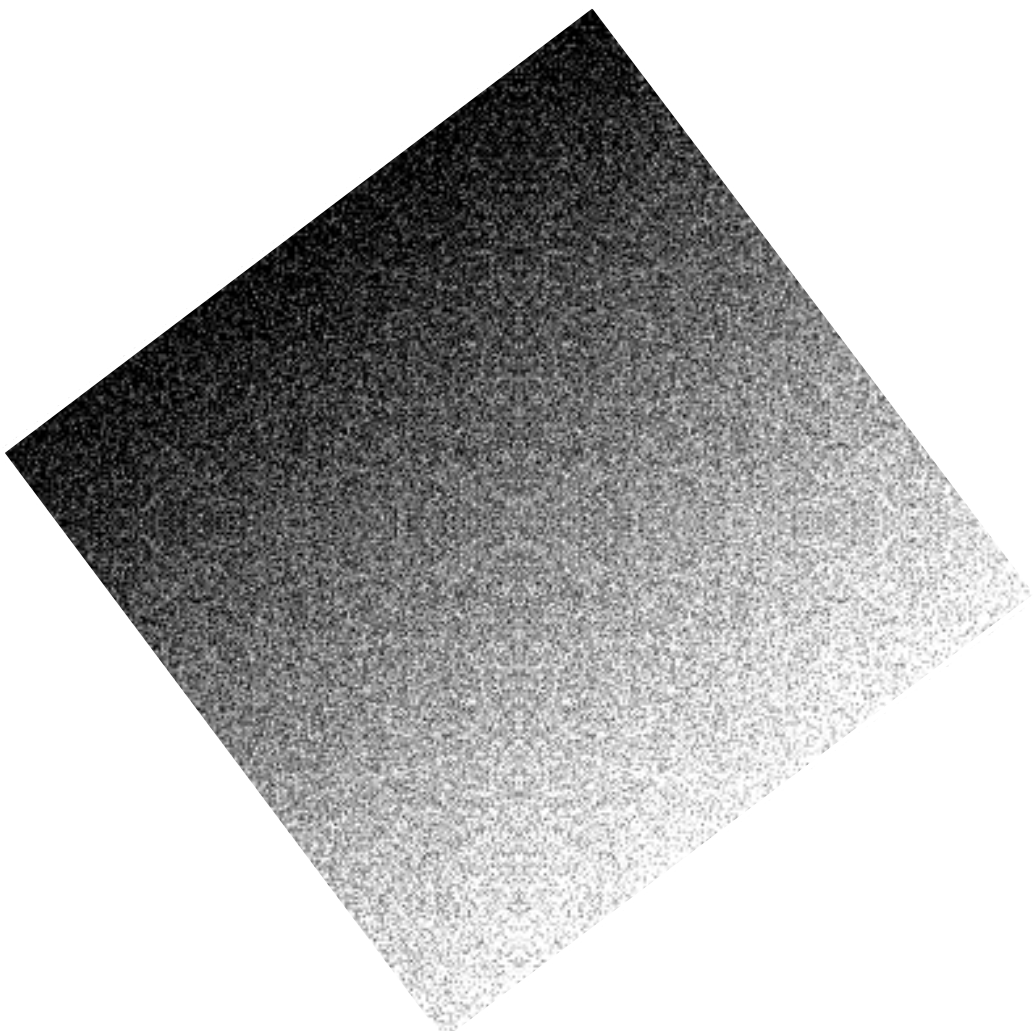
Intelligent Decision Server

IBM

Plot User's Guide

Version 1



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Intelligent Decision Server

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Version 1

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Note

Before using this information and the product it supports, be sure to read the general information under “Notices” on page vi.

First Edition (October 1996)

This edition applies to Version 1 of Intelligent Decision Server, 5639–IDS, and to any subsequent releases until otherwise indicated in new editions or technical newsletters. Make sure you are using the correct edition for the level of the product.

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About This Book

This book describes the features of the Plot tool and the process for creating axes and pie graphs.

Who Should Read This Book

This book is intended for all IDS users who need to create graphs for reports or presentations.

Whether you are learning about the Plot tool for the first time or you are familiar with the Plot tool, you can use this user's guide to learn about the Plot tool and find more detailed information about the capabilities of the Plot tool.

Prerequisite Reading

Before reading this book, read *Working with the Intelligent Decision Server*

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Chapter 1. What Is Plot?

The Plot tool enables you to visually present tabular data from other IDS tools, including Query, Reporter, Spreadsheet, Transformers, and SQL Entry, as graphs. You can use graphs in reports and presentations to help your audience visualize the data. You can also use the Plot tool with other tools in a capsule application to produce a graph automatically.

You can create two types of graphs with the Plot tool:

An axes graph, which depicts several sets of data side by side, enabling you to make correlations and show numeric relationships that are difficult to present using only numbers.

A pie graph, which depicts individual values in proportion to the total of the values.

The Axes Graph

The axes graph illustrates the data as a numeric correlation or relationship. In this guide, *plot* refers to one curve, line, bar, or other graphic, and *graph* refers to the entire group of plots. An axes graph is charted against two axes, the *x-axis* and the *y-axis*.

The x-axis is typically the horizontal axis of the graph along which values are charted.

The y-axis is typically the vertical axis of the graph. It has a range of numbers, or *scale*, against which plots are charted.

The following axes graph depicts the forecasted and actual sales of diet cola in specific regions.

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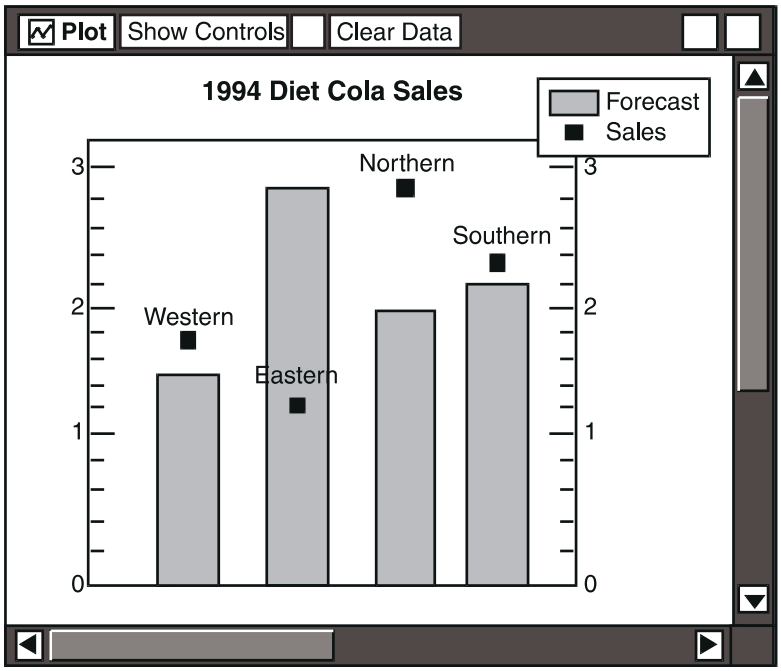
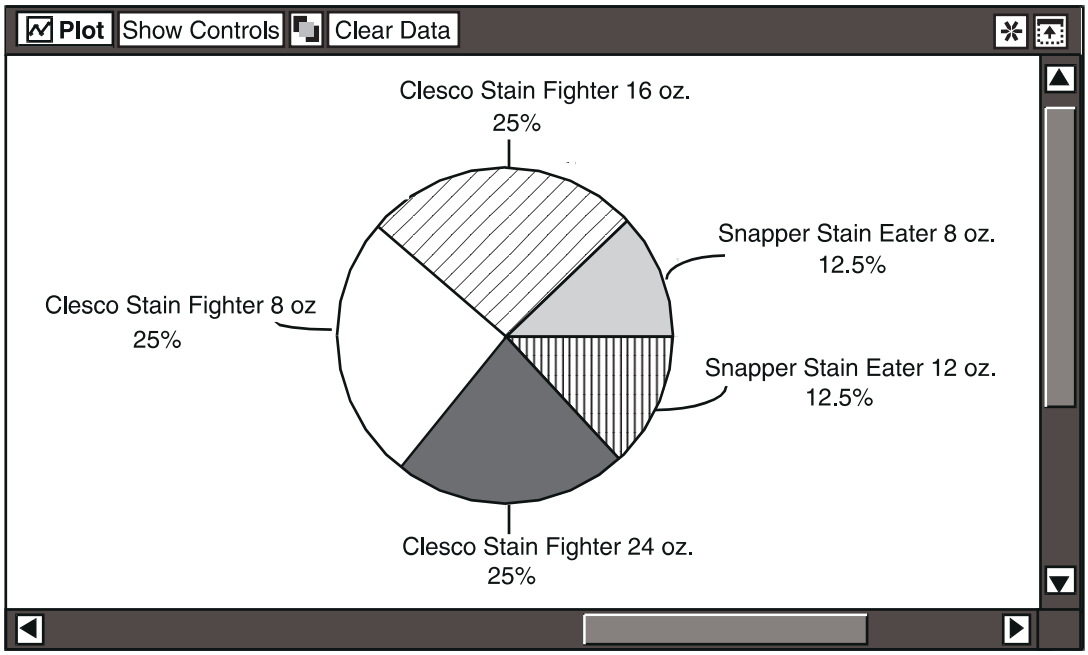


The Pie Graph

The pie graph illustrates the relationship of a value as a portion of a total value. A pie graph is comprised of slices, each representing a data value from the source icon.

The following pie graph contains slices depicting the percentage of the market share for each cleanser.


Plot
Show Controls
Clear Data
Clesco Stain Fighter 16 oz.
25%
Snapper Stain Eater 8 oz.
12.5%
Clesco Stain Fighter 8 oz
25%
Snapper Stain Eater 12 oz.
12.5%
Clesco Stain Fighter 24 oz.
25%

Chapter 2. Getting Started

The Plot tool does not perform data access, but receives data from a database using a source icon. You must copy or move data into the Plot tool to analyze it. After data is in the tool, you can choose the type of graph that presents the data in the best way. This chapter describes how to:

Copy data to a Plot icon or into the Plot window

Choose the graph type for presenting your data

Clear data from the Plot tool

Cancel changes made to a graph

Copying Data to a Plot Icon or into a Plot Window

Copy the data you wish to chart from a source icon to a closed Plot icon or into the Plot window. Source icons can be Query, Reporter, Spreadsheet, SQL Entry, and Transformer icons. Source data for the Plot tool must be organized in a tabular format (columns and rows) with one line of headings. If the column or row headings have two lines, only one line displays on the graph.

To copy data to a Plot tool:

1. Open the source icon.
2. Click on the Select All button in the source icon.

   Select specific portions of the source icon.
3. Copy the data to the Plot tool.

   If you copy data to a closed Plot icon, the icon automatically opens and displays the Plot window, as shown in Figure 1 on page 5.

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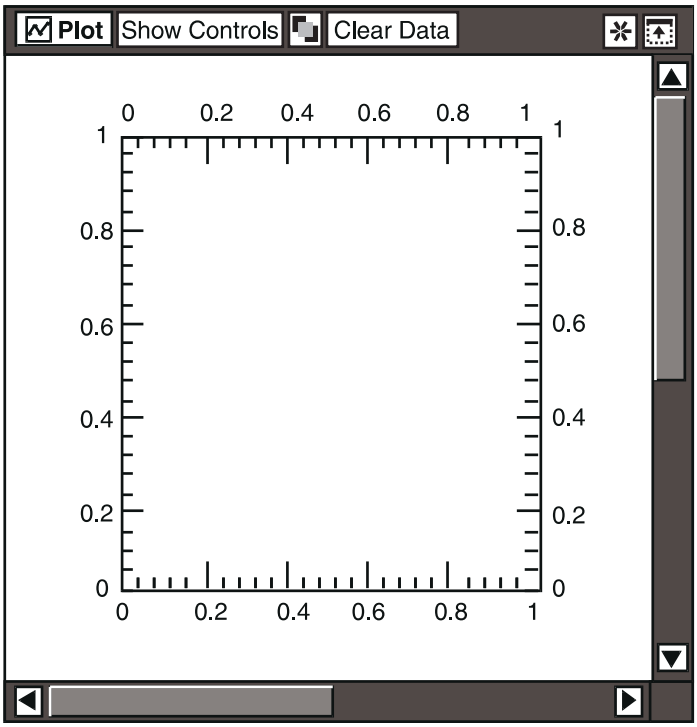


Figure 1. The Plot window

The Plot window appears empty until you apply selections in the Plot Controls window that determine how to chart your data.

If you copy data into a Plot tool that already contains data, the new data overwrites the existing data.

After you copy the data into the Plot icon, the desktop message bar displays information about the graph. The message indicates the number of columns, rows, and titles the Plot tool received from the source icon.

To show the size of the data again, select **Show Data Size** in the Special menu.

The desktop message bar displays the number of rows, columns, and titles in the graph.

Choosing the Graph Type

After you copy data into a Plot icon, you choose how to depict the data. The Plot tool is capable of producing two graph types: an axes graph and a pie graph. A graph is comprised of several single plots or slices, each representing one column or one row of source data. The graph choices and their related fields are located in the Plot Controls window.

To open the Plot Controls window:

1. Click on Plot window header.

The Plot Controls window opens as shown in Figure 2. The **Graph Type** field defaults to the axes graph choice, depicted as points connected by lines.

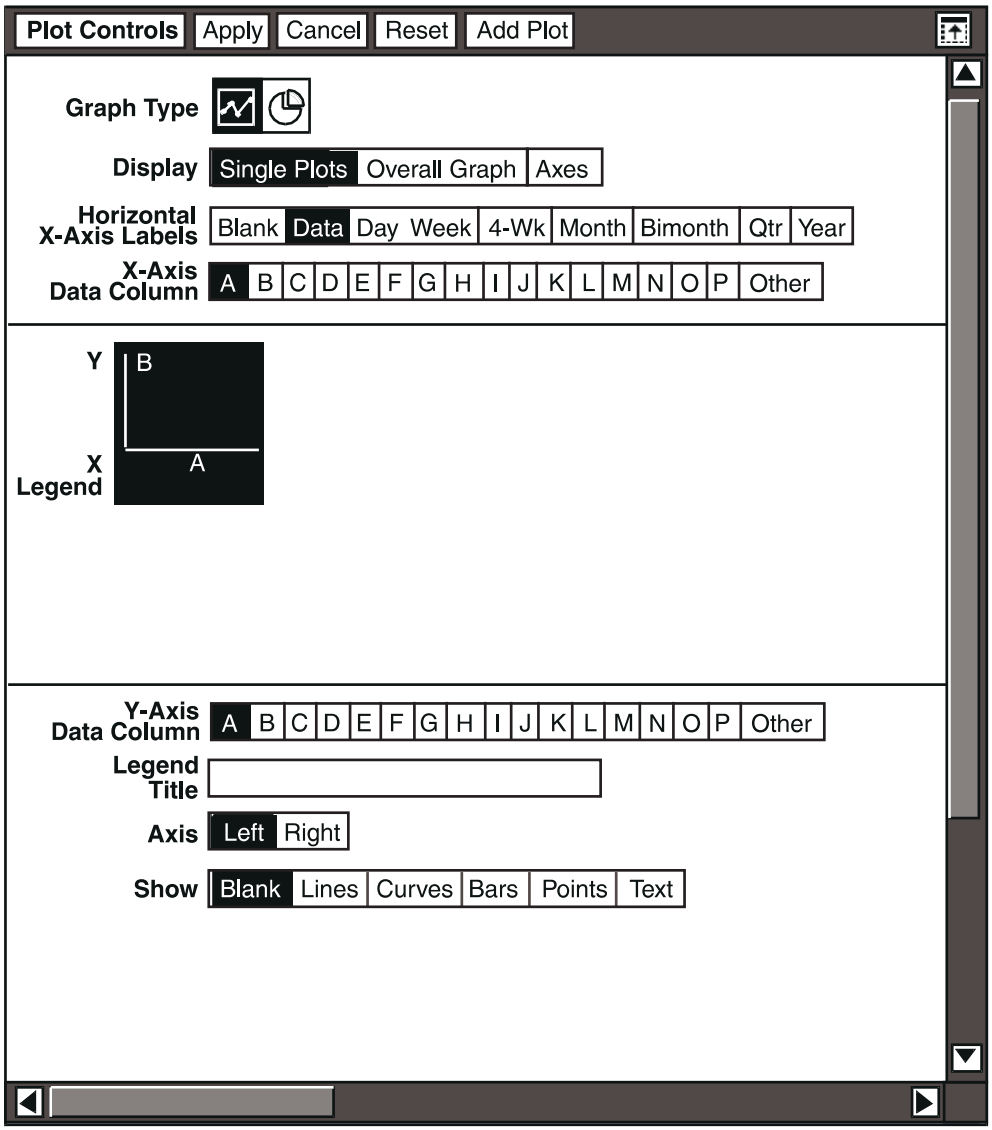
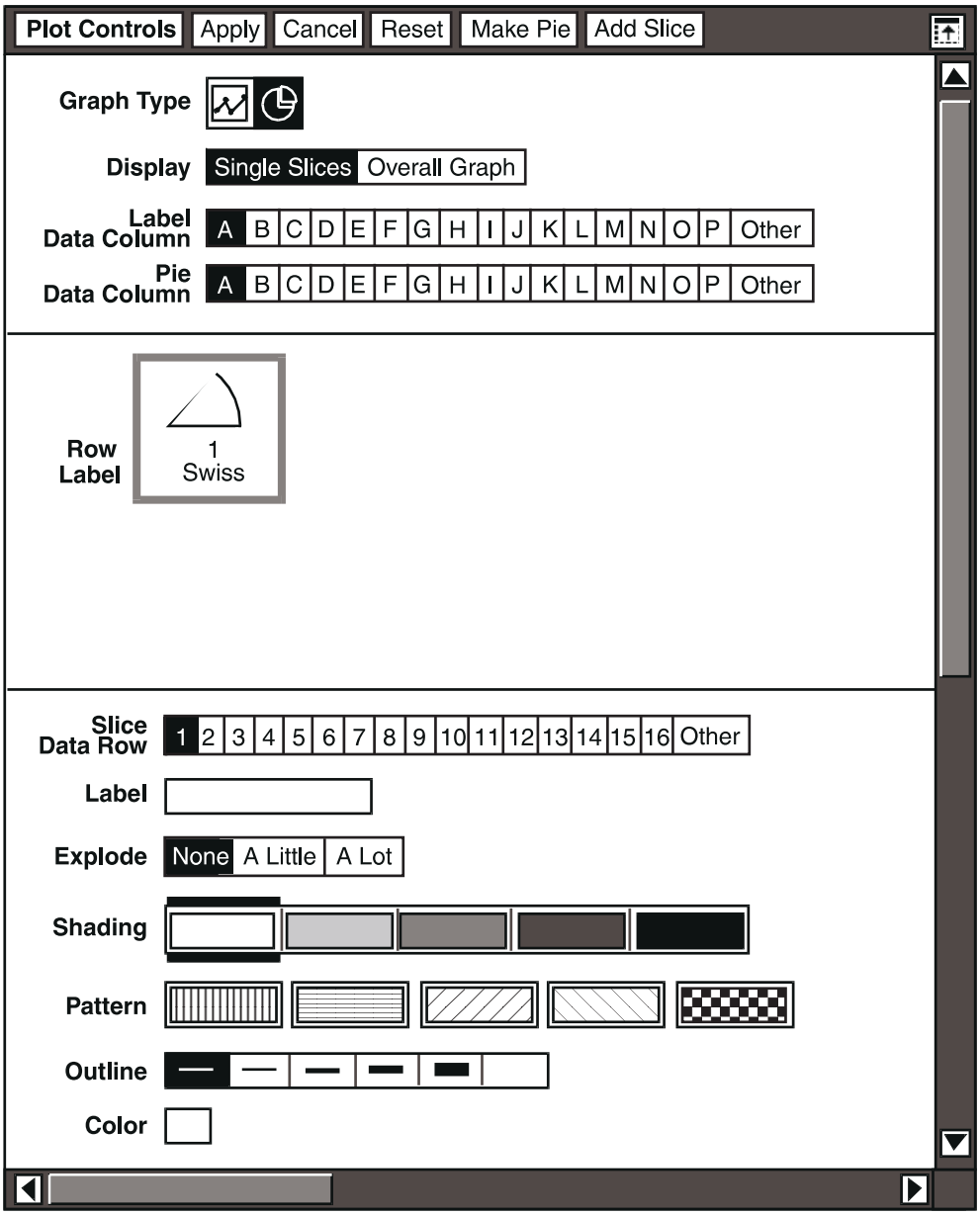


Figure 2. The Plot Controls window

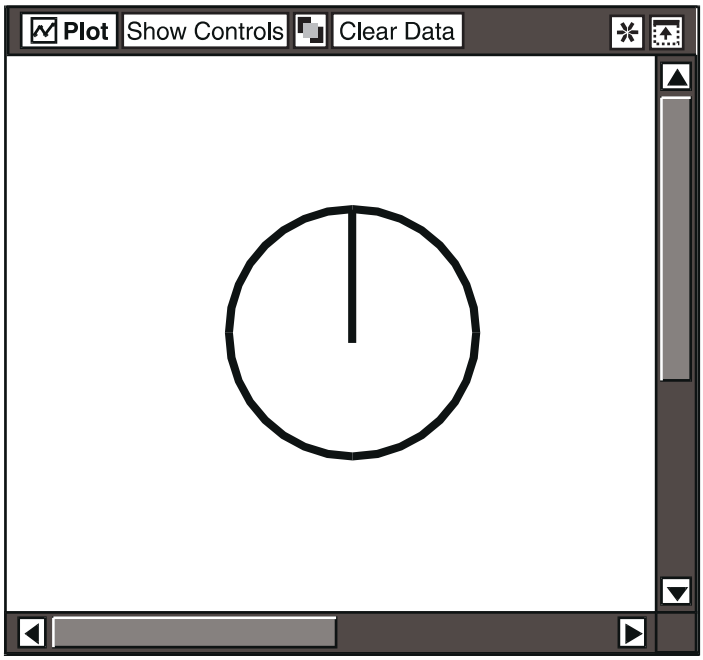
For more information on creating axes graphs, see Chapter 4, “Creating an Axes Graph” on page 20.

To set the Plot tool to create a pie graph, select the pie graph choice (depicted as a circle with a slice set apart) in the **Graph Type** field.

The Plot Controls window changes to show the pie graph settings.



The Plot window changes to display an empty pie graph.



For more information on creating pie graphs, see Chapter 5, “Creating a Pie Graph” on page 63.

Clearing Data

The **Clear Data** button removes all the data from your graph without affecting the selections made in the Plot Controls window. The **Clear Data** button is useful when you want to use the same Plot Controls window settings for charting different sets of data.

For example, suppose you set up a complex graph using data from a spreadsheet. You want to chart data from another spreadsheet, using the existing graph as a template.

To clear data from the existing graph:

1. Click on **Clear Data** to remove the data from the graph.
2. Copy the new data you want to chart from the spreadsheet to the Plot tool.

   The graph retains the same settings, but it displays the new data from the spreadsheet.

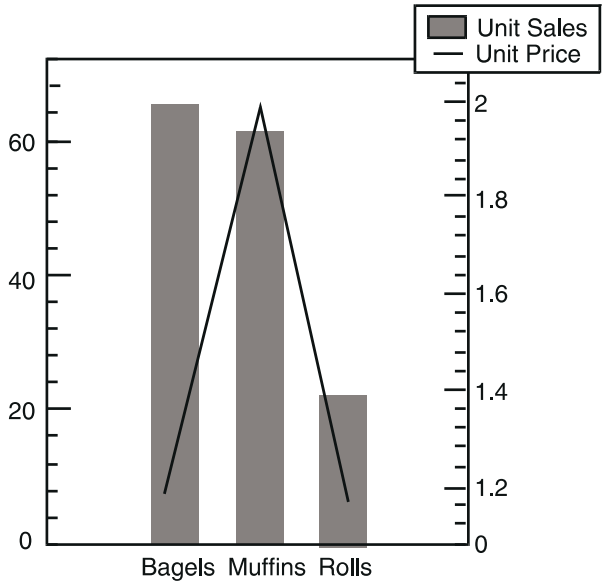
You can also copy new data from the spreadsheet without first using **Clear Data** to clear the data in the graph. The new data overwrites the existing data.

If you inadvertently clear the data from your graph and you have not closed the Plot icon, you can recover your data by selecting **Cancel Changes** in the Special menu.

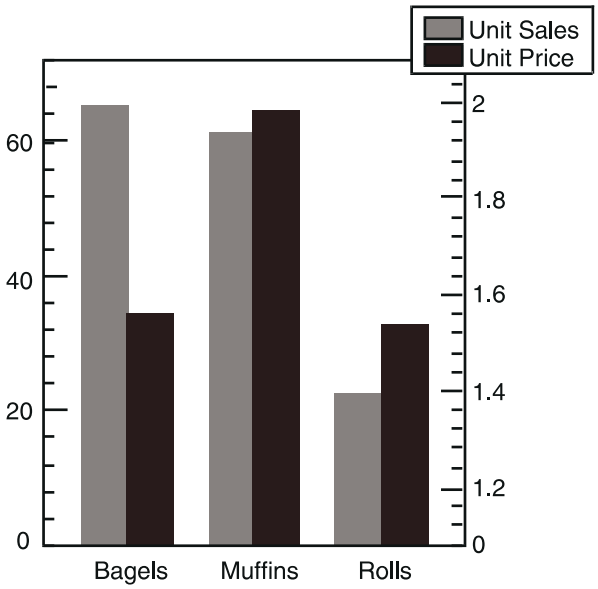
Canceling Changes

The **Cancel Changes** choice in the Special menu allows you to cancel changes made to a graph, including changes applied in the Plot Controls window.

Suppose you decide to display the unit price data as a bar plot instead of a line plot in the following graph.



You change the line plot charting unit price to a bar plot, and click on the Plot Controls window to apply your changes to the graph.



You decide that the graph looks confusing with two bar plots, and want to change the graph back to display unit price as a line plot. When you select **Cancel Changes**, the Plot window closes. When you open the Plot icon, the original line plot is restored.

You cannot use **Cancel Changes** to restore the window to its previous state if you saved changes to your graph by closing the Plot window. After you close the Plot window, the changes are set.

To restore the graph to its state at the last time you closed it, select **Cancel Changes**.

The Plot window closes, and the graph reverts to the last saved version.

Important: If you select **Cancel Changes** after creating a new graph, and you have not saved changes to the graph by closing the Plot window, you cancel all the changes made and lose the entire graph.

Chapter 3. Charting the Data

After you copy data into the Plot tool, you decide whether the data is organized in the graph by columns or rows.

Deciding which data to use in your graph is a crucial part of creating a graph that displays the results you want.

This chapter describes how to:

- Determine whether the graph should use column- or row-oriented data
- Chart column-oriented data
- Chart row-oriented data

Selecting the Data to Chart

Data from a single source can be charted two different ways in a graph — as columns or rows. Use the **Treat Data As** field in the Overall Graph page to determine how data is charted in a graph. By default, the Plot tool treats the source data as columns.

Queries and spreadsheets are typically charted as columns. Reports created with the Reporter tool can be charted as either columns or rows.

When you choose to chart the data as column or rows, your choice applies to the entire graph, not just to individual plots or slices. You cannot, for example, create a graph that uses one plot of column-oriented data, and one plot of row-oriented data.

The following spreadsheet illustrates the difference between data organized as columns and data organized as rows.

Column-oriented data categorized by quarterly sales.

Row-oriented data categorized by cheese product.

	A	B	C	D	E
1	Cheese Product	$Sales-1Q 1994	$Sales-2Q 1994	$Sales-3Q 1994	$Sales-4Q 1994
2	Swiss	26,046.00	24,460.00	15,879.00	19,327.00
3	Cheddar	34,928.00	28,583.00	25,802.00	20,877.00
4	Gouda	15,624.00	18,468.00	23,997.00	18,769.00
5	Cream	38,072.00	30,489.00	27,325.00	25,393.00

The following graphs use this spreadsheet for the source data, and illustrate the differences between a graph representing column-oriented data and a graph representing row-oriented data.

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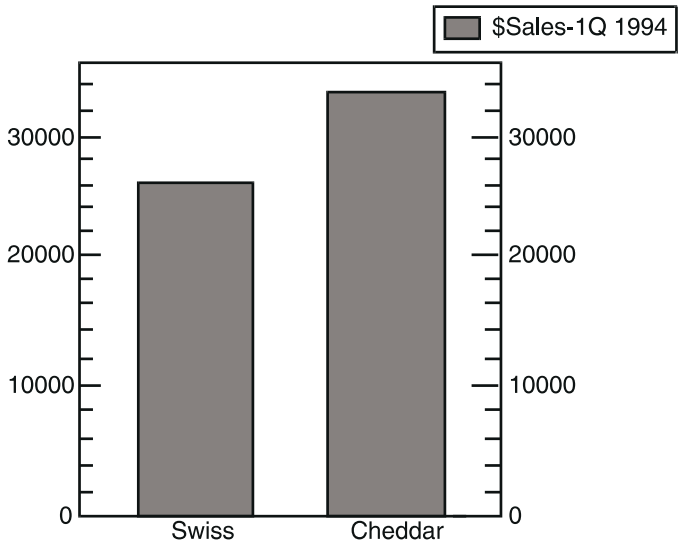
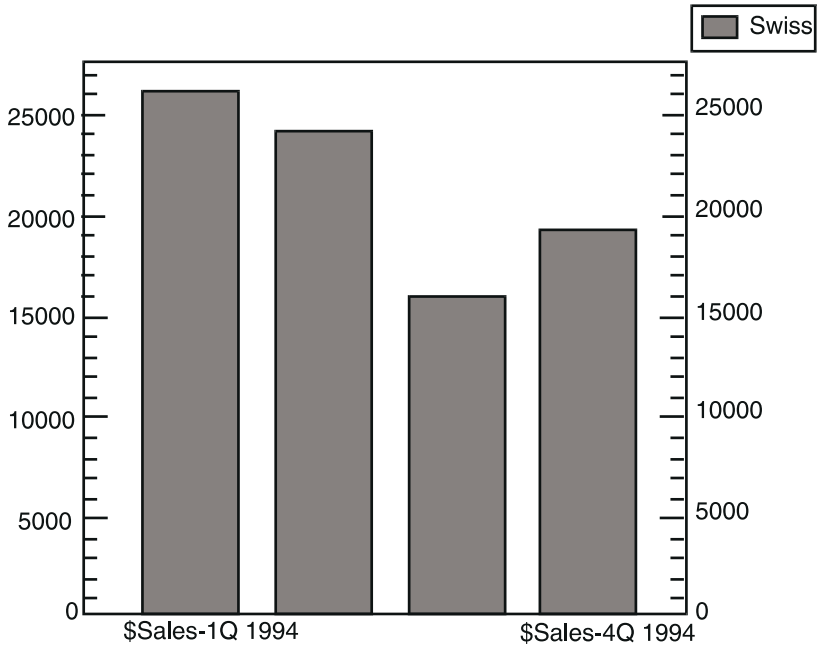
If you want to chart the first quarter sales for Swiss and Cheddar cheese, you would treat the data from the source icon as columns.



