

Grapher

The ultimate technical graphing package

Quick Start Guide

Grapher® Registration Information

Your **Grapher** product key is located in the download instructions email and in your account at MyAccount.GoldenSoftware.com.

Register your **Grapher** product key online at www.GoldenSoftware.com. This information will not be redistributed.

Registration entitles you to free technical support, download access in your account, and updates from Golden Software.

For future reference, write your product key on the line below:

Grapher®

Quick Start Guide

The Ultimate Technical Graphing Package

Golden Software, LLC
PO Box 281, Golden, Colorado 80402, U.S.A.
Phone: 303-279-1021
www.GoldenSoftware.com

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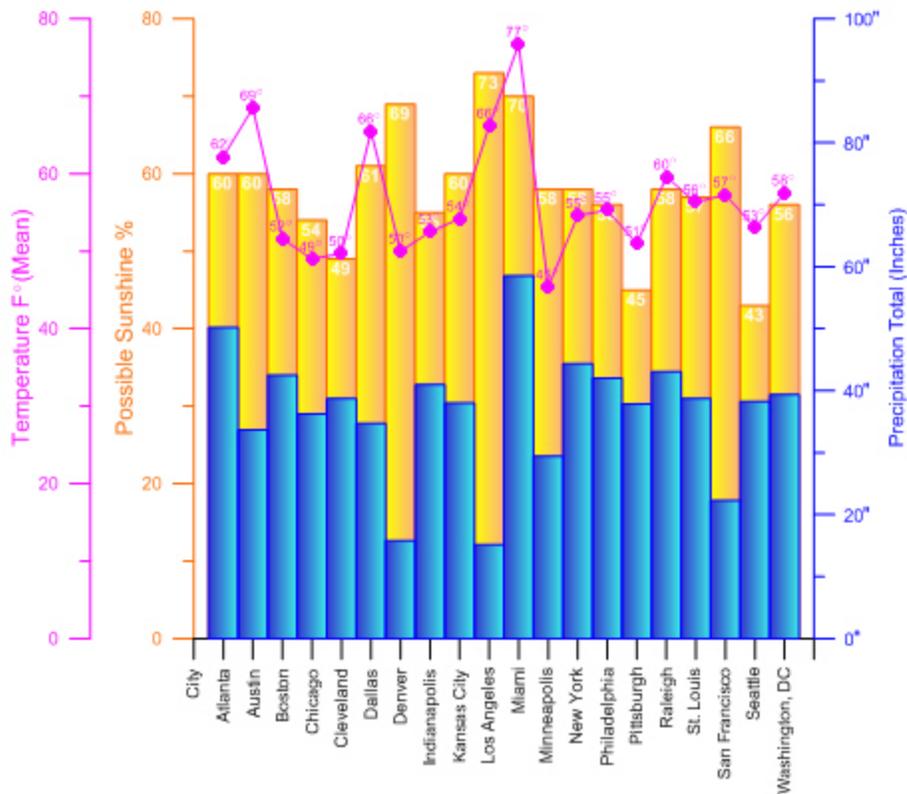
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Introduction to Grapher

Welcome to **Grapher**, the easy-to-use 2D & 3D technical graphing package for scientists, engineers, business professionals, or anyone who needs to generate publication quality graphs quickly and easily. **Grapher** is an efficient and powerful graphing program for all of your most complex graphing needs. Create exciting graphs and plots for presentations, papers, marketing, analysis, sales, and more.

With **Grapher**, creating a graph is as easy as choosing the graph type, selecting the data file, and clicking the Open button. **Grapher** automatically selects reasonable default settings for each new graph, though all of the graph settings can be modified. For example, you can change tick mark spacing, tick labels, axis labels, axis length, grid lines, line colors, symbol styles, and more. You can add legends, images, fit curves, and drawing objects to the graph. To apply the same custom settings to several graphs, you can create a **Grapher** template containing the preferred styles. Automate data processing and graph creation using Golden Software's **Scripter** program or any Active X automation program. Once the graph is complete, you can export it in a variety of formats for use in presentations and publications.

Major City Climate Comparison



Grapher is extremely flexible. For example, you can combine multiple plot types, display graph titles, customize axis settings, and more.

System Requirements

The minimum system requirements for **Grapher** are:

- Windows 10, 11 or higher
- 64-bit operating system support
- 1024x768 or higher monitor resolution with a minimum of 16-bit color depth
- At least 500 MB free hard disk space
- At least 512 MB RAM

For best **Grapher** performance we recommend:

- 500 GB hard drive with 25% disc space available
- 16 GB RAM

Installing Grapher

Installing **Grapher** requires Administrator rights. Either an administrator account can be used to install **Grapher**, or the administrator's credentials can be entered before installation while logged in to a standard user account.

To install **Grapher** from a download:

1. Download **Grapher** according to the emailed directions you received or from the **My Products** page of the Golden Software [My Account](#) portal.
2. Double-click on the downloaded file to begin the installation process.
3. Once the installation is complete, run **Grapher**.
4. License **Grapher** by activating a single-user license product key or connecting to a license server.

Updating Grapher

To update your version of **Grapher**, open the **Grapher** program and choose the **File | Online | Check for Update** command. This will launch the Internet Update program which will check Golden Software's servers for any updates. If there is an update for your version of **Grapher**, you will be prompted to download and install the update.

You can also email your registered **Grapher** product key to Graphersupport@goldensoftware.com and request to download the full product update. See the Check for Update topic in the help for additional information.

Uninstalling Grapher

To uninstall **Grapher**, follow the directions below for your specific operating system. We recommend deactivating your license prior to uninstalling **Grapher** if you are using a single-user license.

Windows 10 and 11

Select *Settings* in the **Start** menu. In *Settings*, select **Apps | Apps & features**. Select **Grapher**, and then click *Uninstall*. To uninstall **Grapher** from the Windows Control Panel, click **Programs | Programs and Features**. Next select **Grapher** and click *Uninstall*.

Grapher Trial Functionality

The **Grapher** trial is a fully functioning time-limited trial. This means that commands work exactly as the commands work in the full program for the duration of the trial. The trial has no further restrictions on use. The trial can be installed

on any computer that meets the system requirements. The trial can be licensed by activating a product key or connecting to a license server.

Scripter

The **Scripter** program, included with **Grapher**, is useful in creating, editing, and running script files that automate **Grapher** procedures. By writing and running script files, simple mundane tasks or complex system integration tasks can be performed precisely and repetitively without direct interaction. **Grapher** also supports ActiveX Automation using any compatible client, such as Visual BASIC. The automation capabilities allow **Grapher** to be used as a data visualization and graph generation post-processor for any scientific modeling system.

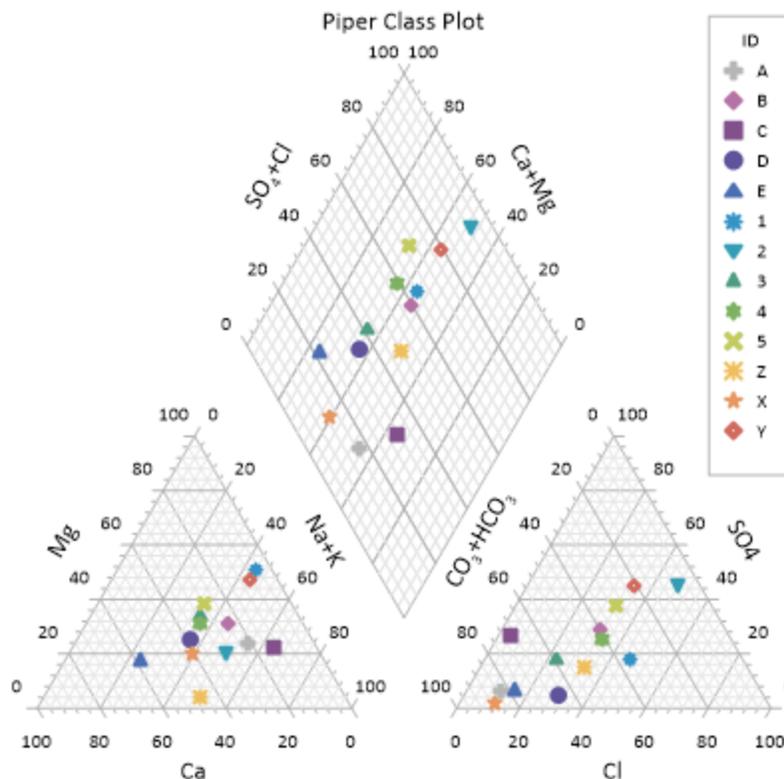
The script recorder records commands in a script as you perform them in **Grapher**. Run the script, and **Grapher** repeats the steps. This is ideal for users that need to perform repetitive tasks but are unfamiliar with automation or for advanced users who do not want to manually enter all of the syntax.

