dialog box, and select the first data series (Series 1 in the example).
6. Click the “Variable” pop-up menu in the “Options” section of the dialog box, and select the column from the Data page that contains the corresponding error (Error 1 in the example).
7. Repeat steps 5 and 6 until all of the series are matched up.

8. Click **OK**. The chart appears with error bars drawn in the chart.

Curve Fitting

Here we shall look at the general theory of curve fitting and at power, exponential, and logarithmic curves. For more details on these curve fits and for an explanation of the more complex theory behind polynomial curves, see the excellent treatment of numerical methods in *Numerical Recipes in C* by Cambridge Press, upon which some of the theory in this section is based. The brief tour given here is not intended to be an exhaustive explanation of curve fitting theory.

There are four basic types of curve fits, as follows:

- Power curves
- Exponential curves
- Logarithmic curves
- Polynomial curves

NOTE  Spline fits are not true curve fits but are an illustrative tool.

General Theory

Before we delve into the mathematics of curve fitting, we should define what curve fitting is. It is a mathematical process by which a curve is determined that minimizes the squares of the distance from the curve to the data points. Thus, it is the attempt to find an equation that represents the data being fit. The better the fit, the smaller the distances are from the curve to the actual data points. However, unless the data are known to fit a particular equation exactly, the curve will not pass directly through all the data points.

Consider the following case, where we wish to determine the best line through a set of data. The equation used to model the line is of the following form:

$$y = f(x) = a + bx$$

To measure how well the linear model agrees with the data, we use the chi-square merit function, which in this case is as follows:

$$\chi^2(a,b) = \sum_{i=1}^n \left(\frac{y_i - y(x_i, a)}{\sigma_i} \right)^2$$

Substituting our linear equation, we get the following:

$$\chi^2(a,b) = \sum_{i=1}^n \left(\frac{y_i - a - bx_i}{\sigma_i} \right)^2$$

The equation is minimized to determine a and b . At its minimum, derivatives of $\chi^2(a,b)$ with respect to a and b vanish.

$$0 = \frac{\partial \chi^2}{\partial a} = -2 \sum_{i=1}^n \frac{y_i - a - bx_i}{\sigma_i^2}$$

$$0 = \frac{\partial \chi^2}{\partial x} = -2 \sum_{i=1}^n \frac{x_i(y_i - a - bx_i)}{\sigma_i^2}$$

These conditions can be rewritten in a convenient form if we define the following sums:

$$S = \sum_{i=1}^n \frac{1}{\sigma_i^2}, S_x = \sum_{i=1}^n \frac{x_i}{\sigma_i^2}, S_y = \sum_{i=1}^n \frac{y_i}{\sigma_i^2}, S_{xx} = \sum_{i=1}^n \frac{x_i^2}{\sigma_i^2}, S_{xy} = \sum_{i=1}^n \frac{x_i y_i}{\sigma_i^2}$$

With these definitions we have the following:

$$aS + bS_x = S_y$$

$$aS_x + bS_{xx} = S_{xy}$$

The solution of these two equations in two unknowns is calculated as follows:

$$\begin{aligned}\Delta &= SS_{xx} - (S_x)^2 \\ a &= \frac{SS_{xx}S_y - S_xS_{xy}}{\Delta} \\ b &= \frac{SS_{xy} - S_xS_y}{\Delta}\end{aligned}$$

These are the general forms of solutions for DeltaGraph's curve fitting. The difference between the linear, power, exponential and logarithmic curve fits is confined mainly to linearizing the data prior to using the above equations to determine a and b . We will consider each of the remaining cases individually.

Power Curve

For a power curve fit, we use the following assumption about the model:

$$y = f(x) = ax^b$$

Using the following algebra, we can linearize the equation:

$$\begin{aligned}\ln(y) &= \ln(ax^b) \\ &= \ln(a) + \ln(x^b) \\ &= \ln(a) + b \ln(x) \\ &= A + bx' \\ &= g(x) = A + bx'\end{aligned}$$

where: $A = \ln(a)$ or $e^A = a$ and $\ln(x) = x'$

This linearized equation can use the above solution by assuming the error is of the following form:

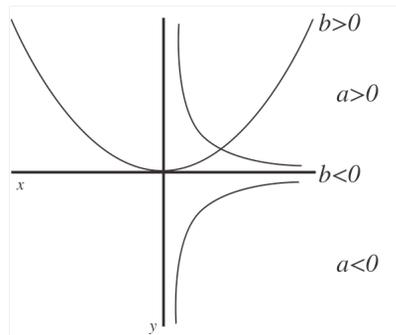
$$\chi^2(a,b) = \sum_{i=1}^n \left(\frac{\ln(y_i) - g(\ln(x_i))}{\sigma_i} \right)^2 = \sum_{i=1}^n \left(\frac{\ln(y_i) - A - B \ln(x_i)}{\sigma_i} \right)^2$$

As a result, we can use the $\ln(y)$ and the $\ln(x)$ to calculate A and B for the power equation. Using the natural logarithms in effect linearizes the data, so the same theory can be used to determine the line. The results are then used in the original equation to show the best fit.

When using a power curve fit, you must know the range over which the model is valid. As seen in the next figure, when the power (b) is greater than 0 (zero) the curve is shaped like a “U” centered around $x = 0$.

Changing the sign of a flips the “U” upside down. This means that, for data sets which appear like a portion of the $b > 0$ family of curves, there is an a and b which is valid.

Conversely, when $b < 0$ the curve appears like the lower left half of an “O”. As an example, consider $b = -1$, which is $y = f(x) = a/x$. As x tends toward 0, the value of y goes to ∞ and there is no curve on the $x < 0$ side of the graph. Hence, trying to fit data sets with a downward sloping trend for $x < 0$ will often result in no solution.



Exponential Curve

For an exponential curve fit, we use the following assumption about

the model:

$$y = f(x) = e^{(a+bx)} = ae^{bx}$$

Using the following algebra, we can linearize the equation:

$$\begin{aligned}\ln(y) &= \ln(ae^{bx}) \\ &= \ln(a) + \ln(e^{bx}) \\ &= \ln(a) + bx \\ &= A + bx \\ &= g(x) = A + bx\end{aligned}$$

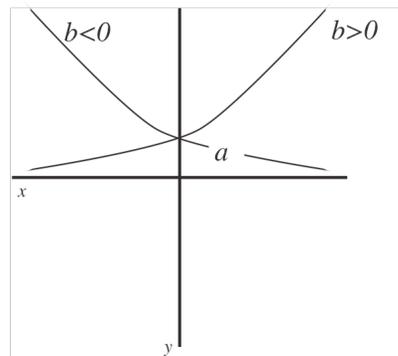
where: $A = \ln(a)$ or $e^A = a$

then:

$$\chi^2(a,b) = \sum_{i=1}^n \left(\frac{\ln(y_i) - g(x_i)}{\sigma_i} \right)^2 = \sum_{i=1}^n \left(\frac{\ln(y_i) - A - bx_i}{\sigma_i} \right)^2$$

$$\ln(y) = g(x) = A + Bx$$

As seen in the next figure, the trend for an exponential curve is toward 0 (zero) when $x < 0$ and toward ∞ when $x > 0$. Changing the sign of a and b flips the curve around both the X and Y axes. That means an exponential curve fit is defined for any set of data. However, this does not say how well this form will fit the data.



Logarithmic Curve

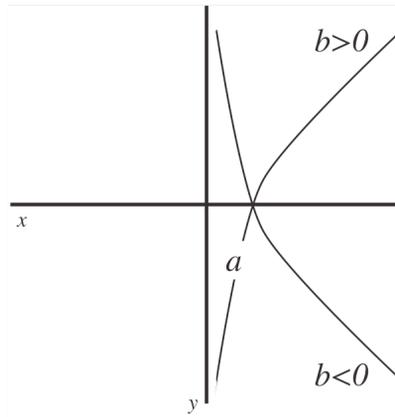
For a logarithmic curve fit, we use the following assumption about the model:

$$y = f(x) = a + b \ln(x)$$

Using a similar argument as for the power curve fit, we get the following form of the error:

$$\chi^2(a,b) = \sum_{i=1}^n \left(\frac{y_i - (a + b \ln(x_i))}{\sigma_i} \right)^2 = \sum_{i=1}^n \left(\frac{y_i - a - b \ln(x_i)}{\sigma_i} \right)^2$$

The form of the logarithmic curve fit is shown below. As seen in the figure, the curve tends toward $\pm \infty$ as x approaches 0 (zero) and is undefined for $x < 0$.



Let us consider another case of interest in which a curve fit is known to pass through 0 (zero). Some processes, by definition, must be 0 at the start. By slightly modifying the curve fit we can obtain a curve which passes through 0. Consider the following linear case:

$$y = f(x) = a + bx$$

We can force this curve to pass through 0 by specifying $a = 0$ regardless of the data being fit.

$$y = f(x) = 0 + bx$$

Using the same derivative of the merit function as above, we have the following:

$$0 = \frac{\partial \chi^2}{\partial a_1} = -2 \sum_{i=1}^n \frac{x_i(y_i - bx_i)}{\sigma_i^2} = -2 \sum_{i=1}^n \frac{x_i y_i - bx_i^2}{\sigma_i^2}$$

Solving for b we get the following:

$$b = \frac{S_{xy}}{S_{xx}} = \frac{\sum_{i=1}^n x_i y_i}{\sum_{i=1}^n x_i^2}$$

In conclusion, similar solutions may be obtained for other types of curves.

Using Curve Fits

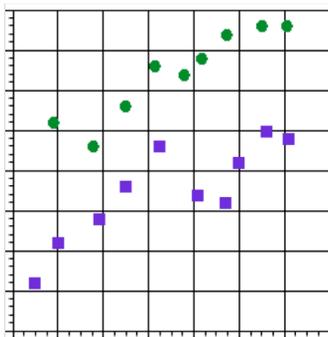
You can click the Curve Fits icon on the extended Command bar, or choose **Curve Fitting** from the Chart menu to draw a curve that is “fitted” to the plotted data points.

There are two classes of curve fits: “equations” and “splines.” Equations assume the selected model or curve fit type describes the data being fit. By minimizing the differences between equation and data, the model represents the best approximation of a curve based on all data points. Because the type of model may not accurately represent the data, the curve may not pass through any of the data points. By comparison, a spline fit calculates a series of curve fits internally which must pass through each data point.

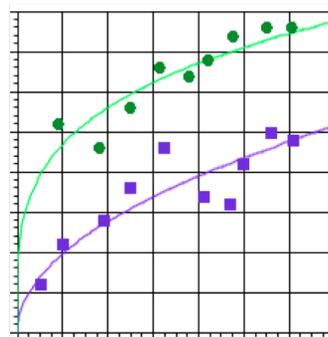
Curves or curve fits can be applied to Line, Step, Scatter, Paired Scatter, XY Line, and Paired XY Line charts. You can draw curves for only one series, a selection of data series, or all the series.

DeltaGraph displays curves within the boundaries of the axes only. If

you wish to see more of the curve you can extend the data ranges of your Value axes.



Without a Curve Fit



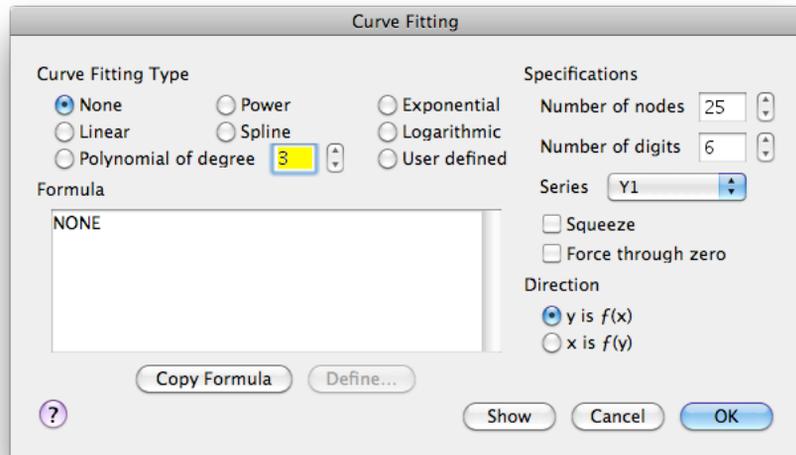
With a Curve Fit

By their nature, the formulas used to derive curves in DeltaGraph are complex. A fairly detailed explanation for the equations has been included to help more statistically oriented users understand the methods being used. If you find the math confusing, you can skip over the more technical passages. If you want to learn more about curve fitting, most college-level statistics textbooks can help. You can also refer to *Numerical Recipes in C*, William H. Press, Brian P. Flannery, Saul A. Teukolsky, William T. Vetterling, Cambridge University Press.

The procedure outlined below takes you step-by-step through the curve fitting process. When appropriate, the steps refer you to other sections of the chapter for additional information.

To fit a curve, do the following:

1. Select the chart. Curve Fits can only be performed on Line, Step, Scatter, Paired Scatter, XY Line, and Paired XY Line charts.
2. Click the Curve Fits icon on the extended Command bar, or choose **Curve Fitting** from the Chart menu. A variation of the “Curve Fitting” dialog box appears.



3. Click the “Series” pop-up menu in the “Specifications” section of the dialog box to select the series to which you wish to fit a curve.
4. Choose the type of curve you want from the “Curve Fitting Type” section. This option determines the type of curve you want to apply to your data series. When you choose a linear, polynomial, power, exponential, or logarithmic curve type, the R^2 or correlation coefficient value, along with the formula, is displayed in the “Formula” window. This value can be copied and pasted in a text block in your Chart page. The formula for a user-defined curve fit is displayed only after it is defined. Refer to the references below for additional information on the types of curve fits.
5. Make changes to the “Specifications” and “Direction” sections as necessary. Refer to “Assigning Curve Fit Specifications and Direction” on page 13-18 for information on using these sections. To learn more about “Force Through Zero,” refer to “Force Through Zero Option” on page 13-20.
6. Click **Show** to preview your changes without exiting the dialog box. This makes it easy to experiment with different effects. You can move the dialog box out of the way by dragging the Title bar.

7. If you want to fit curves to more data series, select a different series (step 3) and repeat steps 4-6.
8. When you have the results you want, click **OK** to implement the changes and return to the Chart page. To exit the dialog box without changing the chart, click **Cancel**.

To learn more about...	Refer to...
Different types of curve fits	“Understanding the Types of Curve Fits” below
User-defined curve fitting	“Creating a User-Defined Curve Fit” below
Spline curves	“Force Through Zero Option” below

Understanding the Types of Curve Fits

Each of the “other” curve-fitting techniques (“Linear,” “Polynomial,” “Power,” “Exponential,” “Logarithmic,” and “User-defined”) uses the “linear least-squares method” to determine the “best fit” for the curve. x_i and y_i represent the data used to plot the chart. These curve fitting techniques are also displayed in the “Curve Fitting” dialog box.

Choosing a Curve Fit

Linear

For the function $f_x = ax + b$, a and b are calculated so that the sum of the squares of the errors given by $(f(x_i) - y_i)^2$ is minimized, as follows:

$$f_x = a \cdot x + b$$

Polynomial

For the function

$$f_x = a_0 + a_1 \cdot x + a_2 \cdot x^2 + \dots + a_n \cdot x^n,$$

a multiple linear regression is performed using $1, x_i, (x_i)^2, \dots, (x_i)^n$ as the values of the independent variables and y_i as the values of the dependent variable. The results are used for

$$a_0, a_1, \dots, a_n.$$

You can enter a degree of the polynomial from 1 to 10. The default is 3. The degree of the polynomial is dependent on the number of data points plotted as follows:

2 points = First-degree polynomial (2 points is a Line)

3 points = Second-degree polynomial

4 points = Third-degree

polynomial and so on...

It is not necessary to enter the exact polynomial degree for the plotted data. For example, if you have four points on your chart you can enter a degree of "5." DeltaGraph automatically finds the appropriate degree to use. All of the "extra" terms in the polynomial higher than the "perfect fit" degree get coefficients of zero.