If you want to chart Swiss cheese sales for the entire year, you would treat the data from the source icon as rows.



When you specify which column or rows are charted in the Plot tool, you affect various field in the graph, as described in Table 1 on page 13.

Table 1. Plot tool fields

Field	Affects
X-Axis Data	X-axis labels of the axes graph
Y-Axis Data	Y-axis values of the axes graph
Label Data	Slice labels of the pie graph
Pie Data	Data evaluated in the pie graph

The names of the fields automatically change depending on whether **Columns** or **Rows** is selected in the **Treat Data As** field.

The following sections explain the process of charting columns and rows of data.

Charting Columns of Data

This section explains how to select a specific data column from the source icon for the Plot tool to use:

When you are creating an axes graph, you must specify a column in the **X-Axis Data Column** and **Y-Axis Data Column** fields for the values of the x-axis and y-axis.

When you are creating a pie graph, you must specify a column

- In the **Label Data Column** field to determine the labels of the slices in a pie graph.
- In the **Pie Data Column** field to specify the data that is charted.

Each letter in a data column field represents one column of data from the source icon.

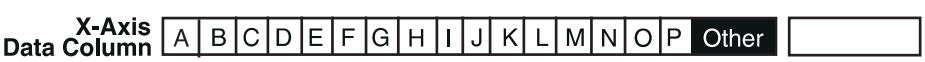
To chart a column of data from the source icon, select the letter representing the column you wish to chart.

When you have a large source icon and you want to chart a column whose letter is not shown in a data column field, you must specify the column you wish to chart.

To chart a column not represented in the data column field:

1. Select **Other** in the data column field.

   A blank field appears.



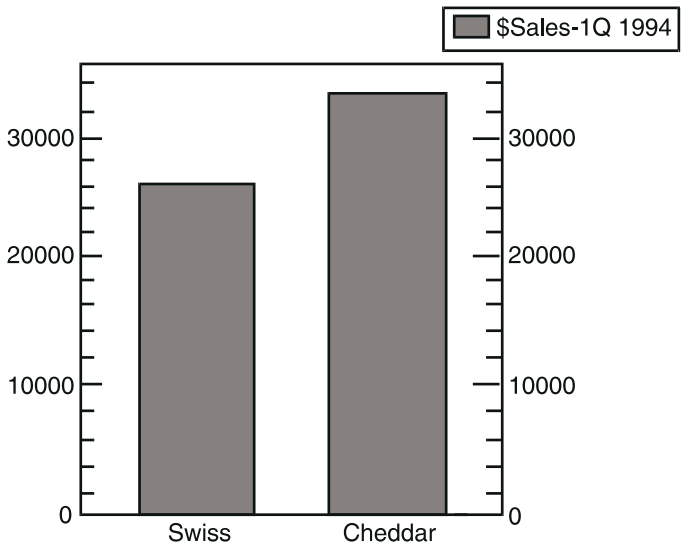
2. Enter the column of data you want to chart.

3. Click on **Apply**.

The following examples illustrate how columns of data are charted in axes and pie graphs.

Example 1—Axes Graph

The following example illustrates a graph comparing the sales in the first quarter for two different products.



The data charted in this graph came from the following spreadsheet, with column A used as the source for data along the x-axis and column B used as the source for data along the y-axis. You would select the corresponding choices in the **X-Axis Data Column** and **Y-Axis Data Column** fields.

x-axis column y-axis column

	A	B	C
1	Cheese Product	$Sales-1Q 1994	$Sales-2Q 1994
2	Swiss	26,046.00	24,460.00
3	Cheddar	34,928.00	28,583.00

X-Axis Data Column A B C D E F G H I J K L M N O P Other

Y-Axis Data Column A B C D E F G H I J K L M N O P Other

The titles in column A of the spreadsheet label the x-axis, and the values in column B determine the scale of the y-axis.

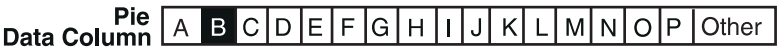
Example 2—Pie Graph

Suppose you are making a pie graph using data from a spreadsheet in which column A contains the names of the products you are charting.

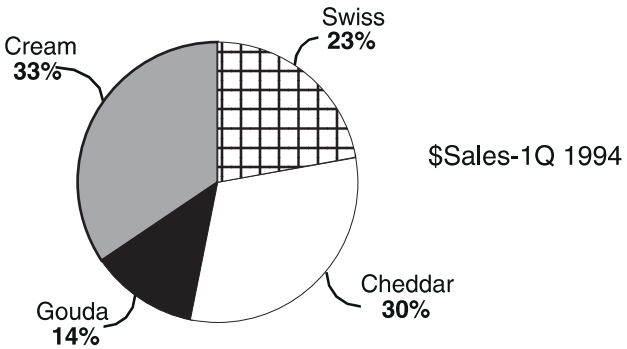
	A	B	C	
1	Cheese Product	$Sales-1Q 1994	$Sales-2Q 1994	
2	Swiss	26,046.00	24,460.00	
3	Cheddar	34,928.00	28,583.00	
4	Gouda	15,624.00	18,468.00	
5	Cream	38,072.00	30,489.00	

To label the slices with product names, you would leave **column A** selected in the **Label Data Column** field.

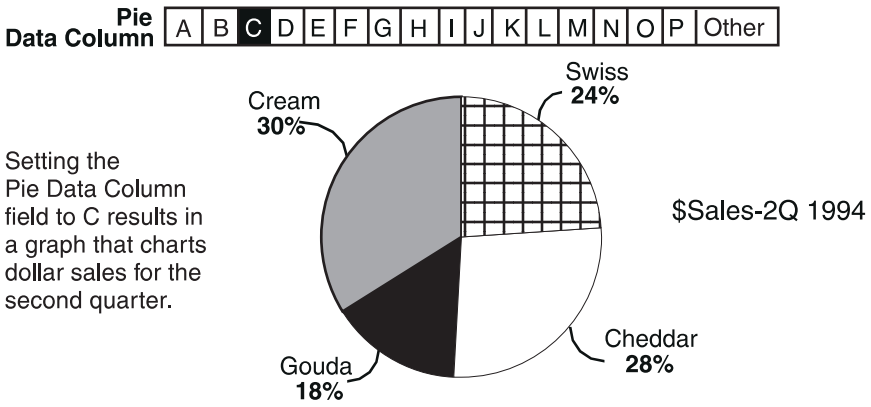
To chart sales for the first quarter, you would select **column B** in the **Pie Data Column** field.



Setting the Pie Data Column field to B results in a graph that charts dollar sales for the first quarter.



To chart dollar sales for the second quarter, you would select **column C** in the **Pie Data Column** field.



Charting Rows of Data

This section explains how to select a specific **data row** from the source icon for the Plot tool to use:

When you are creating an axes graph, you must specify a row in the **X-Axis Data Row** and **Y-Axis Data Row** fields for the values of the x-axis and y-axis.

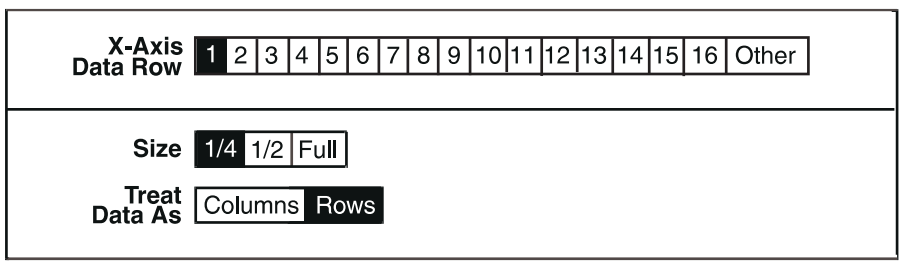
When you are creating a pie graph, you must specify a row

- In the **Label Data Row** field to determine the labels of the slices in a pie graph.
- In the **Pie Data Row** field to specify the data that is charted.

Each number in a data row field represents one row of data from the source icon.

To chart the data as rows, select **Rows** in the**Treat Data As** field.

The **X-Axis Data Column** field changes to the **X-Axis Data Row** field, indicating that you are charting rows instead of columns.



To chart a row of data from the source icon:

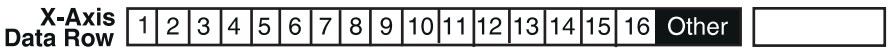
1. Select the number representing the row you wish to chart.

When you have a large source icon and you want to chart a row whose number is not shown in the data row field, you must specify the row you wish to chart.

To chart a row not represented in the data row field:

2. Select **Other**.

   A blank field appears.

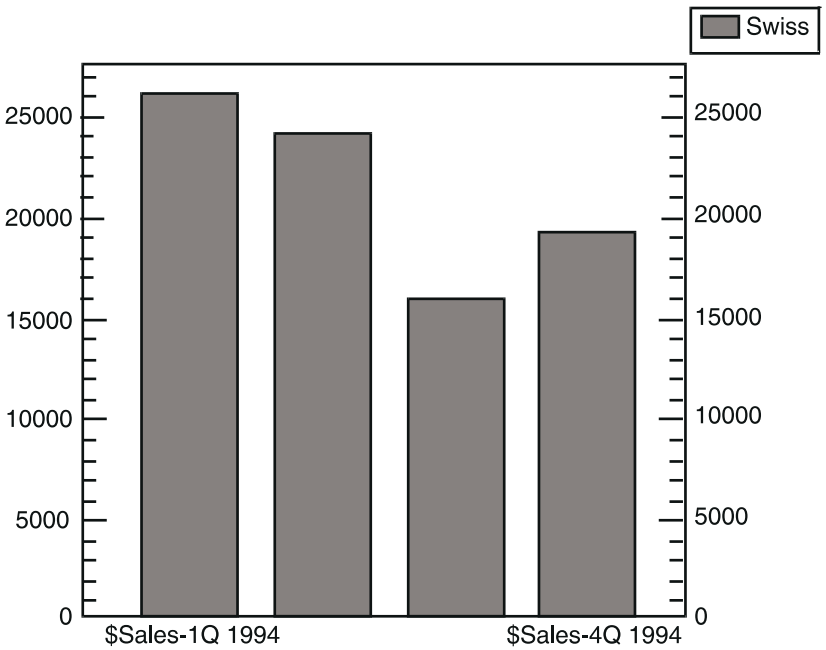


3. Enter the row of data you want to chart.
4. Click on **Apply**.

The following examples illustrate how rows of data are charted in axes and pie graphs.

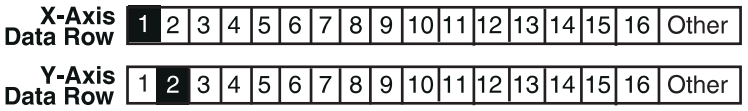
Example 1—Axes Graph

The following example illustrates a graph charting the quarterly sales of Swiss cheese for 1994.



The data charted in this graph came from the following spreadsheet, with row 1 used as the source for data along the x-axis and row 2 used as the source for data along the y-axis.

	A	B	C	D	E
x-axis row → 1	Cheese Product	$Sales-1Q 1994	$Sales-2Q 1994	$Sales-3Q 1994	$Sales-4Q 1994
y-axis row → 2	Swiss	26,046.00	24,460.00	15,879.00	19,327.00
3	Cheddar	34,928.00	28,583.00	25,802.00	20,877.00



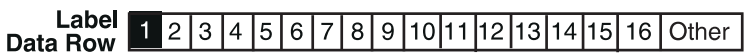
The titles in row 1 of the spreadsheet label the x-axis, and the values in row 2 determine the scale of the y-axis.

Example 2—Pie Graph

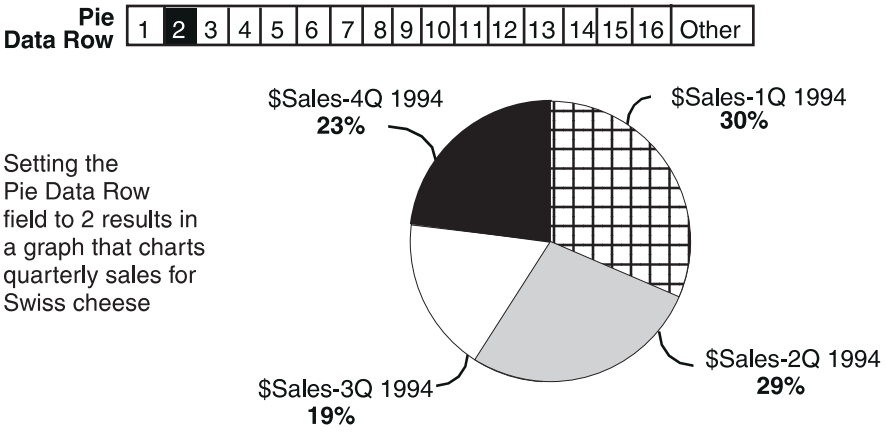
Suppose you are making a pie graph using data from a spreadsheet in which row 1 contains the periods of time you are charting for each product.

	A	B	C	D	E
1	Cheese Product	$Sales-1Q 1994	$Sales-2Q 1994	$Sales-3Q 1994	$Sales-4Q 1994
2	Swiss	26,046.00	24,460.00	15,879.00	19,327.00
3	Cheddar	34,928.00	28,583.00	25,802.00	20,877.00
4	Gouda	15,624.00	18,468.00	23,997.00	18,769.00
5	Cream	38,072.00	30,489.00	27,325.00	25,393.00

To label the slices with quarterly periods, you would leave **row 1** selected in the **Label Data Row** field.

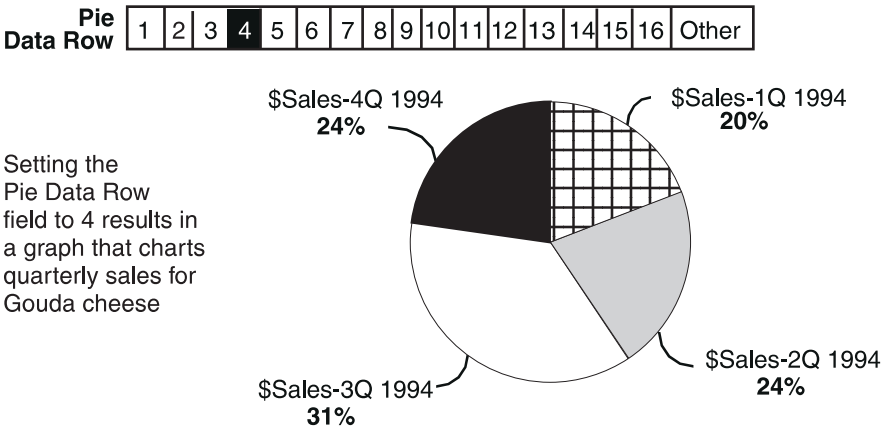


To chart the quarterly sales for Swiss cheese, you would select **row 2** in the **Pie Data Row** field.



Setting the Pie Data Row field to 2 results in a graph that charts quarterly sales for Swiss cheese

To chart the quarterly sales for Gouda cheese, you would select **row 4** in the **Pie Data Row** field.



Setting the Pie Data Row field to 4 results in a graph that charts quarterly sales for Gouda cheese

After you select the data to chart, you are ready to create your graph.

Chapter 4. Creating an Axes Graph

When you want to depict several sets of data in a numeric relationship, leave the axes graph choice selected in the **Graph Type** field.

Graph Type

The axes graph options allow you to create five different plot types (line, curve, bar, point, and text) and layer them to create a graph. This chapter describes how to:

- Add plots to a graph
- Choose values for the x-axis labels
- Chart data against different axes
- Add a legend to a graph
- Format the graph
- Change the axes of a graph
- Manipulate plots in the depiction area

Adding Plots to a Graph

After you copy data into the Plot tool and open the Plot Controls window, the Single Plots page appears, as shown in Figure 3 on page 21. A blank plot appears in the depiction area. The depiction area labels provide information about each plot. The information next to the X and Y labels corresponds to the data from the source icon used for the x- and y-axis respectively. The information next to the Legend label corresponds to the data from the source icon that appears in the legend.

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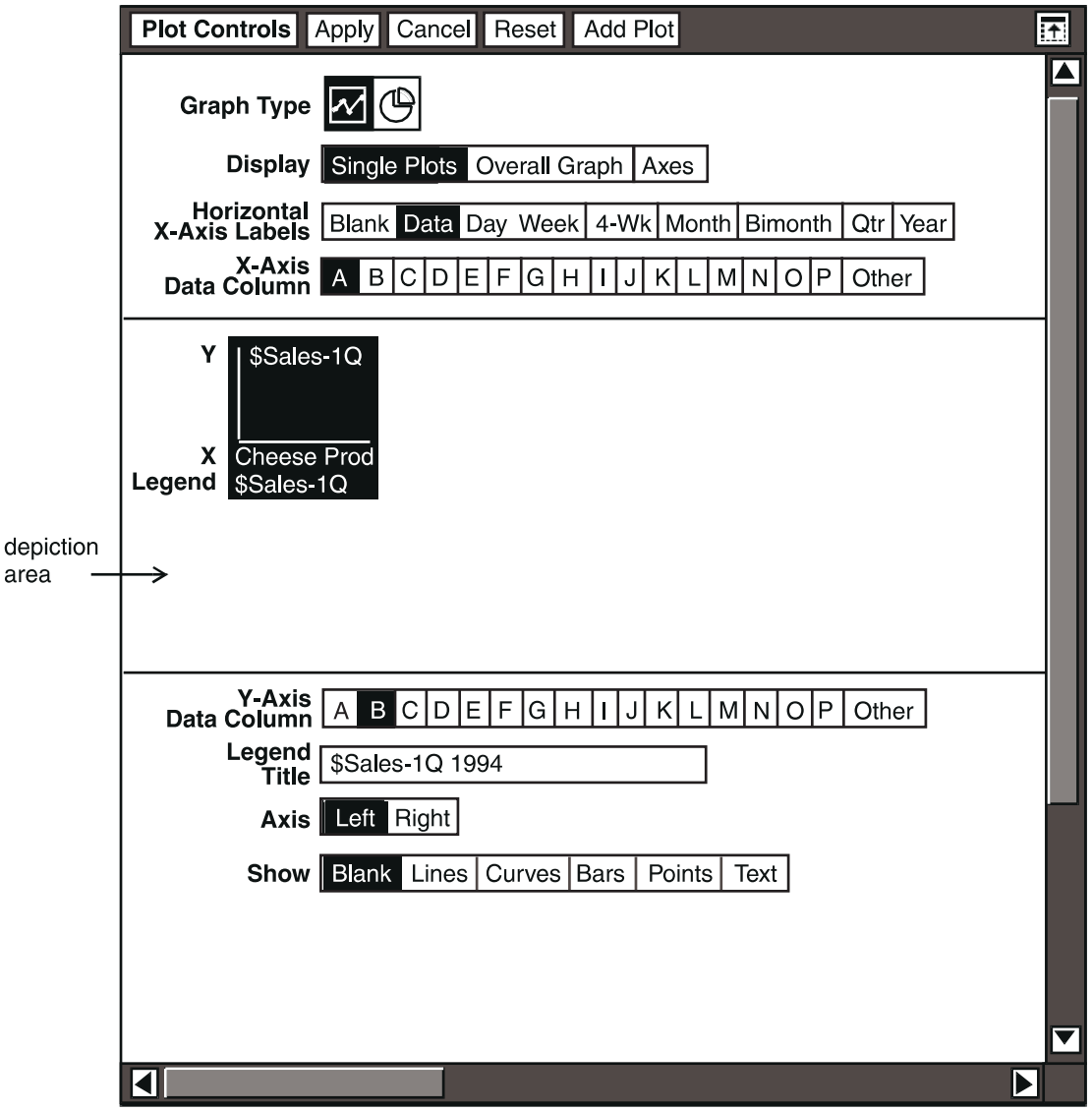
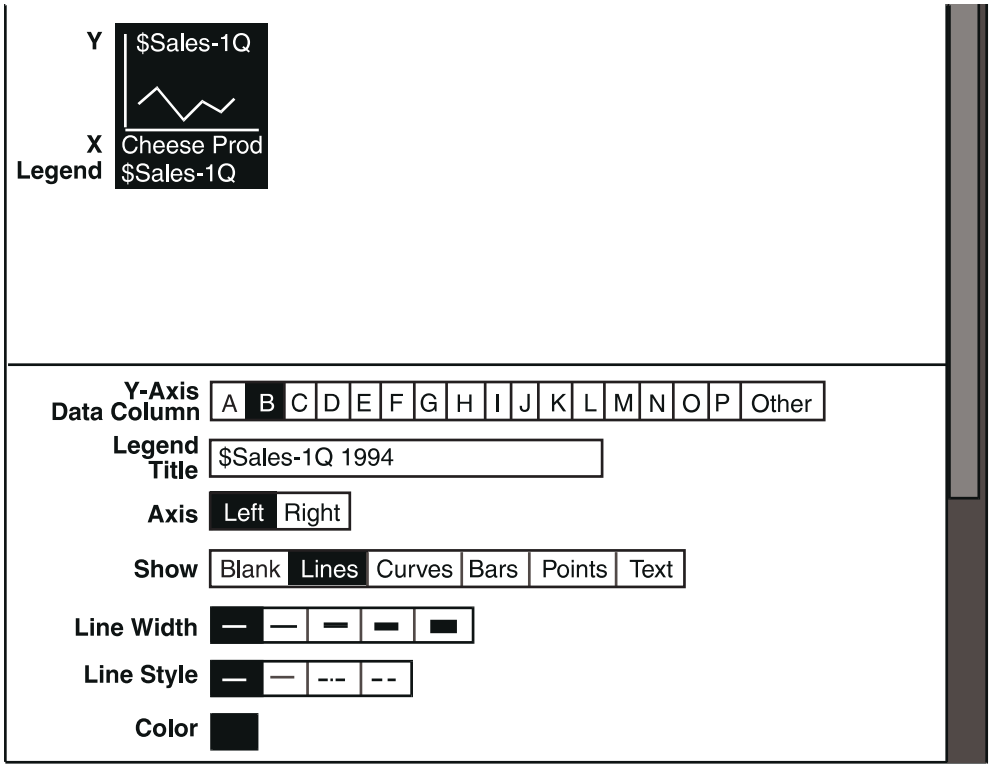


Figure 3. The Single Plots page

To have data appear on your graph, the plot type must be something other than blank. To change the blank plot to a different type:

1. Select the plot in the depiction area.
2. Select a choice other than **Blank** in the **Show** field.
3. Click on **Apply** to update the graph.
4. Click in the depiction area; the blank plot changes to the type of plot selected.

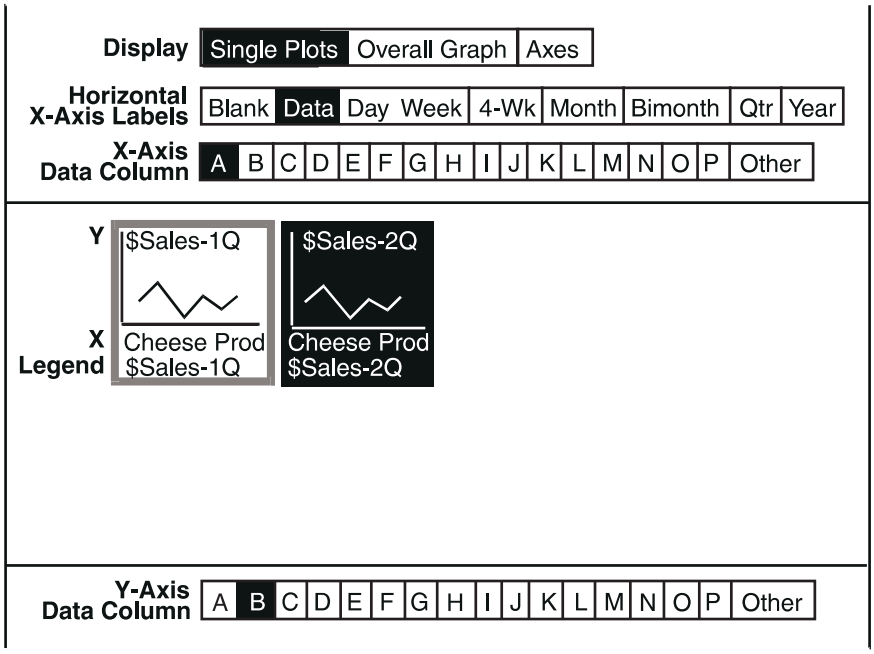


After you chart your first column or row of data, you can chart additional data by using the **Add Plot** button. The **Add Plot** button creates a new plot, advancing through the source data column-by-column or row-by-row. Each time you add a plot to the graph, it is the same type of plot as the last one you added. You can change the plot type by selecting a different choice in the **Show** field. You can have up to 16 plots on your graph.

To add a new plot to your graph:

1. Click on the **Add Plot** button.

   A new plot appears in the depiction area. The **Y-Axis Data Column** field advances one position, and automatically charts the next column of data from the source icon.



The y-axis of each plot in the depiction area corresponds to a letter in the Y-Axis Data Column field.

2. Click on **Apply** to update the graph.

The Plot tool automatically makes selections in the Plot Controls window fields so each plot format is different. For example:

If you add a line or curve plot, the **Line Width** and **Line Style** fields change, and the **Y-Axis Data Column** field advances one position.

If you add a bar plot, the **Shading** and **Pattern** fields change, and the **Y-Axis Data Column** field advances one position.

If you add a point plot, the **Symbol Shape** field changes, and the **Y-Axis Data Column** field advances one position.

If you add a text plot, the **Y-Axis Data Column** field advances one position.

When you add plots to your graph, you are actually layering each new plot over the others, and you might accidentally hide a plot. See “Moving a Plot” on page 59 for more information about changing the layering of a graph.

If you want to change the column of data charted in a plot you can reset the y-axis to any column letter. To change the data charted in a plot:

1. Select a choice in the **Y-Axis Data Column** field.

For more information on changing the data charted in a plot, see Chapter 3, “Charting the Data” on page 11.

Choosing the Plot Type

You can depict your data as a line, curve, bar, point, or text plot. You can also choose not to display data on your graph by using a blank plot. A graphic representation of the plot appears in the depiction area of the Plot Controls window. By default, a blank plot appears in the depiction area.

To choose the type of plot you want on your graph:

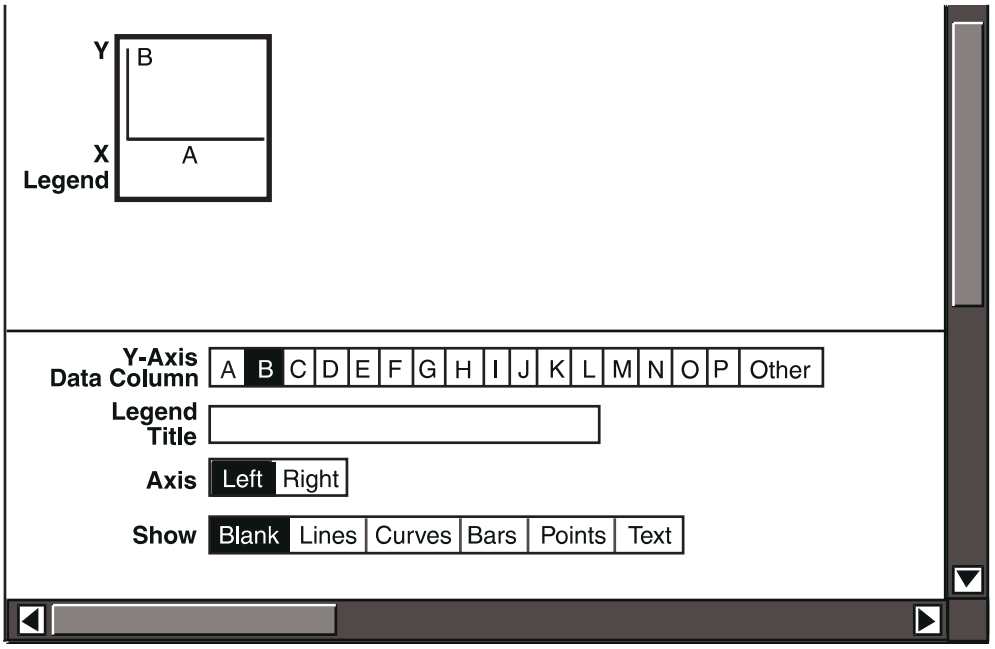
1. Select a choice in the **Show** field.
2. Click on **Apply** to update the graph.

   The formatting fields in the lower third of the Plot Controls window change depending on the type of plot you select.

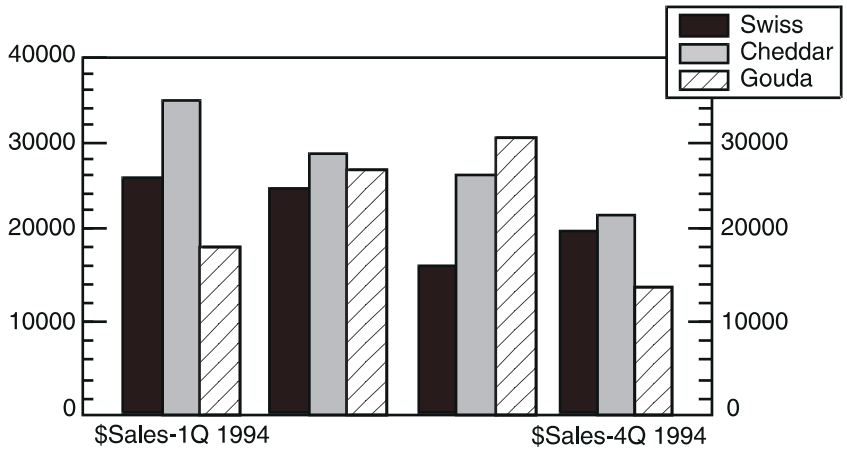
   The fields for each type of plot are described in the sections about the specific plot. When you select any type of plot except **Blank**, the **Color** field appears in the lower third of the Plot Controls window. The **Color** field is described in “Choosing the Color of a Plot” on page 34.