Three-Minute Tour

We have included several sample files with **Grapher** so that you can quickly see some of **Grapher's** capabilities. Only a few example files are discussed here, and these examples do not include all of **Grapher's** many plot types and features. The **Object Manager** is a good source of information as to what is included in each file.

To view the sample files:

1. Open **Grapher**.
2. Select *Sample Files* in the *Files* list of the Welcome to Grapher dialog.
3. Select a sample file from the *Sample Files* list.
4. Click the *Open* button. The sample file is now displayed. Repeat as necessary to see the files of interest.
5. Click on various parts of the graph, axes, and plots in the **Object Manager**. View the object properties in the **Property Manager**.



The piper class plot .grf sample file provides an example piper class plot with axis and graph titles, as well as a class legend.

Using Grapher

Graphs can be created in several ways in **Grapher**. The **Home | New Graph** commands create a graph with a single plot, and then the **Add to Graph** commands can be used to add plots and features as desired. The Graph Wizard quickly creates a new graph with one or more plots from a single data file. The **Graph Wizard** can also be used to add features to the graph, such as legends and titles, as well as to apply a color palette to the plots in the graph.

Using Scripiter

Tasks can be automated in **Grapher** using Golden Software's **Scripiter** program or any ActiveX Automation-compatible client, such as Visual BASIC. A script is a text file containing a series of instructions for execution when the script is run. **Scripiter** can be used to perform almost any task in **Grapher**. You can do practically anything with a script that you can do manually with the mouse or your keyboard. Scripts are useful for automating repetitive tasks and consolidating a sequence of steps. **Scripiter** is installed in the same location as **Grapher**. Refer to the *Grapher Automation* help book for more information about **Scripiter**. We have included several example scripts so that you can quickly see some of **Scripiter's** capabilities.

Example Script Files

A variety of script files are included with **Grapher**. You can run the script as is or you can customize the script.

To run a sample script in **Grapher's** Script Manager:

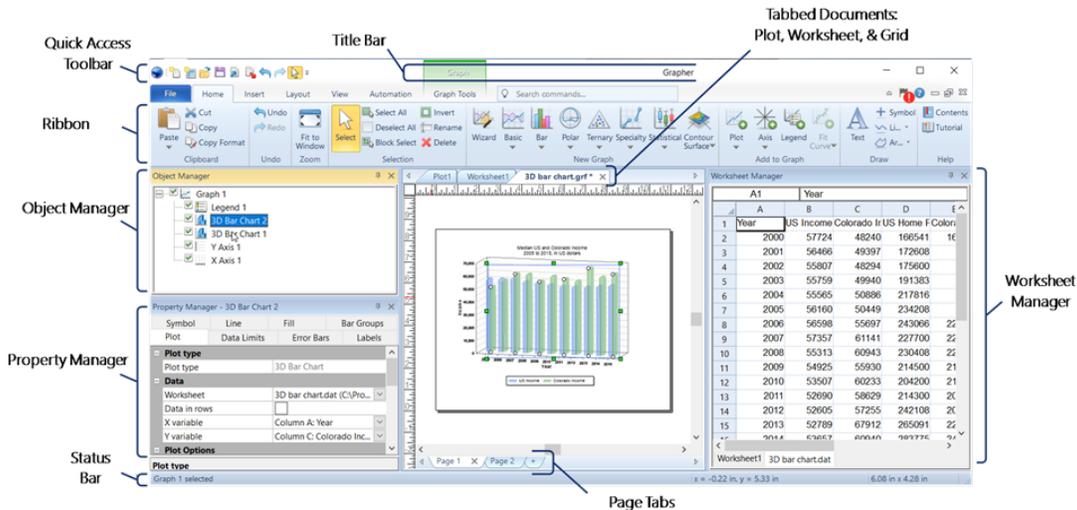
1. Open **Grapher**.
2. Check the **View | Display | Script Manager** command. A check mark will indicate the manager is displayed.
3. In the **Script Manager**, click the  button.
4. In the **Open** dialog, select a sample .BAS file and click *Open*. The sample scripts folder is located at C:\Program Files\Golden Software\Grapher\Samples\Scripts by default. The script is displayed in the **Script Manager**.
5. Click the  button to execute the script.

To run a sample script in **Scripter**:

1. Open **Scripter** by navigating to the installation folder, C:\Program Files\Golden Software\Grapher. Double-click on the Scripter.exe application file.
2. Click the **File | Open** command and select a sample script .BAS file from the C:\Program Files\Golden Software\Grapher\Samples\Scripts folder.
3. Click the **Script | Run** command to execute the script.

Grapher User Interface

Grapher contains four document window types: the plot window, worksheet window, grid window, and Excel worksheet window. Graphs and maps are displayed and edited in the plot window. Tabular data files are displayed, edited, transformed, and saved in the worksheet window. A native Excel workbook can be opened in the Excel window. Grid files can be viewed in the grid window. The **Grapher** user interface consists of the quick access toolbar, ribbon tabs and commands, tabbed documents, managers, and a status bar.



The **Grapher** user interface includes several managers and windows with a command ribbon at the top.

The following table summarizes the function of each component of the **Grapher** layout.

Component Name	Component Function
Ribbon	The ribbon contains the commands used to run Grapher . Some commands are unique to the plot document, worksheet document, and grid document.
Tabbed Windows	Multiple plot windows, worksheet windows, Excel worksheet windows and grid windows can be displayed as tabs. Click on a tab to display the window.
Plot Window	The plot window contains the graphs and other graphics in one or more pages.
Worksheet Window	The worksheet window displays the contents of the plot data sources and data files.
Status Bar	The status bar shows information about the activity in Grapher . The status bar is divided into three sections that contain information about the selected command or object position, the cursor position, and the size of the selected object.
Page Tabs	A plot document can have multiple pages. By default a plot document is created with a single page. Pages are displayed as tabs at the bottom of the plot window.
Object Manager	The Object Manager contains a hierarchical list of objects in a Grapher plot window; these objects can be selected, arranged, and renamed in the Object Manager . The Object Manager is initially docked on the left side above the Property Manager .

Property Manager	The Property Manager lists the properties of a selected object. Multiple objects can be edited at the same time by selecting all of the objects and changing the shared properties. The Property Manager is initially docked on the left side below the Object Manager .
Script Manager	The Script Manager controls scripts that are recorded and run within Grapher . Right-click in the Script Manager to see relevant menu commands for opening, saving, and running scripts. The Script Manager is hidden by default.
Worksheet Manager	The Worksheet Manager contains a view of all data loaded into Grapher . Edits made in the Worksheet Manager are automatically reflected in the graph. Right-click in the Worksheet Manager to save, edit, transform, sort, or obtain statistics on cells. When plots are first created or when they are opened from a GRF file, the data file contents is displayed in the Worksheet Manager . When a GPJ file is opened, the embedded data is displayed in the Worksheet Manager .

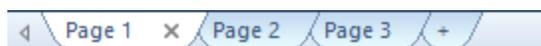
Plot Window

A plot window is the area used for creating and modifying graphs. When you first open **Grapher**, you can choose to start from an empty plot window. Multiple plot windows can be open at one time. Click the document tabs to easily move between multiple plot windows.

Plot Document Pages

A plot document can have multiple pages. By default a plot document is created with a single page.