Power

For the function $g(x) = A \cdot x + B$, A and B are calculated so that the sum of the square of the errors given by:

$$\sum [g(\ln(x_i)) - \ln(y_i)]^2$$

is minimized. Then b is calculated as $b = e^B$, and the formula is displayed as

$$f(x) = bx^A.$$

Spline

The formula is not displayed, because it is not convenient to display such a detailed formula in the “Curve Fitting” dialog box.

Exponential

For the function $g(x) = A + b \cdot x$, A and b are calculated so that the sum of the

square of the errors given by $\sum [g(x_i) - \ln(y_i)]^2$ is minimized. Then a is calculated as $a = e^A$, and the formula is displayed as

$$f(x) = e^{(a+bx)} = ae^{bx}.$$

Logarithmic

For the function $f(x) = a \cdot \ln(x) + b$, a and b are calculated so that the sum of the

square of the errors given by $\sum [f(x_i) - y_i]^2$ is minimized.

User-Defined

Allows you to create a curve-fit model function of your own. Click **Define** to define the parameters and establish your equation. For more information on creating a user-defined curve fit, refer to “Creating a User-Defined Curve Fit” below.

Understanding How Curve Fitting Affects Different Charts

In all the curve-fitting techniques, one or more model functions are chosen to represent the best fit to the data. Every function must get its data from somewhere—the *domain* of the function. The curve representing these functions will go from one end of the domain to the other.

Curve fitting on 2-D Scatter charts is different from curve fitting on a Line or Step chart. For Line and Step charts, the domain of the

function is always the category numbers and all numbers in between them. For Scatter charts, the domain can be either the X axis or the Y axis. Here X and Y refer to the data components. The X component of data for the first series always comes from the first column of values selected. The Y component comes from the second column.

The X axis of a Scatter chart is horizontal unless “Switch Axes” is selected in the chart’s “Options” dialog box. To choose a component of the data to indicate the domain of the function, select **Y is F(x)** or **X is F(y)** from the “Direction” section of the “Curve Fitting” dialog box. “Y is F(x)” chooses the values on the x axis as the domain. “X is F(y)” chooses y values for the domain.

When a Scatter chart with a Spline curve is selected, the “Direction” buttons are dimmed. Two functions are calculated, one that returns x values and one that returns y values. The domain for each function is the category numbers.

In the options discussed below, the values x_i and y_i are determined by the chart type and the “Direction” selection. For a Line chart and a Step chart, the x_i are the category numbers starting at 1 for the first category. The y_i are the values in each of those categories. (The “Direction” selection does not matter.)

For a Scatter chart, there are two cases as follows:

- If “Y is F(x)” is selected, x_i are the x components and y_i are the y components.
- If “X is F(y)” is selected, x_i are the y components and y_i are the x components.

Assigning Curve Fit Specifications and Direction

Defining the Number of Nodes

DeltaGraph draws all curve fits as Bezier curves. A Bezier curve is defined by a list of nodes and control points. Nodes are points

through which the curve must pass. The position of the nodes, the slopes through the nodes, and the curvature through the nodes, are the same for the curve in DeltaGraph and the model chosen. Between nodes, the position slopes and curvature are not necessarily as precise. Control points are points that affect the path of the curve between nodes.

“Number of Nodes,” in the “Specifications” section of the “Curve Fitting” dialog box, determines the number of Bezier nodes that the curve must pass through. For a Spline curve, this number must be the number of valid data points plotted, so the dialog box item is dimmed. For any other curve, you can enter any number greater than 1 and less than 251. The default is 25.

In general, more nodes means a more accurate representation of the curve. However, more than two nodes on a straight line is unnecessary, while a large number of nodes can use excessive memory.

Because DeltaGraph can curve fit data whose Value axis or axes are scaled by logarithm, the number of nodes for a linear fitted curve is not forced to two. If one Value axis is scaled by logarithm, a linear fitted curve is not a straight line. However, if one Value axis is scaled by logarithm, an exponential fitted curve is a straight line.

Defining the Number of Digits

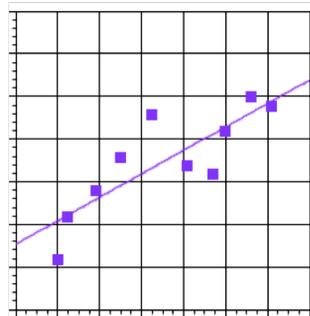
“Number of Digits” in the “Specifications” section of the “Curve Fitting” dialog box determines the number of digits that appear to the right of the decimal in the mantissa of each of the parameters that appear in the curve fit formula displayed in the “Formula” window. Enter a “0” to display *all* digits beyond the decimal. You can enter any number from 1 to 16. The default is 6.

Selecting a Series

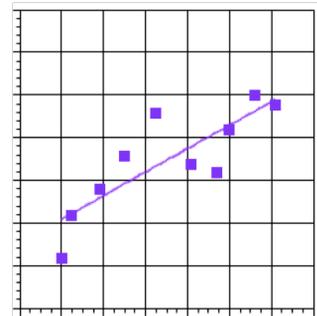
You can use a different type of curve fit on each series of data in the chart. To choose the different series, click the pop-up menu next to “Series” in the “Specifications” section of the “Curve Fitting” dialog box.

Using the Squeeze Function

When “Squeeze” is off (default) in the “Specifications” section of the “Curve Fitting” dialog box, the curve fit is drawn over the entire axis of the domain of the curve fit function. When “Squeeze” is selected, the curve is drawn over an interval bounded by the smallest and largest domain values.



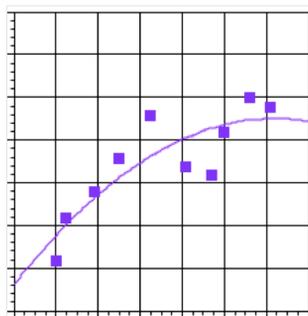
Squeeze Off, the line extends from axis to axis



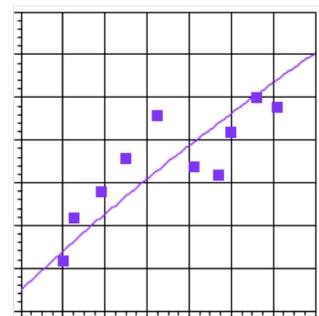
Squeeze On, the line does not extend out to the axis

Choosing the Axis Direction

The “Direction” section of the “Curve Fitting” dialog box gives you two options: “Y is F(x)” chooses Y as the dependent variable, and “X is F(y)” chooses X as the dependent variable. The examples below use a second-degree polynomial curve fit.



Y is F(x)



X is F(y)

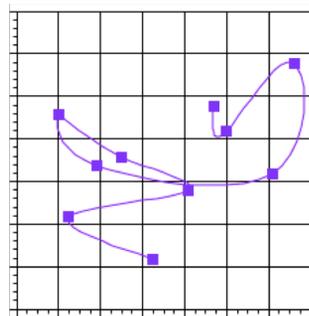
Force Through Zero Option

Curve fits typically fit the exact trend of data, meaning they begin part way up the Y axis (at the Y intercept). Sometimes, however, the data actually begin from zero (0) on the Y axis, and using “Force Through Zero” in the “Curve Fitting” dialog box allows you to force the curve through the point of origin.

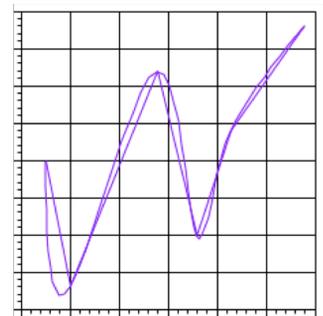
This option is provided as a convenient means of starting a curve fit at the origin. It applies only to linear and polynomial curve fits. If you want to force a curve fit through some Y intercept, you can do so by creating a user-defined curve fit. A curve forced through the point of origin (zero) can be seen in the next example.

Creating a Spline Curve

The Spline curve is drawn through all points on the chart. The effects of a Spline curve on a chart are determined by the type of chart plotted. Below are two different types of charts plotted with the same data. On the Scatter chart, the Spline curve connects each data point in the order it was selected from the Data view. An XY Line chart, on the other hand, connects the points from one end of the domain to the other no matter how the data were selected in the Data view.



Scatter Chart



XY Line Chart

Applying Spline Curves to Line and Step Charts

Over each interval between categories, the curve follows the function $f_x = a \cdot x^3 + b \cdot x^2 + c \cdot x + d$, which is a third-degree polynomial. Each interval can have a completely different set a , b , c , and d .

The domain of f (the values that x can take) are the category numbers at the data points plotted and all real numbers in between. The range of f (the values computed by f) are in the user scale for the Value axis.

The curve is smooth through the transitions from one third-degree polynomial to the next in the sense that the value of the function, its first and second derivatives at the right end of one interval, are equal to the corresponding values at the left end of the next interval to the right.

Because category numbers are always increasing from 1 to the total number of categories and also go from one end of the Category axis to the other, the curve does not cross over itself.

Applying a Spline Curve to Scatter Charts

Here the Spline curve is defined by two functions. The x function is defined on the category number of the data values and all real numbers in between and takes on values in the user scale of the X axis, while the y function is defined on the category numbers and takes on values of the Y axis.

On each interval defined by adjacent category numbers, the curve follows the two functions as follows:

$$x_t = ax \cdot t^3 + bx \cdot t^2 + cx \cdot t + dx$$

$$y_t = ay \cdot t^3 + by \cdot t^2 + cy \cdot t + dy$$

As with the Line chart and Step chart, the ax , bx , cx , and dx , as well as the ay , by , cy , and dy , may be different for each interval. They are calculated so that the function values, and their first and second derivatives, match up on interval boundaries.

Because the x and y components of the data values can be listed in any arbitrary order, the x components are not necessarily increasing with category and neither are the y components. Therefore, the curve may cross over itself many times. If the desired curve should not cross itself, then the data should be sorted either by the x component or y component (either outside of DeltaGraph or with the “Sort” command on the Data menu).

Understanding User-Defined Curve Fits

This feature allows you to define your own curve-fit function and provides more flexibility to model specifications.

User-defined curve fitting is a general way of picking a function to represent or describe your data. Without user-defined curve fitting, you are restricted to a very narrow range of functions. For instance, the “linear” curve fit allows you to pick functions of the following form: $f(x) = a \cdot x + b$.

DeltaGraph picks the best values of a and b so that when plotted the function lies “as close as possible” to the data points supplied by the user according to the “linear least-squares” method. But with linear scaling on both axes of a Scatter chart, this curve is not “curvy”—it is a straight line no matter what values are selected by DeltaGraph for a and b . The other curve fit options may give a more “curvy” curve than “linear,” but each curve fit type has its own limited set of curve possibilities.

User-defined curve fits allow quite a bit more freedom in that you can define what the possibilities are. A “Linear” curve fit uses only addition and multiplication and the two parameters a and b . User-defined curve fits can use any of the operators, any of the functions (with a few restrictions on the arguments for some functions), and any number of parameters. Knowing what formula to type to get a particular family of shapes requires knowing analytical geometry. But you can use DeltaGraph as an experimental tool to see how different kinds of functions fit different kinds of data.

It is more likely, though, that you have a specific model in mind based on some knowledge of science, mathematics, engineering, economics, or statistics. Such models have a great deal of variety, yet many of them are expressible in the function language of user-

defined curve fits. In order to make the translation from a given model in, say, a science text to the function syntax of user-defined curve fits, several features have been implemented.

User-Defined Curve Fitting Restrictions

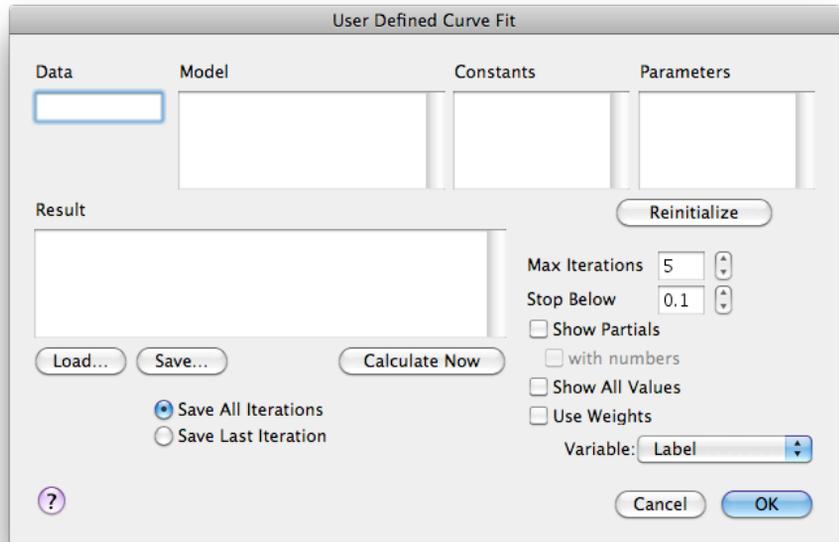
Variables can be named almost anything you choose. (Greek letters are not allowed.) Dependent variables don't all have to be called "y" or "f"; independent variables don't all have to be called "x" or "t," and parameters don't have to have names like "m1" or "m2."

Constants can be defined in order to simplify the formulas, and you can define as many as you like. The value of the constant can be a simple number or the result of evaluating an expression.

Even user-defined curve fit models have limits though. You may have only one independent variable. This represents the x component of data in a two-component data series (such as in a Scatter chart) or the category number in a one-component data series (such as in a Line chart). You can also have only one dependent variable. This represents the y component of data in a two-component series (such as in a Scatter chart) or the only component of data in a one-component data series (such as in a Line chart). Your models will not be able to use some commonly used functions that we do not supply; for example, complex functions, many statistical functions, linear transformations, tensor transformations, integration, and differentiation.

To display the "User-Defined Curve Fit" dialog box, do the following:

1. Select the chart to which you want to apply a user-defined curve fit.
2. Click the Curve Fits icon on the extended Command bar, or choose **Curve Fitting** from the Chart menu. The standard "Curve Fitting" dialog box is displayed.
3. Select **User Defined** in the "Curve Fitting Type" section of the dialog box.
4. Click **Define** at the bottom of the dialog box. The following dialog box appears.



Data

This is the name given to the independent variable. You can call it “x,” “y,”

“dollars,” or anything you like. However you spell it, this same spelling must be used whenever you refer to the independent variable in your model. This is just a name, not a formula or equation.

Model

This is the equation that defines the possibilities in your curve fit model. It is always of the following form:

$$\begin{aligned} <\text{dependent variable name}> = \\ <\text{model formula}> \end{aligned}$$

<dependent variable name> follows the usual naming rules. The name is just for “show”—you never have to type it in any other box. It will be displayed in the “Curve Fitting” dialog box’s “Formula” window and may also appear in the partial derivative expressions in the “User-Defined Curve Fit” dialog box’s

“Output” window when “Show Partial” is selected.

<model formula> is the mathematical formula that details how the dependent variable of your model depends on the independent variable and the parameters. You can use any of the operators and functions that are valid in the “Formula Builder” dialog box. You must use at least one parameter in your formula. You must use the independent variable in your formula. You can use any constant you have defined in the “Constants” window.

Constants

Each constant is a name and a formula. The constant name can be used in any other formula. It is shorthand for the result of evaluating the constant formula. Any number of constants can be defined (within limits of memory).

Each constant definition consists of a constant name and an equal sign followed by a constant expression. If you have more than one definition, they must each be separated by a list separator (; in the U.S. version). These are called “constants” because a constant’s formula may not depend on the independent variable or any of the parameters. Other than that restriction, a constant can have any formula.

The “Parameters” window can contain references to these constants in the formulas that set the initial values of the parameters. The model formula can also refer to any of these constants. These are entirely optional.

Parameters

These are the quantities that give your model its flexibility. In your model formula, you place a parameter in the formula wherever you have an unknown quantity and you want DeltaGraph to figure out what the best value of that quantity should be.

Even though DeltaGraph will calculate a “best” value, you must supply an “initial” value. The technique used for determining best parameter values is an “iterative” algorithm (the Levenberg-Marquardt method, see *Numerical Recipes in C*) and as such requires a reasonable guess as to what the right answer is before it can “improve” on it to get the best answer.