Blank

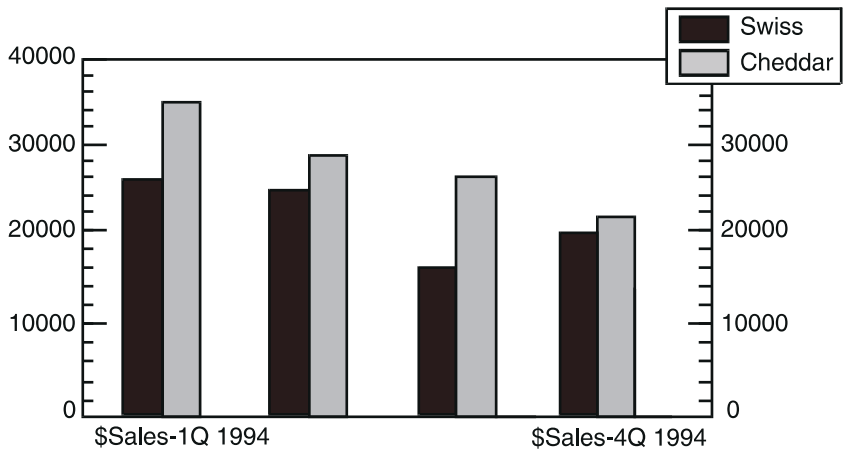
If you have a graph that you frequently change for different audiences, select **Blank** for the data you do not want to display instead of deleting the plot. When a plot type is blank, the plot is not displayed in the Plot window, and the Plot Controls window does not display any additional formatting options.



Suppose you have a graph that displays data for Swiss, Cheddar, and Gouda cheese.



If you want to temporarily change the graph so that the data for Gouda cheese is not displayed, you would select **Blank** for the plot charting Gouda cheese. The graph displays the information for Swiss and Cheddar cheese only.



To restore the Gouda cheese plot, you would reselect **Bars** in the **Show** field.

Line

To display the plot as a line:

1. Select **Lines** in the **Show** field and click in the depiction area.

The depiction area changes to illustrate a line plot**.** The **Line Width**, **Line Style**, and **Color** fields appear in the lower third of the window.

The **Line Width** field displays five choices of line widths. The **Line Style** field allows you to vary the appearance of the line in your plot by providing four line styles: solid,

dotted, dotted-dashed, and dashed. The **Line Width** and **Line Style** fields default to the first choice.

To change the line width and style for a plot:

1. In the depiction area of the Plot Controls window, select a line plot.
2. Select a choice in the **Line Width** field.
3. Select a choice in the **Line Style** field.
4. Click on **Apply**.

Curve

To display the plot as a curve:

1. Select **Curves** in the **Show** field and click in the depiction area.

The depiction area changes to illustrate a curve plot, and the **Line Width** and **Color** fields appear.

The **Line Width** field displays five choices of line widths for your curve plot.

To change the line width for a plot:

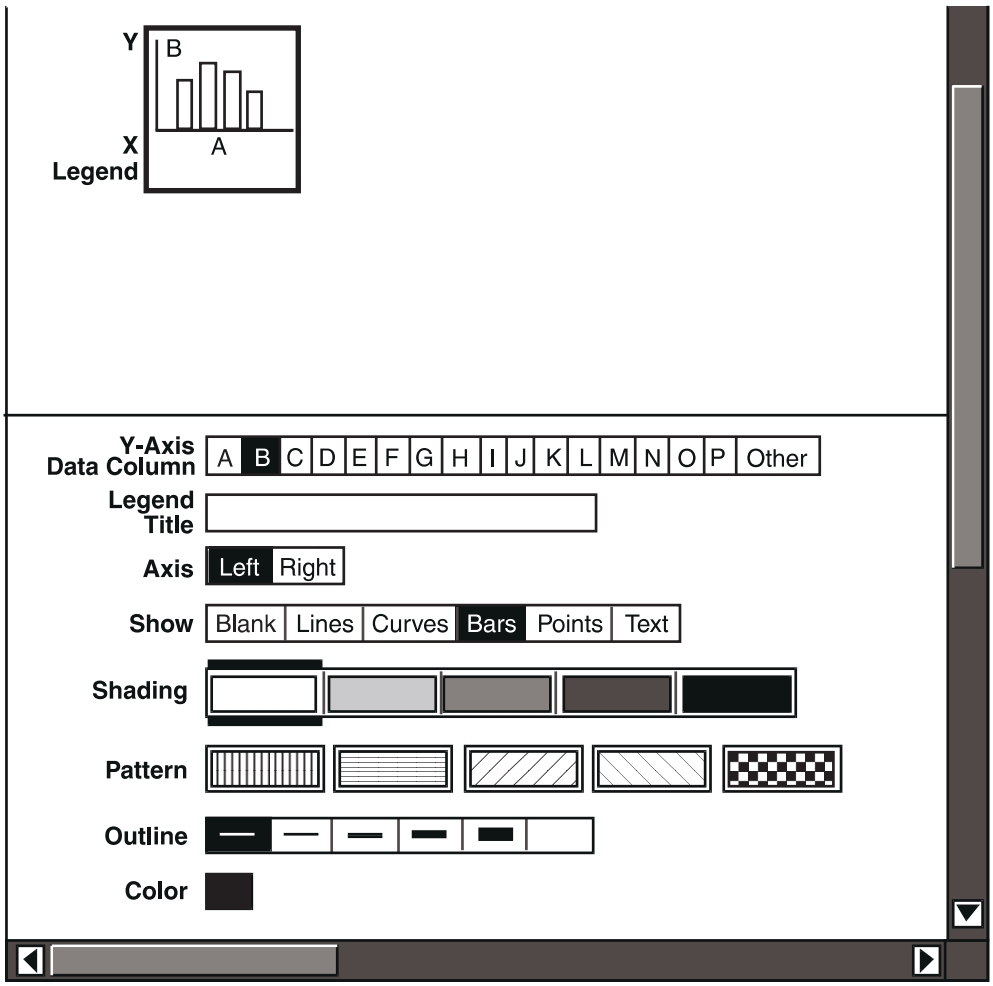
1. In the depiction area of the Plot Controls window, select a curve plot.
2. Select a choice in the **Line Width** field.
3. Click on **Apply**.

Bar

To display the plot as a bar:

1. Select **Bars** in the **Show** field and click in the depiction area.

The depiction area changes to illustrate a bar plot**.** The **Shading**, **Pattern**, **Outline**, and **Color** fields appear in the lower third of the window.



The **Shading** and **Pattern** fields provide you with a number of patterns for the bars in a plot, so that each bar plot on your graph can be made unique.

The Plot tool automatically places a thin line around each bar of the graph. You can control the line thickness, or remove it altogether, by selecting a choice in the **Outline** field.

Each time you add a bar plot to your graph by using the **Add Plot** button, the Plot tool displays default choices in the **Shading**, **Pattern**, and **Outline** fields. You can override the automatic selections for each bar plot by making your own selections in the **Shading**, **Pattern**, and **Outline** fields.

The **Shading** field provides five choices for shading bars of the graph. You can select only one choice per bar plot. The **Pattern** field provides five choices, and you can

select as many choices as you wish per bar plot. The Plot tool layers each pattern on top of the other patterns, producing a unique pattern.

Selecting the darkest choice in the **Shading** field overrides any choices selected in the **Pattern** field.

To select or change the formats for a bar plot:

1. In the depiction area of the Plot Controls window, select a bar plot.
2. Select a choice in the **Shading**, **Pattern**, or **Outline** fields.
3. Click on **Apply**.

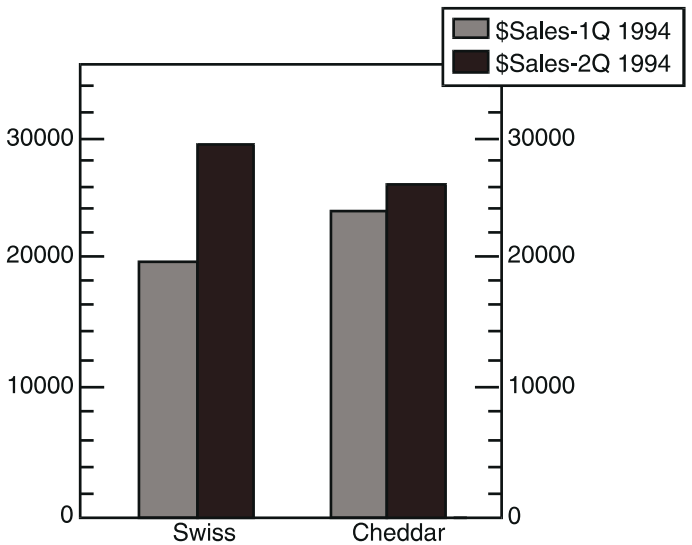
You can display the bar plots on your graph in a side-by-side or stacked position, with different amounts of spacing by using the **Bar Style** and **Bar Spacing** fields in the Overall Graph page.

To go to the Overall Graph page, select **Overall Graph** in the **Display** field.

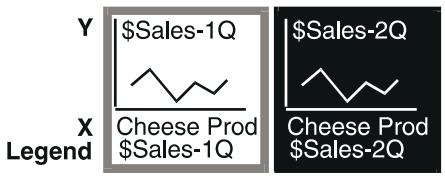
Style: The **Bar Style** field allows you to change the appearance of the bar plots in a graph. By default, the bars appear in a side-by-side position in the graph.

Bar Style

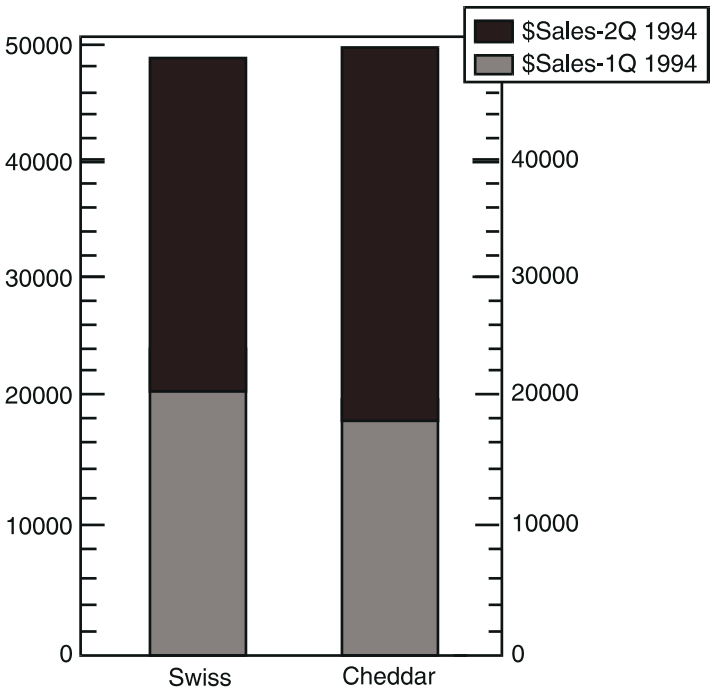
Suppose you have the following graph charting the sales for Swiss and Cheddar cheese for the first and second quarters.



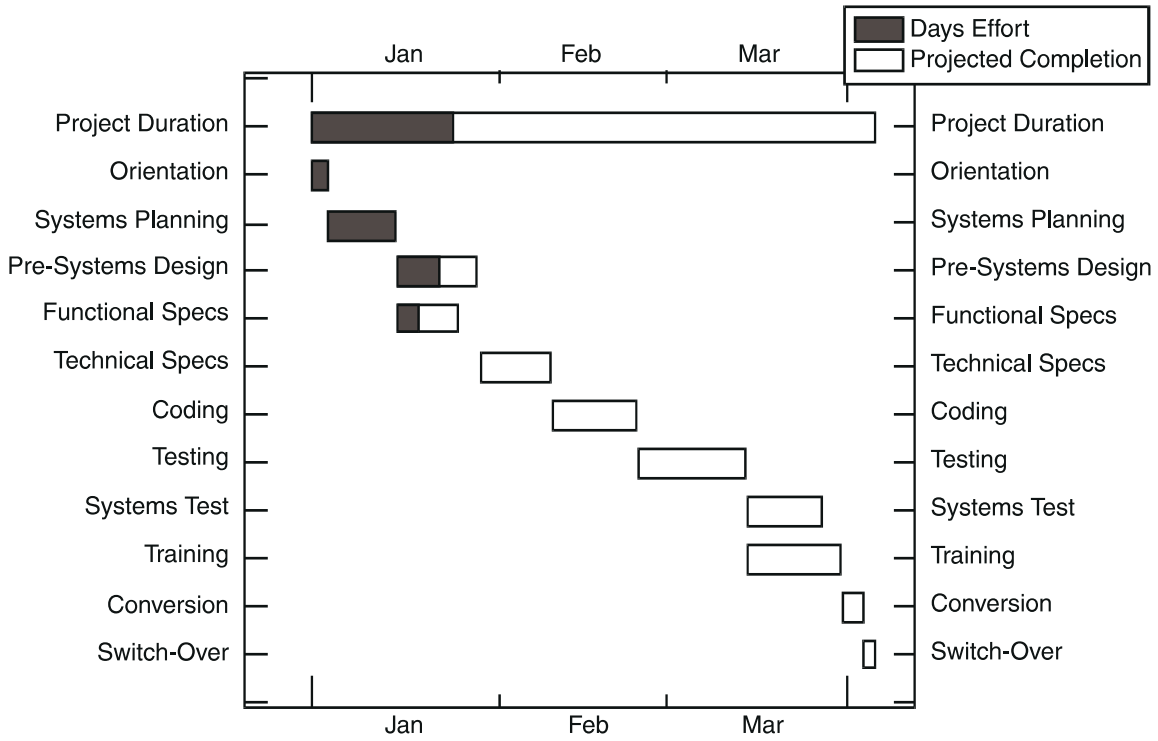
You can also use stacked bars to illustrate the increase in sales in the second quarter. To do this, you would arrange the plots in the depiction area so that the plot charting the second quarter sales is after the plot charting the first quarter sales. For more information on how the order of plots in the depiction area affects a graph, see “Manipulating Plots in the Depiction Area” on page 59.



When you change the bar style to stacked, the plot charting the higher values is stacked on top of the plot charting the lower values, as shown in the following graph. Notice that the order of the titles in the legend also changes.



In a Gantt chart, bar plots are stacked and arranged horizontally to illustrate overlapping time periods.



Spacing: The **Bar Spacing** field provides five choices for the spacing of side-by-side bars in a graph, ranging from overlapping to widely separated.

The **Bar Spacing** field defaults to the first choice, which places the bars flush with each other.

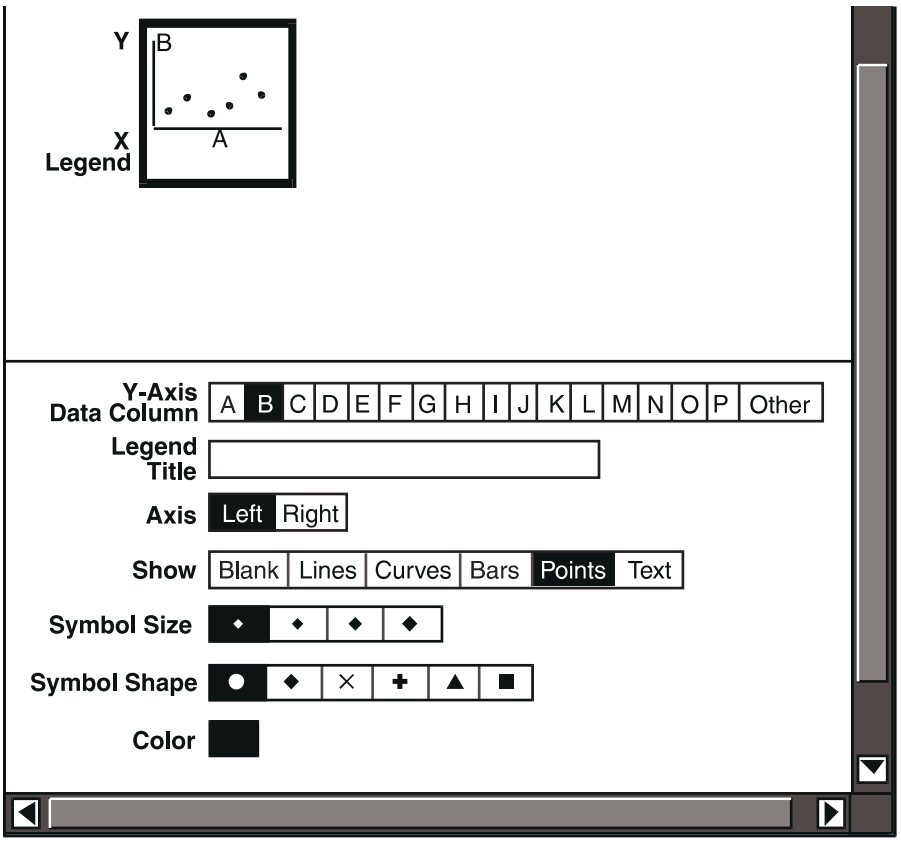
Changing the spacing between the bars can make the graph easier to read, or emphasize certain information in the graph. You might want to try each choice in the **Bar Spacing** field once, to see how the spacing affects the look of the graph.

Point

To display a symbol at each data point:

1. Select **Points** in the **Show** field.

The depiction area changes to illustrate a point plot**.** The **Symbol Size**, **Symbol Shape**, and **Color** fields appear in the lower third of the window.



To change the size and shape of the symbol in the point plot:

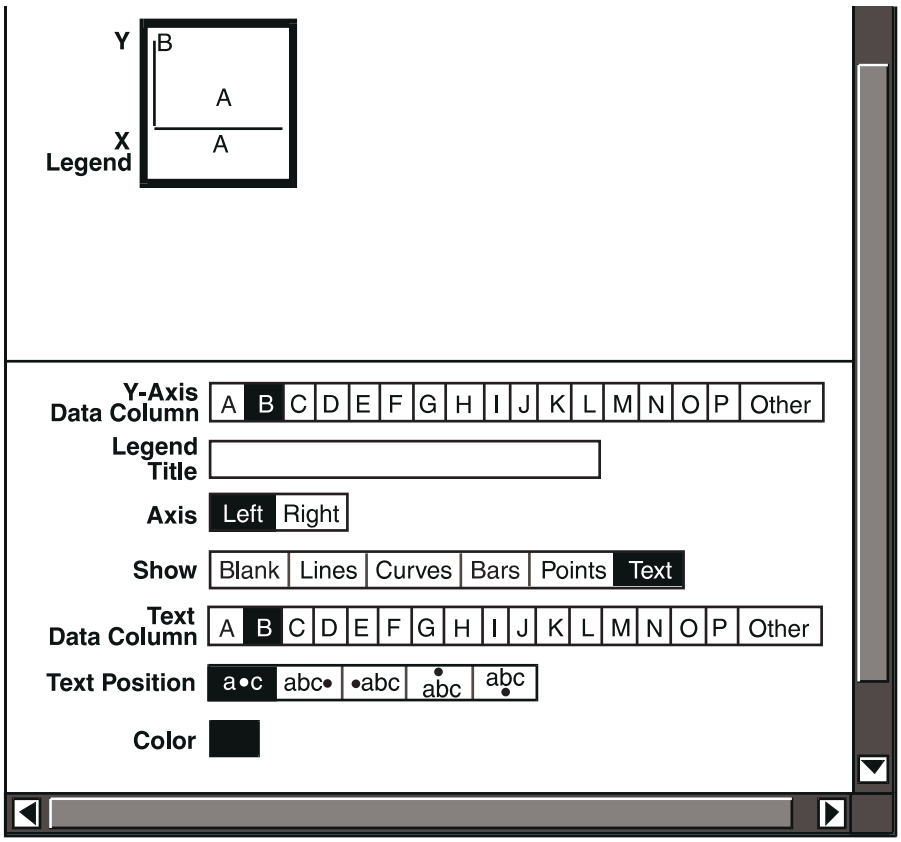
1. Select the plot you want to change in the depiction area of the Plot Controls window.
2. Select a choice in the **Symbol Size** and **Symbol Shape** field.
3. Click on **Apply**.

Text

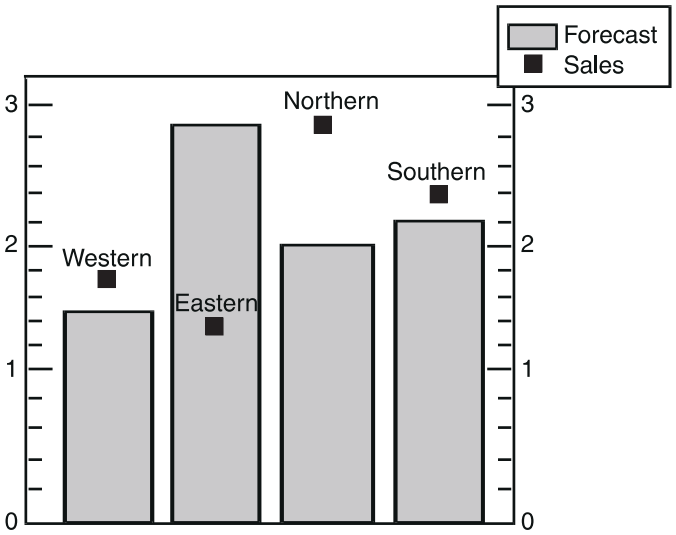
Text plots are usually used to label the point plots on a graph. To display text at each data point in a graph select **Text** in the **Show** field.

The depiction area changes to illustrate a text plot. The **Text Data Column**, **Text Position**, and **Color** fields appear in the lower third of the window. In the **Text Data Column** field, you specify the column from the source icon that contains the text you want to use as a text plot. The **Text Data Column** field defaults to A.

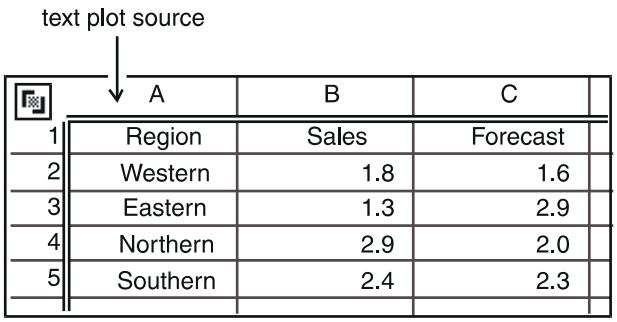
If you are charting rows of data, the **Text Data Row** field appears in the window, and defaults to 1.



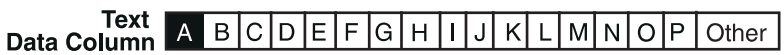
Suppose you want to create the following graph that uses text plots to label the data points.



The data charted in this graph came from the following spreadsheet: column C is used as the source for the bar plots, column B is used as the source for the point plots, and column A is used as the source for the text plots.



To use column A from the spreadsheet for the source of the text plots, the Text Data Column is set to A.



To choose which column of data the Plot tool uses as a text plot:

1. Select a letter in the **Text Data Column** field.
2. Click on **Apply**.

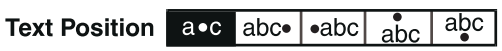
If you have a large source icon and you want to chart a column whose letter is not shown in the **Text Data Column** field:

1. Select **Other** in the **Text Data Column** field.

   A blank field appears.

2. Enter the column of data you want to use for text labels.
3. Click on **Apply**.

   You can specify the position of the text relative to the data point. If you are using text plots to label point plots, the text can be centered on, to the left of, to the right of, below, or above the data point.



By default, the text is centered on the data point. To change the position of the text relative to the data point:

1. In the depiction area, select the plot you want to change.
2. Select a choice in the **Text Position** field.
3. Click on **Apply**.

   If you leave the first choice selected in the Text Position field, the text label can cover the data point.

Choosing the Color of a Plot

When you select **Lines**, **Curves**, **Bars**, **Points**, or **Text** in the **Show** field, the **Color** field appears in the lower third of the Plot Controls window.

The **Color** field provides a color palette, so that you can select a unique color for each plot in the graph.

To select a color from the color palette:

1. Point inside the **Color** field, then press and hold down the left mouse button. The color palette is displayed for as long as you continue to press the left mouse button.
2. Release the left mouse button on the color you want to use for the plot.

   The plot color is displayed in the depiction area.
3. Click on **Apply** to update the graph.

The following conditions apply when selecting a color for your plot:

Selecting a pattern along with a color for a plot causes the color to appear in the pattern, not the background.

Selecting the white choice in the **Shading** field overrides any color selection in the **Color** field, but the outline of the bar is in the chosen color.

You can also change the typeface and size of the font of text plots. For more information on formatting text, see “Changing the Graph Font” on page 52.

Choosing the Values for the X-Axis Labels

The **Horizontal X-Axis Labels** field allows you to select how the Plot tool uses the data in the source icon to label the x-axis. By default, the x-axis is the horizontal axis of the graph. The **Horizontal X-Axis Labels** field automatically changes to the **Vertical X-Axis Labels** field if you change the graph orientation, as described in “Changing the Orientation” on page 51.

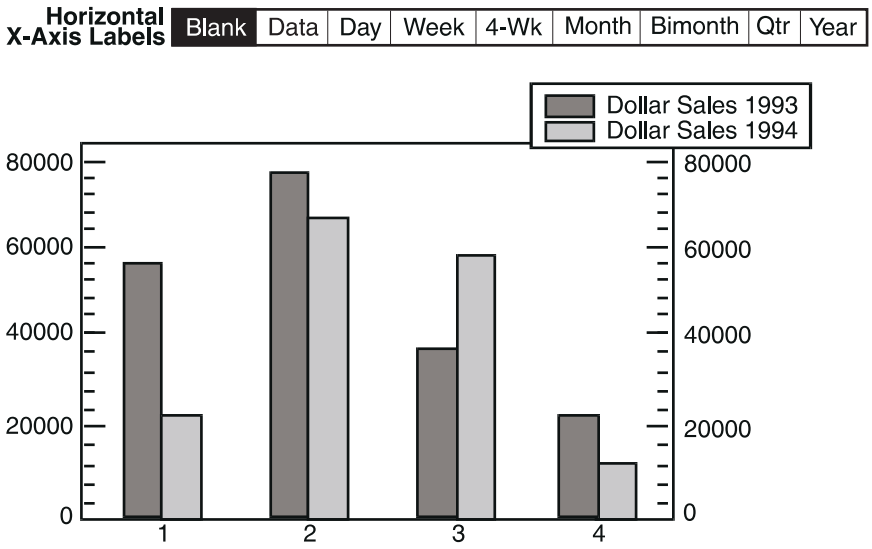
By default, data from the source icon labels the x-axis. You can also select integers, dates, or time periods for x-axis labels.

Integers

Suppose you want to chart the following data in a graph, but not display the brand names on the x-axis because of their length.

	A	B	C	
1	Product	Dollar Sales 1993	Dollar Sales 1994	
2	Clesco Stain Fighter 16 oz	55,000.00	22,000.00	
3	Clesco Stain Fighter 8 oz	76,000.00	66,000.00	
4	Snapper Stain Eater 8 oz	36,000.00	58,000.00	
5	Snapper Stain Eater 12 oz	22,000.00	12,000.00	

You would select the **Blank** choice in the **Horizontal X-Axis Labels** field to label the graph with integers.



To use integers (for example, 1, 2, 3) to label the x-axis of your graph:

1. Select **Blank** in the **Horizontal X-Axis Labels** field.
2. Click on **Apply**.

   The integers automatically appear on the x-axis.

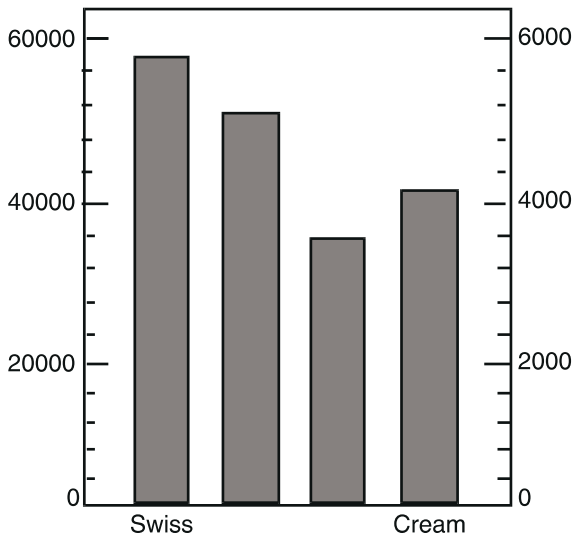
Data

Suppose you want to use the information in column A of the following spreadsheet to label the x-axis of a graph.

	A	B	C	
1	Cheese Product	Unit Sales	Dollar Sales	
2	Swiss	65.72	343.99	
3	Cheddar	61.00	545.00	
4	Gouda	63.00	250.00	
5	Cream	62.50	492.29	

You would leave **Data** selected in the **Horizontal X-Axis Labels** field, and select **A** in the **X-Axis Data Column** field.

The data in column A of the spreadsheet labels the x-axis of the graph.



To use data from the source icon for the x-axis labels of your graph, leave **Data** selected in the**Horizontal X-Axis Labels** field.

When the data from the source icon is text, only some of the labels appear on the x-axis since there is a standard space allotted for text labels. Numeric data from the source icon is scaled to fit as labels on the x-axis.

For more information about selecting the data to label the x-axis, see Chapter 3, “Charting the Data” on page 11.

Date Intervals

You can use days, weeks, months, quarters, and years as the values for the x-axis labels. When specifying day, week, and year intervals, you must enter dates in a specific format. If you enter an incorrect date format, the Plot tool does not accept it and reverts to the base date of January 1, 1970. Table 2 provides a list of acceptable date formats for the Plot tool.

Table 2. Date formats

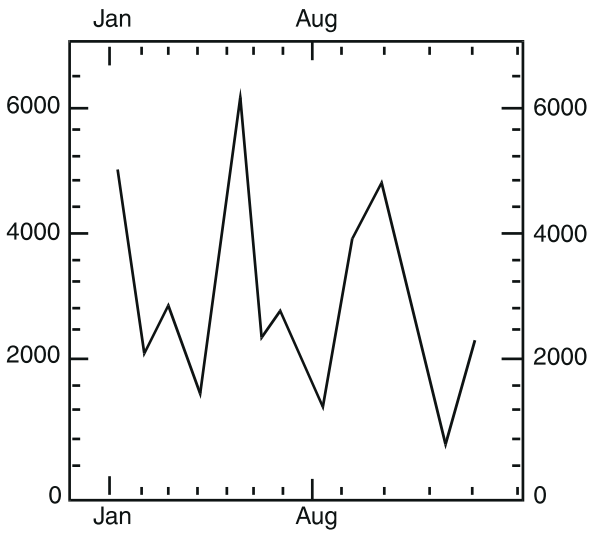
Date type	Correct format	Incorrect format
Day, Week, Month	January 15, 1994 Jan 15, 1994 Jan 15, 94 jan 15, 94	Jan. 15, 1994 1-15-94 1/15/94 1/15, 94
Year	1994 94	94,1994

When you select a date interval to appear on the x-axis of your graph, the Plot tool ignores any time periods that are part of your source data.