- Add pages to the plot document by clicking the + button next to the page tabs. Pages are displayed as tabs at the bottom of the plot window.
- Remove pages from the plot document by clicking the X on the tab.
- Double-click the tab name, type a new name, and press ENTER to rename the page.
- Duplicate a page and all of its contents by right-clicking the desired tab and selecting **Duplicate** in the context menu.
- Click and drag the page tabs to reorder the pages.

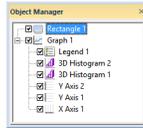


The page tabs are displayed at the bottom of the plot document.

Click the tab to activate the page. The active page is displayed in the plot window. Only the active page is printed or exported. When saving to a Grapher 13 or earlier file format, only the active page is saved.

Object Manager

The **Object Manager** contains a hierarchical list of the objects in a **Grapher** plot window. The objects can be selected, arranged, and renamed in the **Object Manager** or with ribbon commands. Changes made in the **Object Manager** are reflected in the plot window, and vice versa.



*The **Object Manager** contains a list of all objects in a plot window and can be used to select objects, arrange objects, and control object visibility.*

Each item in the **Object Manager** list consists of an icon indicating the object type, a text label for the object, and a visibility check box. A check mark indicates that the object is visible. An empty box indicates that the object is not visible. Click the check box to change the visibility of the item. Invisible objects do not appear in the plot window or on printed output.

To change the visibility for multiple selected objects, right-click in the **Object Manager** and click **Toggle Visibility**. Visible selected objects will be hidden, and hidden selected objects will become visible.

If an object contains sub-objects, a or displays to the left of the object name. Click the or icon to expand or collapse the list. For example, a graph object contains a plot, e.g., line/scatter, plus at least two axes. To expand the tree, click on the icon, select the item and press the plus key (+) on the numeric keypad, or press the right arrow key on your keyboard. To collapse a branch of the tree, click on the icon, select the item and press the minus key (-) on the numeric keypad, or press the left arrow key.

Click on the object name to select an object and display its properties in the Property Manager. The plot window updates to show the selected object with a selection bounding box and the status bar displays the name of the selected object. To select multiple objects, hold down the CTRL key and click on each object. To select multiple adjacent objects at the same level in the tree, click on the first object's name, hold down the SHIFT key, and then click on the last object's name.

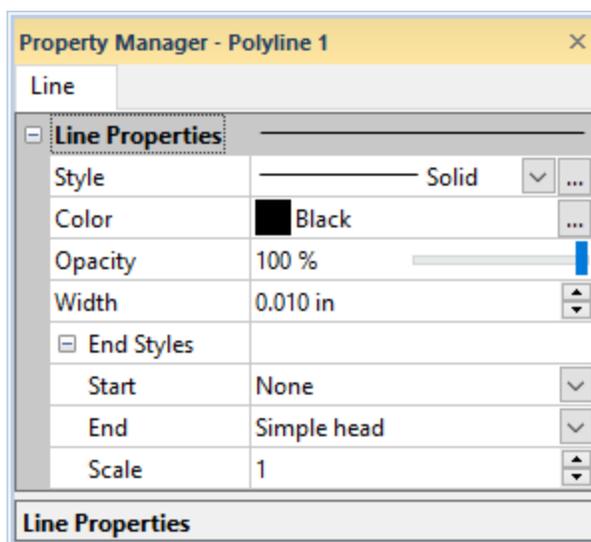
Select the object and then click again on the selected object (two slow clicks) to edit the object name. You must allow enough time between the two clicks so the action is not interpreted as a double-click. Enter the new name into the box. Alternatively, right-click on an object name and click **Rename Object**, select an object and click the Home | Selection | Rename command, or select an object and press F2. Enter a name in the **Rename Object** dialog and click OK to rename the object.

To change the display order of the objects with the mouse, select an object and drag it to a new position in the list above or below an object at the same level in the tree. The cursor changes to a black right arrow if the object can be moved to the cursor location or a red circle with a diagonal line if the object cannot be moved to the indicated location. For example, a line/scatter plot can be moved anywhere within its graph object or into another graph object, but not into a group object. Objects can also be arranged using the Layout | Move commands: **To Front**, **To Back**, **Forward**, and **Backward**.

To delete an object, select the object and press the DELETE key. Some objects cannot be deleted. For example, you cannot delete an axis that is currently in use by a plot in a graph.

Property Manager

The **Property Manager** allows you to edit the properties of an object, such as a plot or axis. The **Property Manager** contains a list of all properties for a selected object. The **Property Manager** can be left open so that the properties of selected objects are always visible.



*The **Property Manager** displays the properties associated with the selected object.*

Sections with multiple properties appear with a plus \oplus or minus \ominus to the left of the name. To expand a section, click on the \oplus button. To collapse a section, click on the \ominus icon. For example, the expanded *End Styles* section contains three properties: *Start*, *End*, and *Scale*.

The **Property Manager** displays the properties for selected objects. To change a property, click on the property's value and type a new value, scroll to a new number using the  buttons, select a new value using the  slider, or select a new value from the list or palette. For example, a polyline has *Style*, *Color*, *Opacity*, and *Width* properties and an *End Styles* sub-section with *Start*, *End*, and *Scale* properties. Changing the *Color* requires clicking on the current color and selecting a new color from the color palette. Changing the *Opacity* requires typing a new value or clicking on the slider bar and dragging it left or right to a new value. Changing the *Width* requires typing a new number or scrolling to a new number. Changing the *End* requires clicking on the existing style and clicking on a new style in the list.

The selections in the **Property Manager** control which properties are displayed. Properties are hidden when they do not have an effect on the object. For example, when the *Gradient* is set to *None* on the Fill page, the *Colormap* and *Fill orientation* properties are hidden. When the *Gradient* is changed to *Linear*, the *Colormap* and *Fill orientation* properties are displayed, while the *Pattern*, *Foreground color*, and *Foreground opacity* properties are hidden.

You can modify more than one object at a time. For example, click on *X Axis 1* in the **Object Manager**, and then hold the CTRL key and click *Y Axis 1*. You can change the properties of each axis simultaneously in the **Property Manager**. Only shared properties may be edited when multiple objects are selected. For example, only the line properties are displayed when both a polyline and polygon are selected. You can edit multiple plots of the same type at one time. However, no properties are displayed when the selected plots are different plot types.

Object properties automatically update after you select an item from a palette, press ENTER, or click outside the property field. When using the  buttons or slider, changes are displayed on the graph immediately.

Press ALT+ENTER to access the **Property Manager**. Pressing ALT+ENTER will also show the **Property Manager** if it is hidden or pinned. When working with the **Property Manager**, the up and down arrow keys move up and down in the **Property Manager** list. The TAB key activates the highlighted property. The right arrow key expands collapsed sections, e.g., *Plot Properties*, and the left arrow collapses the section.

Worksheet Manager

The **Worksheet Manager** contains a view of all data that are used or referenced in an open plots. Multiple data files are displayed in a tabbed format. By default, the **Worksheet Manager** appears at the right of the **Grapher** window. You can dock the **Worksheet Manager** by right clicking in its bottom bar and selecting *Docking*. You can also check or uncheck the box next to **View | Display | Worksheet Manager** to display or not display the **Worksheet Manager**.

Right-click inside the **Worksheet Manager** to open the worksheet menu commands. These commands are named similarly to the commands on the ribbon. Use the **Home | New Graph** commands to create a graph in the current plot window. Use the Data Tools menu commands to transform, sort, or generate statistics for the worksheet data.

If changes are made to data in the **Worksheet Manager**, an * will appear to the right of the changed file name. If you close the plot that is using changed data in the **Worksheet Manager**, you will be prompted to save or discard the changes.

