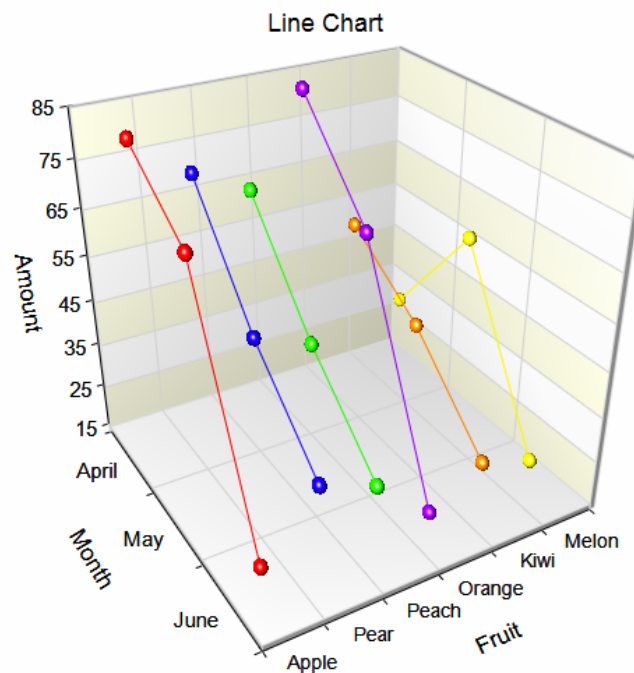


## Chapter 149

# 3D Line Charts

## Introduction

Line Charts are used to visually compare values to each other. This chapter gives a brief overview and examples of simple 3D line charts and two-factor 3D line charts. The orientation of a 3D line chart may be vertical or horizontal. Below is an example of a vertical 3D line chart with two factors (Month and Fruit).



## Data Structure

Data for a 3D line chart are entered in columns. Each numeric data value becomes a point. The simple 3D line chart procedure gives a 3D line chart for each column of data. The two-factor 3D line chart combines columns of data into a single chart. Below is an example of data ready to be charted. These data are stored in the Fruit dataset.

### Fruit dataset

Fruit	April	May	June	Total
Apple	82	70	20	172
Pear	73	50	33	156
Peach	67	45	28	140
Orange	85	65	17	167
Kiwi	54	42	24	120
Melon	33	58	20	111

---

## Procedure Options (3D Line Charts and Two-Factor 3D Line Charts)

This section describes the options available in the two 3D line chart procedures.

---

### Variables Tab – 3D Line Charts

Specify the variables (columns) used to make a simple 3D line chart.

---

#### Variables

##### Data Variables

These are columns of data with numeric values. The location of the symbol is given by these numeric values.

##### Label Variable

Specify an optional variable containing the labels for each symbol.

##### Data Orientation

The orientation controls whether values for the symbols go down a column (Vertical) or across a row (Horizontal).

---

#### Variable Names

##### Variable Names

This option specifies whether the column names or column labels are used on the chart.

---

### Variables Tab – Two-Factor 3D Line Charts

Specify the variables (columns) used to make a two-factor 3D line chart.

---

#### Variables

##### Data Variables

These are columns of data with numeric values. The location of the symbols is given by these numeric values. If the Data Orientation is Vertical, each column specified here will produce a sub-grouping of symbols on the chart. If the Data Orientation is Horizontal, each row specified here will produce a sub-grouping of symbols on the chart.

##### Label Variable

Specify an optional variable containing the legend labels for each symbol.

##### Data Orientation

The orientation controls whether sub-groupings for the symbols go down a column (Vertical) or across a row (Horizontal).

---

#### Variable Names

##### Variable Names

This option specifies whether the column names or column labels are used on the chart.

## 3D Line Charts

## 3D Line Chart Format

## Format

Click the format button to change the plot settings (see 3D Line Chart Window Options below).

## Edit During Run

Checking this option will cause the line chart format window to appear when the procedure is run. This allows you to modify the format of the graph with the actual data.

## 3D Line Chart Window Options

This section describes the specific options available on the Line Chart window, which is displayed when the 3D Line Chart button is clicked. Common options, such as axes, labels, legends, and titles are documented in the Graphics Components chapter.