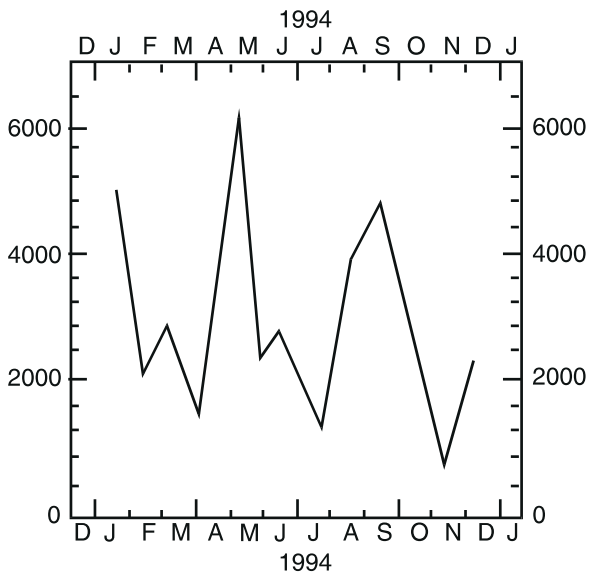
Suppose you have a source icon containing the unit sales per month, and you want to chart the monthly unit sales on your graph.

	A	B
1	Month	Unit Sales
2	Jan	5,346.00
3	Feb	2,153.00
4	Mar	3,227.00
5	Apr	1,568.00
6	May	6,252.00
7	Jun	2,045.00
8	Jul	3,103.00
9	Aug	1,548.00
10	Sep	4,278.00
11	Oct	5,183.00
12	Nov	1,094.00
13	Dec	2,293.00

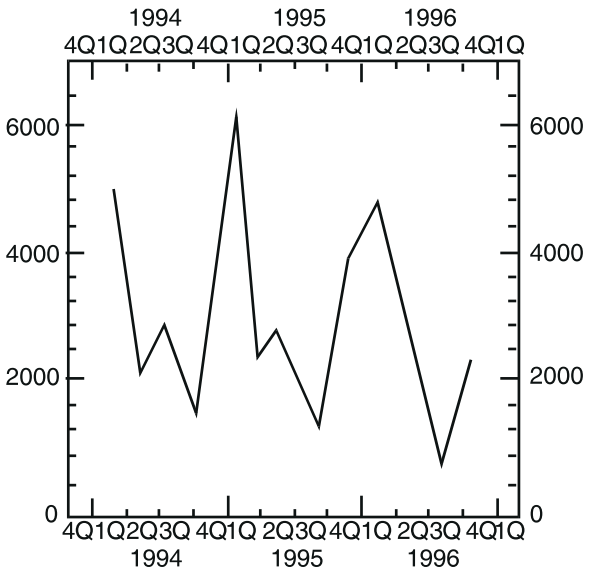
When you create your graph, only the labels Jan and Aug appear on the x-axis because there is a finite amount of space allotted for text along the axis.



To show the months on the x-axis, you would select **Month** in the **Horizontal X-Axis Labels** field.



Suppose you decide that you want to label the data as quarters over three years. You would select **Qtr** in the **Horizontal X-Axis Labels** field. The Plot tool labels the x-axis with quarterly time periods and ignores the monthly time periods in the source icon.



Days

When specifying day as the values for the x-axis labels:

1. Select **Day** in the **Horizontal X-Axis Labels** field.

The **First Day** field appears in the Plot Controls window, with the current date.

To change the date:

1. Enter the new starting date into the field.
2. Click on **Apply**.

   The x-axis is labeled with every fifth day: 5, 10, 15, and so on.

Weeks

When specifying weeks as the values for the x-axis labels:

1. Select **Week** or **4-Wk** in the **Horizontal X-Axis Labels** field.

The **First Day** field appears, with the current date.

To change the date to a new starting date:

1. Enter the new starting date into the field.
2. Click on **Apply**.

Months

When specifying months as the values for the x-axis labels, select **Month** or **Bimonth** in the **Horizontal X-Axis Labels** field.

The **First Month** and **Year** fields appear. The **First Month** field defaults to **J** (January). The **Year** field defaults to the current year.

To change the month:

1. Select the letter that represents the month you want.
2. Click on **Apply**.

Quarters

When specifying quarters as the values for the x-axis labels, select **Qtr** in the **Horizontal X-Axis Labels** field.

The **First Quarter** and **Year** fields appear. The **First Quarter** field defaults to **1Q** (first quarter). The **Year** field defaults to the current year.

To change the quarter:

1. Select the choice that represents the quarter you want in the **First Quarter** field.
2. Click on **Apply**.

Years

When specifying years as the values for the x-axis labels:

1. Select **Year** in the **Horizontal X-Axis Labels** field.

The **First Year** field appears, with the current year.

To change the year:

1. Enter the new year into the field.
2. Click on **Apply**.

Using @-Variables to Define Dates

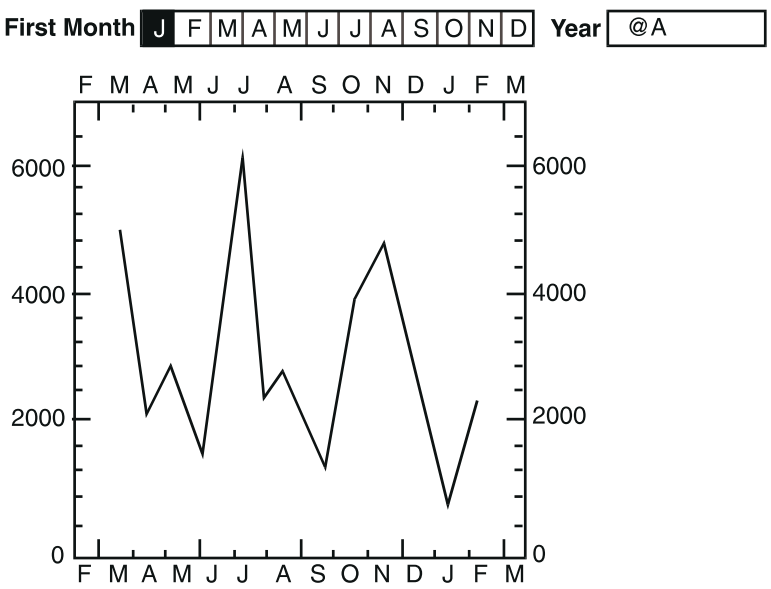
When you use the Plot tool in a capsule application, you can use *@-variables* with assigned values in the capsule's User Input Control window to define dates. The Plot tool automatically retrieves the @-values when data is transferred to the Plot.

To use *@-variables* to define dates:

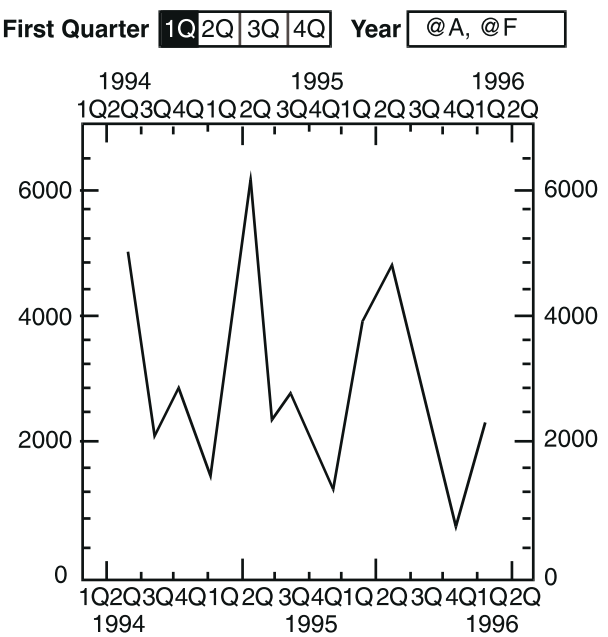
1. Define the *@-variables* in the User Input Control window of the capsule tool.
2. Select a date interval in the **Horizontal X-Axis Labels** field.
3. Type the *@-variables* directly into the**Year** field, just as you would enter text.
4. Select **Get @-Values** in the Special menu of the Plot window header.
5. Run the capsule application.

   The @-values label the x-axis.

Suppose you define *@A* as **March, 1994** in the capsule's **User Input** Control window. You would enter *@A* into the **Year** field to label the x-axis beginning with March, 1994. The entry in the **Year** field overrides the selection in the **First Month** field.



Suppose you decide to change the *@-variable* definitions, and you define *@A* as **2Q**, and *@F* as *1996* in the User Input Control window. You would enter *@A, @F* into the **Year** field to retrieve data for the second quarter of 1996. The entry in the **Year** field overrides the selection in the **First Quarter** field.



Refer to the IDS publication *Capsule User's Guide* for information about defining *@-variables*.

Charting Data Against Different Axes

The Plot tool automatically assigns values to the y-axis based upon the highest and lowest values of the information being charted, and uses the left axis of the graph as a reference when it charts data.

Axis Left Right

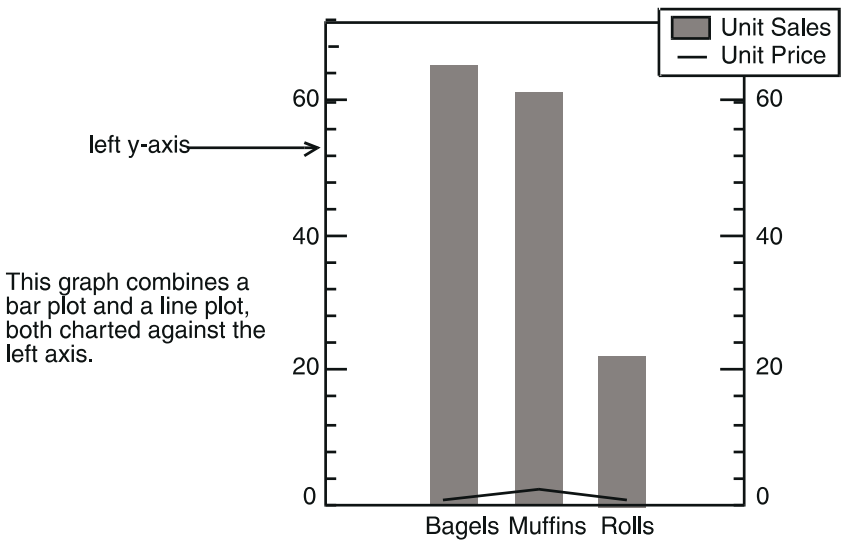
When you change the orientation of your graph from vertical to horizontal, the Plot tool rotates the positions of the x- and y-axis, and uses the top axis of the graph as a reference. See “Changing the Orientation” on page 51 for more information.

To chart two columns or rows of data with very different values, chart one column or row of information against the left y-axis, and the other column or row of information against the right y-axis.

Suppose you want to create a graph charting two columns of data from the following spreadsheet. You want to depict unit sales using a bar plot and unit price using a line plot.

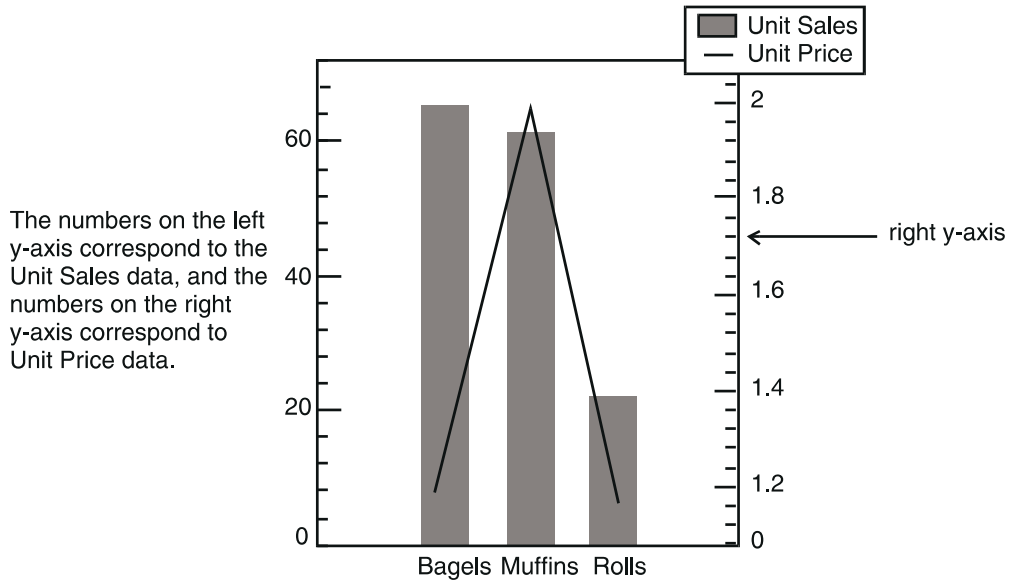
	A	B	C	
1	Product Desc	Unit Sales	Unit Price	
2	Bagels	65.72	1.09	
3	Muffins	61.00	1.99	
4	Rolls	22.30	0.99	

The highest value in the spreadsheet is 65.72 in the Unit Sales column. The Plot tool uses the value of 65.72 to scale the y-axis. The highest value for unit price is 1.99. The large difference between unit sales and unit price data results in the line plot used to chart the unit price information barely registering on the graph.



This graph combines a bar plot and a line plot, both charted against the left axis.

To better display the unit price data on the graph, the Unit Sales and Unit Price columns must be charted against different y-axes. When the unit price data is charted against the right y-axis, the Plot tool uses the value of 1.99 to scale the right y-axis for the line plot representing Unit Price.



The numbers on the left y-axis correspond to the Unit Sales data, and the numbers on the right y-axis correspond to Unit Price data.

To chart data against a different axis:

1. Select a plot in the depiction area.

2. Select **Right** in the **Axis** field of the Single Plots page.
3. Click on **Apply**.

You might want to add annotations to the graph to point out the information that each axis is charting. For more information on annotating your graph see Chapter 6, “Adding Titles to the Graph” on page 91.

Adding a Legend to a Graph

Information transferred to the Plot tool from the source icon is used for legend titles. Each plot in the depiction area has a legend title associated with it. When you add a legend to a graph, the titles appear in the legend.

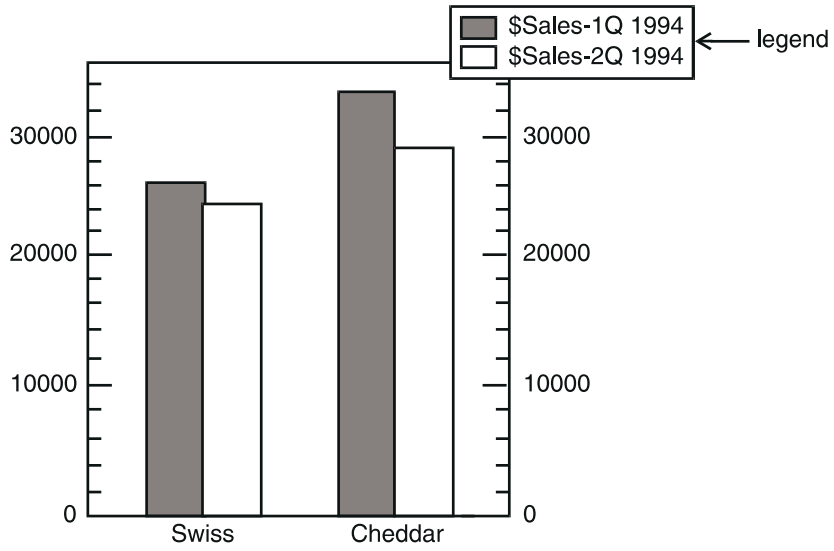
When you copy specific portions of a source icon that do not include the column or row headings, the legend does not appear on the graph.

Suppose you are using the following spreadsheet as your source icon.

	A	B	C
1	Cheese Product	$Sales-1Q 1994	$Sales-2Q 1994
2	Swiss	26,046.00	24,460.00
3	Cheddar	34,928.00	28,583.00

If you are charting columns of data, the column headings are used to label the plots in the depiction area and as the titles in the legend.

The spreadsheet column titles appear in the depiction area and in the legend.



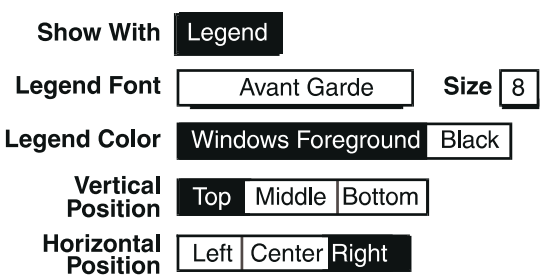
When the first column or row of data in the source icon contains numeric data, the whole column or row is treated as numeric data, and is not used as legend titles. When the column or row headings have two lines, only the first line displays as legend titles.

By default, there is no legend on a graph.

To include a legend:

1. In the Overall Graph page, select **Legend** in the **Show With** field.

   The **Legend Font**, **Size, Legend Color Vertical Position**, and **Horizontal Position** fields appear.



The **Legend Font**, **Size**, and **Legend Color** fields default to your desktop font typeface, size, and the window foreground color specified in the Set Preferences window. The **Vertical Position** and **Horizontal Position** fields default to Top and Right, respectively. In Plot tools that have been upgraded from a previous release of DIS, the default legend color is black.

2. Click on **Apply**.

   The legend appears on the graph.

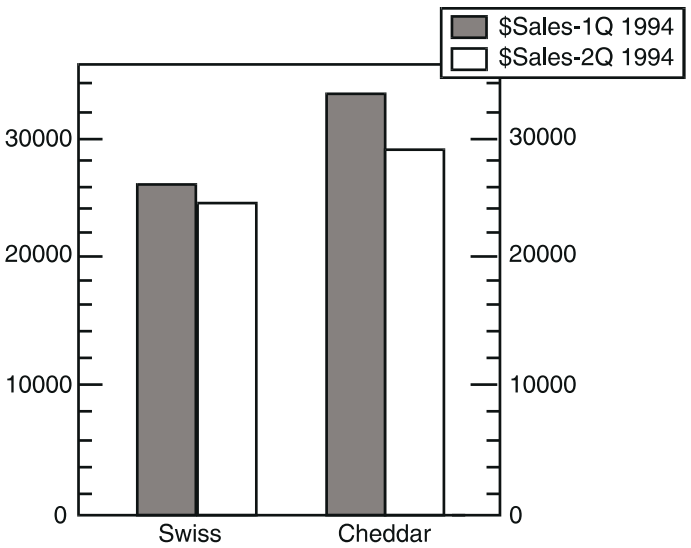
If you want to change the format of your legend, you can select different choices in the **Legend Font**, **Size, Legend Color**, **Vertical Position**, and **Horizontal Position** fields. (The choice **Plot Colors** in the field **Legend Color** makes the legend text the same color as the single plot it is associated with.)

Changing the Legend Title of a Plot

You can change the titles for individual plots in the **Legend Title** field of the Single Plots page.

After you change the legend title of a plot, it is not automatically updated when new data is transferred to the Plot icon. To change the legend title, you must enter a new title in the **Legend Title** field.

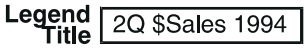
Suppose you want to change the legend of the following graph so that the quarter is emphasized.



To change the legend title of a plot:

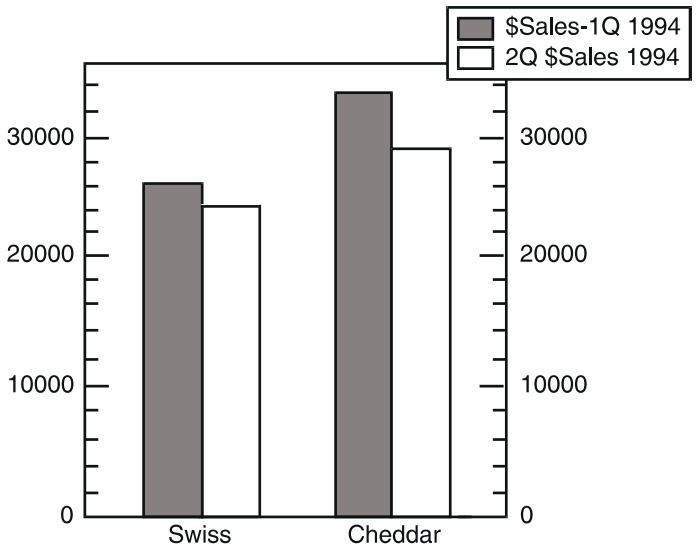
1. In the depiction area, select the plot associated with the title you want to change.

2. Type the new title into the **Legend Title** field.



3. Click on **Apply**.

   The legend changes in the Plot window.



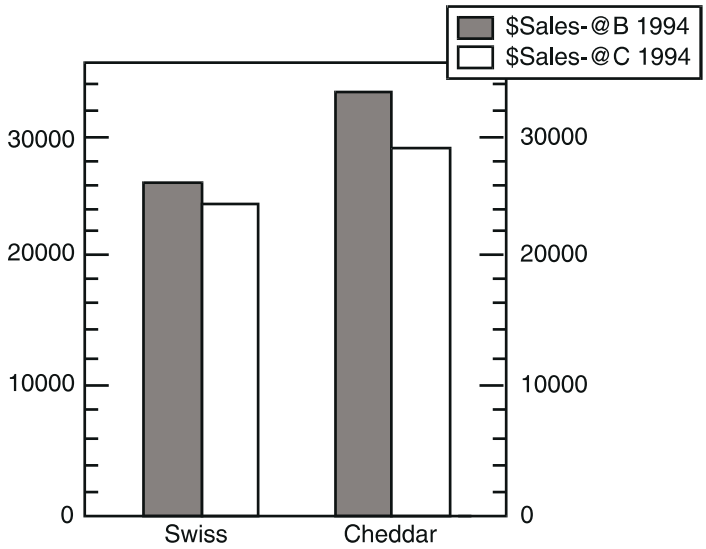
Using @-Variables in the Legend

When you use the Plot tool in a capsule application, you can use *@-variables* with assigned values in the capsule's User Input Control window to generate legend titles. The Plot tool automatically retrieves the @-values when data is transferred to the Plot.

To use *@-variables* in the legend:

1. Define the *@-variables* in the User Input Control window of the capsule tool.
2. Type the *@-variables* directly into the **Legend Title** field, just as you would enter text.

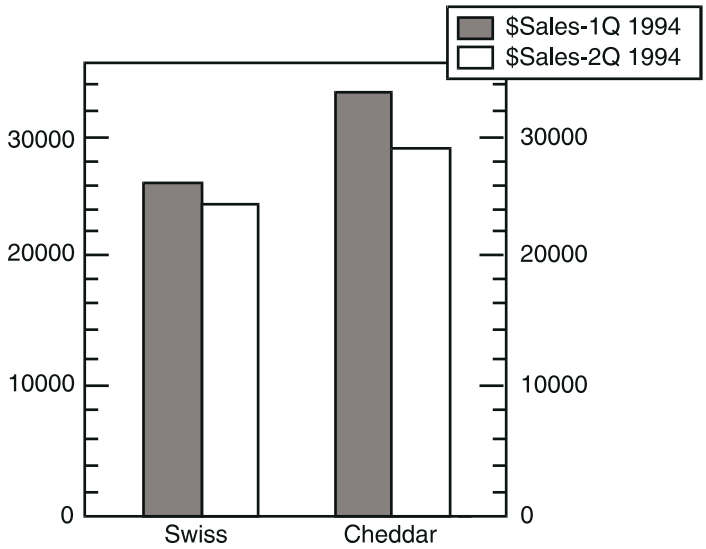
The *@-variables* appear in the legend.



3. Select **Get @-Values** in the Special menu of the Plot window header.

   Run the capsule application.

   The @-values appear in the legend.



Refer to *Capsule User's Guide* for information about defining *@-variables*.

Formatting the Graph

Use the fields in the Overall Graph page, shown in Figure 4, to format the size, orientation, text font, and appearance of the axes graph. You can see the format of your graph change in the Plot window as you specify the settings in the Plot Controls window and click on the **Apply** button.

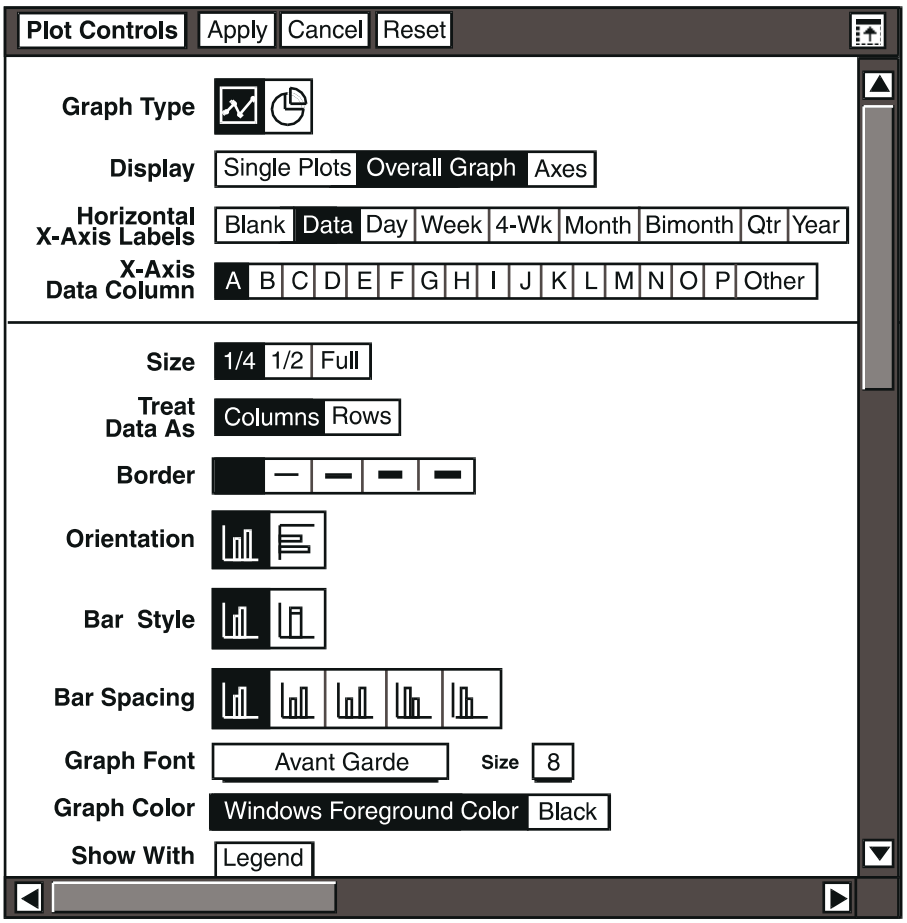


Figure 4. The Overall Graph page

Changing the Size

You can change the size of the graph relative to the size of the printed page with the **Size** field. You might want to change the size of your graph if you cannot view the entire graph in the Plot window. For example, if the labels on the x-axis of your graph are long, you might want to select **Full** in the **Size** field.

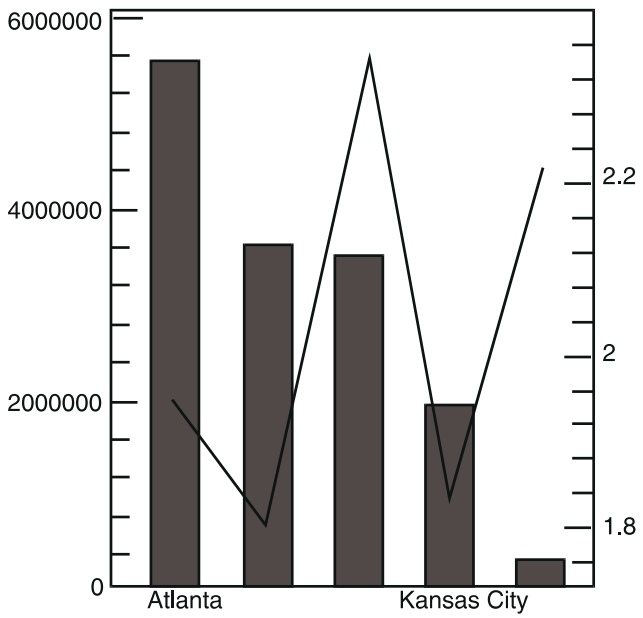
By default, the graph appears one-fourth the size of the printed page in the Plot window and is printed one-fourth the size of the paper, minus the margins.

Changing the Orientation

The **Orientation** field allows you to reverse the positions of the x- and y-axis of a graph.

By default, the Plot tool charts data in a vertical orientation: the x-axis is the horizontal axis of the graph, and the y-axis is the vertical axis.

Suppose you have a graph in which only some of the city names appear on the x-axis because the names in the source icon are lengthy.



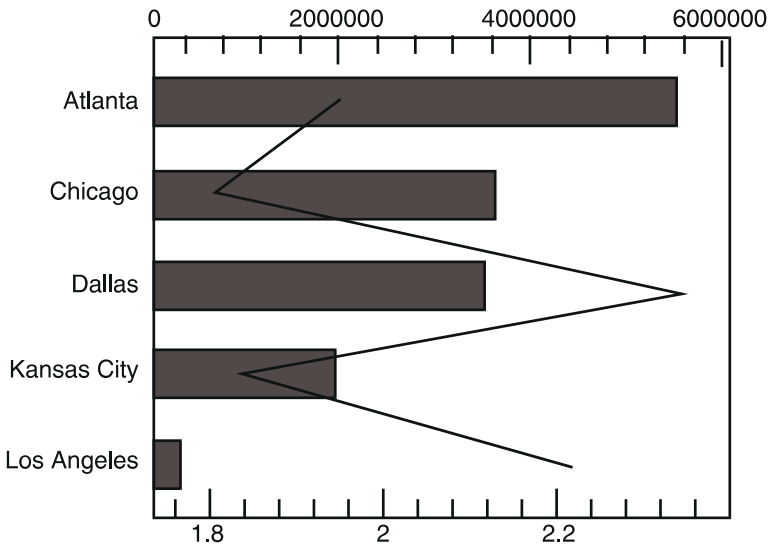
You can change the orientation of the graph so that all of the x-axis labels appear.

To change the graph orientation to horizontal:

1. Select the second choice in the **Orientation** field, depicted as horizontal bars.
2. Click on **Apply** to update the graph.

   Data is now charted horizontally: the x-axis becomes the vertical axis of the graph, and the y-axis is the horizontal axis.