Any name you use for a parameter, along with an initial value for that parameter, must be included in the “Parameters” window and must follow a certain format. List separators (; in the U.S. version) must be used to separate each parameter definition. Parameter names follow the usual rules for names. Initial values can be numbers or formulas referring to constants.

Please remember that any formulas used are for initial values only. DeltaGraph improves upon those values when you apply the curve fit. The final values of the parameters are displayed in the “Output” window of the “User-Defined Curve Fit” dialog box and in the “Formula” window of the “Curve Fitting” dialog box. If “Save All Iterations” is selected (default), then the best value so far of each parameter at each step of the iteration is displayed in the “Output” window when the curve fit is complete.

Since the iteration starts with your initial values for each of the parameters and improves on them with each step, the final values of the parameters may be very different for a different set of initial values.

User-Defined Curve Fitting Rules

Every entry you make in the “Data,” “Model,” “Constants,” and “Parameters” fields in this dialog box starts out with a name followed by an equal sign (=). Each of these names is used to name the independent variable, the dependent variable or model, constants, or parameters that you are defining for your curve-fitting function. Refer to the “User-defined Curve Fit” dialog box illustration on page 13-24 and the figure on page 13-33 for a user-defined curve fit example.

The names that you assign to these fields have the following restrictions:

- Names must be limited to 63 characters.
- An equal sign (=) must follow the name. (The “Data” field does not require an equal sign.)
- The name must be unique and cannot be used to name any other function in an- other field in the dialog box.
- The name can consist of a combination of letters and

numbers or a single quote (') but cannot start with a number.

- The name cannot contain an underscore (_) or spaces.

After the name and equal sign (=), the “Model,” “Constants,” and “Parameters” fields contain a definition for the name.

- Constants can be defined with expressions containing references to previously defined constants.
- Parameters can be initialized with expressions containing references to previously defined parameters *or* constants.
- Letters of the alphabet can be used in the expression to represent columns of data in the Data view. If you want to use letters in the expression to refer to something other than columns of data, you must define them in the “Constants” or “Parameters” window. Letters that refer to columns, or what the computer may refer to as columns, are automatically capitalized. Columns in the Data view are lettered from A through Z, then AA through IT.
- You can have multiple parameters or constants defined, however, be sure to separate definitions by a list separator (a semicolon is used in the U.S.).

Using Formulas in a User-Defined Curve Fit

You can use function arguments from the “Formula Builder” dialog box in the user-defined curve fit. Formulas are appropriate in three places as follows:

- The constant expression in a constant definition.
- The initial value in a parameter definition.
- The model formula in the model definition.

Other formula restrictions are as

follows:

Model

You can use the following functions without restriction in the “Model” window:

sin, asin, sinh, asinh, cos, acos, cosh, acosh, tan, atan, tanh, atanh, cot, acot, coth, acoth, csc, acsc, csch, acsch, sec, asec, sech, asech, Sqrt, Exp, Log, Ln. You can also use the formula for the nth root as described in “Formula Builder Functions” on page 4-32.

Any of the other functions can be used with the following restriction: neither the independent variable (“Data”) nor any parameter may appear in any of the function arguments. (This is to insure that the other function has zero-valued partial derivatives with respect to the independent variable and each parameter.) If you break the rule, an error message alerts you when you click

Calculate Now.

Constants and Parameters

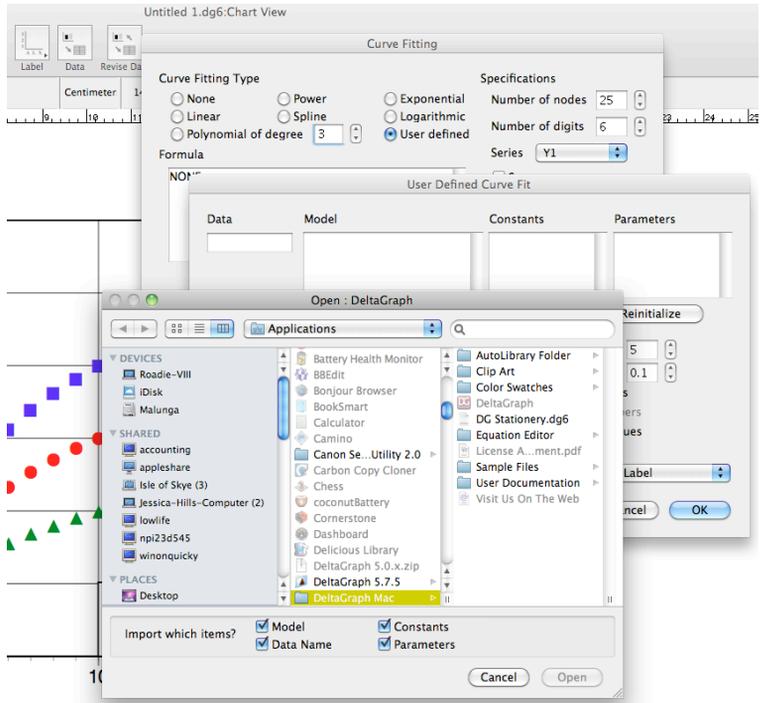
All of the functions can be used with no restrictions when defining values for constants and initial values for parameters.

To learn more about...	Refer to...
“Formula Builder” command	“Building Formulas” in Chapter 4

Loading and Saving a Curve Fit

After entering your curve fit information in the User-defined Curve Fit dialog box, click **Save**. You can name and save these formulas as you would a regular file.

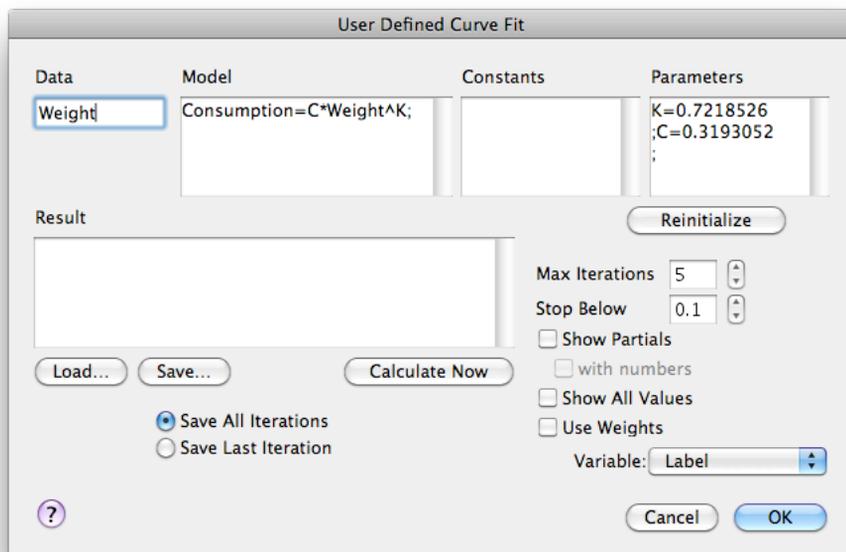
You can also load all or just a portion of a saved user-defined curve fit. From the User-defined Curve Fit dialog box, click **Load**. You can select whether or not you want the Model, Data Name, Constants, or Parameters section of the saved user-defined curve fit to be loaded in the “User-defined Curve Fit” dialog box. User-defined curve fits can only be opened from this dialog box.



Creating a User-Defined Curve Fit

To create a user-defined curve fit, do the following:

1. Display the “User-defined Curve Fit” dialog box as previously described.



2. Enter the name you want to use to reference the independent variable in the text box next to “Data.”
3. In the window under “Constants,” enter the name of a constant, an equal sign (=), then an expression to initialize the constant. This is an optional entry. The “Constants” window does not require any entry if you do not want to use named constants.

You can have multiple constants, but you must separate them by a semicolon. The constants are used in the model expression (in the “Models” window) or in the parameter initializations (in the “Parameters” window).

You cannot use the independent variable, the dependent

variable, the “Data” name, or a parameter name in the expression. Constants can be referenced and used in the “Parameters” window, or you can enter references to a cell in the Data view.

To reference a cell, type the column letter followed by the cell number of the referenced data in square brackets. The example below references k1 as the constant name, D as the column letter, and 2 as the referenced cell in column D.

Example: $k1=D[2]$

4. In the window under “Parameters,” enter the name of the parameter, an equal sign (=), then an expression to initialize the parameter.

You must have at least one parameter. If you have multiple parameters, separate them by a semicolon. Because your model must include at least one parameter, you must have at least one parameter name and initial value included in the “Parameters” window (otherwise DeltaGraph has nothing to calculate).

User-defined curve fitting uses an iterative algorithm. The initial value of each parameter is supplied here. Each iteration may improve the values of the parameters.

In the curve-fitting algorithm, the constant expressions are evaluated and stored in the order you list them. Then the initial values of the parameters are evaluated and stored in the order you list them. Note the order in which you list the constants and parameters, and take care not to refer to an undefined constant or uninitialized parameter.

You cannot use the independent variable or the dependent variable to define any of the initial values of the parameters.

5. In the window under “Model,” enter the name you want to use as the dependent variable, an equal sign (=), then the model expression.

You must have a model equation. The expression defines how the dependent variable in the model depends on the independent variable and the parameters. It should contain at least one reference to the independent variable (the name

entered in the “Data” section) and at least one reference to a parameter.

6. Make changes to other options, as follows, in the dialog box as necessary.

Reinitialize

Changes the starting value for the next iteration based on the last value of the previous curve fit. If a curve fit has been calculated, clicking this button causes the best values of the parameters to be substituted for the initial values of the parameters. This change is reflected in the Parameters block. This is useful if the previous curve fit calculation has stopped because the maximum number of iterations was attained, but it is desirable to continue the curve fit algorithms for more iterations. Click **Reinitialize** followed by **Calculate Now** to continue the curve fitting algorithm. If a curve fit has not been calculated, then this button will be disabled.

Max Iterations

Determines the maximum number of calculations used in finding the best possible values for the parameters. Enter numbers from 1 to 32,767. The default is 5. Remember, the more iterations, the longer the computation takes. All iterations are displayed in the “Output” window and numbered 1; 2; etc. (see the figure on page 13-33). If you enter “0,” no iterations are calculated. The initial values of the parameters are used as the final values of the parameters

Stop Below

The algorithm stops if chi-squared is less than the entered value at the end of an iteration.

Show Partial

Shows partial derivatives of the model function with respect to the independent variable and parameters. This option does not affect the curve fit in any way; it is there for your own information.

with numbers

Controls how the parameters inside a partial derivative are displayed in the “Output” window. Show partials must be selected. If deselected, then the names of the parameters are displayed in the partial derivative formulas. If selected, then the best values of the parameters are displayed in place of names in the partial derivative formulas.

Show all Values

Determines how many iterations will be displayed in the “Output” window, good or bad, including chi-squared. When off, the “Output” box shows the best values of the parameters at any step shown. When on, the “Output” box shows the new parameters values used at each step shown, in addition to the best values.

Use Weights

Determines the value contributed to the total error of chi-squared using values from a column of data from the Data view. Default is 1.0. To explicitly define the weights, enter the weights in one column of the Data page. Select that column from the “Use Weights” pop-up menu. The number on the first row of the column is the weight for the first selected row in the data selection. Subsequent rows of the weight column correspond to subsequent rows of the data selection.

Specifying a weight much smaller than 1.0 for a particular data point magnifies the contribution of that data point to the total error and can make the total error much larger.

Specifying a weight much larger than 1.0 for a particular data point diminishes the contribution of the data value to the total error. It does not reduce the total error much unless all the data values are assigned weights greater than 1.0.

Save All Iterations

Puts the values of the parameters and the measure of fit after each step through the iteration in the “Output” window. Each iteration in the “Output” window is numbered 1:, 2:, etc..

Save Last Iteration

Puts the values of the parameters and the measure of fit after the last iteration only in the “Output” window.

7. Click **Calculate Now**. The iterations of the function appear in the “Output” window of the dialog box.

The first line of the iteration contains the iteration number. This number has no significance other than to divide the iterations. Next comes the replacement values for the parameters for that iteration. These values change with every iteration and are used by the model function to obtain a best fit for the curve. A value for the square of the regression coefficient R^2 , and chi-squared appear at the bottom of each iteration. Chi-squared is defined as follows:

$$\chi^2 = \sum \{ [y_i - f(x_i)] / \sigma_i \}^2$$

where:

y_i is the y component of the data

x_i is the x component of the data

$f(x_i)$ is the value of the right-hand side of the model equation evaluated by substituting x_i for the independent variable

σ_i is the weight associated with each data point

the sum, Σ , is taken over all the categories in a data selection

If “Show Partial” was selected, the partial derivatives of the model appear at the end of the output statement. These derivatives are the partial derivatives (a concept from calculus) of

the model function with respect to the independent variable and with respect to the parameters. You may find them useful, and the curve-fit algorithm needs to know them for the sake of precision. If you have n parameters, you will get $n + 1$ partial derivatives. Following is an example of user-defined curve fit output.

```

1:
a = 1.618043E+0
b = -3.312051E+9
chi squared = 1.510217E+2
R^2 = 9.772041E-1

2:
a = 1.618043E+0
b = -3.312051E+9
chi squared = 1.510217E+2
R^2 = 9.772041E-1

3:
a = 1.618043E+0
b = -3.312051E+9
chi squared = 1.510217E+2
R^2 = 9.772041E-1

∂y/∂x = a*1/(x-b)
∂y/∂a = Ln(x-b)
∂y/∂b = a*-1/(x-b)

```

The Greek symbol “ ∂ ” is used in the standard way to specify the derivative of one variable (always the dependent variable) with respect to another variable (the independent variable or a parameter). To the right of the symbol for a derivative is an equal sign (=) followed by the formula for the specified derivative. That formula may have references to the independent variable and/or to the parameters, as dictated by the model formula you specify and the rules of calculus and algebraic simplification. Each partial derivative then looks like the following in the “Output” window:

$$\partial \text{ <one variable> } / \partial \text{ <another variable> } = \text{ <formula> }$$

8. Click **OK** to make the changes and return to the “Curve Fitting” dialog box. If you want to return to the “Curve Fitting” dialog box without specifying a user-defined curve fit, click **Cancel**.

The final model formula for the user-defined curve fit now appears in the “Formula” window of the “Curve Fitting” dialog box. The parameters in the formula have been replaced by

numbers. These numbers are derived from the iteration with the best fit.

9. Click **Show** to preview your changes without exiting the “Curve Fitting” dialog box. “Show” makes it easy to experiment with different effects. You can move the dialog box out of the way by dragging the Title bar.

If the curve fit is not a good fit, it may require more iterations. Instead of using the same parameters and just requesting more iterations, replace the parameters in the “User-Defined Curve Fit” dialog box with the values in the “Formula” window. By replacing values, you can start from where you left off without recalculating any previous iterations.

10. To fit curves to more data series, select a different series by clicking the “Series” pop-up menu and repeat steps 2-9.
11. Click **OK** to implement the changes and return to the Chart view. To exit the dialog box without changing the chart, click **Cancel**.

User-Defined Curve Fit Samples

The following table lists some example User-defined Curve Fit formulas and Models. The sample files are included with DeltaGraph and are located in the “Curve Fits” folder in the “Sample Files” folder. These formulas can be loaded in the “User-defined Curve Fit” dialog box in the “Curve Fitting” dialog box.