## 3D Line Chart Tab

## Plot Type Section

You can create a chart that displays either symbols or bars using the options in this section.

## One Factor

Chart using Symbols

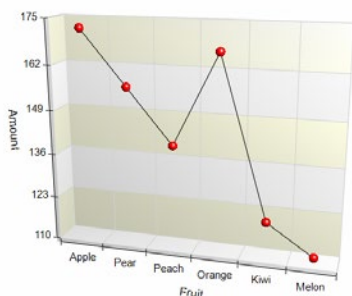
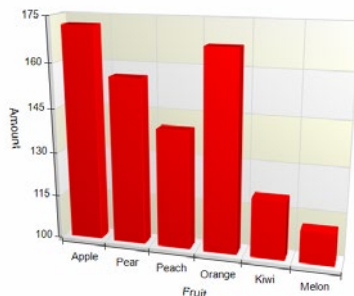
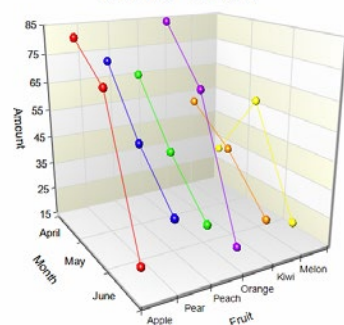


Chart using Bars

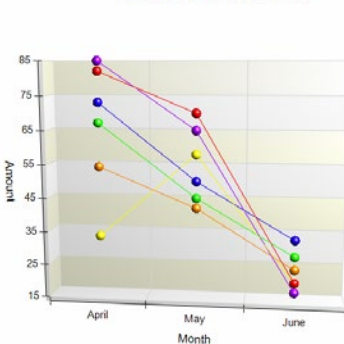


## Two Factors

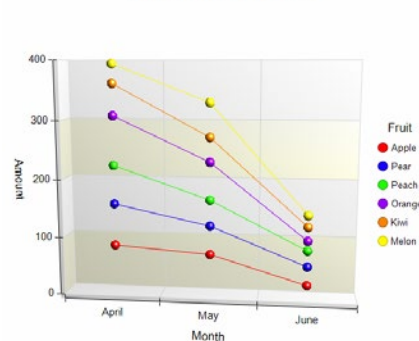
Series Chart



Overlaid Chart



Stacked Chart



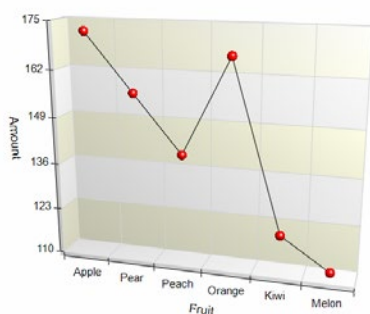
## 3D Line Charts

## Symbols and Lines of Bars Section

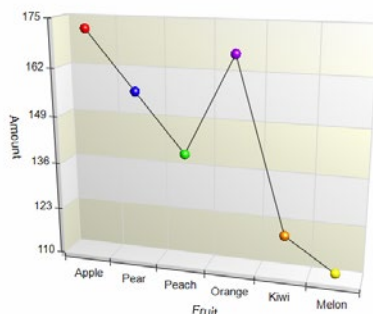
You can specify the format of either the symbols or the bars using the options in this section.