When the graph has a horizontal orientation, all of the city names appear on the x-axis.



When you change the graph orientation, it affects some of the fields in the Plot Controls window. In the top portion of the Plot Controls window, the **Horizontal X-Axis Labels** field changes to the **Vertical X-Axis Labels** field. In the **Axis** field, the choices change to **Top** and **Bottom**. In the **Axes** page, the **Top Edge** and **Bottom Edge** fields change to **Right Edge** and **Left Edge**.

Changing the Graph Font

By default, the Plot tool uses the typeface and size formats set in the Set Preferences window for text plots and labels on the axes. You can change the typeface and the size of the font for the graph in the **Graph Font** and **Size** fields. For example, if the labels on the x-axis are too small to read, select a larger font size in the **Size** field.

To change the font typeface and size for text plots and axes labels:

1. In the Overall Graph page, select a typeface from the **Graph Font** field.
2. Select a size from the **Size** field.
3. Click on **Apply**.

Adding a Border

The **Border** field allows you to create a border around your graph by providing four different line thicknesses from which to choose, and one blank choice, which is the default.

When you add a border to the graph, long labels can overlap it. On an axes graph, a legend always appears inside the border. You cannot move the border.

The following illustration shows a graph with a border.

Scaling and Formatting the Axes

This section describes the Axes page of the Plot Controls window and the various ways you can format an axis. The Plot tool automatically uses data from the source icon to label the x-axis and scale the y-axis of a graph.

The Plot Controls window allows you to change the scale and appearance of the axes. Using the fields in the Axes page, you can:

Choose an axis to format

Change the position of the baseline in a graph

Remove the labels, tick marks, or edge of an axis

Change the major and minor increments of an axis

Change the values that appear at the top, bottom, left, and right edges of a graph

To see the Plot Controls window:

1. Select **Axes** in the **Display** field.

The Plot Controls window appears, as shown in Figure 5 on page 54.

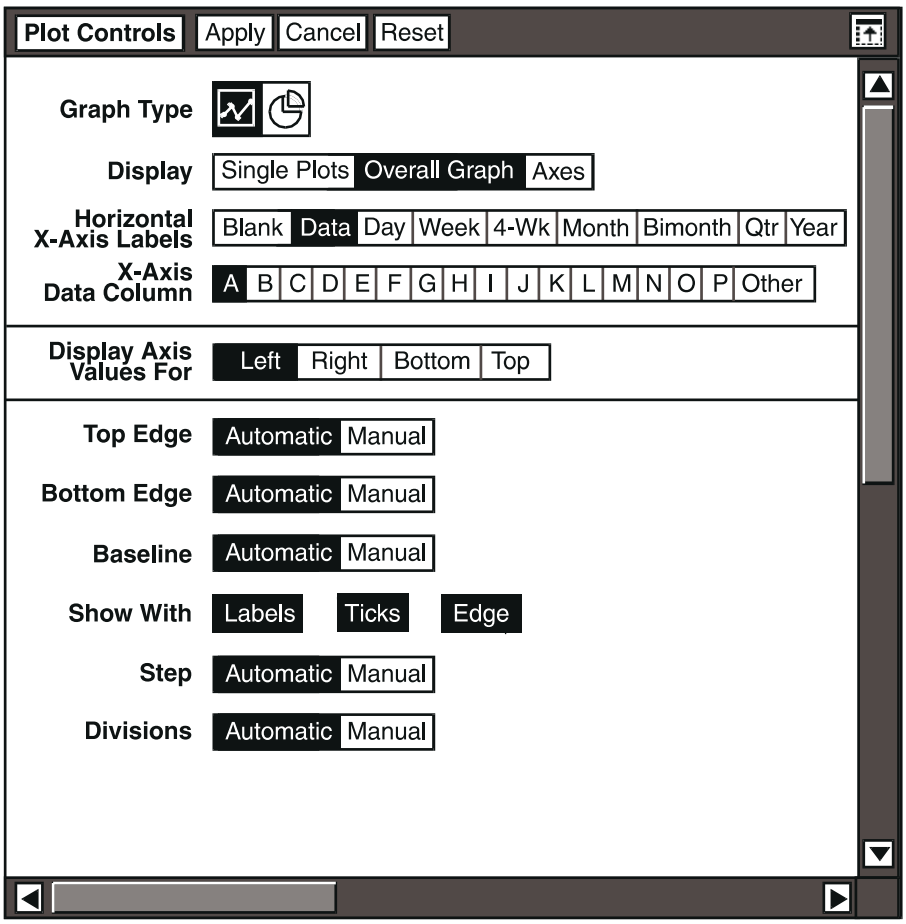


Figure 5. The Axes page

Choosing an Axis to Format

The **Display Axis Values For** field allows you to choose the axis you want to format.

The position of the axes is determined by the orientation of the graph. By default, the graph has a vertical orientation. The choices in the **Display Axis Values For** field represent the following: **Left** and **Right** are the y-axes; **Bottom** and **Top** are the x-axes.

If you change the graph orientation to horizontal, the choices in the **Display Axis Values For** field have a different meaning. The **Left** and **Right** choices in the **Display Axis Values For** field become the x-axes, and **Bottom** and **Top** become the y-axes.

To choose an axis to format, select a choice in the **Display Axis Values For** field.

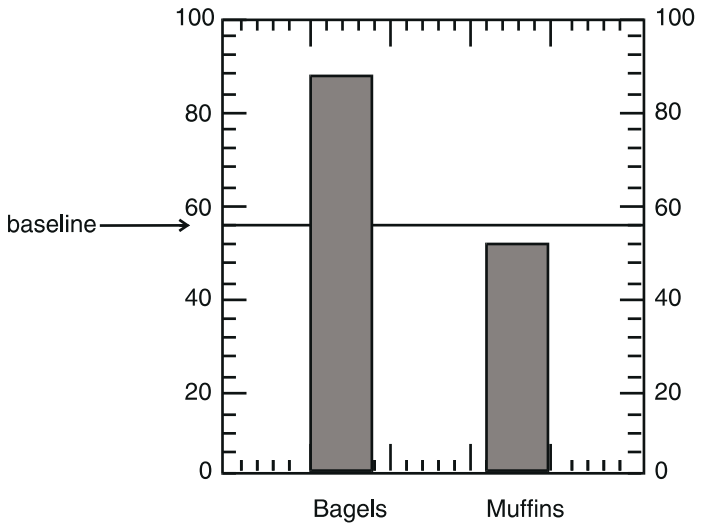
The lower third of the window changes to display the fields that format the axis.

The graphs shown in the following sections reflect the default settings; the graph has a vertical orientation, and the data is charted as columns.

Changing the Baseline of a Graph

The Plot tool automatically places a measuring baseline on a graph where the data value is equal to zero. When the bottom of the x-axis is also zero, the baseline overlaps the x-axis and does not appear on the graph. To illustrate a value not equal to zero, you can specify a different value for the baseline.

Suppose you want to illustrate with your graph that to break even you must sell 56 bagels and 56 muffins. You can change the value of the baseline to **56** to reflect the break-even point for the sales of bagels and muffins.



To change the value of the baseline:

1. Select **Manual** in the **Baseline** field.
2. Enter a new value into the field.
3. Click on **Apply**.

Adjusting the Axes Scale

The Plot tool uses the type and range of data from the source icon and the graph orientation to calculate the scale for the axes. You can change the axes scale to focus on a specific area of a graph. When the graph is in a vertical orientation, you can change the values on the top and bottom edges of the left or right axis and the values on the left and right edges of the bottom axis.

Top Edge Values

The Plot tool automatically calculates the value for the top edge of each axis by using the highest value from the source data.

To change the value of the top edge of an axis:

1. Select **Manual** in the**Top Edge** field.

   A field appears containing the current value for the top edge.
2. Enter a new value into the field.
3. Click on **Apply**.

Bottom Edge Values

Most graphs use zero as the value for the intersection of the x-axis and y-axis. The Plot tool automatically designates zero (0) as the value for the bottom edges of the left and right axes of a graph containing a bar plot, unless the minimum value in the source icon is less than zero. For all other types of plots, the Plot tool bases the value for the bottom edges of the axes on the information charted in the graph.

To change the value of the bottom edge of an axis:

1. Select **Manual** in the **Bottom Edge** field.

   A field appears containing the current value for the bottom edge.
2. Enter a new value into the field.
3. Click on **Apply**.

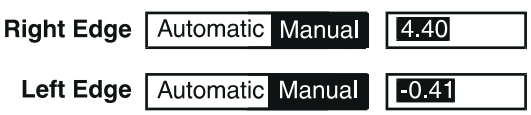
Left and Right Edges Values

When you format the left edge or right edge of the bottom axis, the plots in the graph shift horizontally towards or away from the edges.

To change the value of the left edge or right edge of the bottom axis:

1. Select **Manual** in the **Left Edge** or **Right Edge** field.

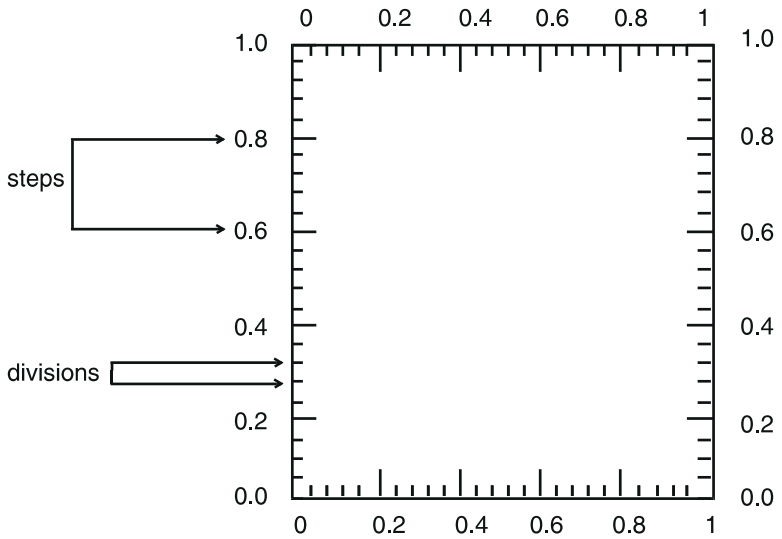
   Fields appear containing the current values for the left and right edges.



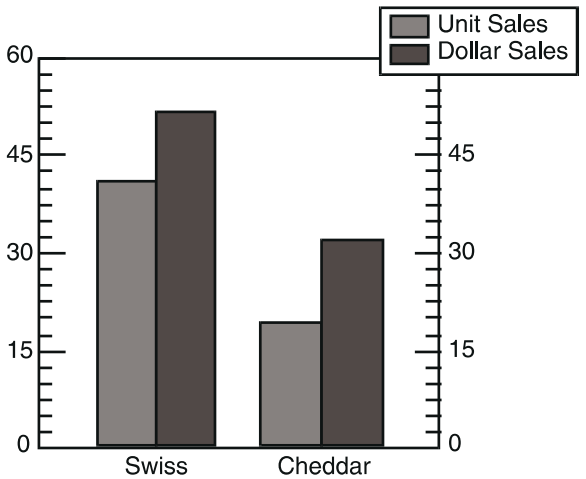
2. Enter a new value into the field of the edge you want to change.
3. Click on **Apply**.

Changing the Axes Increments

Major increments on axes are *steps*, and the increments between each step are *divisions*. The Plot tool places a specified number of divisions between the steps on the axes, depending on the type and range of data from the source icon.



Suppose you want to change the right y-axis of the following graph to show different numeric values.



You would format the right axis by increasing the numeric increments of the steps and reducing the number of divisions between each step.

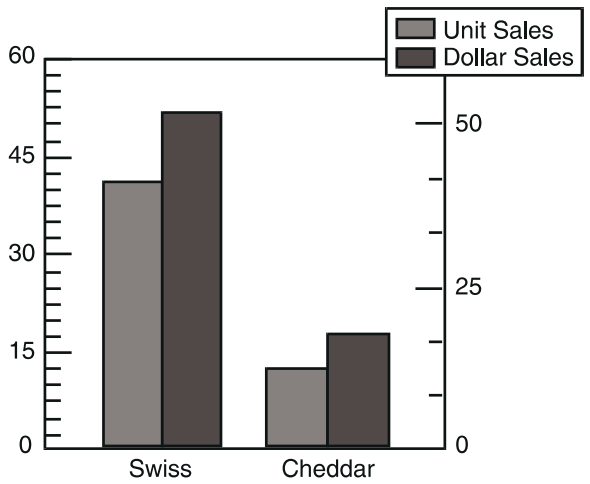
To change the numeric increments of the steps:

1. Select **Manual** in the **Step** field.
2. Enter the new value into the field (25 in this example).
3. Click on **Apply**.

To change the number of divisions between steps:

1. Select **Manual** in the **Divisions** field.
2. Enter the new value into the field (3 in this example).
3. Click on **Apply**.

   Only the right axis of the graph changes to reflect the new values in the **Steps** and **Divisions** fields, because each axis is formatted individually.



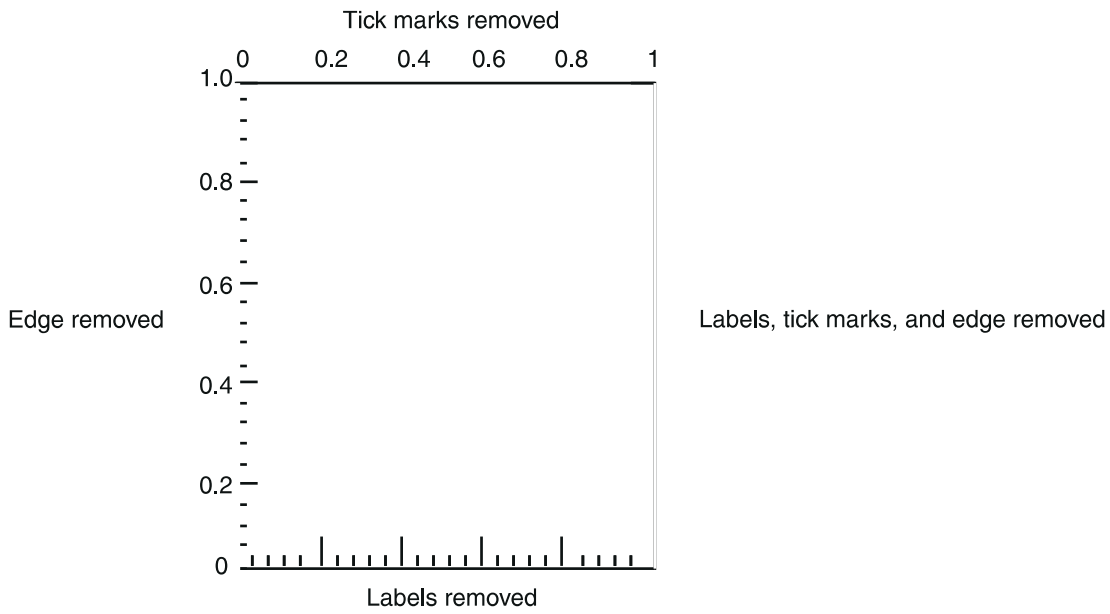
Removing Labels, Tick Marks, and Edges

Each axis is automatically displayed with a ruling edge, tick marks, and labels. You might want to remove the labels and tick marks on an axis to focus on the data in the graph. You format the appearance of an axis in the **Show With** field.

To remove labels, ticks marks, or the edge from an axis:

1. Select an axis to format in the **Display Axis Values For** field.
2. Select the element you want to remove in the **Show With** field.
3. Click on **Apply**.

The following illustration shows a graph with various components removed from the axes.



Manipulating Plots in the Depiction Area

When you want to change the appearance of a graph, you can copy, move, or delete the plots in the depiction area of the Plot Controls window.

Copying a Plot

You can copy a plot anywhere in the depiction area to use the original plot formats and settings for a new plot. When you copy a plot, it also charts the same data as the original plot until you select a different column or row of data in the **Y-Axis Data Column** or **Y-Axis Data Row** field.

To copy a plot:

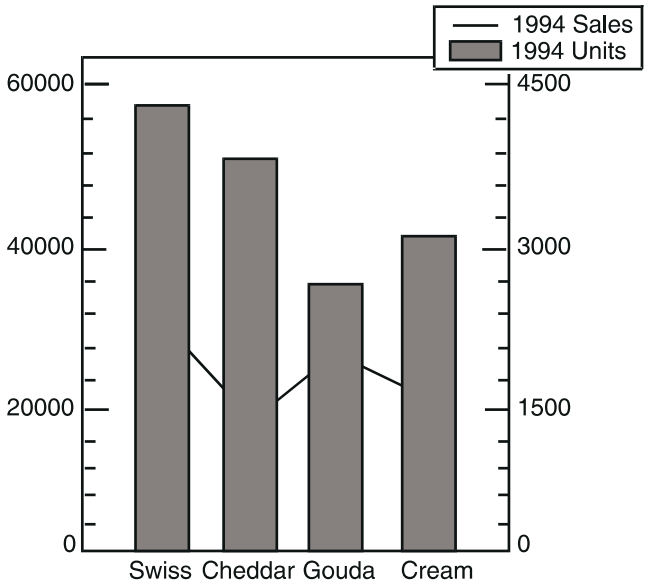
1. Select a plot in the depiction area.
2. Copy the plot anywhere in the depiction area.

Unless you select a new value in the **Y-Axis Data Column** or **Y-Axis Data Row** field for the copied plot, there are two identical plots in the graph.

Moving a Plot

The order of the plots in the depiction area from left to right, top to bottom affects the layering of the graph. You can move the plots in the depiction area to reveal any hidden data, as explained in the following example.

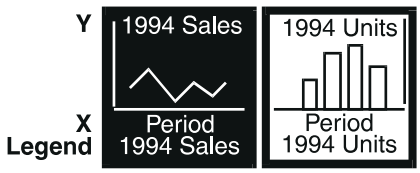
Suppose you create the following graph consisting of a line plot and a bar plot. Because the bar plot was added to the graph after the line plot, the bars cover the line.



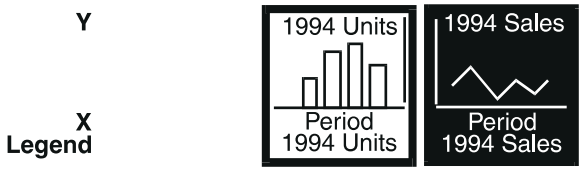
To move the line plot in front of the bar plot, you would change the layering of the plots on the graph by moving the line plot to the right of the bar plot in the depiction area.

To move a plot, and change the layering of a graph:

1. Select the plot you want to move.

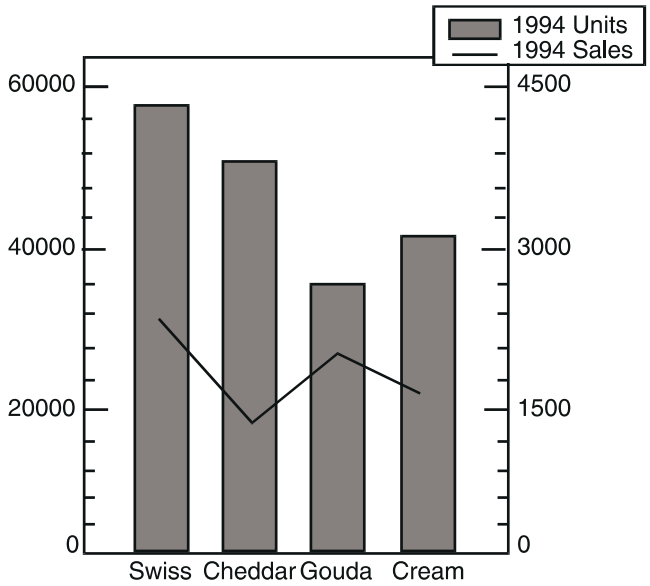


2. Move the plot to the right in the depiction area.



3. Click on **Apply**.

The line plot appears in front of the bar plot on the graph, as shown in the following illustration.



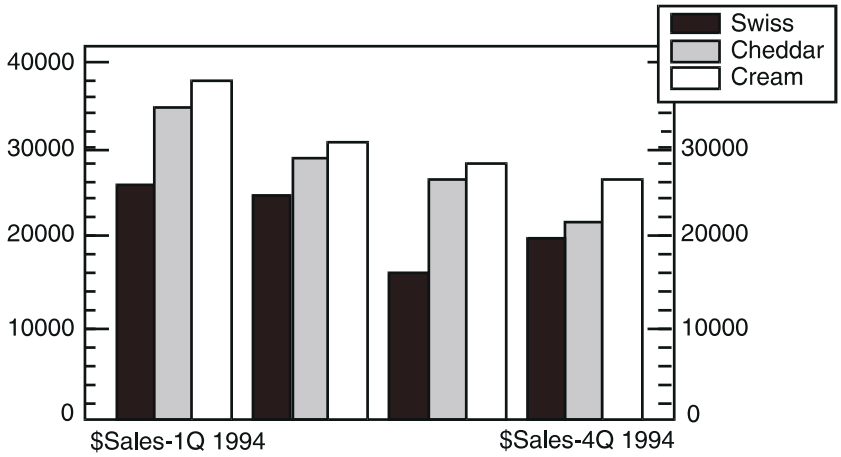
Deleting a Plot

You can remove a plot from your graph by deleting a plot from the depiction area. When you delete a plot from the depiction area, you delete all of its settings, and the Plot tool relayers and redraws the graph. The space in the depiction area remains empty until you copy or move a plot into the space or add another plot to the graph

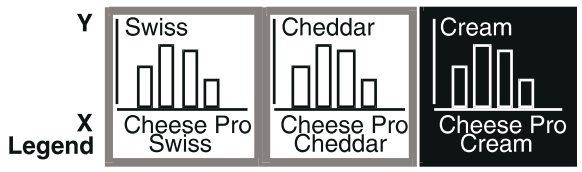
Deleting a plot from the depiction area does not remove the data from the plot tool.

If you want to temporarily remove a plot from a graph, change the plot type to **Blank**. See “Choosing the Plot Type” on page 24 for more information.

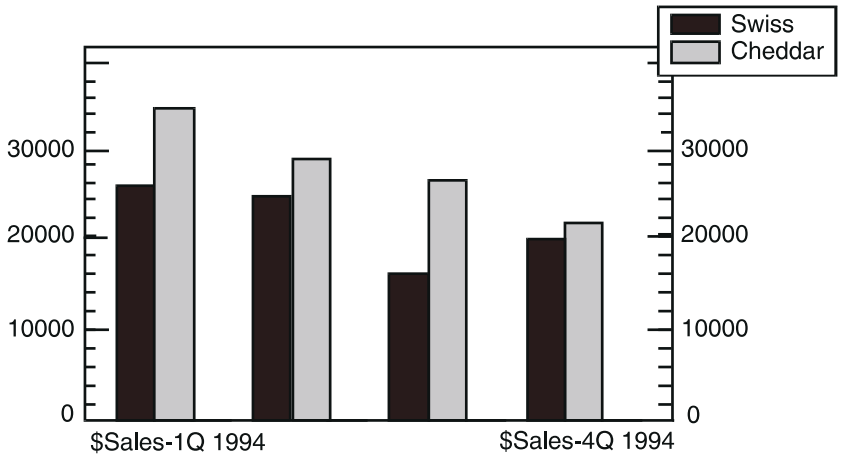
For example, suppose you have a graph that charts the data for three cheese products: Swiss, Cheddar, and cream.



To change the graph to chart only the data for Swiss cheese and Cheddar cheese, you would delete the plot charting the cream cheese data from the depiction area.



The Plot tool redraws the graph without the cream cheese data.



If you inadvertently delete a plot from the depiction area, and you have not clicked on the **Apply** button or closed the Plot Controls window, you can recover the plot by clicking on the **Cancel** or **Reset** buttons in the Plot Controls window header.

Chapter 5. Creating a Pie Graph

When you want to depict individual data values as a portion of the sum of all the data values, select the pie graph choice in the **Graph Type** field.

The Plot tool automatically sums all the data from a row or column in the source icon, then calculates the percentage of each individual data value in relation to the total data value. You can then create a pie graph by making selections in the Plot Controls window, or setting the Plot tool to automatically make a pie graph. This chapter describes how to:

- Add slices to a graph
- Change the data charted in a slice
- Aggregate slices
- Choose the appearance of a slice
- Format slice labels
- Format the graph
- Manipulate slices in the depiction area

Adding Slices to a Graph

After you copy data into the Plot tool, select the pie graph choice and open the Plot Controls window, the Single Slices page appears, as shown in Figure 6 on page 64. The depiction area of the Plot Controls window appears empty until you add a slice to the graph. You can have up to 16 slices on your graph.

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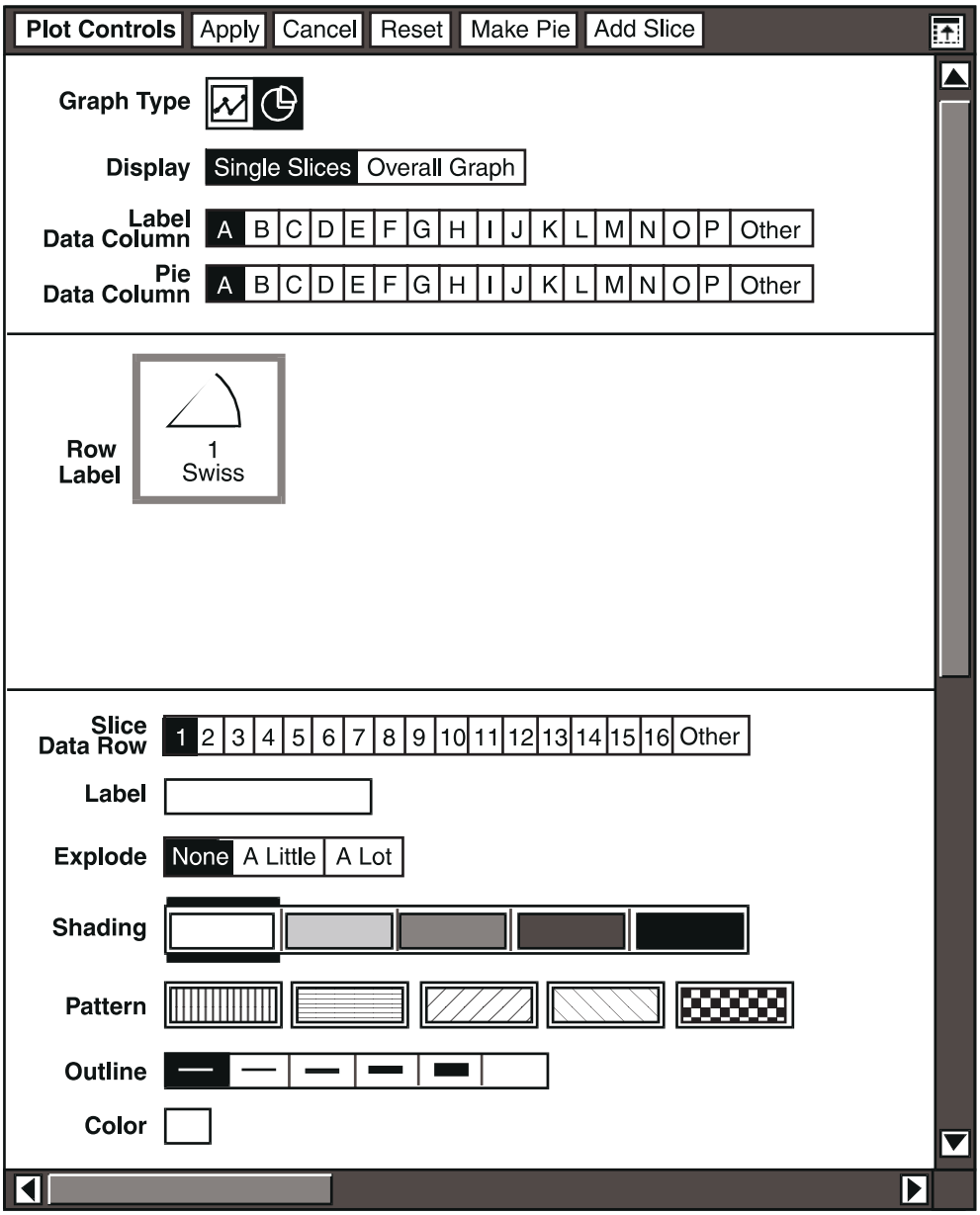


Figure 6. The Single Slices page

The depiction area labels provide information about each slice. The information next to the **Row** label corresponds to the row from the source icon depicted in a slice. When data is treated as rows, **Row** changes to **Col**, which corresponds to the column from the source icon depicted in a slice. The information next to **Label** corresponds to the data from the source icon that appears as the label for a slice.

You can create a pie graph manually or set the Plot tool to automatically create a graph.

Manually

When you manually create a pie graph, you can select individual slices in the depiction area and change the data and the format for each slice. By default, the **Make Pie Graph** field in the Overall Graph page is set to **Manually**.

The slices in the depiction area have a shaded border, indicating that you can select them.

There are two ways to manually create a pie graph:

The **Make Pie Graph** button creates an entire pie graph all at once.

The **Add Slice** button creates a pie graph one slice at a time.

Using the Make Pie Graph Button

The Plot Controls window header when you display the Single Slices page.

When you use the **Make Pie Graph** button to create a pie graph, the Plot tool automatically selects the data, shading, pattern, and color for each slice. After the pie graph is created, you can select individual slices in the depiction area and change the settings.

To make a pie graph all at once, but still be able to control the settings for each slice of the pie, click on the **Make Pie Graph** button.

The Pie Graph window appears, shown in Figure 7.

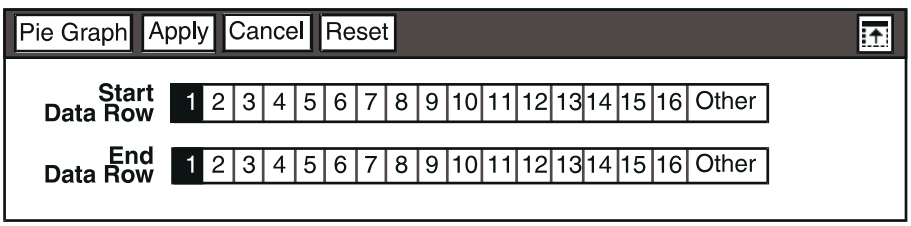


Figure 7. The Pie Graph window

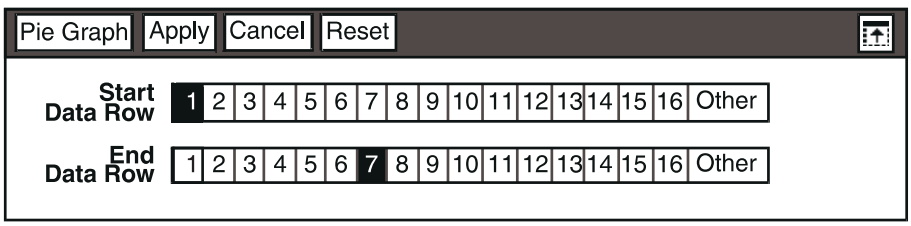
The **Start Data Row** and **End Data Row** fields appear in the Pie Graph window. The Plot tool charts each row of data as a slice in the pie graph, using the column of data selected in the **Pie Data Column** field.