Script Manager

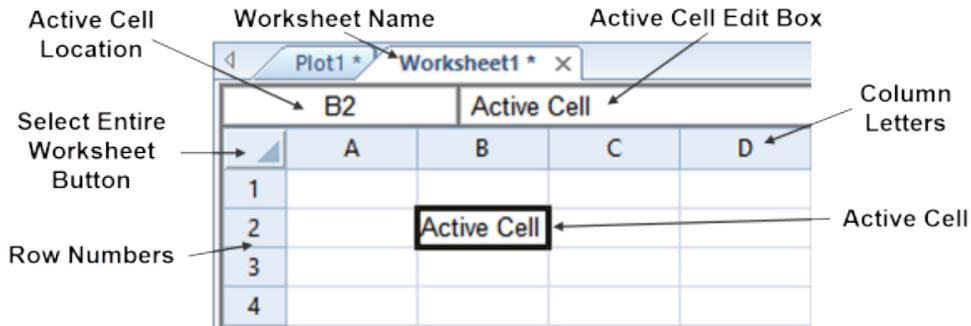
The **Script Manager** allows you to work with automation within **Grapher** rather than opening Golden Software's automation program, **Scripter**, separately. All of **Scripter's** functionality is available within the **Script Manager**. Right-click in the **Script Manager** to access **Scripter's** menu commands.

By default, the **Script Manager** is not displayed. Click the **View | Display | Script Manager** or **Automation | Script Manager | View Script Manager** command to show or hide the **Script Manager**. A check mark indicates the manager is visible. No check mark indicates the manager is hidden. When the **Script Manager** is displayed, the default location is tabbed with the **Worksheet Manager**.

Worksheet Window

The worksheet window contains commands to display, edit, enter, and save data. The worksheet window has several useful and powerful editing, transformation, and statistical operations available. Several import and export options are available for opening data files from other spreadsheet programs. The **Data Tools** tab is automatically selected when you open or switch to a worksheet document.

To enter data in a worksheet, use the **File | Open** command to open an existing data file or click the **File | New | Worksheet** command to create a blank worksheet. Data already used to create plots can be opened in the worksheet window with the **Graph Tools | Worksheet | Display** command.



The components of a worksheet window shown above are described in the following table.

Column Letters	The column letters identify a column in the worksheet.
Row Numbers	The row numbers identify a row in the worksheet.
Active Cell	The active cell is highlighted with a bold outline. The active cell receives data input (numeric values or text strings) from the keyboard. Only one cell is active at a time.
Active Cell Location	The active cell location is specified by column letter and row number.
Active Cell Edit Box	The active cell edit box displays the contents of the active cell. Data typed into an empty cell appears in both the edit box and the active cell.
Worksheet Name	The worksheet name displays the data file name or the worksheet number if the data file has not been saved.
Select Entire Worksheet Button	The select entire worksheet button is used to select all cells in the worksheet.

Status Bar

The status bar is located at the bottom of the window. Check or clear the **View | Display | Status Bar** command to show or hide the status bar. The status bar displays four sections about the current command or selected object in **Grapher**.

From left to right the status bar sections show:

- Information about the selected command or item in the **Properties** window
- The selected object name

- The cursor X and Y position in units of the axes (when a plot is selected), otherwise the cursor position in page units
- The dimensions of the selected object

Adjust Section Width

The status bar section widths can be adjusted to display additional text. If "..." is displayed at the end of the text, additional text can be displayed. To change the width, place the cursor over a section division. When the cursor changes to a , left-click and drag the divider left or right to a new location.

Click=select; drag=block select; shift... Group

A portion of the status bar. The "..." in the left section indicates there is additional text.

Click=select; drag=block select; shift+click=multi-select; ctrl+click=cycle selection Group

A portion of the status bar after making the left section larger.

Customizing the Quick Access Toolbar

The Quick Access Toolbar is a customizable toolbar. One method that can be used to add commands to the Quick Access Toolbar is to right-click on the command in the ribbon and click **Add to Quick Access Toolbar**. The command is automatically added to the end of the Quick Access Toolbar. To customize the commands and their locations on the Quick Access Toolbar, right-click the ribbon and click **Customize Quick Access Toolbar**.

1. To add a command, select the command from the list on the left that you want to add. Click the *Add>>* button and the command is added to the list on the right.
2. To add a separator between commands, set the *Choose commands from* to *Home* on the left side of the dialog. Select *<Separator>* and click *Add>>*. Move the separator to the desired position.
3. To delete a command, select the command from the list on the right. Click the *<<Remove* button and the command is removed from the list on the right.
4. To rearrange commands or move separators, click on the command or separator name from the list on the right that you want to move. Click the up and down arrow buttons on the far right to move the command up or down the list. Commands are shown in the exact order that they are displayed in the Quick Access Toolbar.
5. To reset the Quick Access Toolbar to the default display, click the *Reset* button below the list on the right side of the dialog.
6. Click OK and all changes are made.

Customizing the Ribbon

The ribbon is customizable in **Grapher**. To customize the commands in the ribbon, right-click the ribbon and select **Customize the Ribbon**. In the dialog, you can add new tabs, add groups, add commands to custom group, hide existing tabs or groups, and rearrange the tabs into an order that better fits your needs.

Customizing the Keyboard Shortcuts

Keyboard shortcuts can be changed by right-clicking on the ribbon and selecting **Customize the Ribbon**.

1. In the dialog, click the *Customize* button next to *Keyboard shortcuts*.
2. On the left side of the **Customize Keyboard** dialog, select the ribbon tab name in the *Categories* list where the desired command is located.
3. On the right side of the dialog, click on the command name in the *Commands* list.
4. Click in the *Press new shortcut key* box and press and hold the keys that should be used for the command. For instance, you might press and hold the CTRL, SHIFT, and H keys on the keyboard. The key names CTRL+SHIFT+H will be listed in the *Press new shortcut key* box. If no other command uses the key combination, the *Assigned to* section lists [Unassigned].
5. When the keys are unassigned, click the *Assign* button at the bottom of the dialog to assign the key combination to the selected command.

Changing the Window Layout

The managers display in a docked view by default. However, they can also be displayed as floating windows. The visibility, size, and position of each manager may also be changed.

Manager Visibility

Use the View | Display commands to show or hide the Object Manager, Property Manager, Script Manager, Worksheet Manager, and Status Bar. A check mark indicates the manager is displayed. An empty check box indicates the manager is closed. Alternatively, you can click the  button in the title bar of the manager to close the manager window.

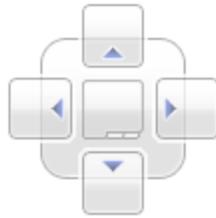
Auto-Hiding Managers

You can increase the plot document space by minimizing the managers with the *Auto Hide* feature. The manager slides to the side or bottom of the **Grapher** main window and a tab appears with the window name. To hide the manager, click the  button in the upper right corner of the manager. When the manager

is hidden, place the cursor directly over the tab to display the manager again. Click the  button to return the manager to its docked position.

Docking Managers

Grapher has a docking mechanism that allows for easy docking of managers. Left-click the title bar of a manager and drag it to a new location while holding down the left mouse button. The docking mechanism displays arrow indicators as you move the manager around the screen. When the cursor touches one of the docking indicators in the docking mechanism, a blue rectangle shows the window docking position. Release the left mouse button to allow the manager to be docked in the specified location. Double-click the title bar of a manager to switch between the docked and floating positions.



The docking mechanism makes it easy to position managers.

Tabbed Managers

To create tabbed managers:

1. Left-click the title bar of the manager and drag over the other manager. A docking mechanism will be displayed.
2. Hover the cursor over the center of the docking mechanism. The blue rectangle shows where the tabbed manager will display.
3. Release the mouse button.

To return to individual managers from the tabbed view:

1. Click on the manager's name on the tab.
2. Drag the tab to a new position.

Restoring the Managers to Their Default Locations

If the managers have moved or become invisible, or if they are in undesired locations, you can use the View | Display | Reset Windows command to move them back to their original locations. You must restart **Grapher** for the changes to take effect.

File Types

Grapher primarily uses data files and **Grapher** files. Grid files can be used to create maps. Image files and vector data files can be imported into plot documents. There are three types of **Grapher** files: **Grapher** .GRF, .GPJ, and .GRT files. The type of file you create when saving your project should be determined by how you wish to link the plots and their data:

- The *Grapher File (*.grf)* file stores a link to the data file(s) used by the plots. Data files are saved separately from the GRF file. A GRF file and one or more data files are necessary to open a GRF file.
- The *Grapher Project (*.gpj)* file embeds the data for the plots in the GPJ file. When opening a GPJ file, the plots are recreated exactly as they were saved. No outside data file is necessary to open a GPJ file.
- The *Grapher Template (*.grt)* file does not embed the data nor store links to the data. Only the plot and graph properties and layout are saved. When opening a GRT file, **Grapher** will prompt you for the data files to use for your plots.