## One Factor

Single Color

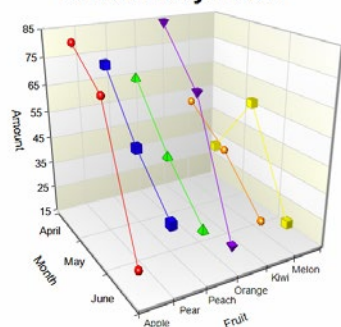


Multiple Colors

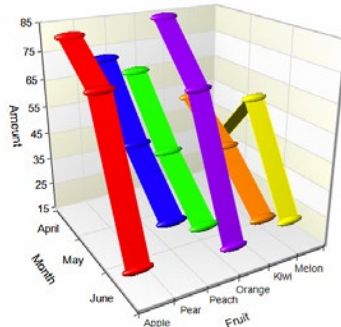


## Two Factors

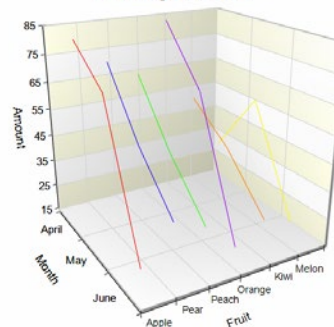
Different Symbols



Tape Connecting Line



No Symbols

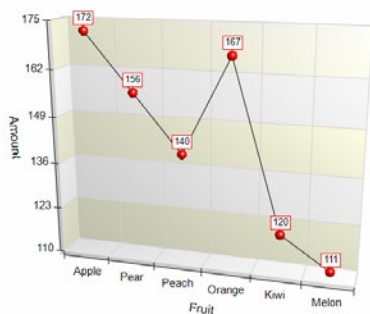


## Data Labels Section

You can add and format data labels using the options in this section.

## One Factor

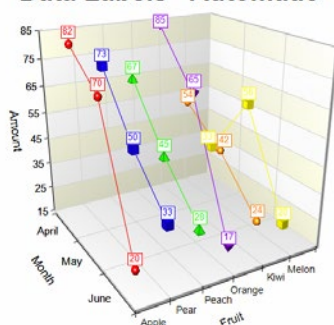
Data Labels - Outside



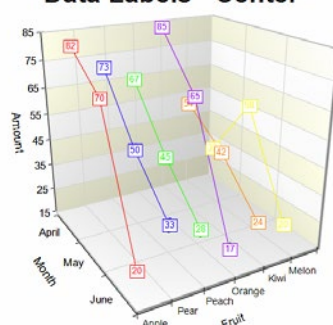
## 3D Line Charts

## Two Factors

Data Labels - Automatic



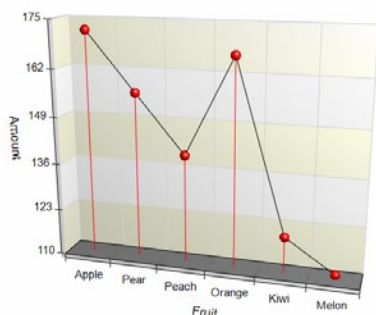
Data Labels - Center



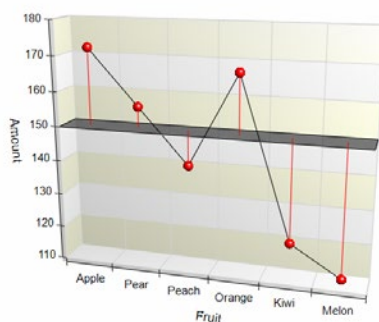
## Reference Value Section

The Reference Value is the plane from which the reference lines are drawn. You can specify the value from which the lines originate using the options in this section.

Reference Value - Automatic



Reference Value at 150



## 3D Layout Tab

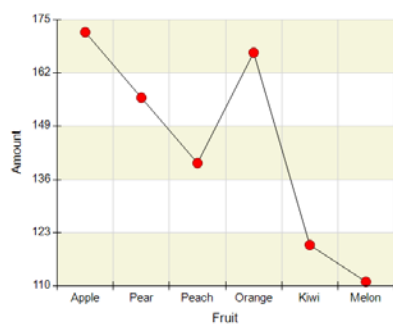
Use this tab to control the 3D viewing aspects of the plot. Click on **Show in New Window** beneath the 3D Plot Preview display to show the plot in a separate window where you can auto-spin the plot and interact with the 3D orientation on the fly. All of the options on this tab are also available on the 3D Plot Preview window.

## Display Section

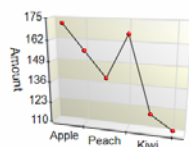
Control the display of the plot. Make the plot 2D or 3D using these options, as well as the zoom and the perspective angle. When using 2D, only the X and Y axes are displayed; the Z axis is not displayed.