The Plot tool automatically selects the row numbers in the **Start Data Row** and **End Data Row** fields, based upon the number of rows of data it receives from the source icon. The Plot tool ignores the row containing labels, and refers to the first row of data as row 1 in the **Start Data Row** field. The subsequent row references are renumbered.

For example, suppose you want to create a pie graph comparing the first quarter sales of cheese products using data from the following spreadsheet.

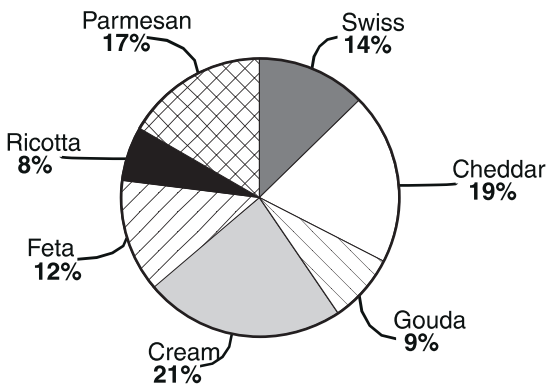
	A	B
1	Cheese Product	$Sales-1Q 1994
2	Swiss	26,046.00
3	Cheddar	34,928.00
4	Gouda	15,624.00
5	Cream	38,072.00
6	Feta	20,763.00
7	Ricotta	14,825.00
8	Parmesan	30,277.00

To make the pie graph all at once, you would click on the **Make Pie Graph** button. The Pie Graph window appears with selections already made in the **Start Data Row** and **End Data Row** fields.

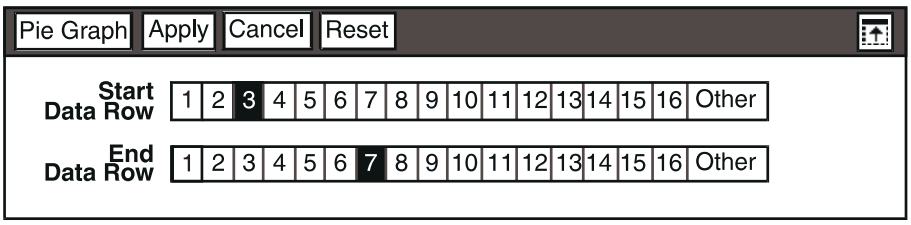


The Plot tool ignores the label, $Sales-1Q 1994, in row 1 and begins charting the data from row 2. Row 2 is consequently referred to as row 1 in the **Start Data Row** field, and the last row of data (row 8) is referred to as row 7 in the **End Data Row** field.

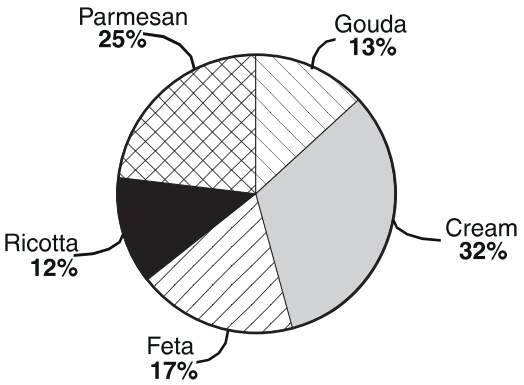
When you click on the **Apply** button or close the Pie Graph window, the Plot tool creates the following graph.



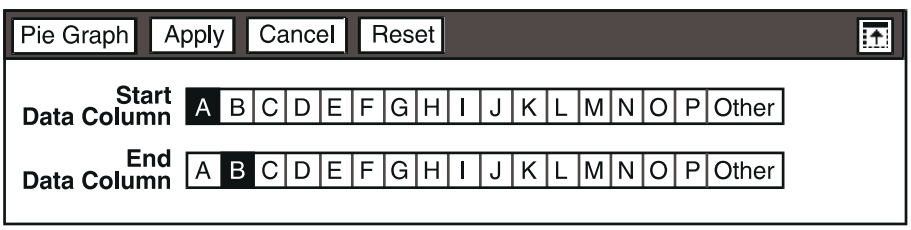
Suppose you decide that you do not want to chart the data for Swiss cheese and Cheddar cheese. You would select **3** in the **Start Data Row** field so that the pie graph would begin charting from the third row of data (row 4) in the spreadsheet.



When you click on the **Apply** button or close the Pie Graph window, the Plot tool recalculates the percentages and creates the following graph.



If you select **Rows** in the **Treat Data As** field of the Overall Graph page, the Pie Graph window displays the **Start Data Column** and **End Data Column** fields, and automatically selects the column letters. The Plot tool compares the columns of data in the row selected in the **Pie Data Row** field.



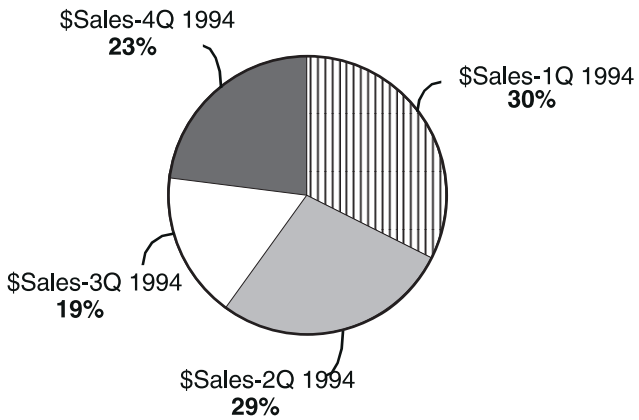
For example, suppose you want to create a pie graph comparing the quarterly sales of Swiss cheese using data from the following spreadsheet.

	A	B	C	D	E
1	Cheese Product	$Sales-1Q 1994	$Sales-2Q 1994	$Sales-3Q 1994	$Sales-4Q 1994
2	Swiss	26,046.00	24,460.00	15,879.00	19,327.00

To make the pie graph all at once, you would click on the **Make Pie Graph** button. The Pie Graph window appears with selections already made in the **Start Data Column** and **End Data Column** fields.

The Plot tool ignores the label, Swiss, in column A and begins charting the data from column B. Column B is consequently referred to as column A in the **Start Data Column** field, and the last column of data (column E) is referred to as column D in the **End Data Column** field.

When you click on the **Apply** button or close the Pie Graph window, the Plot tool creates the following graph.



When you want to create a pie graph and you are finished making selections in the Pie Graph window, click on the **Apply** button.

Close the Pie Graph window.

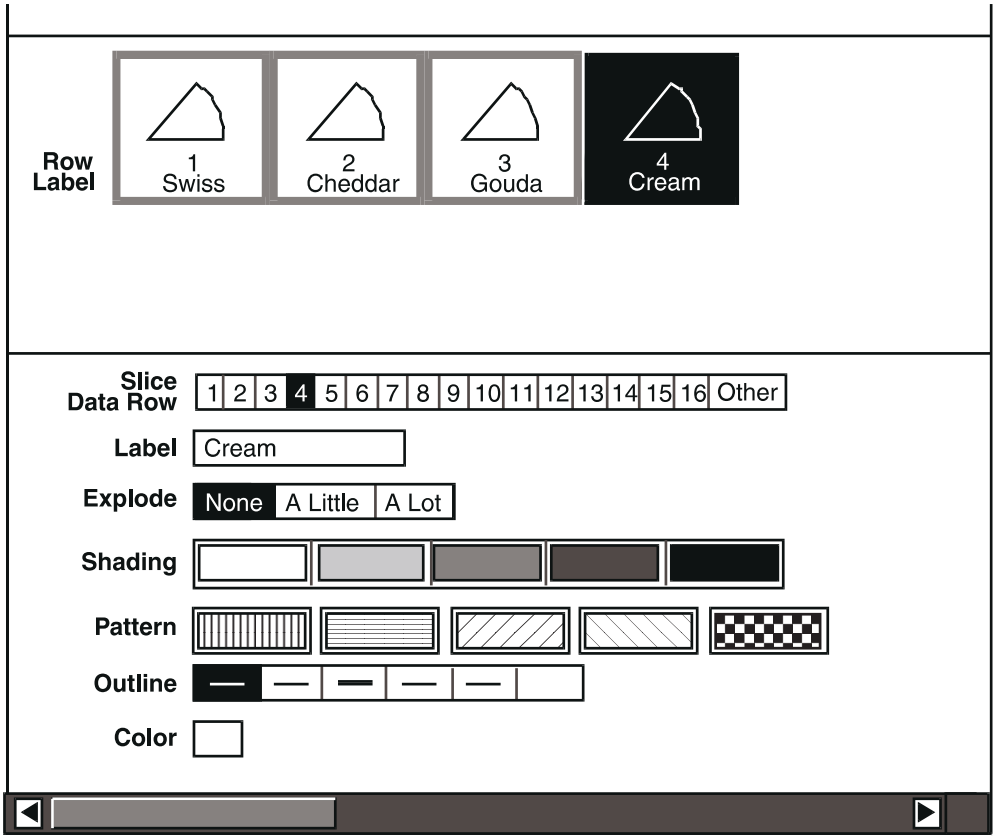
Using the Add Slice Button

The **Add Slice** button is located in the Plot Controls window header.

To make a pie by adding one slice at a time:

1. Click on the **Add Slice** button once for each slice of the pie graph.

The slices appear in the depiction area.



Each time you click on the **Add Slice** button, the **Slice Data Row** field advances one position, and the Plot tool automatically charts the next row of data from the source icon. The Plot tool also automatically makes selections in the **Shading** and **Pattern** fields, which gives each slice a unique pattern needed for black and white graphs.

You can change the appearance of a slice in the pie graph by making selections in the Plot Controls window.

To see the formatting options for a slice:

1. Select the specific slice in the depiction area.

The lower third of the Plot Controls window changes, displaying the options for that slice.

For more information about formatting slices, see “Choosing the Appearance of a Slice” on page 78.

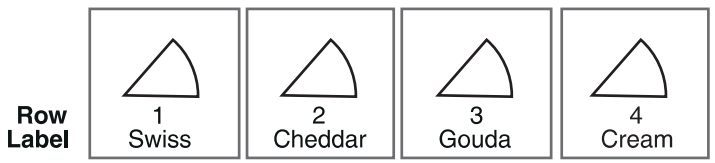
Automatically

Creating a pie graph automatically is useful when the graph is generated in a capsule application, where data is automatically transferred into the Plot tool.

To set the Plot tool to automatically generate a pie graph:

1. Select **Overall Graph** in the **Display** field.
2. Select **Automatically** in the **Make Pie Graph** field.

When you set the Plot tool to create a pie graph automatically, the Plot tool charts all of the data from the source icon and formats the slices. The slices in the depiction area have a broken border, indicating that you cannot select them.



To learn more about using the Plot tool in a capsule application, see “Using Plot in a Capsule Application” on page 98.

Changing the Data Charted in a Slice

After you create a pie graph, you might want to change the data that is represented in an individual slice. Use the **Slice Data Row** field to select specific data from the source icon for the values of the slices in the pie graph. The **Slice Data Row** field is also useful when you have a large source icon and you want to chart specific rows or columns of information in the pie graph.

The **Slice Data Row** field automatically changes to **Slice Data Column** when **Rows** is selected in the **Treat Data As** field. By default, the Plot tool treats the data as columns.

Charting Columns of Data

This section explains how the Plot tool charts each row of data as a slice in the pie graph, using the column of data selected in the **Pie Data Column** field.

When the first row of data in a source icon includes labels, the Plot tool does not chart the first row when referencing the source icon, but charts the data beginning at the second row. The rows are renumbered in the Plot tool, and the **Slice Data Row** field refers to the first row of charted data as row 1.

When you open the Plot Controls window, the **Slice Data Row** field appears.

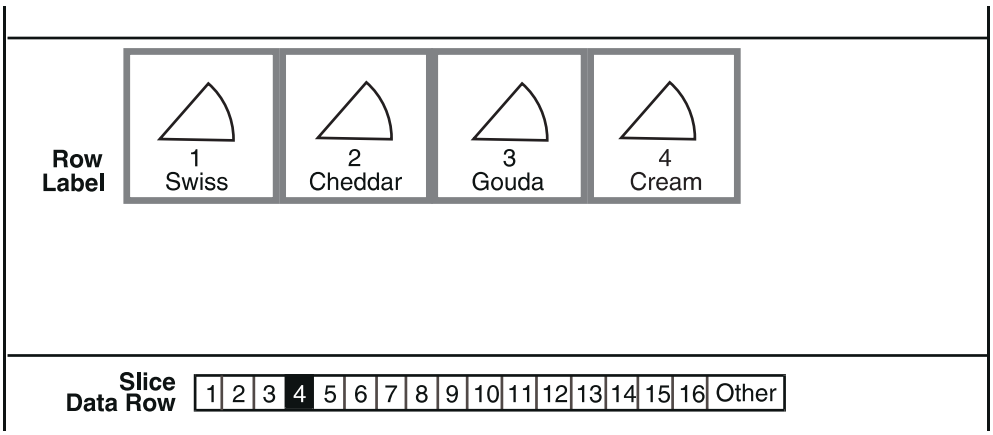
Suppose you want to create a pie graph comparing the first quarter sales of some of the cheese products using data from the following spreadsheet.

	A	B	C	
1	Cheese Product	$Sales-1Q 1994	$Sales-2Q 1994	
2	Swiss	26,046.00	24,460.00	
3	Cheddar	34,928.00	28,583.00	
4	Gouda	15,624.00	18,468.00	
5	Cream	38,072.00	30,489.00	
6	Feta	20,763.00	21,924.00	
7	Ricotta	14,825.00	16,041.00	
8	Parmesan	30,277.00	33,823.00	

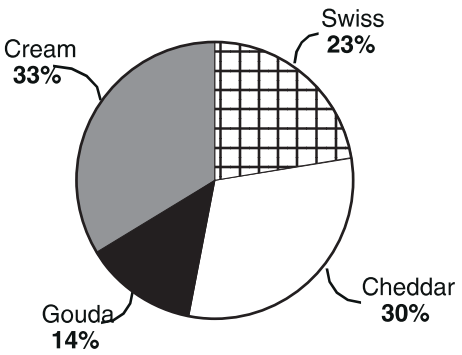
To chart the first quarter sales, you would select **B** in the **Pie Data Column** field.

The Plot tool ignores the row containing labels, and refers to the first row of data as row 1 in the **Slice Data Row** field. The subsequent rows of data are renumbered in the Plot tool.

As you add slices to the graph, the Plot tool ignores the label, $Sales-1Q 1994, in row 1 and begins charting the data from row 2. Row 2 is consequently referred to as row 1 in the depiction area and the **Slice Data Row** field, and rows 3 through 8 are referred to as 2 through 7 respectively.



Using the first four rows of data from the spreadsheet results in the following pie graph.



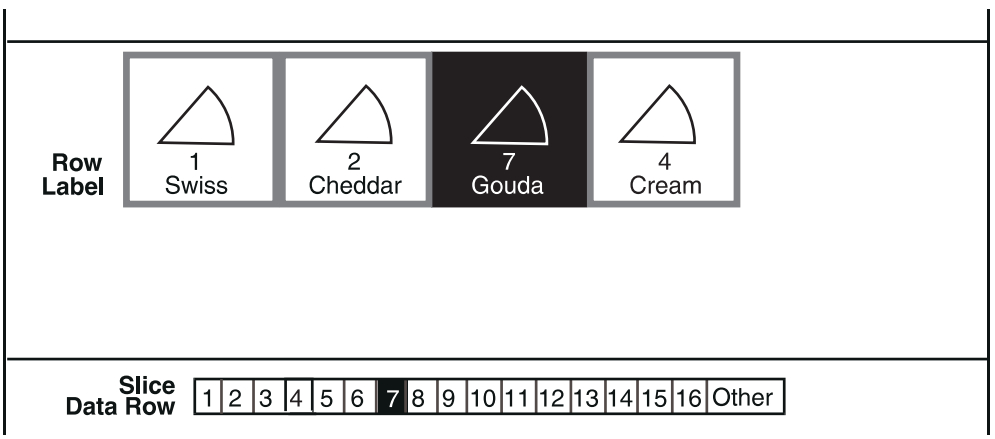
Suppose you want to change the graph so that the sales for Parmesan cheese are charted instead of the sales for Gouda cheese.

To change the data charted in a slice:

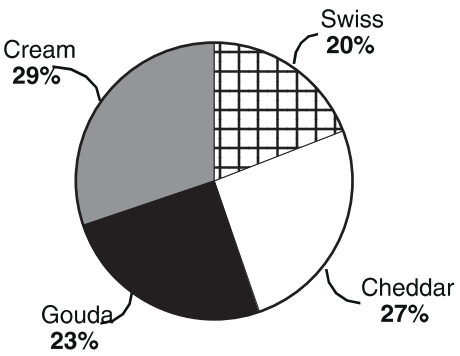
1. Select a slice in the depiction area.
2. In the **Slice Data Row** field, select which row of data to assign to that slice.

   The Plot tool recalculates the percentage value of the slice relative to the other slices in the graph.
3. Click on **Apply**.

To replace the sales data for Gouda cheese with the sales data for Parmesan cheese, you would select the slice in the depiction area that represents Gouda cheese. Since the Plot tool renumbers the rows, you would select 7 in the **Slice Data Row** field to chart the data for Parmesan cheese, even though the Parmesan sales data is contained in row 8 of the spreadsheet.



The pie graph now charts the data for Parmesan cheese and recalculates the percentages of the slices in the graph.



Charting Rows of Data

This section explains how the Plot tool charts each column of data as a slice in the pie graph, using the row of data selected in the **Pie Data Row** field.

When the first column of data in a source icon includes labels, the Plot tool does not chart the first column when referencing the source icon, but charts the data beginning at the second column. The **Slice Data Column** field refers to the first column of charted data as column A.

To create a pie graph that charts the information in a specific row of the source icon:

1. In the Overall Graph page, select **Rows** in the **Treat Data As** field.
2. Select the **Single Plots** choice.

   The **Slice Data Column** field appears in the Single Plots page.

Suppose you want to create a pie graph comparing the quarterly sales of Swiss cheese using data from the following spreadsheet.

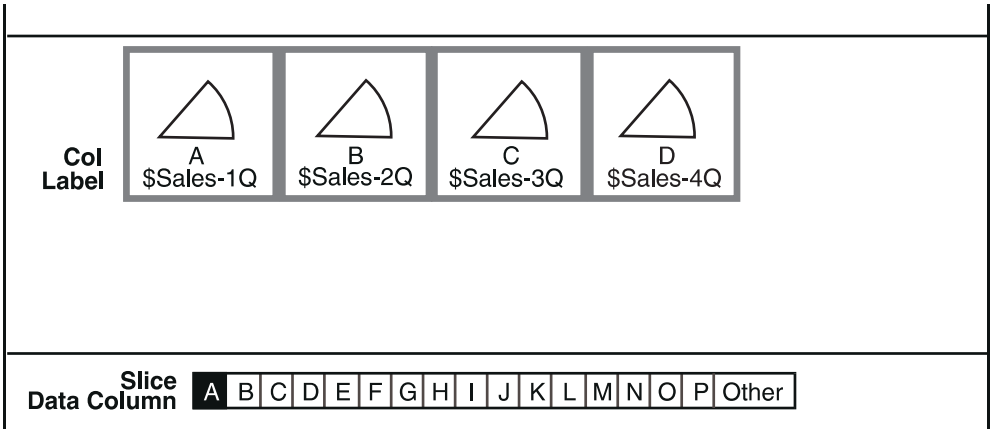
	A	B	C	D	E	F
1	Cheese Product	$Sales-1Q 1994	$Sales-2Q 1994	$Sales-3Q 1994	$Sales-4Q 1994	$Sales-1Q 1995
2	Swiss	26,046.00	24,460.00	15,879.00	19,327.00	30,602.00

To chart the sales for Swiss cheese, you would select 2 in the **Pie Data Row** field.

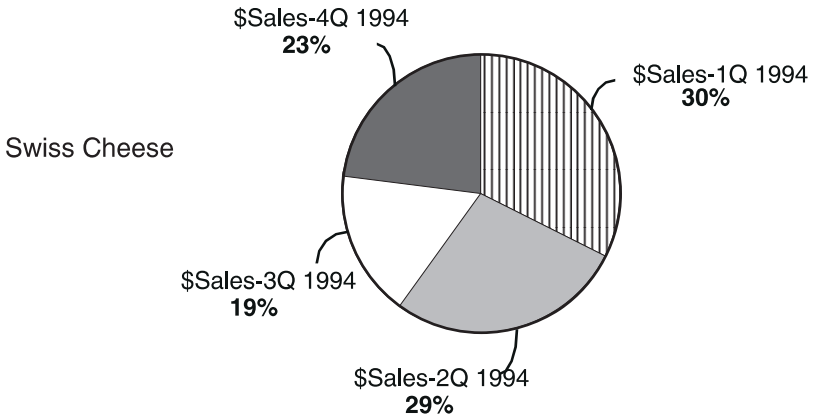
Pie Data Row 1 **2** 3 4 5 6 7 8 9 10 11 12 13 14 15 16 Other

As you add slices to the graph, the Plot tool ignores the label Swiss in column A and begins charting the data from column B. Column B is consequently referred to as

column A in the depiction area and the **Slice Data Column** field, and rows C through F are referred to as B through E respectively.



Using the first four columns of data from the spreadsheet results in the following pie graph.



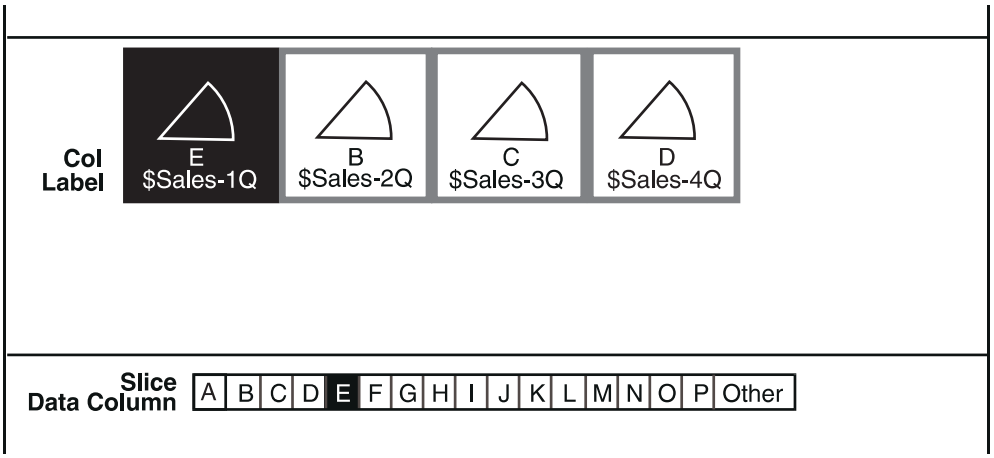
Suppose you want to change the graph so that you can compare the sales for the first quarter of 1995 with the last three quarters of 1994.

To change the data charted in a slice:

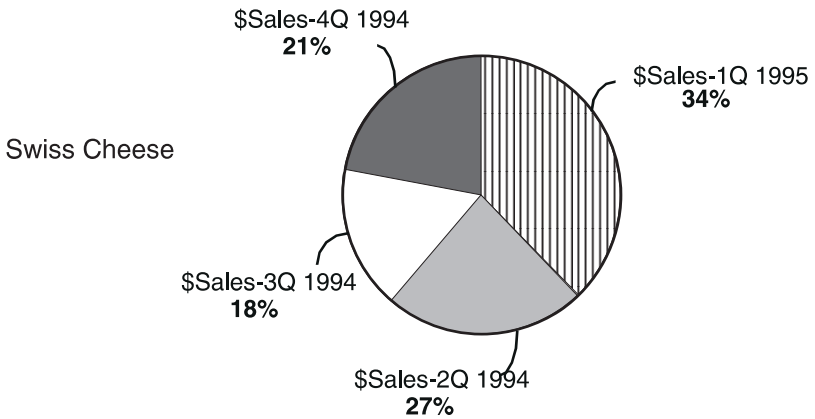
1. Select a slice in the depiction area.
2. In the **Slice Data Column** field, select which column of data to assign to that slice.

   The Plot tool recalculates the percentage value of the slice relative to the other slices in the graph.
3. Click on **Apply**.

To replace the sales data for the first quarter of 1994 with the sales data for the first quarter of 1995, you would select the slice in the depiction area that represents 1994 first quarter sales. Since the Plot tool does not chart the first column of data from the spreadsheet, you would select E in the **Slice Data Column** field to chart the data for 1995 first quarter sales, even though the 1995 first quarter sales data is contained in column F of the spreadsheet.



The pie graph now charts the sales data for the first quarter of 1995 and recalculates the percentages of the slices in the graph.



Aggregating Slices

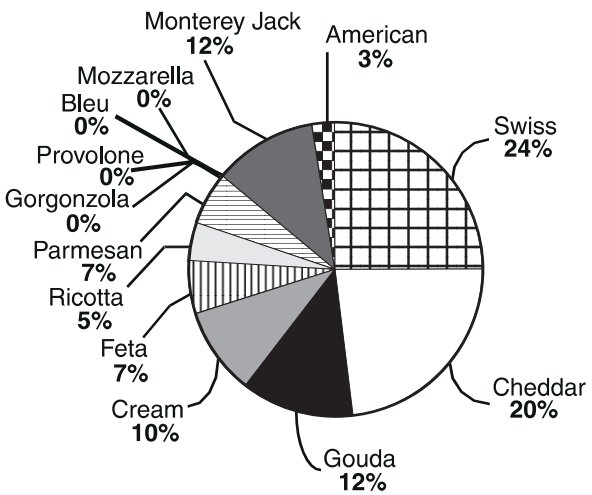
The Plot tool assigns a value of zero to data values that make up less than one-half percent of the total. When you create a pie graph, the slices representing less than one-half percent are not visible and only the slice labels appear.

To show the slices representing less than one-half percent of data in the pie graph, you can *aggregate*, or combine, several slices into one slice. The Plot tool treats the combined data values as one data value, and charts an aggregate slice in the pie graph that represents the combined data values.

Suppose you are using the following spreadsheet as your data source. The data values in rows 9 through 12 are less that one-half percent of the total value.

	A	B
1	Cheese Product	Dollar Sales
2	Swiss	1,026,046
3	Cheddar	866,603
4	Gouda	518,003
5	Cream	418,901
6	Feta	317,392
7	Ricotta	199,781
8	Parmesan	294,786
9	Gorgonzola	7,560
10	Provolone	4,958
11	Bleu	3,805
12	Mozzarella	6,381
13	Monterey Jack	531,117
14	American	142,926

The slice labels appear on the pie graph, but the slices are too small to see.



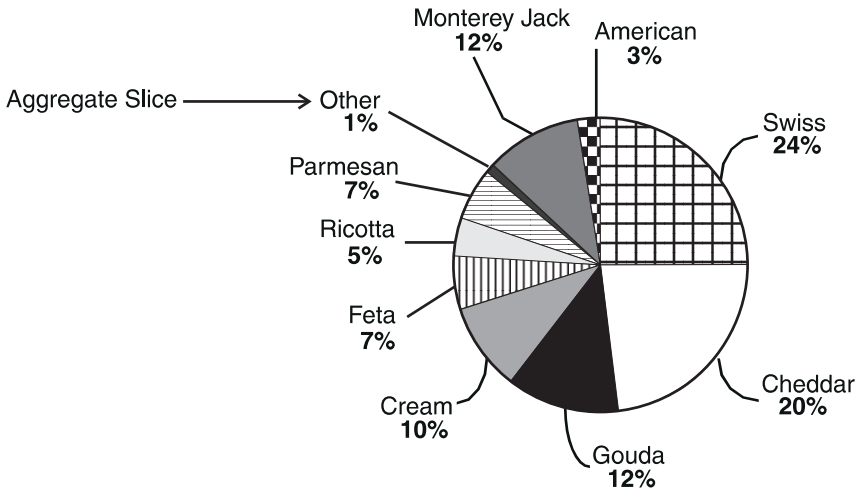
To show the slices representing Gorgonzola, Provolone, Bleu, and Mozzarella cheeses in the pie graph, you would aggregate the slices into one slice.

To aggregate slices in a pie graph into one slice:

1. In the depiction area, delete the slices you are combining.
2. Select the **Add Slice** button to add a new slice to the graph.
3. In the **Label** field, enter the label of the new slice.
4. Select **Other** in the **Slice Data Row** field.
5. In the new field, enter the data rows you are combining with a colon separating the beginning and ending rows.

   Remember that the Plot tool renumbers the columns and rows of source data. By combining slice data rows 8 through 11 in the **Slice Data Row** field, you are actually combining the spreadsheet data in rows 9 through 12. See “Changing the Data Charted in a Slice” on page 70 for more information on how the Plot tool references rows and columns of source data.
6. Click on **Apply**.

   The slices representing Gorgonzola, Provolone, Bleu, and Mozzarella cheeses are aggregated into one slice. The value of the aggregate slice is the sum of the aggregated data values from the source icon.



When you are generating the pie graph automatically or using the **Make Pie Graph** button and your source icon contains more than 16 data values, sort the slices in descending order so that the smallest values are last. The Plot tool automatically aggregates all the data values after the fifteenth data value into one slice, and labels it **Other** in the pie graph. For more information about sorting slices, see “Sorting the Slices” on page 85.

Choosing the Appearance of a Slice

The fields in the Single Slices page allow you to format the appearance of a slice. You can choose a different color or pattern for each slice in your graph. You can also separate a slice from the graph for emphasis.

Choosing Shading and a Pattern

The **Shading** field provides five choices for shading slices of the pie graph. You can select only one choice per slice. The **Pattern** field provides five choices, and you can select as many choices as you like per slice. The Plot tool layers each pattern on top of the other patterns, producing a unique pattern.

Selecting the darkest choice in the **Shading** field overrides any choices selected in the **Pattern** field.

To change the shading and pattern of a slice:

1. In the depiction area, select the slice you want to change.
2. Select a choice in the **Shading** field.
3. Select a choice (or choices) in the **Pattern** field.
4. Click on **Apply**.