Grapher .GRF Files

Grapher .GRF files contain all of the information necessary to reproduce the graph, except for the data. When you save a **Grapher** file, all the scaling, formatting, and parameters for the graph are preserved in the file. **Grapher** .GRF files save a link to the data and do not store the data internally in the file. For example, if a .GRF file needs to be sent to a colleague, you would need to send the data file(s) used to create the graph in addition to the .GRF file. This format is preferred for graphs where the data changes periodically and needs to link to the external source data file. When opening a GRF file, the data files are reloaded into **Grapher**. If the data files haven't changed, the plots will look the exact same as when they were saved. However, if the data files have been changed, the plots will automatically update to reflect the changes in their source data. If the data files can't be found, **Grapher** will prompt you for the data files to use for your plots.

Grapher .GPJ Project Files

Grapher .GPJ files store all of the information necessary to reproduce the graph including embedding the data. All scaling, formatting, and parameters for the graph are preserved in the file. If a .GPJ file needs to be sent to a colleague, you would only need to send the .GPJ file. This format is preferred when you want to have the data and the graph contained in a single file and the data does not change often. If the embedded worksheets contain fewer than 1,048,576 rows x 16,384 columns, then cell formatting is maintained in the GPJ.

Grapher .GRT Template Files

Grapher .GRT files are used to create a template with set graphing preferences. A saved template file does not contain a reference to a specific data file. This means that once the template graph is created, you can use the template with any data set. You can use the template to set options such as the number of decimal places on axis tick mark labels, label angles, axis labels, graph titles, line plot colors, fill colors, symbol size, or any other graphing option. If a .GRT file is sent to a colleague, they can use their own data set with the file to create a graph based on the specifications in the template file. This format is preferred when the layout of the graph needs to remain consistent with a variety of similarly formatted data files.

Data Files

In most cases, there is a prompt for a data file when you create a graph in **Grapher**. Data files can be imported from a variety of sources, such as ASCII text files, Excel files, or database files. Data can be entered directly into **Grapher's** worksheet if the files do not already exist. The data needs to be in column and row format. Data files can also be created, edited, and saved in **Grapher's** worksheet. Some of the most commonly used data types are described in the following sections.

ASCII Data

ASCII files are generic format files that can be read or produced by most applications. There are three common ASCII data formats: .DAT, .CSV, and .TXT. These files can also be imported into most applications, including word processors, spreadsheets, and ASCII editors. The files differ in the types of delimiters, or column separators, between the data. ASCII files do not contain any worksheet formatting information such as row height, column width, or cell formatting. This format does not have a limitation on the number of rows or columns.

Excel Files

Microsoft Excel .XLS, .XLSX, and .XLSM files contain data and retain some cell formatting in **Grapher**. Some information, such as formulas, is ignored. Excel files can preserve all formatting information available in the Golden Software worksheet. An Excel 2003 .XLS worksheet has a 65,536-row limit and a 256-column limit; therefore, this format cannot be used to store very large data sets. An Excel 2007 .XLSX worksheet has a 1,048,576 row limit and a 16,384 column limit.

Use Caution when Saving Excel Files!

Use the File | Save To Multi-Sheet Excel File command to save multiple worksheets in a single Excel document.

A file can be saved in an Excel format from **Grapher** worksheet, **but only one worksheet can be saved** when using the File | Save or File | Save As command. If a multi-worksheet Excel file is opened and saved as an .XLS or .XLSX file from the **Grapher** worksheet, be aware that only the single worksheet is saved in the document. If the existing file is overwritten, all the unused worksheets are destroyed. In this case, a warning message is issued. The message reads: *Saving this worksheet will destroy all but one of the sheets in the existing *.xls, *.xlsx file. To overwrite the file, click OK. To choose a different file name, click Cancel.*

We do not recommend editing Excel files with extensive formulas in **Grapher**. All formulas will be lost if the original files are overwritten during the save operation in **Grapher**.

Database Files

In **Grapher**, graphs can be created from Access .ACCDB and .MDB files and dBase .DBF files directly without first converting to a new worksheet. A graph is created directly from the database file and will reference the database. Changes made in the database table will automatically update the graph.

Other database formats can be imported into **Grapher's** worksheet. Click the **File | Open** command. In the **Open** dialog, click the *Database* button. Step through the dialogs to import the file and the database is converted into a worksheet format. These files cannot be saved in their native format, but you can save the files in any of the available worksheet formats by clicking the File | Save As command.

Grid Files

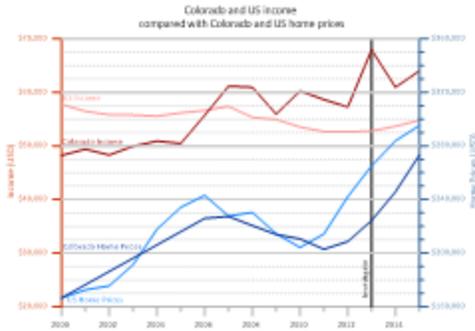
Grid files are used to produce grid-based contour and surface maps in **Grapher**. Grid files contain a regularly spaced rectangular array of Z values organized in columns and rows. Grid files can be imported from a wide variety of sources. For example, the *contour grid map.GPJ* sample file uses a Surfer .GRD file to create an XY contour grid map.

Plot Types

Several unique 2D and 3D plot types can be created, modified, and displayed with **Grapher**. The Home tab **New Graph** commands or the graph wizard are used to create a graph. The plot types are organized in the **Home | New Graph** group by category:

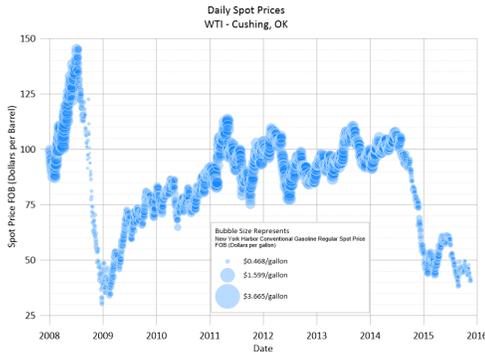
Line/Scatter Plots

Line/scatter plots include 2D line plots, scatter plots, line/scatter plots, and step plots. In most cases, two variables are displayed on two axes. The Line/scatter plots category also includes 3D ribbon plots, 3D wall plots, and 3D step plots. In these cases, two variables are displayed with a 3D view. The XYZ line/scatter plot is also included. This is a true three-dimensional plots, using at least three variables and three axes.



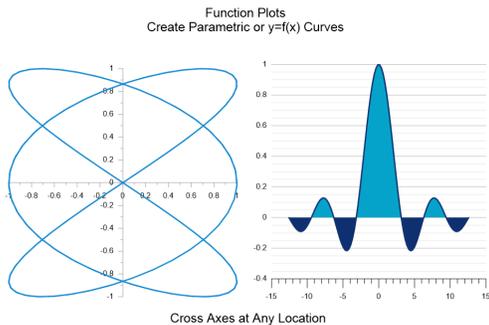
Class/Bubble Plots

Class/Bubble plots include 2D class scatter plots, 2D bubble plots, XYZ class scatter plots, and XYZ bubble plots. For 2D class scatter and bubble plots, two variables are displayed on two axes. XYZ class scatter and bubble plots are true three-dimensional bar charts, where three variables are displayed on three axes.



Function Plots

Function plots include 2D & 3D vertical, horizontal, and parametric function plots. These plot X as a function of Y, Y as a function of X, or T as a function of both X and Y. Function plots also include 2D & 3D contour function maps and surface function maps. These plot Z as a function of X and Y on either 2 or 3 axes. The Function plots group also includes polar function plots and polar parametric function plots. These plot R as a function of A or plot a parametric equation where R and A are functions of a third variable, T, on polar axes.



Bar Plots

Bar plots include 2D, 3D, or XYZ horizontal and vertical bar charts and floating bar charts. For 2D bar charts, two variables are displayed on two axes. For 3D bar charts, two variables are displayed with a 3D aspect. 2D and 3D bar charts can also be created directly from category data. XYZ bar charts are true three-dimensional bar charts, where three variables are displayed on three axes.