## 3D Line Charts

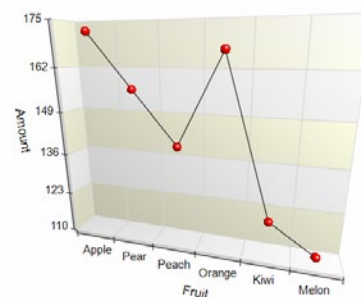
2D Display



No Autofit, Zoom = 50%



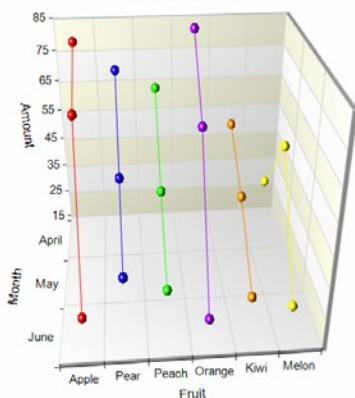
Perspective Angle



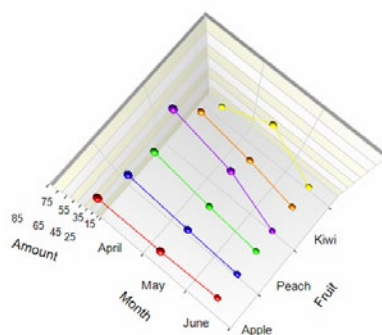
## 3D Orientation Section

Control rotation, elevation, and viewer rotation of the 3D plot. You can modify the rotation and elevation interactively by left-clicking on the plot in the 3D Plot Preview display and dragging your mouse.

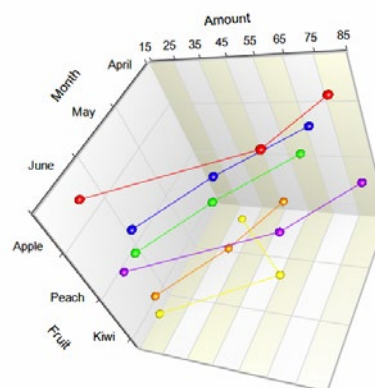
Rotation



Elevation



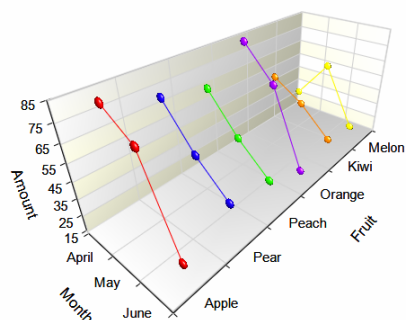
Viewer Rotation



## Relative Dimensions Section

Control the relative display dimensions for the X, Y, and Z axes of the plot.

Relative Dimensions



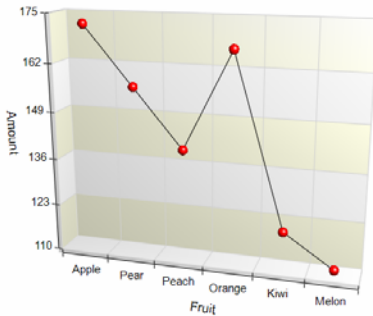


## 3D Line Charts

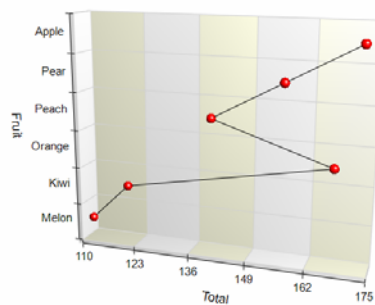
## Quick Layout Tools Section

Use these tools to quickly change multiple plot settings simultaneously to achieve a 3D display result.

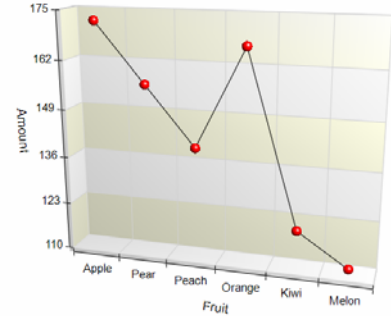
**Result of Clicking "Reset Zoom, 3D Orientation, and Dimensions"**



**Result of Clicking "Optimize for Horizontal Layout"**



**Result of Clicking "Optimize for Vertical Layout"**



## Load the Interactive 3D Plot Preview Window

Click this button to show the plot in a separate window where you can auto-spin the plot and interact with the 3D orientation on the fly. All of the options on this tab are also available on the 3D Plot Preview window.