These samples can be used as starting points for creating your own formulas and models. The initial parameter values are listed and the formulas and models are displayed in mathematical terminology. For example:

$$f(x) = \frac{ax}{b+x} \text{ is the same as } y=(a*x)/(b+x)$$

User-Defined Curve Fit Sample Formulas

Following are sample user-defined curve fit formulas included with DeltaGraph:

Curve Fit	Formula	Parameters
Double Exponential Decay	$f(x) = ae^{-bx} + ce^{-dx}$	a, b, c, d
Exponential	$f(x) = be^{x(-1a)}$	a, b
Exponential Decay	$f(x) = ae^{-bx}$	a, b
Exponential Rise to Max	$f(x) = a(1 - e^{-bx}) + c$	a, b, c
Hyperbolic	$f(x) = \frac{ax}{b+x}$	a, b
Parabola	$f(x) = x^2 - ax + b$	a, b
Power of Natural Log	$f(x) = \ln(x^9 + ax^5 + b)^3$	a, b
Reciprocal	$f(x) = \frac{1}{ax}$	a
Reciprocal of Square Root	$f(x) = \frac{1}{\sqrt{x^2 + a}}$	a
Sigmoid Logistic	$f(x) = \frac{a-d}{1 + \left(\frac{x}{c}\right)^b} + d$	a, b, c, d

Sine Wave	$f(x) = (a + b)\sin\left(\frac{2\pi x}{c} + d\right)$	a, b, c, d
Weighted 3rd Order Poly	$f(x) = a + bx + cx^2 + dx^3$	a, b, c, d

User-Defined Curve Fit Sample Models

Following are the sample user-defined curve fit models included with DeltaGraph:

Curve Fit	Formula	Parameters
Blood Glucose Concentration (mg/dl)	$f(x) = a(1 - be^{-kx})$	$k = 0.049$ $b = 1$ constants: $a = 139.2$
Holling's Response Curve (prey eaten/minute)	$f(x) = \frac{ax}{b + x}$	$a = 0.5$ $b = 0.25$
Ocean Depth Pressure (N/M ²)	$f(x) = a + bcx$	$a = 1.01 \cdot 10^5$ constants: $b = 1 \cdot 10^3$ $c = 9.8$
Oxygen Consumption in Fish (ml/hour)	$f(x) = ax^k$	$k = 0.76$ $a = 1$

Achieving Better Curve Fits

This section provides you with valuable hints and tips for creating more accurate curve fits.

Reinitializing Parameters

Reinitializing your initial parameters will sometimes increase their accuracy, making a much better fit. To reinitialize your parameters, do the following:

1. Input your model and starting parameter(s).
2. Increase the “Max Iterations” to a value appropriate to your model, computer speed, and computer math capabilities. This value can be as low as 1 for simple equations and as high as 10,000 for more complex ones. The models listed in the figure on page 13-33 were calculated using 20 to 50 iterations.
3. Click **Calculate Now**.
4. Click **Reinitialize**.
5. Repeat steps 3 and 4 until the parameters have minimal change or the “chi-squared” value is sufficiently small.
6. Click **OK**.

Curve Fit Hints

Following are helpful hints and troubleshooting tips that may assist you in creating your curve fits:

- The graph on the screen matches the function, specified in the model, very well at the nodes. The nodes are evenly spaced along the curve in the x-axis direction if $y = f(x)$ is selected for the curve fit. The placement of nodes can be controlled by the “Number of Nodes” option in the “Curve Fitting” dialog box. Sometimes a graph can look very different from the

model because the number of nodes is too small.

- Avoid placing a node on an x value where the $f(x)$ value is not defined. Remember some of the functions supplied in DeltaGraph have ranges of values where the function is not defined. For example:

\sqrt{x} is undefined for $x < 0$

$\log x$ is undefined for $x \leq 0$

$\frac{1}{x}$ is undefined for $x = 0$

$\tan x$ is undefined for $x = \frac{\pi}{2} + k \cdot \pi$, where k is any integer.

- Avoid selecting initial values of parameters that cause the evaluation of the model function at any of the data value's x coordinates to be undefined. This could cause a calculation error message to be displayed.
- Avoid selecting initial values of the parameters that cause the evaluation of the model function at any of the node's x coordinates to be undefined. This can cause the graph to be drawn "strangely" in the vicinity of such a node.
- Be sure the number of parameters initialized in the "Parameters" block matches the spelling and number of parameters used in the model functions.
- Compare the "chi-squared" error values displayed with the number in the "Stop below" value. Repeated "Calculate Now"/"Reinitialize" cycles are not necessary if the "Stop below" value adequately describes your requirement for terminating the iteration process.
- User-defined curve fits may not always return what is expected. In the process of iterating, the general method does not always converge to what you would get with the "same" formula chosen from the standard curve fit types. It may not converge to what "looks" like the best answer. It does not necessarily converge to the smallest possible "chi-squared"

value. It does not necessarily converge at all. It may start out fine and then pick a value for a parameter that produces undefined results and not be able to improve on the solution from that point on.

- All user-defined curve fits depend on the data values supplied, the model, and the initial values of the parameters. Changing the data and initial values of parameters can make a very large difference in the final result.

13 Importing and Exporting Graphics

It is easy to import and export graphics to and from the Chart view in DeltaGraph. For frequently used imported graphics, you may want to incorporate them in a template or save them in the Custom Library for easy access and convenience.

This chapter covers the following:

- Importing graphics
- Exporting graphics
- Exporting pictographics

To learn more about...	Refer to...
Importing and exporting data	“Importing Data” and “ExportingData” in Chapter 4
The Custom Library	“Custom Libraries” in Chapter 14

Importing Graphics

You can use the “Import” command on the File menu to import graphics from other applications. Choose **Import** from any Chart page to display a submenu with the following formats:

- Macintosh PICT (.PICT)
- Windows Bitmap (.BMP)

- Adobe PhotoShop (.PSD)
- Portable Network Graphics (.PNG)
- Graphic Interchange Format (.GIF)
- Tagged Image File Format (.TIF, .TIFF)
- QuickTime Image (.QTI)
- Joint Photographic Experts Group (.JPG, .JPEG)
- JFIF Compliant (.JFIF)
- JPEG 2000 (.JPG, .JPEG)
- Encapsulated PostScript File (.EPSF)
- Portable Document Format (.PDF)
- Movie

To import a graphic into DeltaGraph, do the following:

1. Make sure the Chart page you want to import the graphic into is active.
2. Choose **Import** from the File menu and select a format from the submenu. The standard “Open” dialog box is displayed. All of the files with the format you selected are displayed.
3. Select the file you want to import, and click **Open**. The graphic arrives in the upper left-hand corner on top of anything already in that area.

From now on, DeltaGraph treats the graphic as an Imported Graphic object. When selected, it can be moved, resized, and manipulated with many of the commands in the Edit and Draw menus. You can cut, copy, paste, clear, and duplicate it, align, layer, and lock/unlock it, and group it with other objects in the window.

You can use the “Ungroup” command to separate an Imported Graphic object from other objects it has been grouped with. “Ungroup” cannot be used to separate individual elements in the

original imported file.

To learn more about...	Refer to...
Objects in the Chart view	Chapter 12, “Working with Objects in Chart View”
Preferences	Chapter 7, “Setting Preferences”

Exporting Graphics

To export DeltaGraph charts and objects to another application, use the “Export” command on the File menu to save the contents of a Chart page in one of the following file formats:

- Encapsulated PostScript (.EPS)
- Adobe Portable Document Format (.PDF)

Select **As Other** from the Export submenu to save the file in one of the following formats:

- Windows Bitmap (.BMP)
- Joint Photographic Experts Group (.JPG, .JPEG)
- JPEG 2000 Image (.JPG, .JPEG)
- MacPaint (.MAC)
- Adobe PhotoShop (.PSD)
- Portable Network Graphics (.PNG)
- QuickTime Image (.QTI)
- Silicon Graphics Image (.RGB, .BW, RGBA, .SGI)
- Truevision Targa (.TGA)
- Tagged Image File Format (.TIF, .TIFF)

You can export the entire contents of a Chart page or individual objects. Objects in a Chart page must be selected before exporting.

Following is a list of things to keep in mind when deciding on a format for exporting DeltaGraph graphics:

- Objects exported as PICT files are now raster-based images, rather than vector based PICTs as in previous versions of DeltaGraph.
- Objects exported as EPS files cannot currently include Quartz fills. Doing so results in the creation of EPS files which are not readable.
- Exporting objects in EPS or PDF form provides the highest fidelity output, including support for spot colors.

To export graphics, do the following:

- Make sure the Chart page containing the objects you want to export is active and the objects are selected. If you are exporting from the Organizer view, make sure the page or thumbnail is selected.
- Choose **Export** from the File menu and select a format from the submenu. A variation of the standard “Save As” dialog box appears so you can name and save the file you are exporting. DeltaGraph displays a default name for the document under “Export document as” in the dialog box. It consists of the active Chart page name, a period, and the extension of the format you choose (e.g., “.png,” “.eps,” or “.pict”).
- Enter a name, choose your destination, then click **Save** to create a file you can use in another application or file. The graphic is written to the selected folder or directory under the format and name you specified.

14 Creating a Custom Library

This chapter explains how to create and open a Custom Library and how to add and delete objects from a Custom Library.

After you set the font, size, color, and style for the labels in a chart, choose colors and patterns for each data series, and set the grids, ticks, and axes the way you like them, the Custom Library allows you to store the chart as a template so you can reuse all of that hard work over and over again. This saves you from having to redo the same operations for your next chart. When you plot your next chart, you can choose a chart from the Custom Library, plot the new data, and a chart is created with your favorite formatting already in place. You can save your chart templates with or without data. This allows you to transfer data as well as charts to different DeltaGraph documents.

To display a Custom Library, click the Library icon on the Tool bar, or choose **Libraries** from the File menu and select **Open** from the submenu. Custom Libraries can also be used to save clip art, pictographics, and logos commonly used in Chart pages and in slide show presentations you create.

This chapter covers the following:

- The types of objects that can go in a Custom Library
- Creating, opening, and closing a Custom Library
- Placing an object or chart template in the Custom Library and naming it
- Retrieving an object or chart template from the Custom Library
- Retrieving a slide from the Custom Library
- Changing the name of an object in a Custom Library

- Deleting an object from the Custom Library

Custom Libraries

There is no limit to the number of Custom Libraries you can have because each library is saved independently of DeltaGraph documents. This allows you to create your own personal library and access it from any DeltaGraph document. You can display and access Custom Libraries from either the Chart or Organizer views or the Layout mode. Each Custom Library can contain an unlimited number of objects and/or chart templates.

A Chart template consists of a formatted chart. This also includes any accompanying data and objects. If the object added to or used from a Custom Library does not contain a chart, it is simply referred to as an “object.”

You can have an unlimited number of Custom Libraries open at a time (dependent on memory available). In addition, a special library called “Standard Library” is automatically opened when DeltaGraph is launched. The name “Standard Library” can be given to any of your DeltaGraph Custom Libraries to use this feature. Custom chart templates contained in this library are displayed in the various chart categories in the “Chart Gallery” dialog box (choose **Chart Gallery** from the Data or Chart menu, or click the Plot icon to display this dialog box).

Auto-Loading Libraries

Custom Libraries can also be opened automatically when DeltaGraph is launched by simply placing them in the “AutoLibrary Folder.” Up to four Custom Libraries can be included in the folder and loaded. Charts included in the Custom Libraries are displayed in the “Chart Gallery” dialog box along with the standard chart types.

Creating a Library

You can store Text, Chart, Draw, Imported Graphic objects, or any combination of objects in a Custom Library. An entire page from the

Organizer view, including any backgrounds applied to the Chart page, can also be added to a Custom Library as one object. The name of objects added to a Custom Library from the Organizer view are underlined.

Elements from the library are fully editable. When dragged from the library, the objects can be edited, moved, and revised as they would if you had just created them.

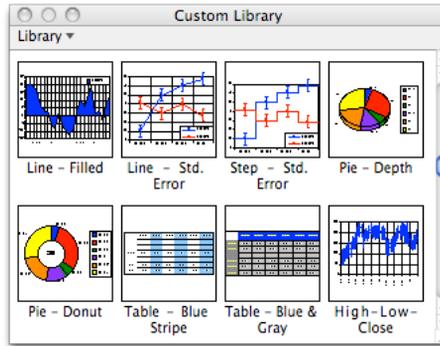
To close a library, click the Library window Close box on the left side of the library Title bar.

To create a library, do the following:

- Click the Library icon on the Tool bar, or choose **Libraries** from the File menu and select **New** from the submenu. The standard “Save As” dialog box appears.
- Enter a name and choose your destination as desired.
- Click **Save** to create a library file. The Custom Library is saved to the folder you selected. An empty Custom Library window with the name you assigned appears in the upper right corner of the Chart view.

The Custom Library

The Custom Library has all of the standard window characteristics, such as a scroll bar, Title bar, and a window resizing icon. The figure below shows examples of objects in a Custom Library. As you can see by the example, you can have a wide variety of objects in your library.



The title of your Custom Library appears on the Title bar, and the titles of the library objects appear below the object picture. Naming your library objects is explained below.

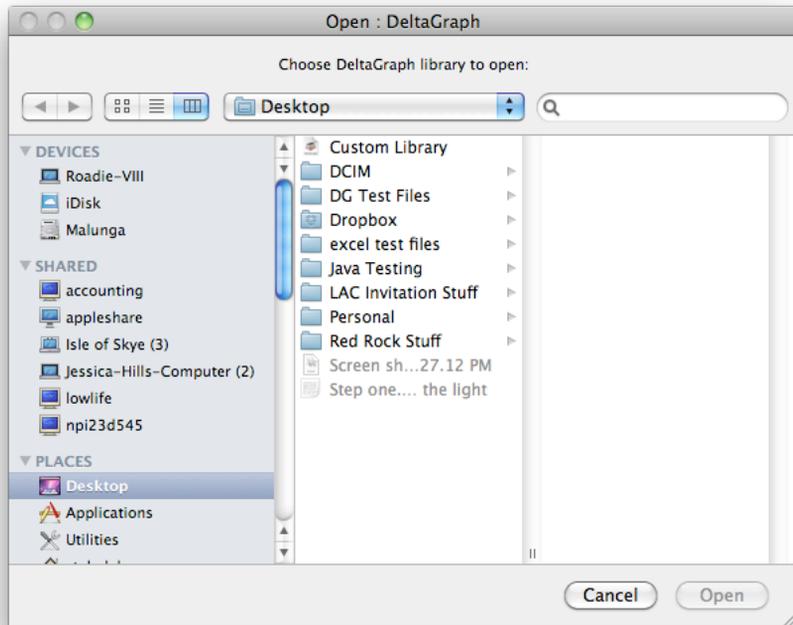
Whenever you resize the Custom Library window, the objects rearrange them- selves to fit the dimensions of the window.

Opening an Existing Library

You can open any Custom Library from any DeltaGraph document. The maximum number of Custom Libraries that you can have open at one time is dependent on the amount of memory available.

To open a library, do the following:

1. Click and hold the Library icon on the tool bar, or choose **Libraries** from the File menu and select **Open** from the submenu. The standard dialog box for opening a file appears. Libraries can be named anything you like.



2. Locate the library you want to open, then double-click its name, or highlight the name and click **Open**. The Library window appears in the upper right side of the page. You can move and resize the Library window as you would a Chart page. Chart templates contained in the open Custom Library appear with the various chart categories in the “Chart Gallery” dialog box.

Placing an Object in a Library

Objects placed in a Custom Library can be used over and over again. Each element in the library object remains separate and can be altered just as it was before you placed it in the library. Procedures for storing any combination of Chart, Draw, Imported Graphic, or Text objects are all the same.

Charts grouped with any other objects using the “Group” command

cannot be placed in a Custom Library. They can, however, be moved into the library together if they are selected and dragged together. Charts and objects in the Custom Library using color schemes and custom colors automatically use the color scheme and custom colors of the active document. If the active document does not have any color schemes or custom colors, the default fill for these objects is white. You can save color schemes and custom colors to be transferred between documents.

Slides from the Organizer view can also be placed in the Custom Library. Exception backgrounds, charts, text, and Data view data belonging to the selected slide are all placed in the library with the slide. The Master Back- ground is not copied into the Custom Library because it will use the destination document's Master Background. The names of slides added to a Custom Library are underlined so you can distinguish them from other library objects.