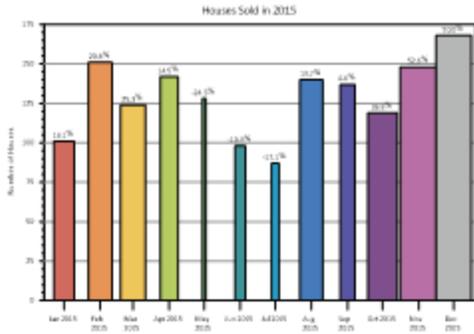
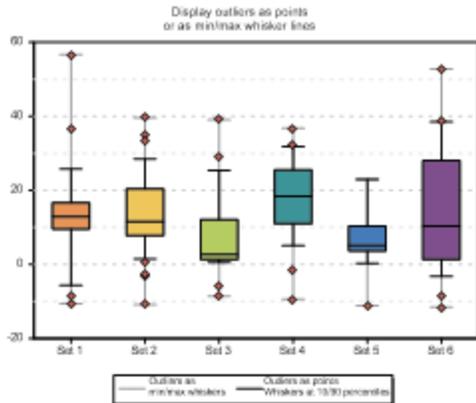


Fig 1. Houses Sold in 2015. Bar with labels indicating percentage increase/decrease over previous year. Label is the actual percentage increase/decrease over previous year.

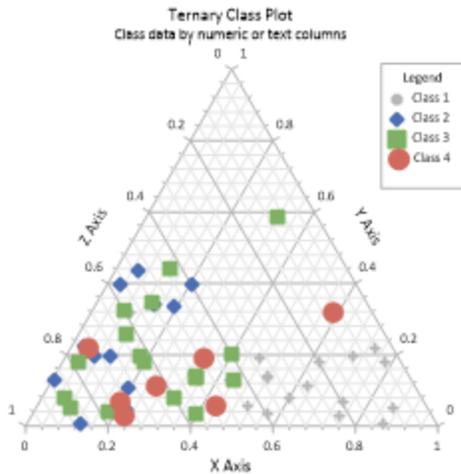
Statistical Plots

Statistical plots include 2D and 3D vertical and horizontal histograms, box-whisker plots, 2D and 3D pie charts, Q-Q plots, and 2D and 3D doughnut plots. Histograms read raw data and count the number of instances in each bin and then display the bin frequency as a bar. Pie charts display data as percentages of a whole. Doughnut plots are similar to pie charts, but can be stacked and have a hole in the center. Box-whisker plots and notched box-whisker plots display median, quartile, and outliers for a data set. Q-Q plots display a data set compared to another data set or to the normal distribution.



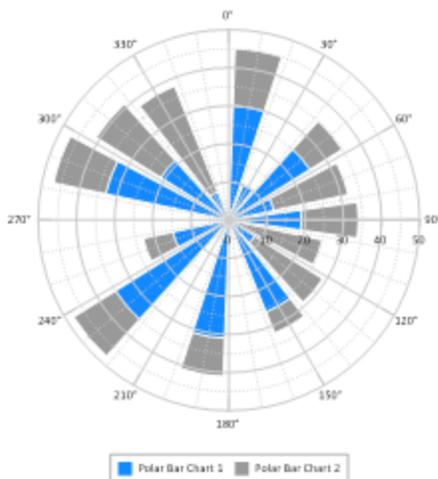
Ternary Plots

Ternary plots include ternary scatter, line/scatter, line, class, and bubble plots. The Ternary group also includes piper and Durov plots. All ternary plots display three variables on three axes, arranged in a triangle display. Classification information can be displayed on the plot when using a ternary class plot. Ternary bubble plots add a fourth dimension to the plot by varying symbol size based on another data column. Piper plots include two ternary plots, typically one cationic and one anionic. The cationic and anionic plots are projected onto a diamond plot. Durov plots show the relative concentrations of six ion groups in two ternary plots.



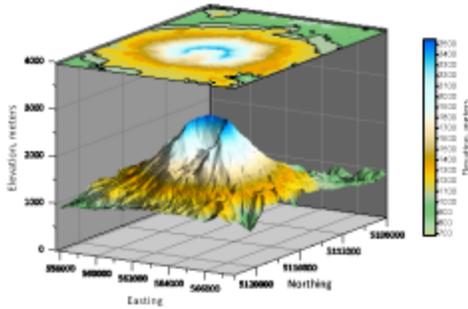
Polar Plots

Polar plots include polar line plots, scatter plots, line/scatter plots, class plots, bar charts, rose charts, wind charts, and radar charts. Data are positioned on a circular plot at an angle and a specified distance away from the center location. Rose charts are histograms where data are binned by angle value. Wind charts are similar to rose charts but the data in the bins is further categorized by a second variable. Radar charts represent multi-variate data on equi-angular spokes, or radii.



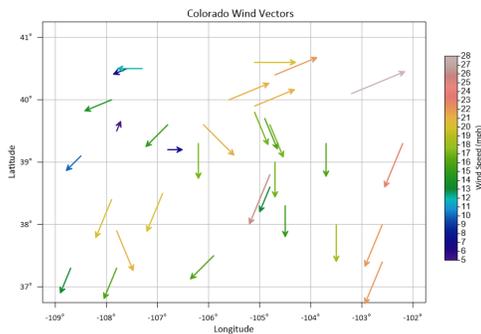
Contour Surface Maps

Contour maps include contour data maps and grid maps. Contour maps are 2D representations of three variables. The contour line defines the equal Z values across the map. Contour maps can be displayed with an XY or XZ orientation. Surface Maps include surface data maps, grid maps, and function maps. Surface maps are 3D color representations of three variables.



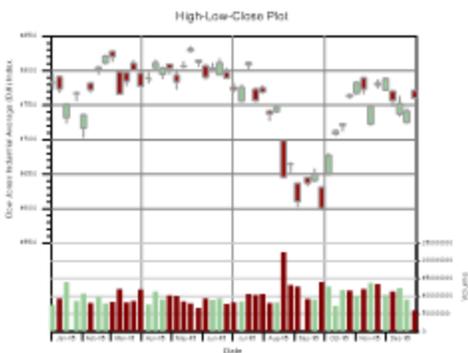
Vector Plots

Vector plots include 2D, 3D, and polar 1-point and 2-point vector plot. 1-point vector maps plot a starting point with a vector line depicting the specified angle and magnitude. 2-point vector maps plot a vector line between a starting and ending point.



Specialty Plots

Specialty plots include high-low-close plots, candlestick plots, and stiff plots. High-low-close and candlestick plots display at least three variables on two axes. Stiff plots show concentrations, typically anion and cation concentrations in water.



Creating Graphs

You can create graphs in several ways in **Grapher**. These methods include creating graphs with the graph wizard, from the Home tab commands, from the worksheet, and from templates.

Additional plots, axes, legends, titles, summation plots, duplicate axes, and magnifiers can be added to the graph after it is created. All properties of the plot can be edited after the graph is created.

Creating Graphs with the Graph Wizard

The Graph Wizard leads you through the necessary steps to create a new graph. This is often the fastest way to make a graph with multiple plots from a single data file. The **Graph Wizard** also makes it easy to add items such as axes, legends, and titles.

To create a graph with the graph wizard:

1. Click the **Home | Wizard | Wizard** command.
2. In the **Graph Wizard - Select File** dialog, select the data file for the graph from the *Select File* list. A preview of the data file is displayed in the *Data Preview* section.
3. In the **Graph Wizard - Select Plot Type** dialog, choose a plot type for the new graph.
4. In the **Graph Wizard - Select Data Variables for Plot** dialog, define the number of plots you wish to create and their associated data columns in the *Data Columns* section.
5. In the **Graph Wizard - Select Graph Options** dialog, select which graph components you wish to display. If the graph contains multiple plots, you can select a *Color palette* for the plots as well.
6. Click the *Finish* button to create the graph.

The graph is created with the specified properties. You can change the properties of a selected graph, plot, or axis through the Property Manager.