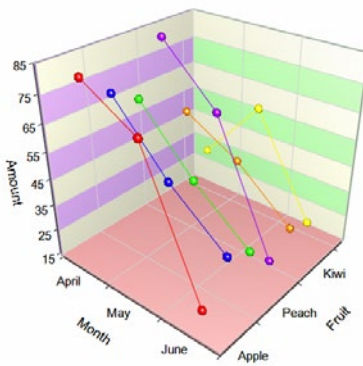
## Walls Tab

Use this tab to control the display of walls on the plot.

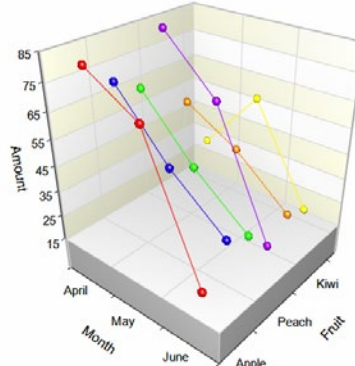
## XY Walls, YZ Walls, and XZ Walls Section

Control how walls are displayed on the plot.

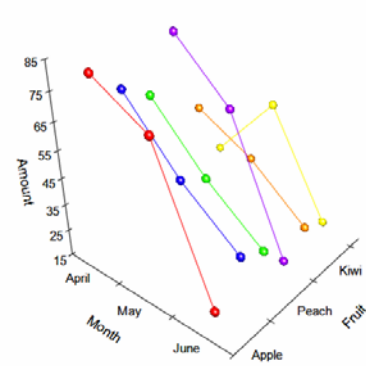
**Wall Colors**



**Wall Width**



**No Walls**



## 3D Line Charts

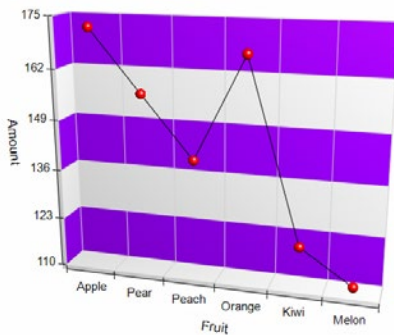
## Titles, Legend, X Axis, Y Axis, Z Axis, Grid Lines, and Background Tabs

Details on setting the options in these tabs are given in the Graphics Components chapter. A few specific options are described below.

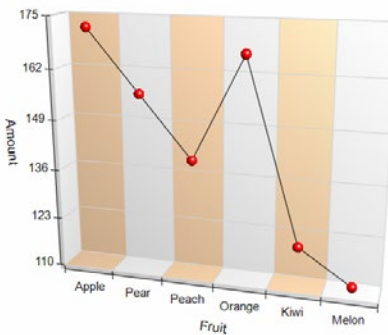
### Fill Between Major Grid Lines (on Grid Lines Tab)

Controls the appearance of reference bands on the plot.

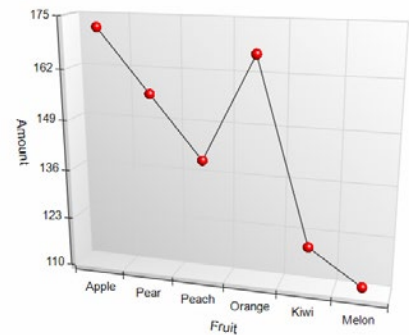
**Major Grid Fill Color**



**Major Grid Fill Location**



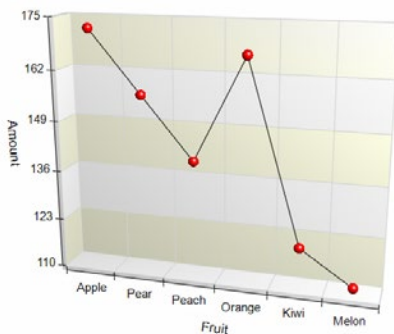
**No Major Grid Fill**



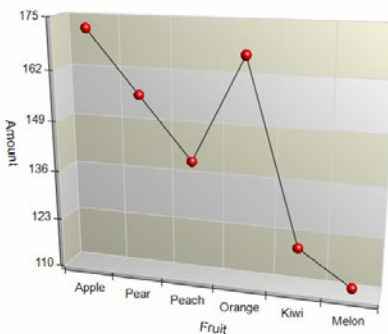
### Lighting Scheme (on Background Tab)

Control the ambient lighting on the plot. Choose from a number of present lighting schemes. These schemes change the way colors and 3D items appear in the plot.