To add an object to a library, do the following:

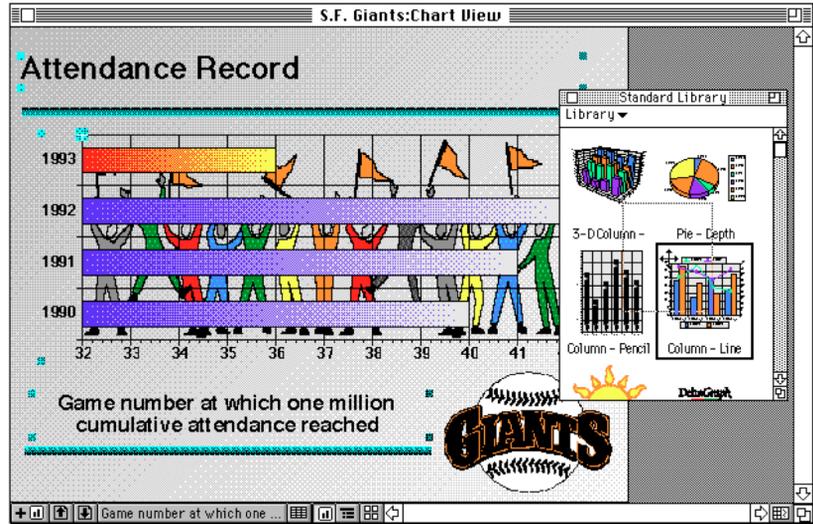
1. If you want to place a chart in a Custom Library, plot the chart and format it the way you like.
2. Create a new or open an existing Custom Library.
3. Select all objects you want included as a single library object.

Selecting a chart includes the legend, all axis labels and titles, and chart elements. You must select Text, Draw, and Imported Graphic objects, in addition to Chart objects, if you want them included in the same library object. You can also use the "Group" command to group objects before you put them in the library. Objects can be ungrouped using the "Ungroup" command once they are placed in the Chart page.

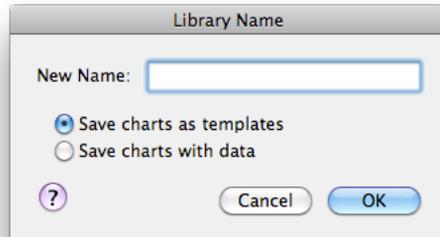
Charts cannot be placed in a library if they are grouped with other objects. However, you can simply select the chart along with other objects, and drag them together into the library. They will move together but remain ungrouped when dragged into a Chart page.

4. Drag the selected item(s) until the crosshair cursor appears in the Library window. The cursor automatically highlights

objects in the library. The new object is positioned in the library directly before the highlighted object.



5. Release the mouse button. The following dialog box appears.



6. Enter the name you want to give the library object. If you are placing a chart in the Custom Library, you have the following options:

Save charts as templates

Saves only the chart formatting as a template. It

does not save the data.

Save charts with data

Saves all values associated with the chart. This option is helpful to use when you want to transfer the data to a new document. No matter what data are selected, all of the data on the page are saved.

7. Click **OK** to name your new object and add it to the Custom Library. To return to the Chart view without adding the object to the library, click **Cancel**.

To learn more about...	Refer to...
Custom colors	“Working with Custom Colors” in Chapter 12
Color schemes	“Color Schemes” in Chapter 10

Using an Object from an Open Library

If you drag an object from the Custom Library into an existing Chart page, that Chart page must be displayed. You can also create a new Chart page by clicking the Add Page icon at the bottom of the Chart page before you begin the following steps.

If you want to drag a pictographic image into a chart element or object, the object or data graphic/series must be selected before you drag the library object from the library. Library objects cannot be placed in a layout or background window. You can, however, place them in a Chart page, copy the objects, and paste them in the layout or background page. When you place a slide from the library, a new Chart page is created, and all of the objects and the attributes stored with the objects are placed in the current document.

When a Custom Library is open, you can access objects in that library in one of the following ways:

- Drag an object into the Chart page from the open Custom Library.
- If the object contains a chart, select the chart template from the “Chart Gallery” dialog box.

Charts contained in the Custom Library appear mixed in with the standard charts of the same category. Slides contained in the Custom Library are underlined.

NOTE 

Custom colors for library objects created in a different DeltaGraph document cannot be transferred across documents and appear with colors as defined by the document. If color schemes or custom color palettes were used, the objects take on the colors of schemes and palettes of the active document.

If your data contain more information than originally used when the chart template was created, you may need to apply fonts and other formatting options to the extra data plotted.

To use a library object, do the following:

1. Open the Custom Library of your choice.
2. Select an object from the library and drag it into a Chart page. If the object does not contain a chart, or if the chart contains data, the objects are automatically displayed in the Chart page. You do not have to continue through the remainder of the steps.

When a chart containing data is extracted, and the data used are not in the active document, a new page is created in the Data view to contain the new data.

If a chart was saved as a chart template without data, DeltaGraph returns you to the last page used in the Data view. A “floating window” is displayed in the lower-left corner of the Data view telling you what you need to do and where the selected data will be plotted.

Year		A	B	C	D	E	F
Label	Year	Game					
1	1988	40					
2	1989	41					
3	1989	39					
4	1990	40					
5	1991	41					
6	1992	42					
7	1993	36					
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							

Select the data range, then click "Plot" to create a new chart or click "Titles" to select the axis title strings.

You can drag the Title bar to move the floating window away from your viewing area.

NOTE 

Many of the Data view features are active and available to you. You can enter or import new data, link to a file, switch to another Data page, or use the data functions to create new data.

3. Import, enter, or navigate to the data you want to use, then select the cells to be plotted. Hold down the **command** key to select non-consecutive cells.
4. Click **Titles** to select axis titles.
5. Click the **Plot** button in the floating window. The Chart page is redisplayed, the selected data are applied to the chart template, and a chart is created. If the library object contains more than one chart, any charts still requiring data are represented by a large box with an **X** in the middle.



6. You can select the box and click the Revise Data icon on the tool bar, choose **Revise Data** from the Chart menu, or press **cmd-,** (comma) to add data to the chart.
7. If you decide not to update the chart template, click **Cancel**

to return to the Chart view.

Other objects contained in the library with the chart are displayed on the page regardless of whether the chart is plotted or not. You can plot the chart later as described in step 5.

NOTE 

When a chart is still a box with an **X** in it, it can be moved or deleted but not resized.

To rename a library object, do the following:

1. Select the object you want to rename in the Custom Library. A dark border appears around the library object.
2. Choose **Change Name** from the Library window pop-up menu. The standard “Name” dialog box appears.
3. Type the new name in the text box below “Change Name to.”
4. Click **OK** to rename the object. To exit the dialog box without saving the changes, click **Cancel**.

To delete a library object, do the following:

1. Select the object you want to remove from the Custom Library. A dark border appears around the object.
2. Choose **Remove Item** from the Library window pop-up menu. A dialog box appears asking you to confirm your choice.
3. Click **OK** to remove the object. To exit the dialog box without deleting the object, click **Cancel**.

To learn more about...	Refer to...
Creating and applying pictographics	“Applying Pictographs” in Chapter 12

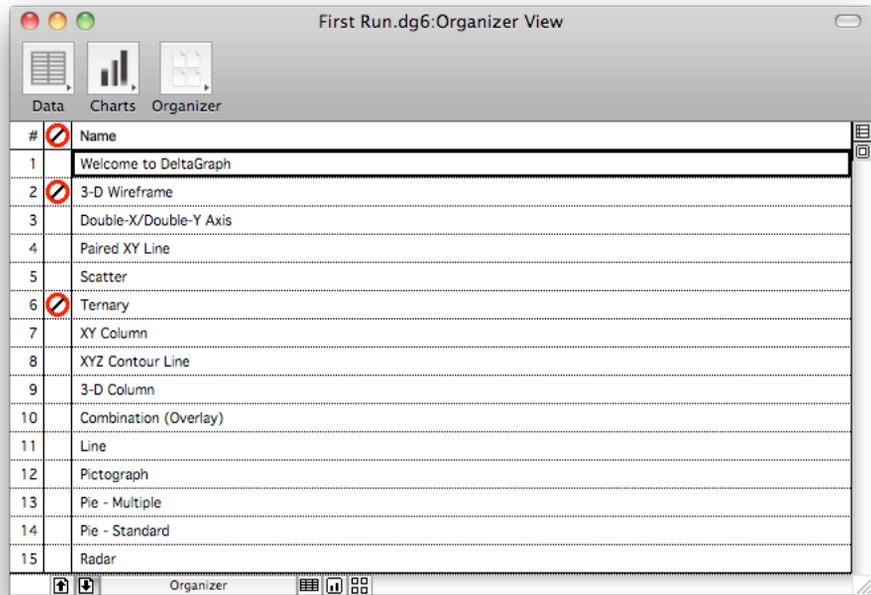
15 The Organizer View

The Title bar displays the name of the document followed by a colon and the name of the view. You can move the window around the screen by clicking and dragging the Title bar.

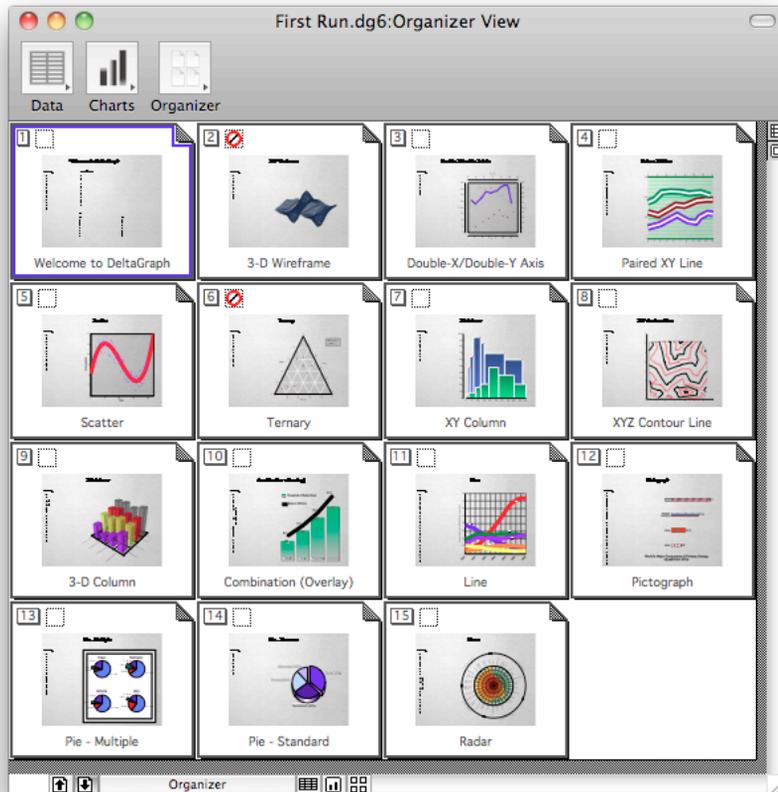
Viewing Your Charts

You can view the contents of the Organizer view in two different ways, as follows.

“List” view (the default, unless you change it) lists the pages/slides by name and number.



“Thumbnail” view shows you a reduced graphic view of each slide.



There is no difference in functionality between the two views; the only difference is what you see. Personal preference and/or the task at hand will influence which view you use. If you need to conserve memory, work in List view as much as possible. (See “Adding Draw Delay to Slide Elements” on page 16-17 for more helpful suggestions.)

To move back and forth between the two modes, click the List/Thumbnail icons at the top of the right scroll bar, click the Organizer View icon on the tool bar, or choose **Organizer View** from the View menu, and make your selection from the sub-menu. To change the default mode, save the document after switching modes. DeltaGraph considers this the default mode until you save the document again while it is in a different mode.

If you want to change the text attributes for the List view information, use commands on the Text menu or use the Font icons on the tool bar.

Organizer View Elements

Organizer View Elements	
Element	Description
Tool bar	Provides quick access to menu commands. For additional information about the Organizer view Tool bar, refer to “Organizer View Command Bar” in Chapter 2.
Marked/ Unmarked Charts	Indicates whether or not the slide appears when you run your slide show. Click in the box next to the page number to toggle your selection. Marked slides are <i>excluded</i> from the show.
Selected Chart	Selected page(s) are highlighted with a dark border. Use the shift +click key combination to select more than one page.
Page Names	DeltaGraph automatically displays the name of the Chart page. You can change the name of any page by choosing “Name Page” from the View menu, then typing a new name in the dialog box that appears. In the Thumbnail view, you can click the name to display the same dialog box.
Charts	Thumbnail view: Graphic representations of Chart pages. List view: One line of information.

Selecting Chart Pages

When chart pages are selected, you can reorder them, drag them into a new document or the Custom Library, or delete them.

- To select a chart page in the List view, click the page name or anywhere to the right of the name.
- To select a slide in the Thumbnail view, click anywhere in the main area of the page.
- To select more than one chart page at a time, click and drag a selection rectangle around the pages (Thumbnail view) or down the numbers (List view), or use the **shift**+click method (hold down the **shift** key while clicking the pages you want to select).
- In both views, a selection rectangle surrounds the selected page(s).

NOTE

Unless you specifically select one or more slides as described above, the first page in the view, or the page last acted upon, is selected by default. If you do not intend to act upon the selected page directly, it does not matter what is selected.

To learn more about...	Refer to...
Marking pages	“Marking/Unmarking Pages” below

Naming or Renaming a Page

DeltaGraph assigns each new slide a default name corresponding to the actual Chart page. Pages in the Sorter view can only be changed from the Thumbnail view. You can also change the name of the page in the Chart view.

To name or rename a page, do the following:

1. Click the Thumbnail icon to display the Thumbnail view.
2. Click the page you want to name/rename. The page is highlighted.
3. Choose Name Page from the View menu. The “Page Title” dialog box appears.
4. Enter the new name. You can enter up to 30 characters. The new name over- writes the default name.
5. Click OK to rename the page. The new name replaces the old name in List and Thumbnail views. If you want to exit the dialog box without making any changes, click Cancel.

Editing a Slide

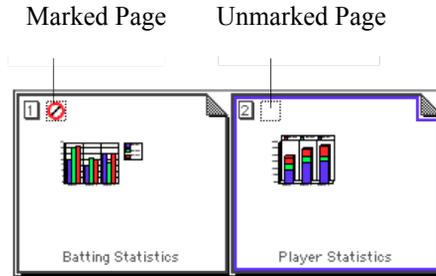
If you want to make changes to the contents of a page, you can either double-click the page in the Sorter view, select the page and choose Edit Page from the Sorter menu, or press cmd-E. Both of these methods return you to the originating Chart page so you can make your changes. The page is automatically updated when you return to the Sorter view.

NOTE

If you make changes in a Chart page without opening the page from the Sorter view, you must return to the Sorter view and select “Rebuild Page” from the Sorter menu if you want to update the affected slide. If more than one Chart page has changed, you can choose “Rebuild All Pages” from the Sorter menu.

Marking/Unmarking Pages

By default, all pages in the active document are included in printing (unmarked). To exclude pages from printing, you can click in the box next to the page number in the List or Thumbnail view. The international “No” symbol indicates that the slide will be excluded from printing. Click again to toggle your selection.



Deleting Pages

To permanently remove one or more pages from your document, select the slide(s) in the Sorter view and press the delete key. You can also select the slide and choose Delete Page from the View menu. The page is also removed from the Chart view.

To delete multiple pages, use the shift key to select multiple slides, then press the delete key.

Reordering Pages

DeltaGraph's advanced multiple-selection capabilities give you great flexibility when reordering pages. All you have to do is select the page(s) you want to move and drag them to a new location. You can even select pages in non-sequential order (using the standard shift+click method) and have them reorder just as you selected them.