Creating Graphs in the Plot Window

The most common method of creating graphs is to use the **Home | New Graph** commands. To create a graph in the plot window:

1. Click or scroll to the **Home** tab.
2. In the **New Graph** group, click the **Basic, Bar, Polar, Ternary, Specialty, Statistical, or Contour Surface** plot category.
3. Click on the plot type you would like to create.

4. Select a data file in the **Open Worksheet** dialog and click *Open*. If you are creating a contour grid map or surface grid map, you are prompted for a .GRD file. If you are creating any type of function plot, you are not prompted for a data or grid file.

The graph is created with the default properties. You can change the properties of a selected plot or axis through the Property Manager.

Creating Graphs from the Worksheet

If you are working with the data in the worksheet, you can create a graph without switching to the plot window. Simply select the columns you wish to plot and choose the graph type you wish to create. To create a graph from the worksheet:

1. Open the worksheet you wish to use for the plot or plots.
2. Highlight the columns to use in the plot or plots.
3. Click the **Home** tab. If you are using the **Worksheet Manager**, right-click in the worksheet and select **Home | New Graph** from the context menu.
4. In the **New Graph** group, click the **Basic, Bar, Polar, Ternary, Specialty, Statistical**, or **Contour Surface** button. In the **Worksheet Manager**, click the **Basic, Bar, Polar, Ternary, Specialty, Statistical**, or **Contour Surface** in the context menu.
5. Select the plot type you would like to create and the graph is created with the default plot properties.

When creating a graph with multiple plots, the plot colors are automatically varied. You can change the properties of a selected plot or axis through the Property Manager.

Creating Graphs Using Templates

Templates are used to set graphing preferences in **Grapher**. A template file does not contain any reference to a data file. This means that once the template graph is created, you can use the template to create a new graph with any compatible data set. To create a new plot from a template:

1. Click the **File | New | Plot from Template** command.
2. Select a .GRT template file in the **Open** dialog, and click *Open*.
3. Select the data file to use with the template. Select the *Use this worksheet for remaining items* option if all the plots in a template use the same worksheet.
4. Check the *Set columns* if you want to change the column specifications for individual plots in the graph.
5. Click the *Open* button and the new plot is created.

You can change the properties of a selected plot or axis through the Property Manager. Refer to template graphs for information on creating or saving an edited template.

Scripter

Golden Software's **Scripter** is a program for developing and running scripts. A script is a text file containing a series of instructions carried out when the script is run. Instructions are written in a Visual BASIC-like programming language. **Scripter** offers many features to help you write, edit, and debug scripts. Its features include language syntax coloring, a list of the procedures defined in the script, an object browser for examining procedures available in external objects, a visual dialog editor, break points, single-step execution (including options to step over and to step out of procedures), a watch window for displaying the values of script variables, and more.

Grapher operations can be controlled through automation scripts. You can do almost everything with a script that you can do manually with the mouse or from the keyboard. Scripts are used to automate repetitive tasks or consolidate a complicated sequence of steps. Since **Grapher** exposes its services through automation, you can use any programming tool that accesses automation objects, such as Visual BASIC, Windows Scripting Host, and many of the Microsoft Office applications.

To open **Scripter**, navigate to the C:\Program Files\Golden Software\Grapher directory and double click the **Scripter** executable. If **Scripter** is not present, the installation of **Scripter** may have been skipped when **Grapher** was installed. See the README.RTF file in the **Grapher** installation directory for information about the installation process.

Script Recorder

Grapher includes a **Script Recorder**, accessed through the **Automation | Scripts** commands. The **Script Recorder** records all commands as you make them in **Grapher**. When a recorded script is run, **Grapher** performs all the steps for you. This is ideal for users that need to perform repetitive tasks but are unfamiliar with automation, for advanced users who do not want to manually enter all of the syntax, or for any user having difficulty with syntax. Check the box next to the **View | Display | Script Manger** command to display the **Script Manager** if you would like to view a script while it is recording. Recording must be stopped before editing scripts within the Script Manager.

Tutorial Introduction

The tutorial introduces you to some of **Grapher's** basic features and should take about an hour to complete. After you have completed the tutorial, you will have the skills needed to begin creating your own graphs with your own data. The lessons should be completed in order; however, they do not need to be completed in one session.

Tutorial Overview

The following is an overview of lessons included in the tutorial.

- Starting Grapher shows you how to begin a new **Grapher** session and open a new plot window.
- *Lesson 1 - Viewing and Creating Data* opens and edits an existing data file and creates a new data file.
- *Lesson 2 - Creating a Graph* shows you one way to create a graph.
- *Lesson 3 - Editing Axes* shows you how to add an axis title, how to change the tick mark spacing, how to change the tick label source, and how to add a second linked axis.
- *Lesson 4 - Adding and Editing a Legend* shows you how to add a legend and modify the legend's appearance.
- *Lesson 5 - Working with the Script Recorder* shows you how to use the **Script Recorder** with the techniques in the previous lessons and adds a few new items. This is an optional advanced lesson. Because other features are covered in this advanced lesson, it is highly encouraged that you complete *Lesson 5*, even if you do not wish to use the script recorder.

A Note About the Documentation

Various font styles are used throughout the **Grapher** quick start guide and online help. **Bold** text indicates command names, dialog names, and page names. *Italic* text indicates items within a dialog such as section or group names, options, and property names. For example, the **Save As** dialog contains a *Save as type* list. Bold and italic text occasionally may be used for emphasis.

In addition, commands appear as **Home | Clipboard | Copy**. This means, "click or scroll to the **Home** tab at the top of the document, then click the **Copy** command in the **Clipboard** group." The first word is always the ribbon tab name, followed by the group name, and the last word is always the specific command.

Starting Grapher

To begin a **Grapher** session start **Grapher** from the **Grapher** desktop icon or from the Windows **Start** menu.

If this is the first time that you have started **Grapher**, you will be prompted to license **Grapher**. **Grapher** has a variety of licensing options, such as Single-User product keys and site-wide licenses. If you have a Single-User product key, your product key is located in the download instructions email. You can also access your product key at your Golden Software [My Account](#) page. If you need to license **Grapher** from a license server, select a license server and follow the required steps.

If you are not sure of your licensing arrangement or need assistance, do not hesitate to reach out for free support on our website or with our technical support staff:

- [Knowledge Base](#) articles (search for licensing)
- GrapherSupport@GoldenSoftware.com
- [Contact Us](#)

The next step to begin the tutorial is to open a new plot window. If you have already been working with **Grapher**, click the **File | New | Plot** command, click the  button on the Quick Access Toolbar, or press CTRL+N on the keyboard. If you see the **Welcome to Grapher** dialog, select the **Plot** command underneath the **New** section on the left side of that dialog.