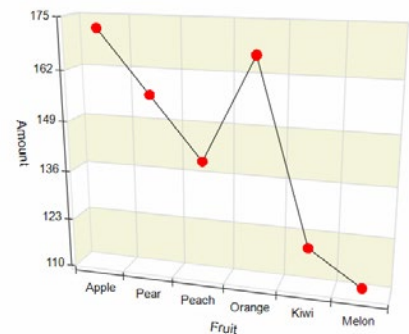
**Glitter Left Lighting**



**Mettalic Luster Lighting**



**No Lighting**





---

## Example 1 – Creating a Simple 3D Line Chart

This section presents an example of how to create a 3D line chart of the data stored in the Fruit dataset.

You may follow along here by making the appropriate entries or load the completed template **Example 1** by clicking on Open Example Template from the File menu of the 3D Line Charts window.

### 1 Open the Fruit dataset.

- From the File menu of the NCSS Data window, select **Open Example Data**.
- Click on the file **Fruit.NCSS**.
- Click **Open**.

### 2 Open the 3D Line Charts window.

- Using the Graphics menu or the Procedure Navigator, find and select the **3D Line Charts** procedure.
- On the menus, select **File**, then **New Template**. This will fill the procedure with the default template.

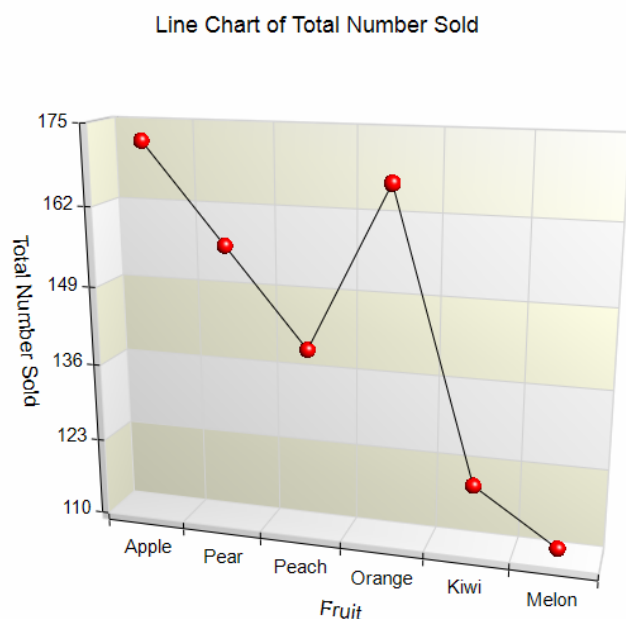
### 3 Specify the variables.

- On the 3D Line Charts window, select the **Variables tab**.
- Double-click in the **Data Variables** text box. This will bring up the variable selection window.
- Select **Total** from the list of variables and then click **Ok**. “Total” will appear in the Data Variables box.
- Double-click in the **Label Variable** text box. This will bring up the variable selection window.
- Select **Fruit** from the list of variables and then click **Ok**. “Fruit” will appear in the Label Variable box.
- Set **Variable Names** to **Labels**.