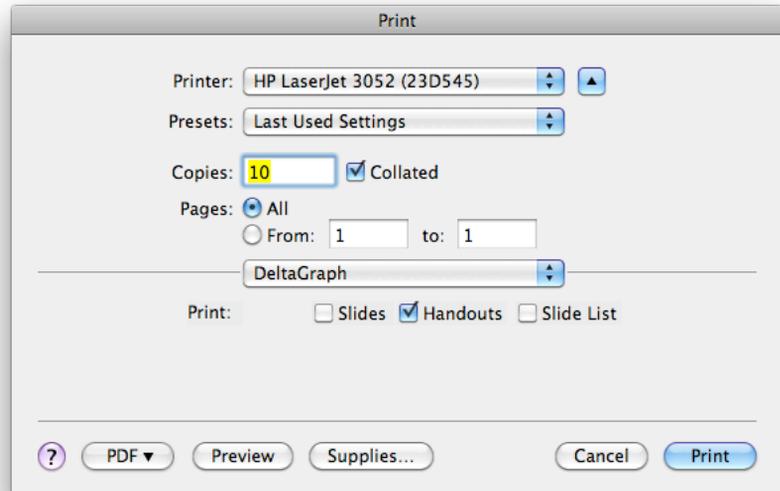
To reorder pages, do the following:

1. Select the page(s) you want to move. When moving more than one page, be sure to select them in the order you want them.
2. Click the first page you selected and hold down the mouse button. The cursor changes to the icon shown at the left.
3. Drag the page(s) to the new location in the Organizer view, making sure that the first page is directly over its new location before releasing the mouse button. The pages rearrange themselves in the same order in which they were selected.

Printing from the Organizer View

To print chart pages, handouts, or the page list in the Organizer view, do the following:

1. Click the Print icon or choose **Print** from the File menu in the Organizer view. The standard “Print” dialog box appears. Select your **Printer** and appropriate **Presets** from the pop-up menus.
2. Click the pop-up that shows a default of “Copies & Pages,” and select **Delta- Graph**. The Organizer view options are added to the dialog box.



3. Select from the following options as needed:

Print

Select the items that you want to print: **Slides**, **Handouts**, and/or the **Slide List** (the List view).

4. Click **Preview** if you want to see what the selected item(s) will look like printed. A preview window opens and the

document is displayed in an Adobe Acrobat® PDF format.

5. Click **Save As PDF** if you want to save the printouts to Adobe Acrobat PDF files (as displayed in the preview).
6. Click **Print** to print the document. If you want to exit the dialog box without printing, click **Cancel**.

To learn more about...	Refer to...
Printing in DeltaGraph	Chapter 17, “Printing in Chart View”

16 Printing in Chart View

To print charts, on paper or to disk, you need to set up the document, the Chart pages, a header and footer if used, and specify your final printing requirements. This chapter covers the following:

- Setting up the document
- Setting up the Chart pages
- Setting up headers and footers and previewing the printed document
- Printing the document

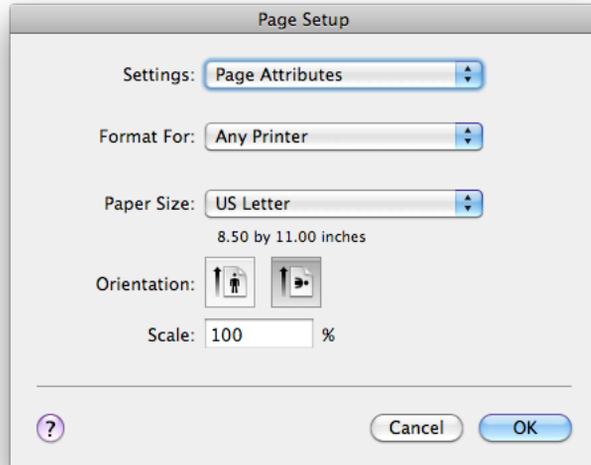
To learn more about...	Refer to...
Printing a Data page	“Printing a Data Page” in chapter 4
Printing files to disk	“Printing the Charts” below

Setting Up the Page

Use “Page Setup” to set up document pages for printing.

To set up Chart pages for printing, do the following:

1. Click the Chart view icon on the Tool bar or Navigational bar to display the Chart view. You cannot set up options for Chart pages in any other view.
2. Choose **Page Setup** from the File menu. The following dialog box appears:



3. Make your selections as needed. You have the following options:

Settings

Select from the pop-up menu the settings that you want to define, as follows:

Page Attributes

Set up the printer, paper size, orientation, and scale (as shown above).

Custom Paper Size

Changes the dialog box to set up a custom paper size. When finished, select “Page Attributes” to return to the “Page Setup” options.

Summary

Displays a summary of your selections in the dialog box.

Format for

Select the printer on which you want to print the Chart pages. The printer name is displayed under the pop-up. Other options available in the dialog box are determined by the printer you select.

Paper Size

The paper sizes available depend on the printer you selected. Select the paper size you want to use from the pop-up menu.

Orientation:

Click the orientation in which you want the pages printed.

Scale:

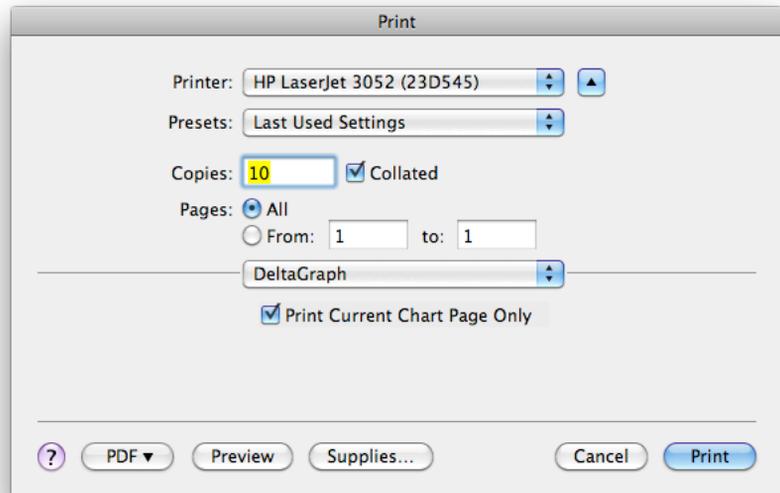
You can scale the size of the chart on the page. Select 100% if you want the chart to fill the page.

4. Click **OK** to save the information. If you want to return to the Chart view without saving, click **Cancel**.

Printing the Charts

To print the Chart pages, do the following:

1. Click the Print icon on the Tool bar, choose **Print** from the File menu, or press **cmd-P**. A standard “Print” dialog box appears.



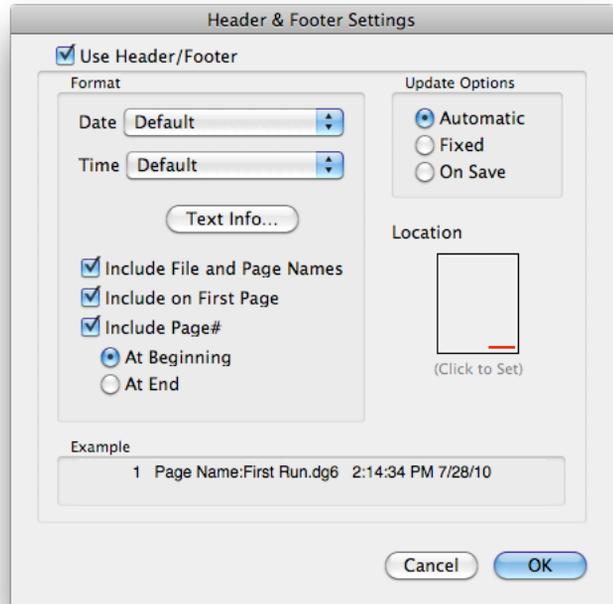
2. If necessary, select the printer and any appropriate presets for the printer.
3. Select **DeltaGraph** from the pop-up menu that defaults to “Copies & Pages.” The following options are displayed for chart printing:

Print Current Chart Page Only

Select to print only the currently displayed Chart page. If this option is not checked, all pages in the document are printed.

Header/Footer

Header/Footer are accessed through the file menu and brings up the following dialog box.



Use Header/Footer

Select to print a header or footer on each page.

Format

Determines what will appear in the header or footer, as follows:

Date and Time

Select a date and/or time format from the pop-up menu, or select “No Date” and/or “No Time.”

Text Info

Opens a dialog box so you can set font, color, and

styles for the header/footer text.

Include Filename

Select to include the document file name in the header/footer.

Include on first Page

Select to include the header/footer on the first page. If not selected, the header/footer is shown on all pages except the first page.

Include Page #

Select to include a page number, and then select whether you want the page number to appear at the beginning or end of the header/footer.

Update Options

Determines when the date and time information in the header/footer is updated.

Automatic

Updates the date and time to the current date/time automatically when printing.

Fixed

Stores the current date/time when selected and does not change it unless another option is selected.

On Save

Changes the date/time to the current date/time when the document is saved.

Location

Click in the box to select whether you want the information in a header or footer and the position on the page. Click the left or right side or in the middle at the *top* of the box to select the location to print a *header*. Click the left or right side or in the middle at the *bottom* of the box to select the location to print a *footer*. A red line indicates the location when you click.

Example

Displays an example of what the header/footer will look like on the page and the information it will include.

Click **OK** to save the information, or click **Cancel** to exit without saving. You are returned to the Print dialog box.

Preview

Click to display the Chart pages in a preview window so you can see how they will look printed.

Use the tools at the top of the window to change the view. Close the window to return to the Print dialog box.

Save As PDF

Click to save the Chart pages in an Adobe Acrobat PDF file.

4. Click **Print** to print the document.

17 AppleScript Commands

This chapter briefly describes how to use Apple events, Apple’s Scripting System (AppleScript™) with DeltaGraph.

Apple Events are high-level messages that applications compatible with the Macintosh system use to communicate with each other. In DeltaGraph, repetitious chart-building tasks can be automated through the use of Apple events and Apple’s Scripting. This chapter outlines DeltaGraph’s supported Apple Events and their AppleScript commands.

To view the list of commands that DeltaGraph supports, use the “Open Dictionary” command in Apple’s Script Editor.

NOTE

The information in this chapter assumes that the user is familiar with AppleScript and basic programming concepts.

High Level Overview

DeltaGraph has many options and settings. AppleScript commands would become overwhelming if all options and settings had to be specified in one command. DeltaGraph takes a different approach. Commands set global options that are accumulated through all commands. The Plot Chart command considers all the global options when plotting a chart. Global options are consistent when plotting multiple charts. To plot two charts with the same options, the options need only be set once.

There are four basic steps to plotting a chart: 1) select the data for the chart, 2) specify chart options, 3) set export type, if any, and 4) plot the chart.

Required Suite Commands

DeltaGraph responds to the four required Apple Events: run, open,

print, and quit.

Run

The Run (Open Application) command is the equivalent of double-clicking the DeltaGraph application icon from the Finder.

Refer to the AppleScript documentation (*AppleScript Language Guide*) for information on the AppleScript command syntax and parameters.

Example `run application "DeltaGraph"`

Open

The Open (documents) command is a request to open the specified DeltaGraph file or files. It is the equivalent of double-clicking a DeltaGraph file's icon in the Finder.

Command Syntax `open directParameter`

Parameters *directParameter*

The file or list of files to open.

Class: String, alias, or a list of strings or aliases (type 'ALIS').

Result None

Example `tell application "Finder"
open alias "My HD:DeltaGraph Folder:My Charts"
end tell`

Print

The Print command is a request to print all chart pages of the specified DeltaGraph file or files. It is the equivalent of selecting DeltaGraph files from the Finder and choosing “Print” from the File menu.

Command Syntax `print directParameter`

Parameters *directParameter*

The file or list of files to print.

Class: String, alias, or a list of strings or aliases.

Result None

Example

```
tell application "DeltaGraph"
print alias "My HD:DeltaGraph Folder:My Charts"
end tell
```

Quit

The Quit command is a request for DeltaGraph to quit. The equivalent is to choose “Quit” from DeltaGraph’s File menu.

Command Syntax `quit`

Parameters None

Result None

Example

```
tell application "DeltaGraph" quit
```

DeltaGraph Suite Commands

DeltaGraph has its own suite of Apple Events for setting input and plot options, plotting charts, and outputting charts. This section describes those Apple Events and their AppleScript commands. Following are the AppleScript commands for DeltaGraph's Apple Events

NOTE  Parameters in square brackets are optional.

Close File

DeltaGraph has a Close File event in its Apple Event suite. The Close File call closes a specified open document in DeltaGraph and, optionally, allows you to save the file before closing.

Command Syntax `Close File documentName [save file YesOrNo]`

Parameters *documentName*

The name of the open document to be closed. You may specify the file name with or without the full path name.

YesOrNo

The integer 1 indicates the file is to be saved, and 0 indicates the file is not to be saved. If you do not include this parameter, the file is not saved.

Result Error message if unable to complete the command. Empty response if successful.

Examples To save and close the file:

```
Close File "Sales for September" save file 1
```

To close the file
without saving:

```
Close File "Sales for August" save file 0
```

or

```
Close File "Sales for August"
```

Open Library

The Open Library command asks DeltaGraph to open the specified DeltaGraph Library.

Command Syntax `Open Library libraryName`

Parameters *libraryName*

The name of a library to be opened. The name may be a full path name or simply a file name. If only a file name is used, the file is assumed to be located in the DeltaGraph application directory.

Result Error message if unable to complete the command. Empty response if successful.

Examples To open a library from a specific path:

```
Open Library "My HD:Work:Chart Libraries:Sales  
Chart Templates"
```

To open a library from the DeltaGraph application directory:

```
Open Library "My Fancy Library"
```

Close Library

The Close Library command closes the specified library by name.

Command Syntax `close library libraryName`

Parameters *libraryName*

The name of the library to close.

Result Error message if unable to complete the command. Empty response if successful.

Example `close library "Sales Chart Templates"`

Load Color Scheme

The Load Color Scheme command tells DeltaGraph to open the specified color scheme file. When used with the Plot Options command, Load Color Scheme allows you to set customized colors for chart objects that use default colors.

Command Syntax `load color scheme colorFile`

Parameters *colorFile*

The name of a color scheme file to be opened. The name may be a full path name or simply a file name. If only the file name is specified, the file is assumed to be located in the DeltaGraph application directory.

Result Error message if unable to complete the command. Empty response if successful.

Examples To load a color scheme from a specific path:

```
load color scheme "My HD:Work:Colors:Color  
Scheme 1"
```

To load a color scheme from the DeltaGraph application directory:

```
load color scheme "Color Scheme 5"
```

Get Chart List

The Get Chart List command returns a list of all charts by name from currently open libraries.

Command Syntax `Get Chart List`

Parameters None

Result The result is a list of charts currently available for plotting.

Example `Get Chart List`

Set Axis Lengths

The Set Axis Lengths command sends specifications for the lengths of some or all possible chart axes, X, Y, and Z.

Command Syntax `Set Axis Lengths [for x xLength] [for y yLength] [for z zLength]`

Parameters *xLength*

The length of the X axis in points.

Class: Integer

yLength

The length of the Y axis in points.

Class: Integer

zLength

The length of the Z axis in points.

Class: Integer

Result None

Example `Set Axis Lengths for x 200 for y 250 for z 150`

NOTE 

All three parameters for this command are optional. You may set axis lengths for some, all, or none of the axes, although setting lengths for none of the axes has no effect on the current settings.

Set Info3D

The Set Info3D command specifies options settings for the next 3-D chart to be plotted. These options include rotation, elevation, and perspective.

Command Syntax `Set Info3d [rotation rotationAngle] [elevation elevationAngle] [perspective perspectiveValue]`

Parameters *rotationAngle*

The rotation angle, from 0–360 degrees, for 3-D charts.

Class: Integer

elevationAngle

The elevation angle, from 0–360 degrees, for 3-D charts.

Class: Integer

perspectiveValue

The perspective value, from 100 –20, for 3-D charts.

Class: Integer

Result None

Example `Set Info3D rotation 45 elevation 60 perspective 80`

Plot Options

The Plot Options command sets various options for the next chart to be plotted, including text font, text size, text color, and color style.

NOTE 

Plot options set with this command affect only default charts or those elements of chart templates that have not been modified by the user. For example, if you have set a library chart's font to something other than the default font, the Plot Options font command parameter has

no effect on that chart's font.

Command Syntax Plot Options [text font *fontName*] [text size *sizeValue*] [text color *rgbColors*] [colorstyle *styleType*]

Parameters *fontName*

The name of the default font to use for the next chart's labels.

sizeValue

The font size for the next chart's labels.

rgbColors

The RGB color for labels on the next chart.