Selecting a Slice Outline

The Plot tool automatically places a thin line around each slice of the pie graph. You can control the line thickness, or remove it altogether, by selecting a choice in the **Outline** field and clicking on the **Apply** button.

Choosing a Slice Color

The **Color** field provides a color palette so that you can choose a unique color for each slice of the pie graph.

To select a color from the color palette:

1. Point inside the **Color** field, then press and hold down the left mouse button. The color palette is displayed for as long as you continue to press the left mouse button.
2. Release the left mouse button on the color you want to use for the slice.

   The slice color is displayed in the depiction area.
3. Click on **Apply** to update the graph.

The following conditions apply when selecting a color for your slice:

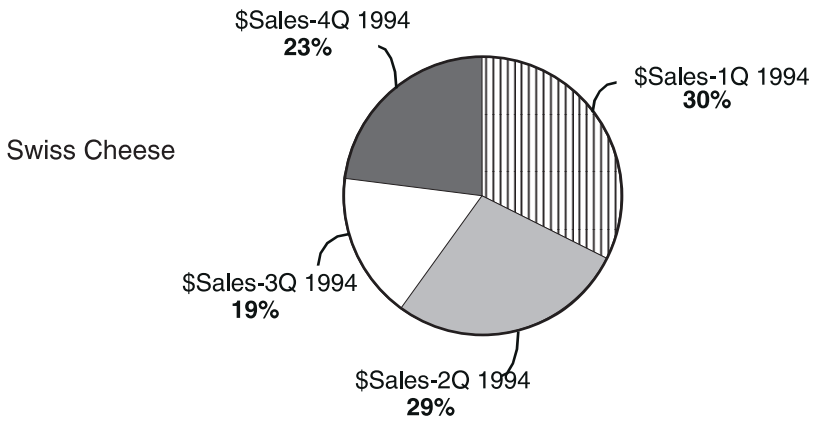
Selecting a pattern along with a color for a slice causes the color to appear in the pattern, not the background.

Selecting the white choice in the **Shading** field overrides any color selection in the **Color** field, except for the slice's outline, which reflects your choice of color for the slice.

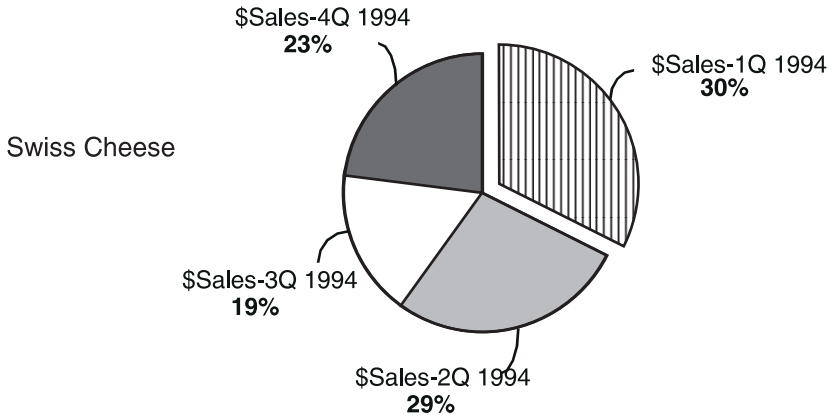
Exploding a Slice

To place more visual emphasis on a slice, you can separate, or explode, a slice from the pie graph. The **Explode** field provides three choices: **None**, **A Little**, and **A Lot**. The Plot tool defaults to **None**, and no slices are separated from the pie.

Suppose you have the following graph illustrating the quarterly sales of Swiss cheese.



You want to emphasize the highest quarter sales for the year. You would select the slice representing first quarter sales in the depiction area and select a choice in the **Explode** field. The slice is separated from the rest of the pie graph.



There is no limit to the number of slices you can separate from the pie graph.

Formatting Slice Labels

In the Overall Graph page, the **Show With** field allows you to format every slice in a pie graph with its name, numeric value, and percentage value. By default, the Plot tool displays the label and percent for each slice.

The Plot tool uses the typeface and size formats specified in the Set Preferences window to label the slices. In addition, it uses the color you have specified as your window foreground color as the color of the labels. You can change the typeface, size, and color of the font in the **Label Font**, **Size**, and **Label Color** fields.

In Plot tools that have been upgraded from a previous release of DIS, the default color for the labels is black.

To change the font typeface, size, and color:

1. Select a typeface from the **Label Font** field.
2. Select a size from the **Size** field.
3. Click on **Black** or **Plot Colors** (the text assumes the same color as the slice it is associated with).
4. Click on **Apply**.

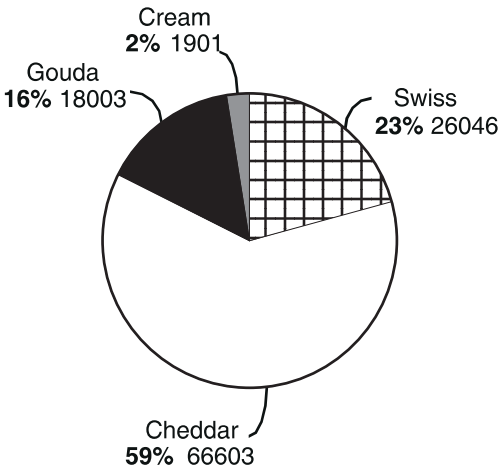
You can also display and format the value assigned to each slice of the pie graph. To show the value of each slice:

1. Click on **Value** in the **Show With** field.

   The **Value Precision** field appears. The default is no decimal precision.

2. From the **Value Precision** field, select the desired decimal precision.
3. Click on **Apply**.

   The following illustration shows a pie graph displaying the slice labels, data values, and percent of each slice.



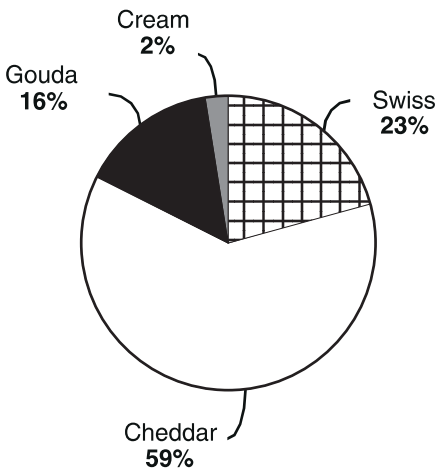
If you do not want to display the labels, values, or percents for each slice:

1. Click on the appropriate button in the **Show With** field to deselect it.
2. Click on **Apply** to update the graph.

Changing a Slice Label

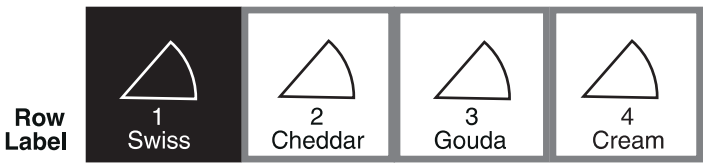
The Plot tool automatically uses the data in the source icon to label each slice of the pie graph, as explained in Chapter 3, “Charting the Data” on page 11. You can change individual slice labels in the **Label** field in the Single Slices page.

Suppose you want to change the label Swiss to be more specific.



To change the label of a slice of the pie graph:

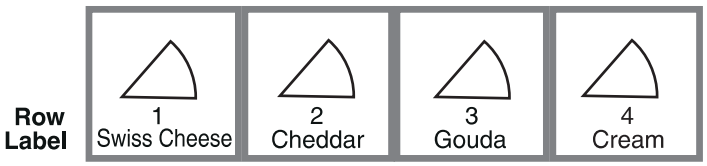
1. In the depiction area, select the slice you want to change.



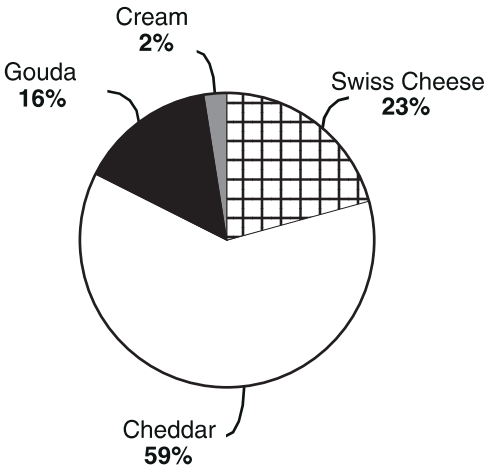
2. Type the new label into the **Label** field.

3. Click on **Apply**.

   The graphic representation of the slice in the depiction area changes to reflect the new label name.



The slice label changes in the Plot window.



Using @-Variables as Slice Labels

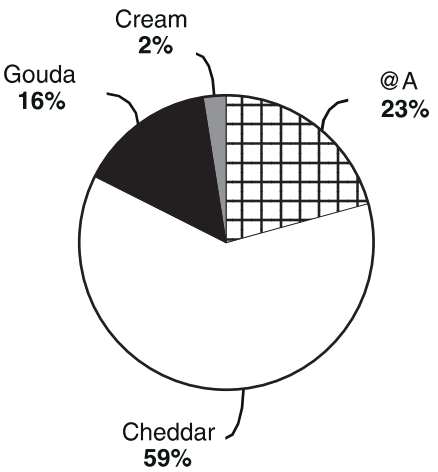
When you use the Plot tool in a capsule application, you can use *@-variables* with assigned values in the capsule's User Input Control window to generate slice labels. The Plot tool automatically retrieves the @-values when data is transferred to it.

To use *@-variables* as slice labels:

1. Define the *@-variables* in the User Input Control window of the capsule tool.
2. Type the *@-variables* directly into the **Label** field, just as you would enter text.

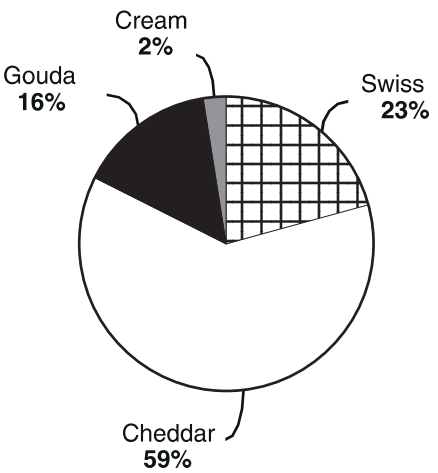
Label @A

The *@-variables* label the slices.



3. Select **Get @-Values** in the Special menu of the Plot window header.
4. Run the capsule application.

   The @-values appear on the graph.



Refer to *Capsule User's Guide* for information about defining *@-variables*.

Formatting the Graph

Use the fields in the Overall Graph page, shown in Figure 8, to format the size, display and sort order for slices, and appearance of the pie graph. You can see the format of your graph change in the Plot window as you specify the settings in the Plot Controls window and click on the **Apply** button.

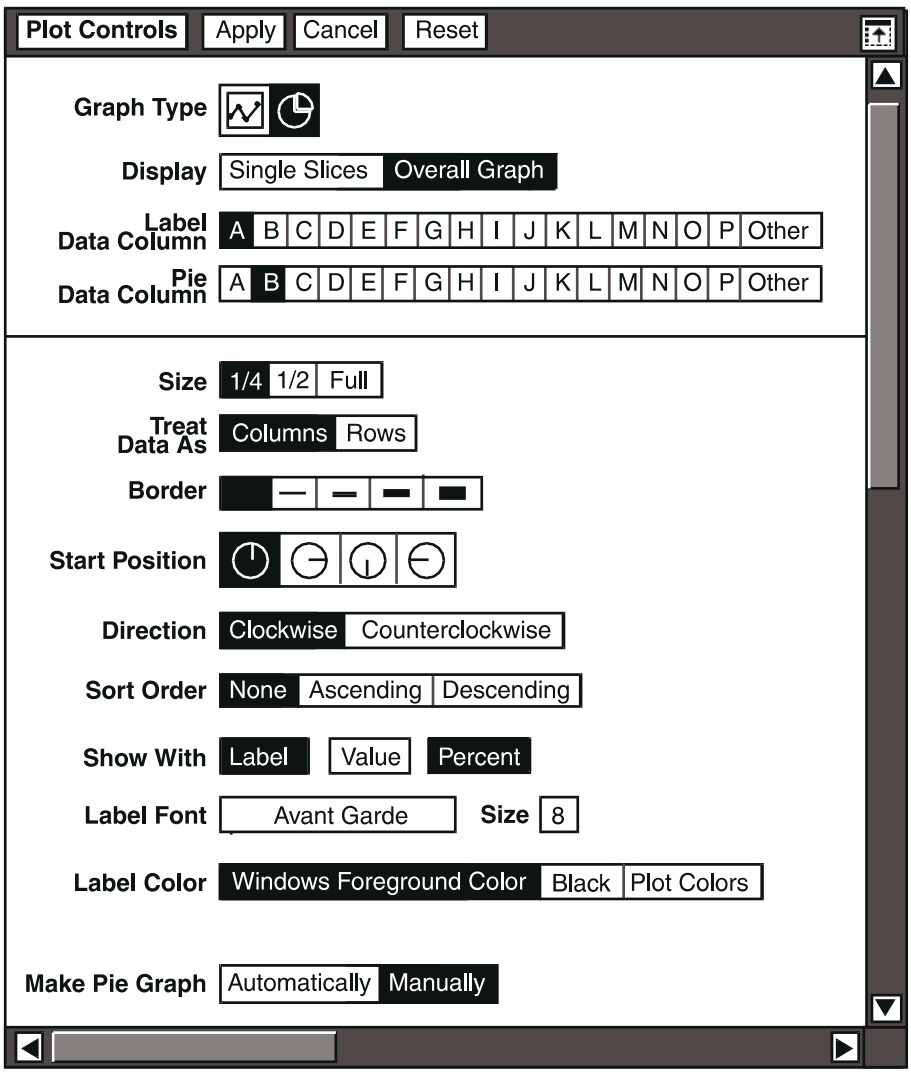


Figure 8. The Overall Graph page

Changing the Size

You can change the size of the graph relative to the size of the printed page with the **Size** field. You might also want to change the size of your graph if you cannot view the entire graph in the Plot window. For example, if the slice labels of your graph are long, you might want to select **Full** in the **Size** field.

The **Size** field defaults to 1/4. The graph appears one-fourth the size of the printed page in the Plot window, and prints one-fourth the size of the paper, minus the margins.

Choosing the Display and Sort Order for Slices

You can change the start position, charting direction, and sort order of the slices of the pie graph.

Selecting the Start Position

The **Start Position** field provides four choices for the start position of the slices.

You might want to chart your pie graph trying each position in the **Start Position** field once, to see how each choice affects the look of the pie graph.

Selecting the Direction

The **Direction** field allows you to chart the slices in a clockwise or counterclockwise direction. By default, the slices are charted in a clockwise direction.

The choices in the **Direction** field affect the overall look of the pie graph. You might want to try charting the slices in both directions, to decide which direction produces the most attractive result.

Sorting the Slices

The **Sort Order** field provides three choices for sorting the slices you are charting. If you leave **None** selected, the Plot tool sorts the slices in the order in which they appear in the depiction area.

To change the sort order of the data:

1. In the **Sort Order** field, select **Ascending**.

   The Plot tool sorts the data in ascending order, and the slices are charted accordingly. The slice representing the smallest data value appears at the start position, followed by the next largest slice, and so on, until all the slices are charted in order of ascending value.

   Select **Descending**.

   The Plot tool sorts and charts the data in descending order. The slice representing the largest data value appears at the start position, followed by the next smallest slice, and so on, until all the slices are charted in order of descending value.

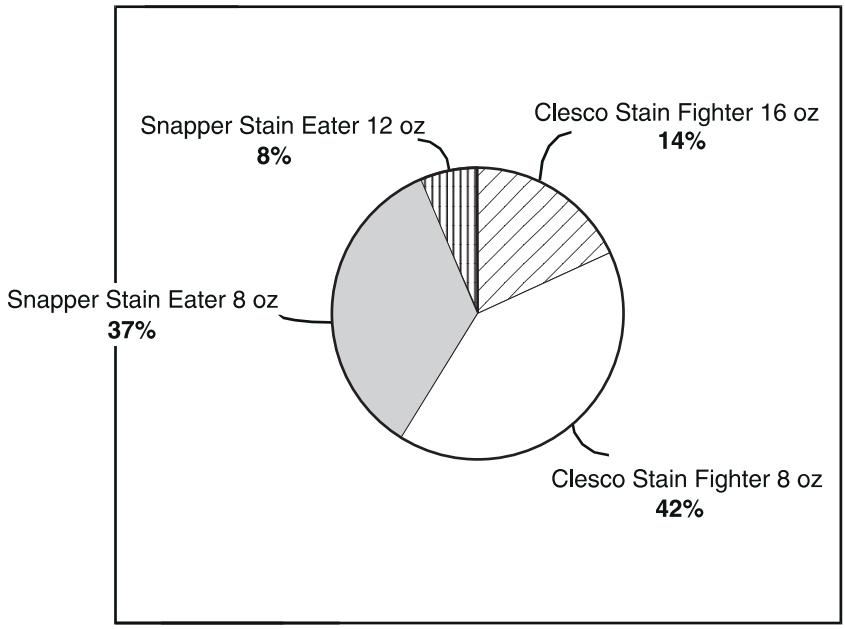
2. Click on **Apply**.

Adding a Border

The **Border** field provides settings for a border to enclose the pie graph.

By default, a border does not appear on the graph. The choices in the **Border** field represent different line thicknesses. If the slice labels are long, they can overlap the border. You cannot move the border.

The following illustration shows a pie graph with a border.



Manipulating Slices in the Depiction Area

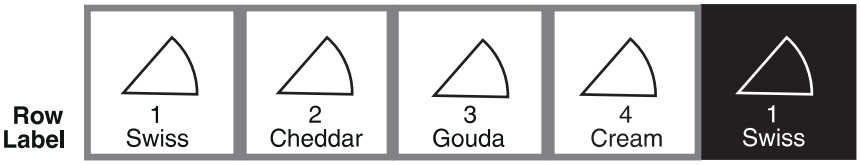
When you want to change the appearance of a graph, you can copy, move, or delete the slices in the depiction area of the Plot Controls window.

Copying a Slice

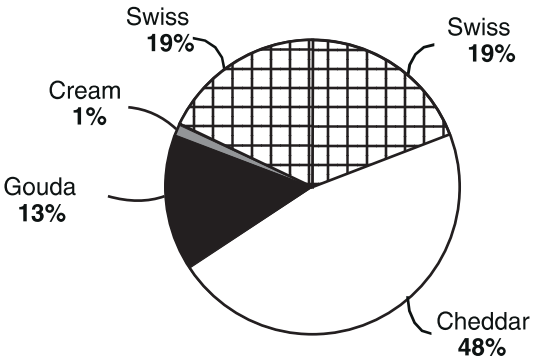
You can copy a slice anywhere in the depiction area. This feature is useful, for example, if you set the **Shading**, **Pattern**, and **Outline** fields for a slice and want to use the same settings for another slice. When you copy a slice, it charts the same data as the original slice until you choose a different column or row of data in the **Slice Data Column** or **Slice Data Row** field.

To copy a slice:

1. Select a slice in the depiction area.
2. Copy the slice anywhere in the depiction area.



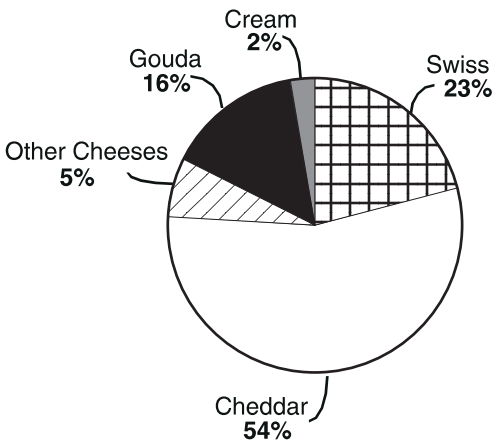
Unless you select a new value in the **Slice Data Column** or **Slice Data Row** field for the copied slice, there are two identical slices in the pie graph.



Moving a Slice

The order of the slices in the depiction area, from left to right, top to bottom, affects the arrangement of slices in a graph. You can move slices in the depiction area to rearrange the display order of slices in the pie graph.

Suppose you create the following pie graph that charts cheese products, including an aggregated slice labeled **Other Cheeses**.

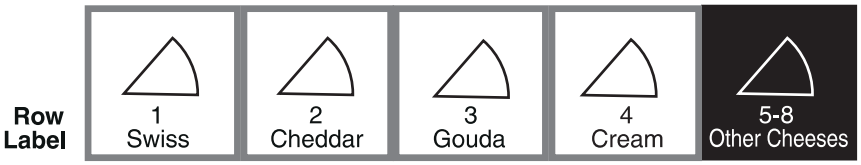


You decide that you want to move the **Other Cheeses** slice to the last position in the graph by moving the **Other Cheeses** slice to the last position in the depiction area.

To move a slice:

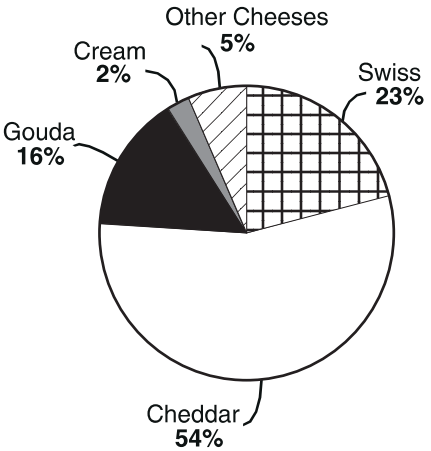
1. Select the slice you want to move.

2. Move the slice to the right in the depiction area.



3. Click on the **Apply** button.

   The slice appears in the last position in the graph.

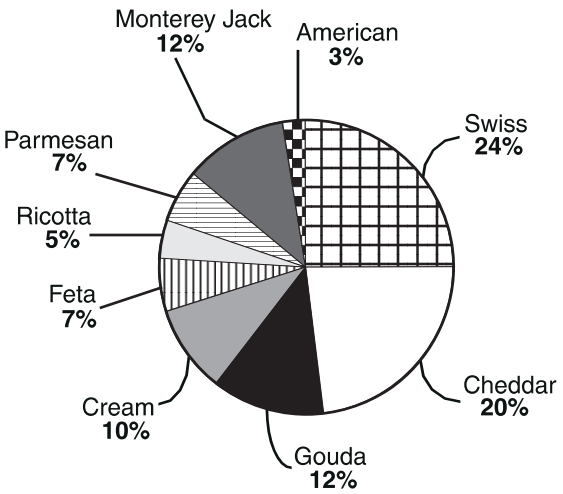


Deleting a Slice

You can remove a slice from your graph by deleting a slice from the depiction area. Deleting a slice from the depiction area is useful when you want to remove a single slice from a graph that is composed of many slices. When you delete a slice, you

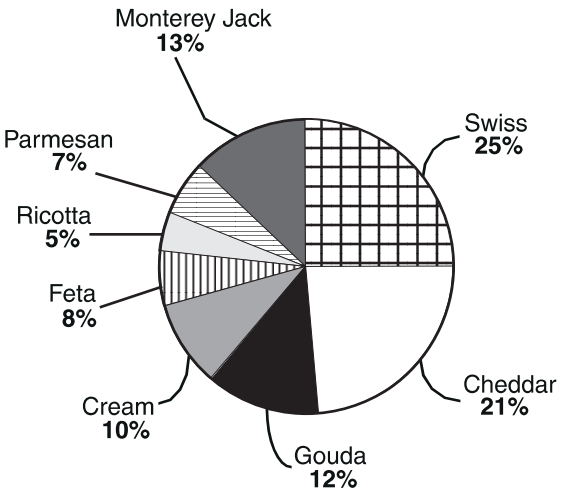
delete all of its settings, and the Plot tool recalculates the percentage value of the remaining slices and redraws the pie graph.

Suppose you have a pie graph that charts the data for many cheese products.



You decide that you do not want to chart the data for American cheese. You would delete the slice charting the American cheese data from the depiction area.

The Plot tool redraws the graph without the American cheese data and recalculates the percentage of each slice.



The space in the depiction area remains empty until you copy or move a slice into the space or add another slice to the graph.

If you delete a slice from the depiction area inadvertently, and you have not clicked on the **Apply** button or closed the Plot Controls window, you can recover the slice by clicking on the **Cancel** or **Reset** buttons in the Plot Controls window header.

Chapter 6. Adding Titles to the Graph

After you finish creating your graph, you might want to add a title or annotation to it. You can place the current date, a “Confidential” label, or the title of a report on the graph. This chapter describes how to:

Add a title to the graph

Format the text in the title frame

Set the options for the title when it is printed

Copy and move the title frame

Adding a Title

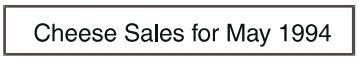
When you add a title to a graph, it is contained in a frame you can move, copy, resize, and delete.

To add a title to your graph:

1. Click anywhere in the Plot window.

   A title frame appears with an insertion point, indicating where text is entered.
2. Enter text into the title frame.

   The text appears centered in the title frame.



To enter multiple lines or paragraphs of text into the title frame:

1. Press the Enter key to begin a new paragraph.
2. Press the Shift+Enter keys to begin a new line.

You can also copy or move text from another icon, such as a spreadsheet or text document, into the title frame, or use *@-variables* as described in “Using @-Variables in Titles” on page 92.

Resizing the Title Frame

As you enter text into the title frame, the lines of text disappear when they reach the border and wrap within the frame. You can see all of the text by expanding the title frame.

To see all the text in the title frame:

1. If the border is not visible, press and hold down the left mouse button, and slide the pointer toward the text.

   The title frame appears with a handle in each corner.

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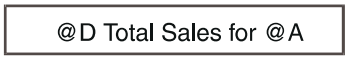
2. Press the Size key.
3. Click and hold on one of the handles, and drag the handle until the frame is the desired size.

Using @-Variables in Titles

When you use the Plot tool in a capsule application, you can use *@-variables* with assigned values in the capsule's User Input Control window to generate titles for your graph. The Plot tool automatically retrieves the @-values when data is transferred to it.

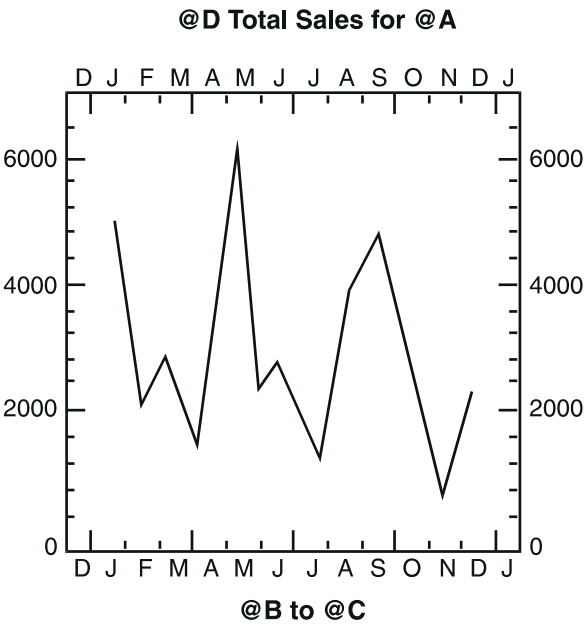
To use *@-variables* in titles:

1. Define the *@-variables* in the User Input Control window of the capsule tool.
2. Type the *@-variables* directly into the text frame in the Plot window, just as you would enter text.



Be sure to make the title frame large enough to accommodate the @-values.

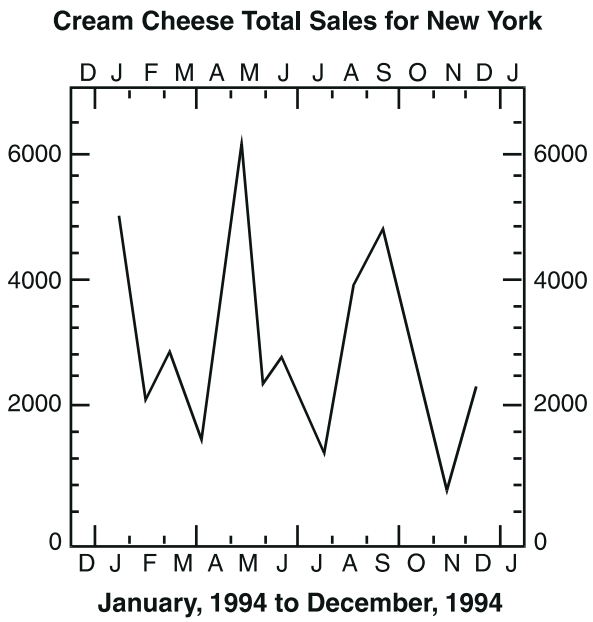
The *@-variables* appear in the graph titles.



3. Select **Get @-Values** in the Special menu of the Plot window header.

   Run the capsule application.

   The @-values appear on the graph.



If you click in the title frame when the @-values are displayed, the *@-variables* reappear. Select **Get @-Values** to show the @-values again.

Formatting the Title

The Title Options window provides options for the title when displaying and printing your graph. The Title Options window allows you to:

- Add a border to the title on your graph
- Choose if the title frame is transparent or opaque when it is printed

To format the title, click on the title frame so that the handles are visible, and open the Title Options window, shown in Figure 9 on page 94.

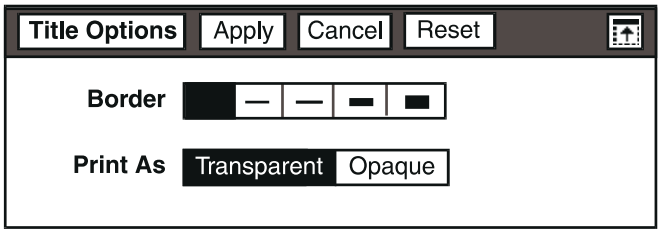
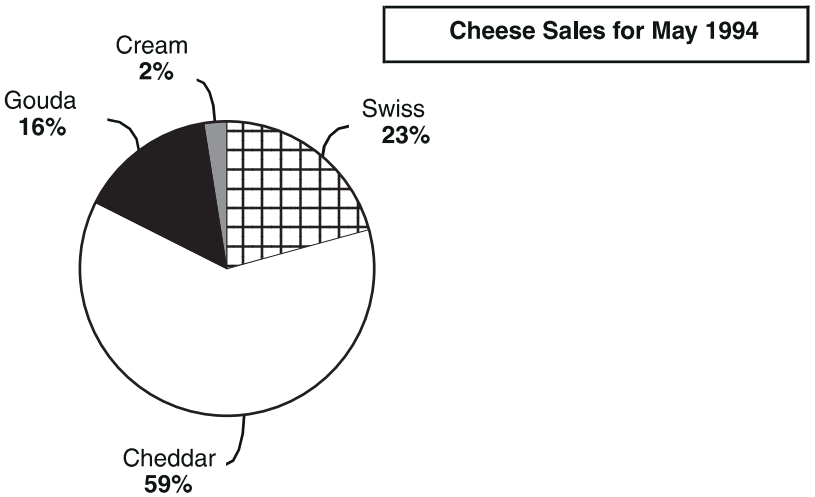


Figure 9. The Title Options window

Adding a Border

The **Border** field allows you to create a border around the title in your graph by providing four line thicknesses from which to choose, and one blank choice, which is the default.