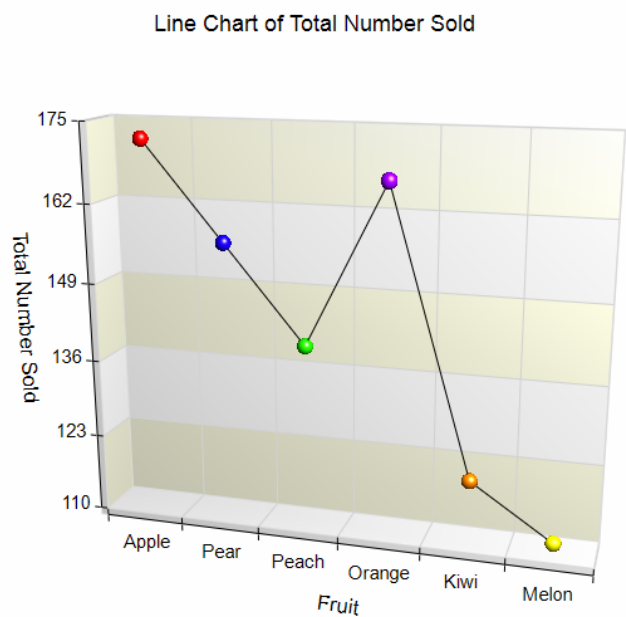
### 4 Run the procedure.

- From the Run menu, select **Run Procedure**. Alternatively, just click the green Run button.

## 3D Line Chart Output



You could make all the symbols different colors by clicking on the 3D Line Chart Format button. There you would click on the Symbol Format button and change the Symbol Format Mode from Single Symbol to Multiple Symbols. The result is shown below.



---

## Example 2 – Creating a Two-Factor 3D Line Chart

This section presents an example of how to create a two-factor 3D line chart of the data stored in the Fruit dataset.

You may follow along here by making the appropriate entries or load the completed template **Example 2** by clicking on Open Example Template from the File menu of the 3D Line Charts (2 Factors) window.

### 1 Open the Fruit dataset.

- From the File menu of the NCSS Data window, select **Open Example Data**.
- Click on the file **Fruit.NCSS**.
- Click **Open**.

### 2 Open the 3D Line Charts (2 Factors) window.

- Using the Graphics menu or the Procedure Navigator, find and select the **3D Line Charts (2 Factors)** procedure.
- On the menus, select **File**, then **New Template**. This will fill the procedure with the default template.

### 3 Specify the variables.

- On the 3D Line Charts window, select the **Variables tab**.
- Double-click in the **Data Variables** text box. This will bring up the variable selection window.
- Select **April, May, and June** from the list of variables and then click **Ok**. “April-June” will appear in the Data Variables box.
- Double-click in the **Label Variable** text box. This will bring up the variable selection window.
- Select **Fruit** from the list of variables and then click **Ok**. “Fruit” will appear in the Label Variable box.

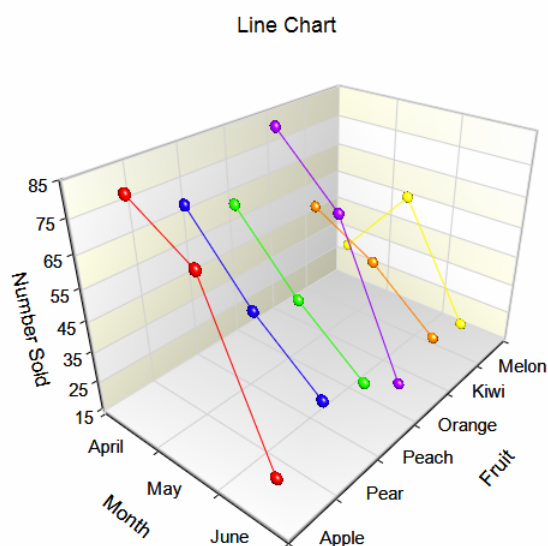
### 4 Specify the Axis Labels and 3D Layout.

- On the 3D Line Charts window, click on the **3D Line Chart Format** button.
- On the **Numeric Axis (Y)** tab, change the **Front Axis Label** to **Number Sold**.
- On the **Group 1 Axis (X)** tab, change the **Front Axis Label** to **Month**.
- On the **3D Layout** tab, change the **Z (Depth) Relative Dimension** to **150%**.
- Click **OK**.

### 5 Run the procedure.

- From the Run menu, select **Run Procedure**. Alternatively, just click the green Run button.

## 3D Line Chart Output



You can switch the factors by changing the **Data Orientation** to **Vertical**, the **Group 1 Axis Label** to {X}, the **Group 2 Axis Label** to **Month**, the **Z (Depth) Relative Dimension** to **100%**, and the **X (Width) Relative Dimension** to **130%**. The result is shown below.