Class: List of 3 integers, each between 0 and 65535

styleType

Specification of pattern or color options for the next chart, from the following types:

default color

Use standard colors only.

patterns

Use patterns only (no color).

scheme color

Use current scheme colors only.

colored patterns

Use the default color/pattern scheme.

NOTE 

The "scheme color" option uses the color scheme that was set using the Load Color Scheme command.

Result Error message if unable to complete the command. Empty response if successful.

Examples To set all parameters directly:

```
Plot Options text font "Palatino" ←  
  
text size 24 ←  
  
text color {65535,1500,1500} ←  
  
colorstyle default color
```

To set a list variable for the RGB text color and then use the variable in the Plot Options command:

```
set colorList to  
{1234,65535,1234} Plot  
Options text color  
colorList
```

Output

The Output command sets the output type and location for the chart to be plotted next, as well as its file name for export from DeltaGraph. Charts can be exported in five different formats: PICT, Encapsulated PostScript (EPSF), JPEG, Microsoft Windows Bitmap, and Adobe Photoshop.

Command Syntax `Output outputType [to file fileName]`

Parameters *outputType*

Specification of type for export from one of the following types: PICT, JPEG, EPSF, Microsoft Windows Bitmap format, Adobe Photoshop format.

fileName

Desired export file name, as type alias or text.

Result Error message if unable to complete the command. Empty response if successful.

Examples To cause the Plot Chart command to return PICT as its result:

```
Output PICT
```

To export the next chart in JPEG:

```
Output JPEG to file "My HD:Chart.jpg"
```

Data

The Data command specifies the data source for the next chart to be plotted. Use the Data command to set up data for the Plot Chart command. The data can be a string, or it can be imported from a tab-, comma-, or space-delimited text or Excel file. The Data command is optional. If it has not been specified in a script, the Plot Chart command attempts to use the selected data on the current sheet. The Open command can be used to open a specific DeltaGraph document and the Select Data command can be used to choose a particular data sheet and range of cells.

Command Syntax `Data [dataString] [as type dataType] [from file inputFile]`

Parameter *dataString*

A string of data of the type specified in the *dataType* parameter. Default is tab delimited.

dataType

Specification of delimiter type of *dataString* or *inputFile* from one of the following types: Tab-delimited, Comma-delimited, Space-delimited, or Excel.

inputFile

Name of file to import.

Result None

Examples To use a string from the script as data:

Data "F.Y. 1991	F.Y. 1992
Portland20	32
Denver16	28
San Diego22	29"

To set data to be imported from a tab-delimited text file:

```
Data as type Tab Delimited from file ←  
"MyHD:Spreadsheets:Sales Data"
```

Plot Chart

The Plot Chart command names which chart is to be plotted and then plots it. The result is either exported to a file or returned directly as the commands result.

NOTE

Before using the Plot Chart command, data must be selected. This can be accomplished directly with DeltaGraph by opening a document and then selecting the appropriate data, by using commands such as, Open, Use, and Select Data, or with the Data command. The Output command must be used to set the export options.

Command Syntax `Plot Chart chartName`

Parameters *chartName*

The name of the chart to be plotted. It must match exactly an available chart name. Available charts include built-in charts and any charts in open libraries. Use the Get Chart List command to retrieve a list of available charts.

Result If no export option was specified, the result is a picture of the chart.

If an export option was specified, no return data is sent. An error message is displayed if unable to complete the command.

Examples To plot a chart named “3-D Area.”

```
Plot Chart "3-D Area"
```

To place the result of the Plot Chart command into a variable for later use:

```
set plotResult to Plot Chart "3-D Area"
```

NOTE 

Older Macintosh Systems imposed a size limit of 32Kbytes for objects passed via Apple Events. If the chart you have plotted is greater than 32K in size, it is not properly sent via the Plot Chart event. Possible solutions are to plot a less complex chart or to export the chart and work with the exported file.

No Default

The No Default command clears all default settings set by the Use command.

Command Syntax `No Default [document ""] [sheet ""]`

Parameters `document ""`

Clears the active document name.

`sheet ""`

Clears the active data sheet name.

Result Error message if unable to complete the command. Empty response if successful.

Examples To clear the page name and the chart name:

```
No Default page ""chart""
```

Select Data

The Select Data command uses the specified section of a data sheet for plotting data. The row of labels has an index value of zero as does the label column. Out of bounds values will be handled as follows:

If a value is larger than the maximum number of rows, then the value is set to the appropriate maximum. If the start row is negative, it is set to zero. If the end row is negative, it is set to the maximum number of rows. The same rules apply to columns.

Command Syntax `Select Data [start row firstRow] [start column firstColumn] [end row lastRow] [end column lastColumn]`

Parameters *firstRow*

An integer indicating the first row of data in the selection.

firstColumn

An integer indicating the first column of data in the selection.

lastRow

An integer indicating the last row of data in the selection.

lastColumn

An integer indicating the last column of data in the selection.

Result Error message if unable to complete the command. Empty response if successful.

Examples To select data in cells starting in row 1, column 2 and ending in row 10, column 3, inclusively. This is a contiguous block of 20 cells.

```
Select Data start row 1 start column 2 end row 10 end
column 3
```

To select the labels and data in cells starting in row 1, column 1 and ending in row 20, column 5, inclusively. This is a contiguous block of 110 cells including both the row labels and column labels.

```
Select Data end row 20 end column 5
```

Use

The Use command makes the named element (the document or data sheet) the default data object.

Command Syntax `Use [document docName] [sheet sheetName]`

Parameters *docName*

The active document to use as the default. Can be a full file path.

sheetName

The active DeltaGraph document sheet to use as the default.

Result Error message if unable to complete the command. Empty response if successful.

Example `tell application "DeltaGraph 5"`

```
Use document "HD:DeltaGraph:MyDocument.dg5" sheet
"First"
Select Data start row 1 start column 1 end row 4
end column 9
Output JPEG to file
"OS_X:Users:klund:Desktop:Output.jpg"
Plot chart "Line"
end tell
```

DeltaGraph Dictionary of AppleScript Commands

The following tables provide a quick reference of the commands in the Delta- Graph AppleScript dictionary.

Required Suite	
Command	Description
open	Open the specified object. open alias: list of objects to open
print	Print the specified object(s). print alias: list of objects to print
quit	Quit application. quit
run	Send to an application when double-clicked. run

DeltaGraph Server Suite	
Command	Description
Close File	Close the named document and optionally save. Close File alias: name of the open document to save [save file integer]: 0 = No, 1 = Yes
Close Library	Close a DeltaGraph library by name. Close Library alias
	Specify the data source for the next chart to be plotted. Data string: Optionally supply data as a string

Data	[as type Tab Delimited/Comma Delimited/Space Delimited/ Excel] [from file alias]
Get Chart List	Return a list of all charts by name from open libraries. Get Chart List Result: list
Load Color Scheme	Load color scheme file. Load Color Scheme alias: File name of color scheme file

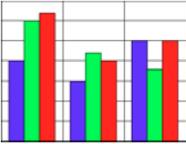
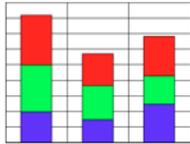
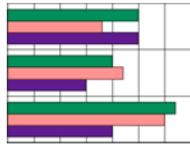
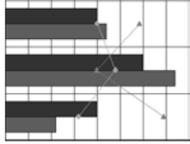
Open Library	<p>Open a DeltaGraph library file by name</p> <p>Open Library alias</p>
Output	<p>Set output type and location for chart to be plotted next.</p> <p>Output JPEG/PICT/PICT with Embedded Postscript//EPSF/Microsoft Windows Bitmap/Adobe Photoshop 4/TeachText:</p> <p>Supply type of output data [to file alias]</p>
Plot Chart	<p>Name the chart to be plotted and plot it.</p> <p>Plot Chart string</p> <p>Result: with no export option, result is a picture</p>
Plot Options	<p>Set various options for the next plot.</p> <p>Plot Options</p> <p>[Text Font string]: Default font to use for labels</p> <p>[Text Size small integer]: Default font size to use for labels [Text Color RGB color]: Default font color to use for labels (RGB)</p> <p>[Colorstyle default color/patterns/scheme color/colored patterns]: Use of color in default chart</p>

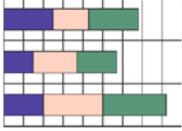
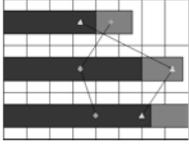
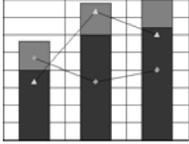
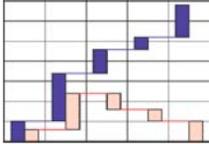
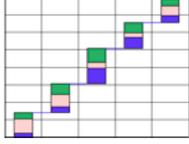
Set Axis Lengths	<p>Set lengths of chart axes in points</p> <p>Set Axis Lengths for X integer for Y integer for Z integer</p>
Set Info3D	<p>Set appearance of 3-D charts</p> <p>Set Info3D rotation integer elevation integer perspective integer</p>

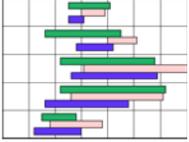
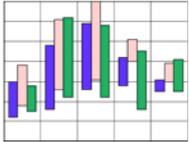
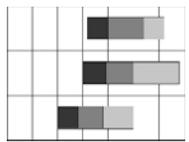
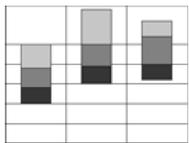
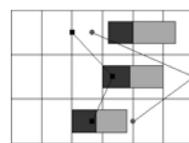
DeltaGraph Immediate Suite	
Command	Description
No default	<p>Clear the name for the current default data object.</p> <p>No default</p> <p>[document null]: Active document</p> <p>[sheet null]: Active data sheet</p> <p>[Excel sheet null]: Name of Excel sheet to open when importing data.</p>
Select Data	<p>Select a section of a data sheet for plotting a chart.</p> <p>Select Data</p> <p>[start row integer]: The first row of data in the selection</p> <p>[start column integer]: The first column of data in the selection</p> <p>[end row integer]: The last row of data in the selection</p> <p>[end column integer]: The last column of data in the selection.</p>
Use	<p>Make the named element the default.</p> <p>Use</p> <p>[document alias]: Active document</p> <p>[sheet string]: Active data sheet</p> <p>[Excel sheet string]: Name of Excel sheet to open when importing data</p>

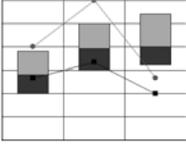
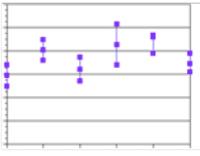
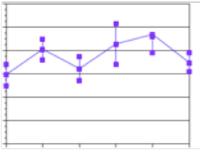
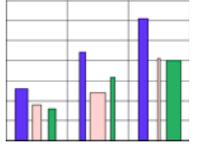
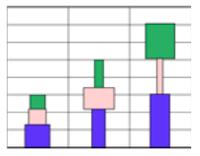
Chart Types Quick Reference

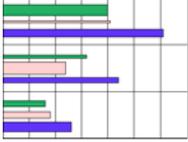
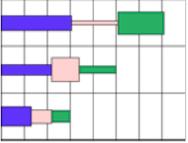
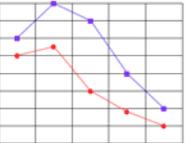
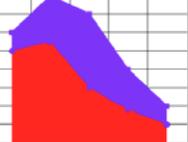
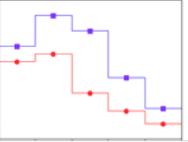
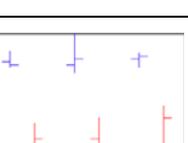
2-D Business Charts

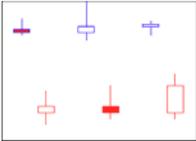
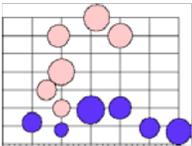
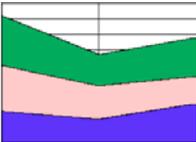
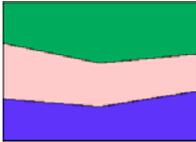
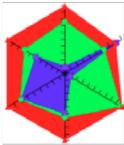
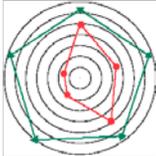
	<p>Column</p> <p>Use a Column chart to compare one item to another or to compare different items over a period of time. Column charts effectively show dramatic changes from one category to another.</p>
	<p>Stacked Column</p> <p>Use a Stacked Column chart to compare parts to the total or to show how components of an item change over time.</p>
	<p>Bar</p> <p>Use a Bar chart to compare sizes and amounts or to emphasize differences between items, usually at the same point in time.</p>
	<p>Bar With Line Overlay</p> <p>Use a Bar with Line Overlay chart to compare sizes and amounts or to emphasize differences between items, usually at the same point in time. The line overlay shows the trend of one or more items over a period of time or number of events.</p>

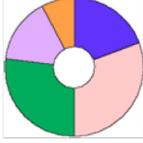
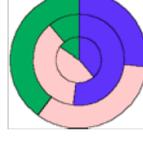
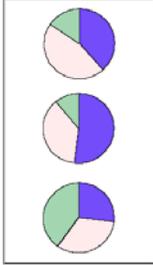
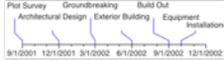
	<h3>Stacked Bar</h3> <p>Use a Stacked Bar chart to show how all categories in a series compare over time or to compare parts to the total.</p>
	<h3>Stacked Bar with Line Overlay</h3> <p>Use a Stacked Bar with Line Overlay chart to compare parts to the total or to show how components of an item change over time. The line overlay shows the trend of one or more items over a period of time or number of events.</p>
	<h3>Stacked Column with Line Overlay</h3> <p>Use a Stacked Column with Line Overlay chart to compare parts to the total or to show how components of an item change over time. The line overlay shows the trend of one or more items over a period of time or number of events.</p>
	<h3>Build-Up</h3> <p>Use a Build-Up chart to show components that build up to a total over time or make up a whole.</p>
	<h3>Stacked Build-Up</h3> <p>Use a Stacked Build-Up chart to show groups of components that build up to a total over time or make up a whole.</p>

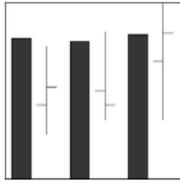
	<p>Floating Bar</p> <p>Use a Floating Bar chart to compare ranges of data among series and categories.</p>
	<p>Floating Column</p> <p>Use a Floating Column chart to compare ranges of data among series and categories.</p>
	<p>Floating Stacked Bar</p> <p>Use a Floating Stacked Bar chart to specify ranges of data in bar format and to compare parts to the total or to show how components of an item change over time.</p>
	<p>Floating Stacked Column</p> <p>Use a Floating Stacked Column chart to specify ranges of data in column format and to compare parts to the total or to show how components of an item change over time.</p>
	<p>Floating Stacked Bar with Line Overlay</p> <p>Use a Floating Stacked Bar with Line Overlay chart to compare parts to the total or to show how components of an item change over time. Specify the lowest and highest value for each bar. This results in bars that “float” (not attached to the category axis). The line overlay shows the trend of one or more items over a period of time or a number of events.</p>

	<h3>Floating Stacked Column with Line Overlay</h3> <p>Use a Floating Stacked Column with Line Overlay chart to compare parts to the total or to show how components of an item change over time. Specify the lowest and highest value for each column. This results in columns that “float” (not attached to the category axis). The line overlay shows the trend of one or more items over a period of time or a number of events.</p>
	<h3>High-Low</h3> <p>Use a High-Low chart to show the highs and lows for different items or different periods of time.</p>
	<h3>Range</h3> <p>A Range chart shows the highs and lows of an item, as well as the midpoints between the two. You can make these comparisons over time.</p>
	<h3>Column Segmentation</h3> <p>Use a Column Segmentation chart much like a Column chart but with a second value for each series that results in width, allowing you to compare two variables for each column.</p>
	<h3>Stacked Column Segmentation</h3> <p>Use a Stacked Column Segmentation chart to compare two values for groups of data that combine to form totals in categories.</p>