A title frame with a border appears on the graph in the following illustration.

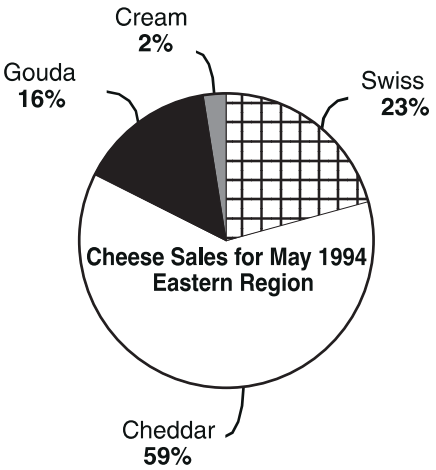


Choosing the Printed Appearance of the Title

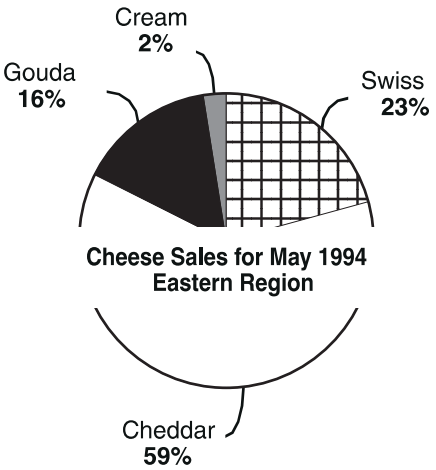
If you place a title on top of the graph, you can use the **Print As** field to specify how you want the title to appear when you print the graph.

The **Print As** field provides two choices:

The **Transparent** choice prints the title on the graph with a transparent background, showing the graph through the title.



The **Opaque** choice prints the title on a white background, hiding the graph behind the title.



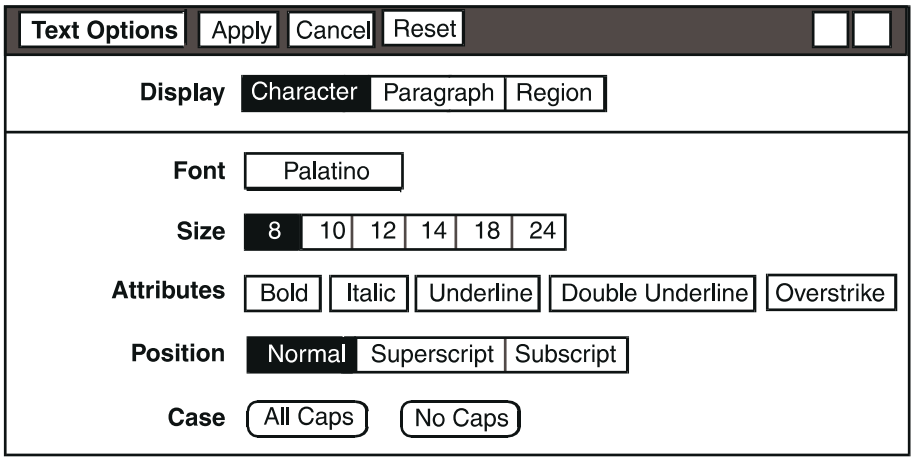
By default the title is printed on a transparent background, but the title always appears opaque in the Plot window.

If you have a title on your graph that prints transparently, and you decide that the title needs to be more visible, select **Opaque** in the **Print As** field to print the title on a white background.

Formatting the Text in the Title Frame

To format the text in a title frame:

1. Select the text inside the frame (not the frame itself).
2. Open the Text Options window.



The Text Options window provides you with character and paragraph formatting fields. For information on formatting text, refer to the IDS *Text User's Guide*.

Copying and Moving the Title Frame

By pressing the Copy or Move key or using the pop-up function pad, you can copy or move a title frame anywhere inside the Plot window or to another Plot window. For example, if you change a graph's orientation, the title frame is not automatically repositioned, and you might need to move the title frame. When you copy or move a title frame, the Plot tool places the center of the frame at the point you select in the Plot window.

When you move the title to another location on the graph, make sure to select and move the frame, rather than just the text. If you move the text without the frame to another location, a new frame is created for the text, and a frame also remains at the original location on the graph.

Chapter 7. Using Plot with Other Tools

The Plot tool can be used with a variety of IDS tools. This chapter describes how to use:

Other tools as source icons

Plot results with other tools

The Plot tool in a capsule application

Using Other Tools as Source Icons

The following IDS tools can be used as source icons for the Plot tool:

Query

Spreadsheet

SQL Entry

Reporter

Transformers

Clipboard

You can choose to transfer all or part of the data from the source icon to the Plot tool. IDS tools that transfer data in a unique way are described in the following sections.

Reporter

In a Reporter tool, you can copy data from the report window to Plot. For example, to copy an entire report to a Plot icon:

1. Open a Plot icon on your desktop.
2. Open a Reporter icon and display the report window.

   Be sure that the report window, not the set-up window, is displayed. The Select All button does not select data in the set-up window.
3. Click on the Select All button.

   All the data in the report is highlighted.
4. Copy the data into the Plot window.

Headings in Reporter can be compressed, expanded, or indented. When copying data from Reporter to Plot, the headings should be compressed if you want the labels on the graph to contain all of the information. Refer to the IDS *Reporter User's Guide* for more information about headings in Reporter.

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Clipboard

Only DIF data can be transferred from the Clipboard icon to the Plot tool. For information about transferring data from the Clipboard tool to a Plot tool, refer to the IDS publication *Interacting with PC Applications*.

Using Plot Results with Other Tools

When you finish creating your graph, you can copy the results from the Plot window to another tool, or transfer the results from a Plot icon to another IDS tool in a capsule application. The following IDS tools can be used to receive graphs from the Plot tool:

Text

Clipboard

Text

When you complete your graph, you can copy the results from the Plot window into a Text window for further enhancement. You can also transfer a graph from a Plot tool to a Text tool region within a capsule application. For information about preparing the Text tool for Plot graphics, refer to the IDS *Text User's Guide*.

Clipboard

If you want to use a graph in a workstation-based text tool, you can copy the Plot icon to a Clipboard icon. The Plot results are stored in the Clipboard icon in BMP format. For more information about transferring data to workstation applications, refer to *Interacting with PC Applications*.

Using Plot in a Capsule Application

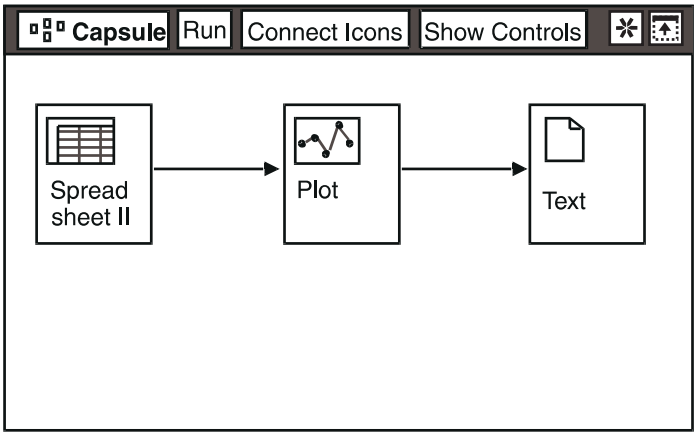
Within a capsule application, data is automatically transferred from tool to tool. The Plot tool can be used in a capsule application with other tools, so that after you create and format a graph, you can chart data from different sources in the graph. For example, if you create a graph to chart a monthly budget, you can change the source icon monthly, but always use the same graph.

To use the Plot tool in a capsule application:

1. Copy a previously formatted Plot icon into the capsule window.
2. Copy the source icon into the capsule window.
3. Connect the source icon to the Plot icon.
4. Select the capsule window header.

If you are creating a pie graph, you can set the Plot tool to automatically generate and format a graph by selecting **Automatically** in the **Make Pie Graph** field.

The following capsule application contains a Spreadsheet icon as the source for the Plot icon, and a Text icon as the destination for the completed graph.



You can use *@-variables* with assigned values in the capsule tool's User Input Control window to generate dates, titles, and labels for graphs. The Plot tool automatically retrieves the @-values when data is transferred to it. Refer to the IDS publication *Capsule User's Guide* for information about defining *@-variables*.

When you use the Plot tool in a capsule application, you can copy a Plot icon to a PC Directory icon and specify the Plot results to be PCX, TIF, or BMP format. Refer to *Interacting with PC Applications* for more information.

Chapter 8. Troubleshooting

In some instances, creating a graph with the Plot tool can produce unexpected results. This chapter lists some of the more common problems you might encounter and provides solutions and recommendations.

This chapter does not cover all possible situations that could affect your graph. If the problem you are experiencing is not listed here, or if a recommendation does not seem to work, contact your system administrator. For more detailed information about error messages, consult the IBM IDS *Messages and Codes*, or ask your system administrator.

The problems described in this chapter are arranged according to the task you are performing:

Charting data

Creating an axes graph

Creating a pie graph

Formatting graphs

Using colors in overall graphs

Charting Data

This circumstance can occur after you transfer data into the Plot tool.

The data you want to chart does not appear in the graph. When you transfer data into a Plot tool, you decide if the data is organized by columns or rows. See Chapter 3, “Charting the Data” on page 11, for more information.

Creating an Axes Graph

Any of these circumstances can occur when creating an axes graph.

X-Axis Labels

All of the text labels do not appear on the x-axis. There is a standard space allotted for text labels from the source data. Change the graph orientation to horizontal. Shorten the text labels in the source icon.

The x-axis time intervals do not change when you transfer new data into the Plot tool. Check that **Data** is selected in the **X-Axis Labels** field.

The wrong dates appear on the x-axis. Verify that the correct date is in the **First Day** field.

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Plots

After adding a plot to your graph, the data does not appear in the Plot window. By default, the **Show** field in the **Single Plots** page is set to **Blank**. Select a plot type from the **Show** field (**Curves**, **Lines**, **Bars**, **Points**, or **Text**), and click on the **Apply** button.

A plot you charted does not appear on the graph. Chart the plot against a different axis.

A plot appears as a 45-degree line. Chart the plot against a different axis.

A bar plot overlays a line plot. The order of the plots in the depiction area determines the layering of a graph. Change the layering of your graph so that the line plot is charted after the bar plot by moving the line plot to the right of the bar plot in the depiction area.

The bar widths increase when you transfer new data into the Plot tool. The bar widths are determined by the Plot tool, and you cannot change them. Select a different choice in the **Bar Spacing** field in the Overall Graph page to add or subtract space between the bars.

Legends

The legend does not change when you transfer new data into the Plot tool. If the Plot tool is inside a capsule application and an *@-variable* has been defined in the User Input Control window, it overrides the incoming data. Delete any *@-variables* in the **Legend Title** field.

The legend overlays part of the graph. For some quarter-page and half-page graphs, the legend always overlays part of the graph. Reposition the legend by selecting a different position for the legend in the **Horizontal Position** and **Vertical Position** fields in the Overall Graph page. Shorten the text used as legend titles.

The legend does not disappear when you clear the data from the graph. Click on **Legend** in the Overall Graph page to deselect it.

Titles in the legend field remain when you clear the data from the graph. When you manually change a title of a plot in the **Legend Title** field, it remains in the legend. Select the plot associated with the title, and delete the text from the **Legend Title** field.

The legend disappears when you copy specific columns or rows of data to the Plot tool. Column and row names in the source icon are used for the legend titles. Copy the row or column that contains the titles to the Plot tool along with the rest of the data.

The legend does not appear on the graph. If the first column or row of data in the source icon contains numeric data, the whole column or row is treated as numeric data, and is not used for legend titles. Replace the numeric data in the first column or row with text.

Duplicate legend titles appear on a graph. Delete the legend title of one of the plots on the graph.

Creating a Pie Graph

This circumstance can occur when creating a pie graph.

Some of the slices do not appear on the pie graph.

If the slices represent less than one-half percent of the total data value, only their labels appear on the graph.

There are more than sixteen slices in the pie graph. Aggregate the slices into one slice.

Formatting Graphs

Any of these circumstances can occur when formatting axes or pie graphs.

A slice or plot label is truncated in the Plot window. When you print the graph, the entire label appears.

A title frame appears when you click in the Plot window. Click on the edge of the frame so that the handles are visible, and delete it.

You cannot move the title frame to the position you want in the Plot window. You cannot move a title frame over an existing title frame. Select the existing title frame, and delete it or move the existing title frame to a different position.

You make changes to a graph inadvertently. If you have not closed the Plot window, select **Cancel Changes** in the Special menu.

You deleted a plot or slice inadvertently. If you have not closed the Plot Controls window or clicked on **Apply**, click on **Cancel** or **Reset**.

Using Colors in Overall Graphs

The color of labels and legends is not what you expected.

In Plot tools from previous releases, the color of labels and legends is always set to black when the Plot icon is upgraded to the current release.

You can then change this color, as described in “Choosing the Color of a Plot” on page 34 and “Formatting Slice Labels” on page 80.

For Plot tools that are at the same level as the current release, the color settings differ slightly for axes and pie graphs.

For axes graphs, the Graph Color field on the **Overall Graph** page determines the color of the labels, tick marks, and axes. You have two choices:

Windows Foreground Color, which prints in gray scale on printers that do not support color.

Black.

For pie graphs, the **Label Color** field on the Overall Graph page determines the color of the labels. You have three choices:

Windows Foreground Color, which prints in gray scale on printers that do not support color.

Black.

Plot Colors, in which the labels are the same color as the slice they are associated with, and, like the windows foreground color, also print in gray scale on printers that do not support color.

Appendix A. Commonly Used Graphs

This appendix contains examples of graphs that are commonly used:

- A pie graph
- A layered graph
- A text and data point graph
- A Gantt chart

The examples consist of the source data and the steps used to build the graphs.

Pie Graph

The spreadsheet for the pie graph is shown in the following illustration.

	A	B	C
1	Product	Dollar Sales 1994	Dollar Sales 1993
2	Clesco Stain Fighter 16 oz	55,000.00	22,000.00
3	Clesco Stain Fighter 8 oz	76,000.00	66,000.00
4	Snapper Stain Eater 8 oz	36,000.00	58,000.00
5	Snapper Stain Eater 12 oz	22,000.00	12,000.00

To create a pie graph:

1. Copy the source data into a blank Plot icon.
2. Select the pie graph choice.
3. Chart the slices in descending order, beginning at the 3:00 position.
4. Click on the **Make Pie Graph** button to automatically create the pie graph.

The finished pie graph is shown in Figure 10 on page 105.

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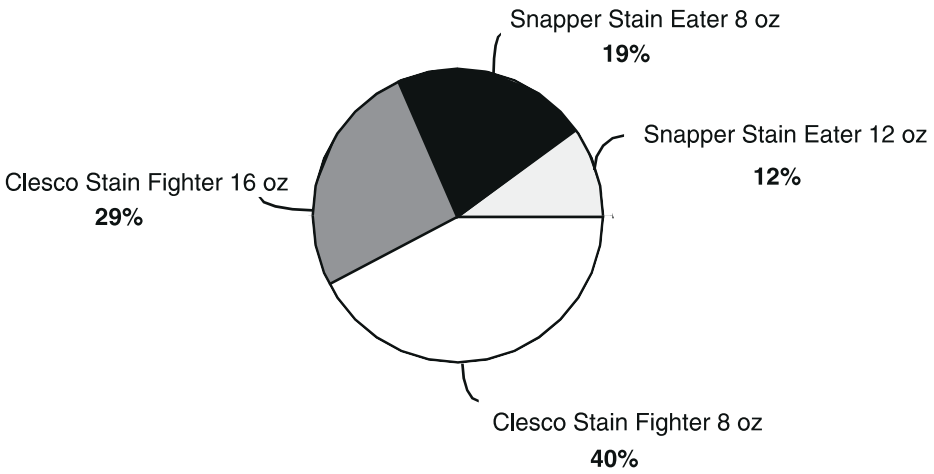

Figure 10. A pie graph

Layered Graph

The spreadsheet for the layered graph is shown in the following illustration.

	A	B	C
1	Period	Dollar Sales	Unit Sales
2	Jan 1994	929,434	315
3	Feb 1994	819,791	556
4	Mar 1994	551,120	195
5	Apr 1994	708,073	280
6	May 1994	801,863	480

To create a layered graph from the spreadsheet:

1. Copy the source data to a blank Plot icon.
2. Change the graph orientation to horizontal.
3. Add a bar plot.
4. Add a line plot.
5. Chart the line plot against the bottom axis.
6. Add a legend.
7. Remove the labels and tick marks from the right axis.
8. Label the top and bottom axes.

The layered graph is shown in Figure 11 on page 106.

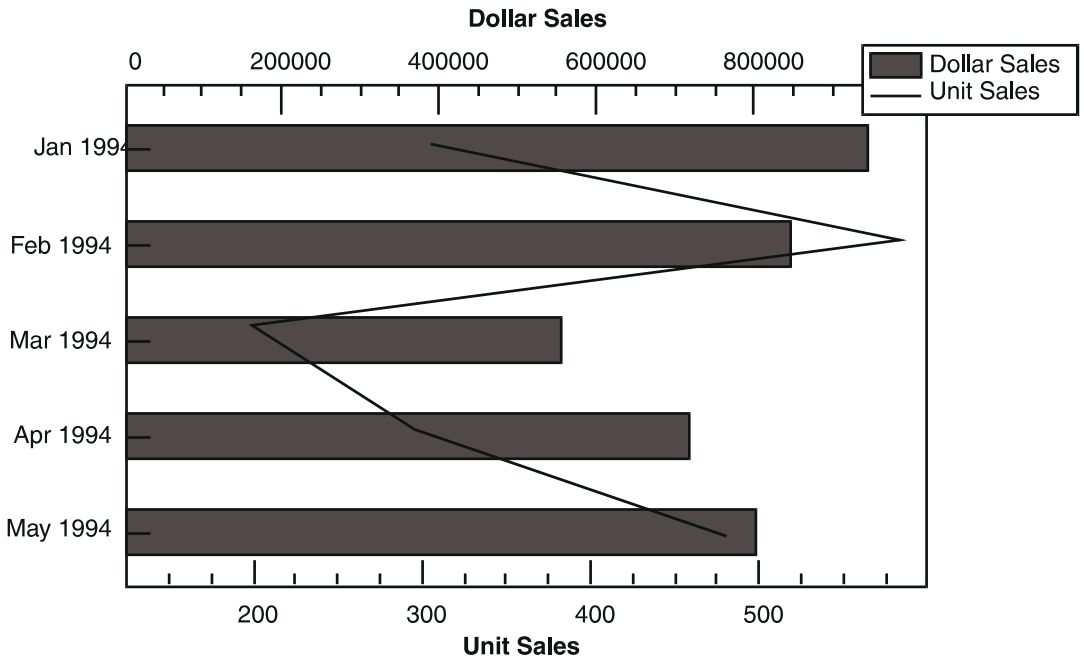

Figure 11. A layered graph

Text and Data Point Graph

You can label each point in a graph if the first column of your source icon contains text instead of numeric data.

The following spreadsheet contains regional sales and forecast information you can use for a text and data point graph. In this example, column A of the spreadsheet is plotted as text data points, column B is plotted as numeric data points, and column C is plotted as bars.

	A	B	C
1	Region	Sales	Forecast
2	Western	1.8	1.6
3	Eastern	1.3	2.9
4	Northern	2.9	2.0
5	Southern	2.4	2.3

To create a text and data point graph:

1. Copy the source data to a blank Plot icon.
2. Add a bar plot charting the forecast data for each region.
3. Add a point plot charting the sales in each region.
4. Add a text plot to label the data points. Use the region names for the point labels.
5. Position the text labels so that the labels and the data points are visible.
6. Delete the text plot legend title.
7. Add a legend.
8. Remove the labels and tick marks from the top and bottom axes.

The text and data point graph appears in Figure 12.

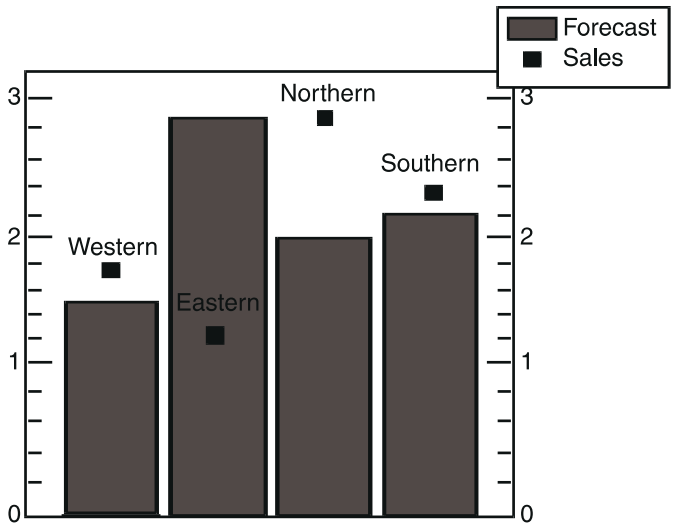

Figure 12. A text and data point graph

Gantt Chart

Gantt charts are useful in planning schedules and milestones for a project or task.

The spreadsheet for the Gantt chart example contains formulas that calculate project information for each task:

The start date

The number of workdays required

The due date

The status, in percentages

The days currently completed

The actual completion date

The spreadsheet calculates the due date based upon the number of days required for the task.

	A	B	C	D	E	F	G
1	Task	Start Date	Workdays	Projected Completion	Status	Days Effort	Date Completed
2	Project Duration	=January 1, 1994	= 112	=April 3, 1994	= 20	= 22	=January 23, 1994
3	Orientation	=January 1, 1994	2	=January 3, 1994	100	= 2	=January 3, 1994
4	Systems Planning	=January 3, 1994	10	=January 13, 1994	100	= 10	=January 13, 1994
5	Pre-Systems Design	=January 13, 1994	15	=January 28, 1994	50	= 8	=January 20, 1994
6	Functional Specs	=January 13, 1994	10	=January 23, 1994	25	= 3	=January 15, 1994
7	Technical Specs	=January 28, 1994	10	=February 7, 1994	0	= 0	=January 28, 1994
8	Coding	=February 7, 1994	15	=February 22, 1994	0	= 0	=February 7, 1994
9	Testing	=February 22, 1994	20	=March 14, 1994	0	= 0	=February 22, 1994
10	Systems Test	=March 14, 1994	10	=March 24, 1994	0	= 0	=March 14, 1994
11	Training	=March 14, 1994	15	=March 29, 1994	0	= 0	=March 14, 1994
12	Conversion	=March 29, 1994	3	=April 1, 1994	0	= 0	=March 29, 1994
13	Switch-Over	=April 1, 1994	2	=April 3, 1994	0	= 0	=April 1, 1994

To create a Gantt chart:

1. Copy the spreadsheet information to the Plot icon.
2. Add a white bar plot with no outline charting the start dates for each task.

   The bar plot is not visible on the graph.
3. Delete the legend title for the bar plot.
4. Increase the size of the graph.
5. Change the graph orientation to horizontal.
6. Change the bar graph style to stacked.
7. Add a shaded bar plot charting the days of effort for each task.
8. Add a white bar plot charting the projected completion date of each task in the project.
9. Add a legend.
10. Add the title in 12 point bold Palatino. Underline the title.

Figure 13 on page 109 illustrates an example of a Gantt chart.

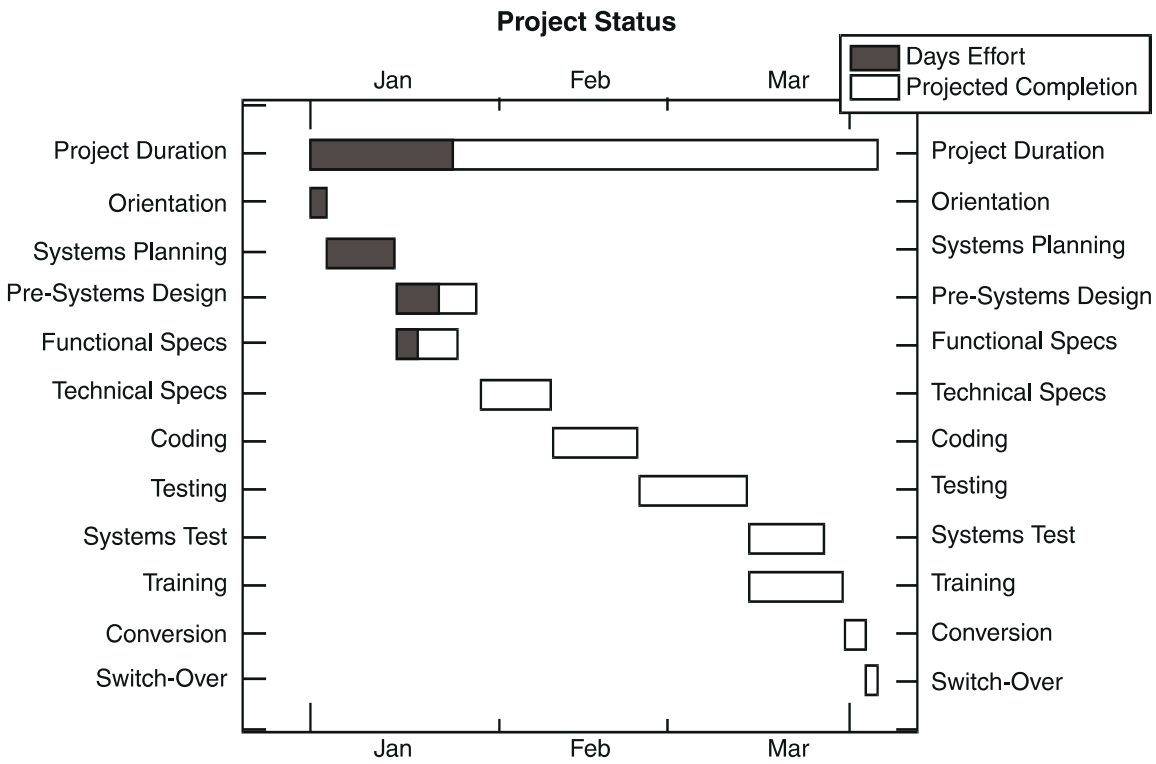

Figure 13. A Gantt chart

Glossary

@-variable. A control variable used to represent a value in any tool that can be run inside a Capsule application. These values are frequently used as constraints and variable titles in the Query, Plot, Spreadsheet, Layout, and other IDS tools. See also *@-value*.

axis. One of the horizontal or vertical reference lines relative to which data values are charted on an axes graph.

baseline. The primary reference line for an axes graph. The baseline usually represents a data value of zero.

Capsule. A tool in which you build an automated processing sequence using other icons.

Capsule application. An automated processing sequence built within a Capsule tool. Typical uses for Capsule applications include running standard reports or processing changing data in standard ways.

color palette. A window in which colors can be selected for a plot, slice, or desktop object.

column. (1) A vertical field in a table. Columns may be identified by letters or text strings at the top of the display area. (2) A vertical field in a spreadsheet. Columns are identified by letters at the top of the display area.

data column. A column of data from a source icon used by the Plot tool to determine values in a graph.

data row. A row of data from a source icon used by the Plot tool to determine values in a graph.

depiction area. In the Single Plots or Single Slices page of the Plot Controls window, the middle third of the window, which displays a picture of each plot or slice in the graph that has been constructed.

display area. The area below the Plot window header into which the user can copy data to be charted and where the final graph is displayed.

division. An increment between each step. See also *step*.

explode. To separate a slice from the other slices in a pie graph to make the slice more visible or to place more visual emphasis on the slice.

field. In a window, an identifiable area where the user can enter information (field), select a choice (field of choices), or view information.

Gantt Chart. A time-based graph designed for comparing rates, planning schedules, and tracking milestones for a project or task; for example, planned production versus actual production.

graph. A graphic representation of quantitative information comparing one or more sets of variable data. The Plot tool can be used to create pie (circular) and axes graphs.

legend. An explanatory caption included with a graph to identify what each plot represents.

message bar. The rectangular area along the bottom of the desktop, where advisory or error messages are displayed.

page. (1) In a window, an alternate view that provides a different set of options for setting controls and defining the behavior of an icon. (2) In a window, the amount of information that can be displayed at one time.

plot. A graphical representation of one row or column of numerical values.

row. (1) The horizontal component of a table. A row contains exactly one value for each column of the table. (2) A record, or single instance, in a database table. (3) A horizontal field in a spreadsheet, identified by a row number. (4) See also *column*.

scale. The range of values assigned to an axis and used for charting data on a graph. The Plot tool automatically scales each numeric axis of a graph to best display the data charted on it.

slice. A section of a pie graph that represents an individual data value.

source icon. An icon used to pass information to other icons.

Spreadsheet. A tool used to perform calculations and analyses, schedule projects, and perform iteration in embedded Capsules.

step. A major increment on an axis.

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tick marks. Short lines that intersect an axis to mark steps and divisions.

title frame. A transparent rectangle containing text that the user types directly into the Plot window.

x-axis. The horizontal line at the bottom of a graph, used to chart values.

y-axis. The vertical line at the left of a graph, used to chart values.

IDS Publications

This section lists IDS publications, including order numbers. To order copies of the books listed here, or to get more information about a book, see your IBM representative.

General Publications

Getting Started with the Intelligent Decision Server (SC26-8892)

Working with the Intelligent Decision Server (SC26-8893)

Installation, Configuration, and Administration Publications

Installing IDS LAN Components (GC26-8877)

System Administration Guide and Reference (SC26-8890)

Messages and Codes (GC26-8878)

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Configuring and Administering Database Gateway Services (GC26-8885)

Administering Databases with IDS (SC26-8891)

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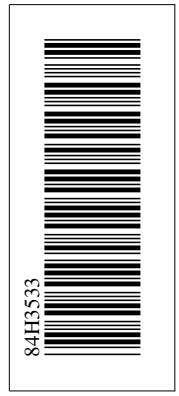

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