	<h3>Bar Segmentation</h3> <p>Use a Bar Segmentation chart much like a Bar chart but with a second value for each series that results in width, allowing you to compare two variables for each bar.</p>
	<h3>Stacked Bar Segmentation</h3> <p>Use a Stacked Column Segmentation chart to compare two values for groups of data that combine to form totals in categories.</p>
	<h3>Line</h3> <p>Use a Line chart to show the trend of one or more items over a period of time or number of events. Line charts are best for plotting a long series of data points.</p>
	<h3>Line Fill</h3> <p>A variation of a Line chart, using a fill below the data series line. To create a fill, use the “Fill Below Line” option in the “Options” dialog box.</p>
	<h3>Step</h3> <p>Use a Step chart to compare items that do not show a trend. Step charts display discrete points along the value axis, with vertical lines showing the difference between each point.</p>
	<h3>Open High Low Close</h3> <p>Use an Open High Low Close chart to show values that fluctuate within a given time period, such as a day or hour.</p>

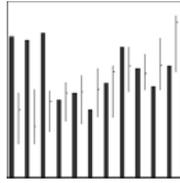
	<h3>Candlestick</h3> <p>Use a Candlestick chart to show whether the open or close activity has increased or decreased within the bounds of the highs and lows for different items or different periods of time. This chart is similar to the Open High Low Close chart.</p>
	<h3>Bubble</h3> <p>Use a Bubble chart to show a visual comparison using three values.</p>
	<h3>Area</h3> <p>Use an Area chart to emphasize the volume or size of a data series, over time.</p>
	<h3>Area Percent</h3> <p>An Area Percent chart is a variation of an Area chart with the data series appearing as a percentage of the whole. To create an Area Percent chart, use the “Percentage” option in the “Options” dialog box.</p>
	<h3>Spider</h3> <p>Use a Spider chart to show multiple variables, such as performance levels, ratings in different areas, or progress.</p>
	<h3>Radar</h3> <p>A Radar chart is a variation of a Spider chart. To create a Radar chart, turn off the “Show Fill” and “Show Axes/Ticks” and turn on the “Radius Major” options in the “Options” dialog box.</p>

	<p>Pie</p> <p>Use a Pie chart to show the relationship of parts to the whole.</p>																												
	<p>Donut</p> <p>A Donut chart is a variation of a Pie chart with a hole in the middle. To create a Donut chart, use the “Donut” option in the “Options” dialog box.</p>																												
	<p>Stacked Pie</p> <p>Use a Stacked Pie chart to show the relationship of the parts to the whole for two or more data series.</p>																												
	<p>Multiple Pie</p> <p>Use a Multiple Pie chart to show the relationship of the parts to the whole for two or more data series.</p>																												
	<p>Time Line</p> <p>Use a Time Line chart to display a project schedule, time line, or even a product comparison based on a predetermined scale.</p>																												
<table border="1"> <thead> <tr> <th>Temperatures</th> <th>High</th> <th>Low</th> <th>Median</th> </tr> </thead> <tbody> <tr> <td>Jan-Feb</td> <td>63</td> <td>59</td> <td>61</td> </tr> <tr> <td>Mar-Apr</td> <td>75</td> <td>64</td> <td>69.5</td> </tr> <tr> <td>May-Jun</td> <td>96</td> <td>72</td> <td>84</td> </tr> <tr> <td>Jul-Aug</td> <td>103</td> <td>68</td> <td>85.5</td> </tr> <tr> <td>Sep-Oct</td> <td>92</td> <td>78</td> <td>85</td> </tr> <tr> <td>Nov-Dec</td> <td>79</td> <td>62</td> <td>70.5</td> </tr> </tbody> </table>	Temperatures	High	Low	Median	Jan-Feb	63	59	61	Mar-Apr	75	64	69.5	May-Jun	96	72	84	Jul-Aug	103	68	85.5	Sep-Oct	92	78	85	Nov-Dec	79	62	70.5	<p>Table</p> <p>Use a Table chart to show chart data as it appears in the Data page.</p>
Temperatures	High	Low	Median																										
Jan-Feb	63	59	61																										
Mar-Apr	75	64	69.5																										
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Volume Open High Low Close

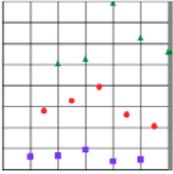
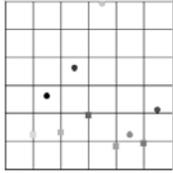
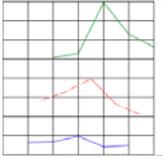
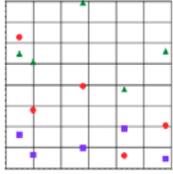
Use a Volume Open High Low Close chart to show values that fluctuate in a given time period, such as a day or hour. You can plot the total volume, starting value (open), the high, the low, and the final (close) values.

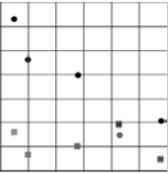
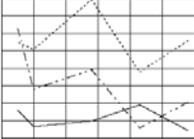
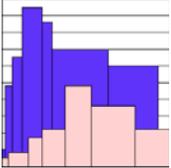
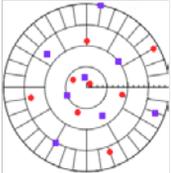
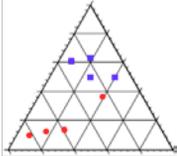


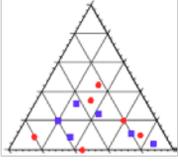
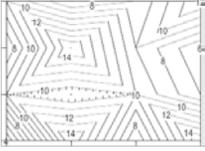
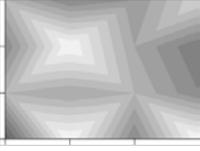
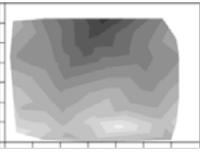
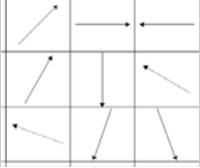
Volume High Low Close

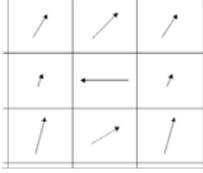
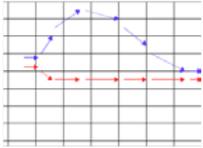
This chart is similar to the Volume Open High Low Close chart except that it does not use the second column of data, the open values are not represented, and the corresponding second column in every series should be left empty.

2-D Technical Charts

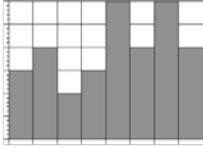
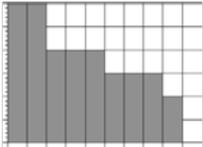
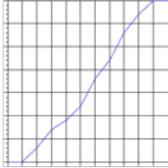
	<p>Paired Scatter</p> <p>Use a Paired Scatter chart to show data points from one or more data series, each point having unique X and Y coordinates. This chart is similar to the Paired XY Line chart in the way the data is organized, but the Paired Scatter chart does not sort the X values before plotting the data.</p>
	<p>Paired Intensity Scatter</p> <p>Use a Paired Intensity Scatter chart to show data points from one or more data series with each point having unique X and Y coordinates. “Paired” refers to how the chart interprets the data that makes up each series of X and Y coordinates.</p>
	<p>Paired XY Line</p> <p>Use a Paired XY Line chart to show sorted data points from one or more data series with unique X and Y coordinates. “Paired” refers to how the chart interprets the data that makes up each series of X and Y coordinates.</p>
	<p>Scatter</p> <p>Use a Scatter chart to show data points from one or more data series, each point having the same X coordinate and unique Y coordinates. This chart is similar to the XY Line chart in the way the data is organized, but the Scatter chart does not sort the X values plotting the data. The number of rows determines how many points are in a data series.</p>

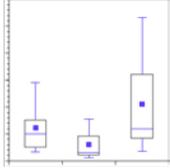
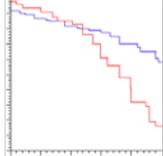
	<h3>Intensity Scatter</h3> <p>Use an Intensity Scatter chart to show data points from one or more data series with each point having the same X coordinate and unique Y coordinates plus a Z-axis intensity value. The number of rows determines how many points are in a data series.</p>
	<h3>XY Line</h3> <p>Use an XY Line chart to show a comparison of one or more data series, each having the same X coordinate and unique Y coordinates. This chart is similar to the Scatter chart in the way the data is organized, but the XY Line chart sorts the X values from left to right before plotting the data.</p>
	<h3>XY Column</h3> <p>Use an XY Column chart in much the same way as a Scatter chart. Create columns by filling the area below and to the left of each XY data point.</p>
	<h3>Polar</h3> <p>Use a Polar chart to show relationships between angles measured in degrees and some other quantity.</p>
	<h3>Ternary</h3> <p>Use a Ternary chart to show the percentage of a whole based on three parts of information.</p>

	<p>Ternary Percent</p> <p>Use a Ternary Percent chart to show the percentage of a whole based on three parts of information, two of which are data in percentage form.</p>
	<p>Contour Line</p> <p>The Contour Line chart is a variation of the Contour Fill and 3-D Surface Line/Fill charts. A Contour Line chart does not have a value axis; the values are shown as a series of lines and numbers within the chart instead.</p>
	<p>Contour Fill</p> <p>Use a Contour Fill chart to show surface variation based on two sets of evenly spaced values (such as latitude and longitude at 10° intervals), which can be entered as row and category labels, and a unique number (such as elevation at a given point).</p>
	<p>XYZ Contour Line</p> <p>Use an XYZ Contour Line chart to show variations and relationships over three sets of values: latitude, longitude, and elevation.</p>
	<p>XYZ Contour Fill</p> <p>Use an XYZ Contour Fill chart to show variations and relationships over three sets of values: latitude, longitude, and elevation.</p>
	<p>Gridded Vector</p> <p>Use a Gridded Vector chart to display a direction (like air flow) using vectors (arrows) over a gridded area.</p>

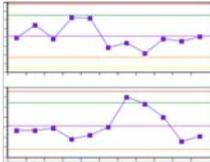
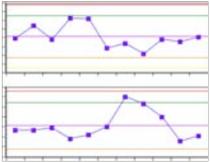
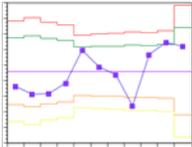
	<p>R/A Gridded Vector</p> <p>Use a Radius/Angle Gridded Vector (R/A Gridded Vector) chart to show direction (such as airflow) using vectors (arrows) over a gridded area.</p>
	<p>XY Vector</p> <p>Use an XY Vector chart to display a direction (such as airflow) using vectors and a magnitude (dependent upon the endpoint calculation method).</p>

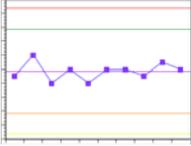
2-D Statistical Charts

	<p>Histogram</p> <p>Use a Histogram chart to show the frequency or occurrence of selected data in a specified range.</p>
	<p>Pareto</p> <p>Use a Pareto chart to show data that need to be counted and sorted.</p>
	<p>Ogive</p> <p>Use an Ogive chart to show the running sum of frequency counts.</p>

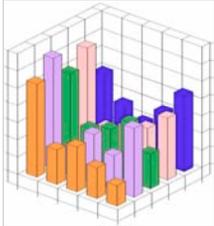
	<h3>Box Plot</h3> <p>Use a Box Plot chart to show the “spread” of data between categories. Statistics are computed to reduce the amount of information displayed while still showing the distribution of data in each category.</p>
	<h3>Survival Chart</h3> <p>Use a Survival chart to show the decay of a variable based on an independent variable (typically time).</p>

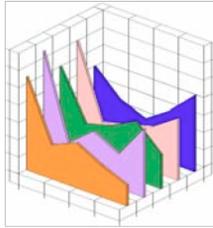
Quality Control Charts

	<h3>X-R (X Bar-R)</h3> <p>The X-R chart uses measured values in each sub- group to compute the average value and the range of the data.</p>
	<h3>X-S (X Bar-S)</h3> <p>The X-S chart is similar to the X-R chart except the standard deviation is plotted. This chart is more appropriate when the set of measured values is greater than 10.</p>
	<h3>Fraction Defective</h3> <p>The Fraction Defective (p) chart shows the fraction of defective items in each measured subgroup. Data are shown as subgroup sizes and defectives are represented as percentages.</p>

	<p>Number of Defectives The Number of Defectives (pn) chart shows the number of defective items in each subgroup. All subgroups must have the same number of members.</p>
	<p>Defects Per Unit</p> <p>The Defects Per Unit (u) chart shows the number of independent defects per unit. Use this chart if there may be many defects. Subgroups can vary or be constant.</p>
	<p>Number of Defects The Number of Defects (c) chart shows the number of defects within a subgroup. The subgroup sizes are constant.</p>

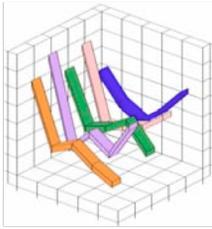
3-D Business Charts

	<p>3-D Column</p> <p>Use the 3-D Column chart to compare one item to another or to compare different items over a period of time. Column charts effectively show dramatic changes from one category to another.</p>
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3-D Area

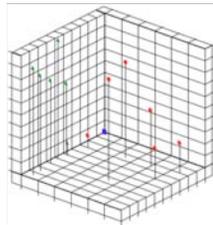
Use a 3-D Area chart to emphasize the volume or size of a data series, frequently over time. This chart is a variation of a 2-D Line or Area chart.



3-D Ribbon

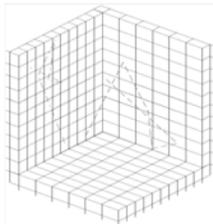
Use a 3-D Ribbon chart to show trends. This chart is a variation of a 2-D Line chart.

3-D Technical Charts



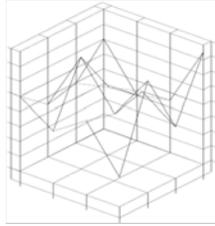
3-D Scatter

Use the 3-D Scatter chart to plot data points created by the intersection of three different coordinate values. The points are connected to one of the chart planes with a drop line. Each of the three values that make up a point corresponds to a particular axis in a 3-D grid.



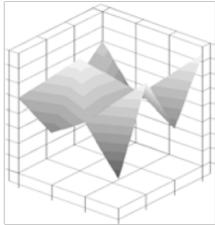
3-D Scatterline

The 3-D Scatterline chart is a variation of the 3-D Scatter chart, except that it connects the data points by a line, as in “connect-the-dots.” This chart measures something that moves in space as a function of time: a satellite orbiting earth, for example. The chart shows a path of contact points along an implied time line represented by the position of the points along the line.



3-D Wireframe

Use a 3-D Wireframe chart to show three-dimensional changes in an object or over time. It is a variation of a Contour chart.



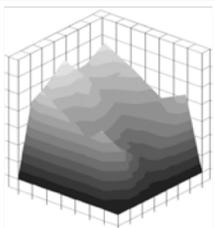
3-D Surface Fill

Use a 3-D Surface Fill chart to show surface variation based on two evenly spaced values (such as latitude and longitude at 10° intervals), which can be entered as row and category labels, and a unique number (such as elevation at a given point).



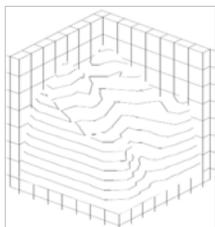
3-D Surface Line

Use a 3-D Surface Line chart to show surface variation based on two evenly spaced values (such as latitude and longitude at 10° intervals), which can be entered as row and category labels, and a unique number (such as elevation at a given point).



3-D XYZ Surface Fill

Use a 3-D XYZ Surface Fill chart to show three dimensional data in which one quantity (plotted on the Z axis) varies depending on X and Y values. XYZ data are not evenly incremented like Surface Line or Fill data.



3-D XYZ Surface Line

Use a 3-D XYZ Surface Line chart to show three dimensional data in which one quantity (plotted on the Z axis) varies depending on X and Y values. XYZ data are not evenly incremented like Surface Line or Fill data.