Lesson 1 - Viewing and Editing Data

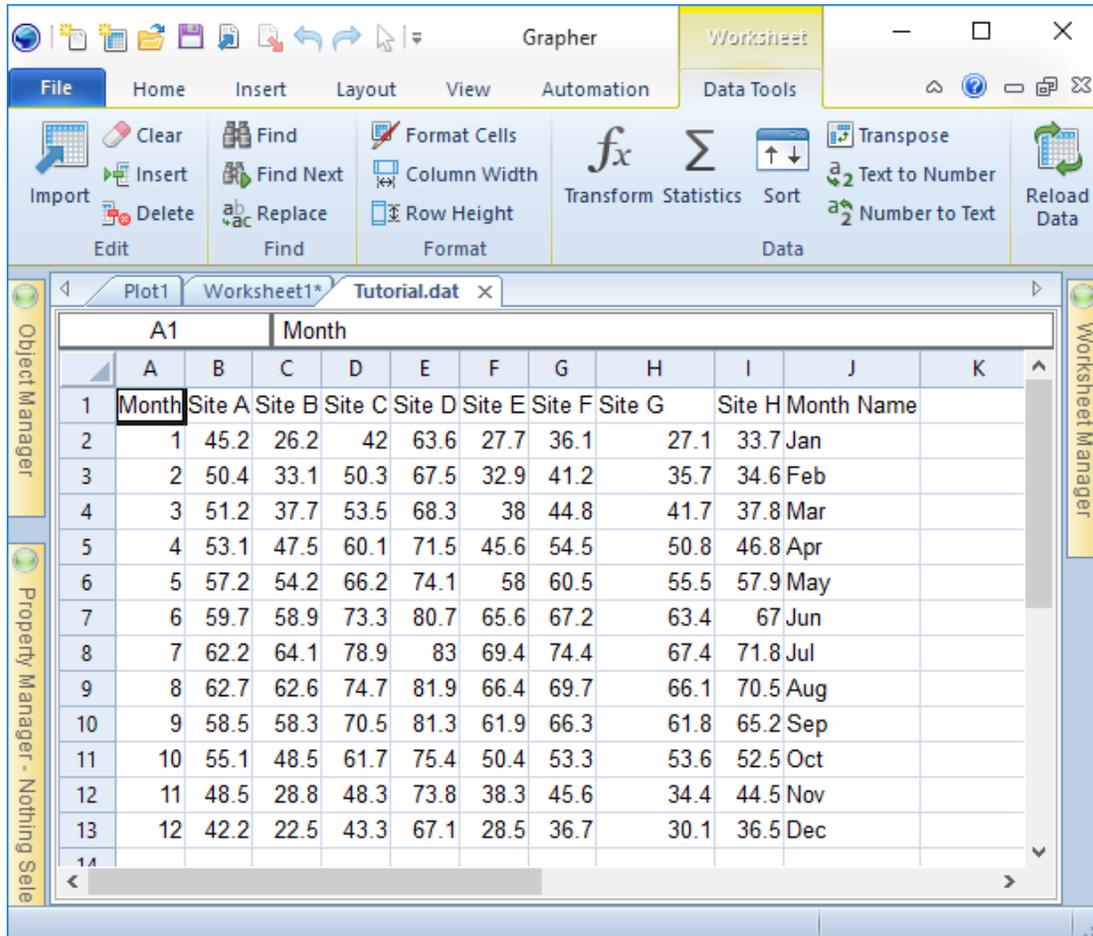
A data file is a file that contains columns or rows of data values. At minimum, two columns or rows are required to create most 2D graphs in **Grapher**. Data files can contain header information, labels, point identifiers, filter information, and data. It is often a good idea to examine the data file contents before creating your graph. The **Grapher** worksheet can be used to create a new data file. Refer to the Worksheet Window help topic for information about the various components of the worksheet window.

Opening an Existing Data File

If you would like to view or edit data, you can open the data file in **Grapher**. There are several ways to view a data file. If a graph has already been created, the most common method to view the data is to use the **Worksheet Manager**. If a graph is not yet created, you can open the data in the worksheet window.

1. Click the **File | Open** command, click the  button on the Quick Access Toolbar or press CTRL+O on the keyboard. The **Open** dialog displays.
2. If you are not in the Samples folder, browse to it. The Samples directory is located at C:\Program Files\Golden Software\Grapher\Samples by default. In the list of files, click *Tutorial.dat*.
3. Click *Open* to display the data in the worksheet window.

Notice that there are several columns of data. Column A contains Month number data. Columns B through I contain site information. Column J contains an abbreviation of month names. Row 1 contains header text, which is helpful for identifying which column contains which data. When a header row exists, the information in the header row is used in the Property Manager when selecting worksheet columns.



The data is displayed in a worksheet window. Note that each variable is a separate column. Row 1 contains a description of what the column contains.

Editing Data

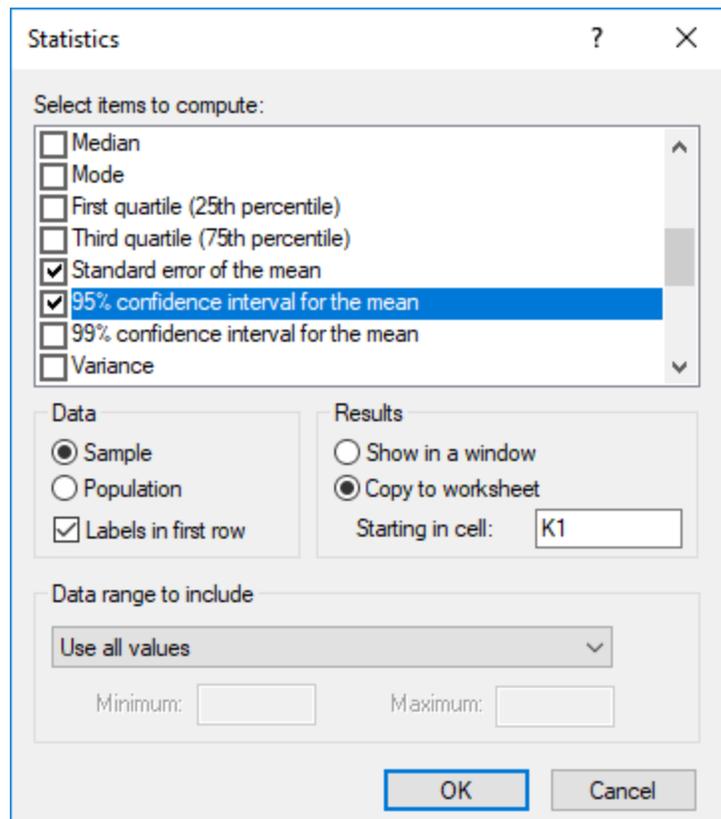
To edit any value, click in the cell to select it. Type information and the existing value is overwritten. Data can be sorted, transformed, or transposed in this window. You can also calculate statistics for the worksheet data in this window. New

columns or rows can also be added. For instance, if we notice that the value in cell B13 is incorrect, we can change it.

1. Click in cell B13.
2. Type the value 46.2.
3. Press ENTER on the keyboard. The new value is entered in cell B13.

Calculating Statistics on the Data

Sometimes, it is necessary to know some basic statistical information about the data. For instance, what is the maximum value for each site and how do the average values relate to one another? This information can be calculated in the worksheet. To compare multiple site average values and compare confidence in the values, we could click on each column separately or we could display all of the information at once. To display all of the information at once:



Check desired options and select Copy to worksheet to copy the results to the existing worksheet.

1. Click on the header B and hold down the left mouse button. Drag the mouse across all column headers between column B and column I, and then release the mouse button. All Site columns are now selected.
2. Click the **Data Tools | Data | Statistics** command.

3. In the **Statistics** dialog, select the items that should be displayed. In this case, we are interested in the maximum value, average values, standard deviation, and confidence in the average values. From the *Select items to compute* list, select:
 - *Maximum*
 - *Mean*
 - *Standard error of the mean*
 - *Standard Deviation*
 - *95% confidence interval for the mean*
4. Select *Copy to worksheet* and set the *Starting in cell* to K1 to display the summary information in the same worksheet as the actual data instead of in a report window.
5. Click *OK* and the statistics are displayed in columns K through S.

Mean values can be compared visually. The standard error of the mean and 95% confidence value can also be compared. In addition, plots can be created directly from the summary statistics information, if desired.

K	L	M	N	O	P	Q	R	S
	Site A	Site B	Site C	Site D	Site E	Site F	Site G	Site H
Maximum	62.70	64.10	78.90	83.00	69.40	74.40	67.40	71.80
Mean	54.00	45.20	60.23	74.02	48.56	54.19	48.97	51.57
Standard error	1.83	4.32	3.67	1.91	4.46	3.86	4.22	4.20
95% confidence interval	4.04	9.51	8.08	4.20	9.81	8.50	9.28	9.25
Standard deviation	6.36	14.97	12.71	6.61	15.44	13.38	14.61	14.55

Visually inspect the statistical results to compare various site data.

Saving the Data File

When you have completed entering all of the data, the data can be saved in a variety of formats.

1. Click the File | Save As command. The **Save As** dialog is displayed.
2. Specify a save location for the new data file, your *Documents* folder for example.
3. In the *Save as type* list, choose the *XLSX Excel 2007 Spreadsheet (*.xlsx)* option.
4. Type *Tutorial* in the *File name* field if it is not there already.
5. Click the *Save* button.

The file is saved in the XLSX format with the file name you specified. The name of the data file appears in the title bar and on the worksheet tab.

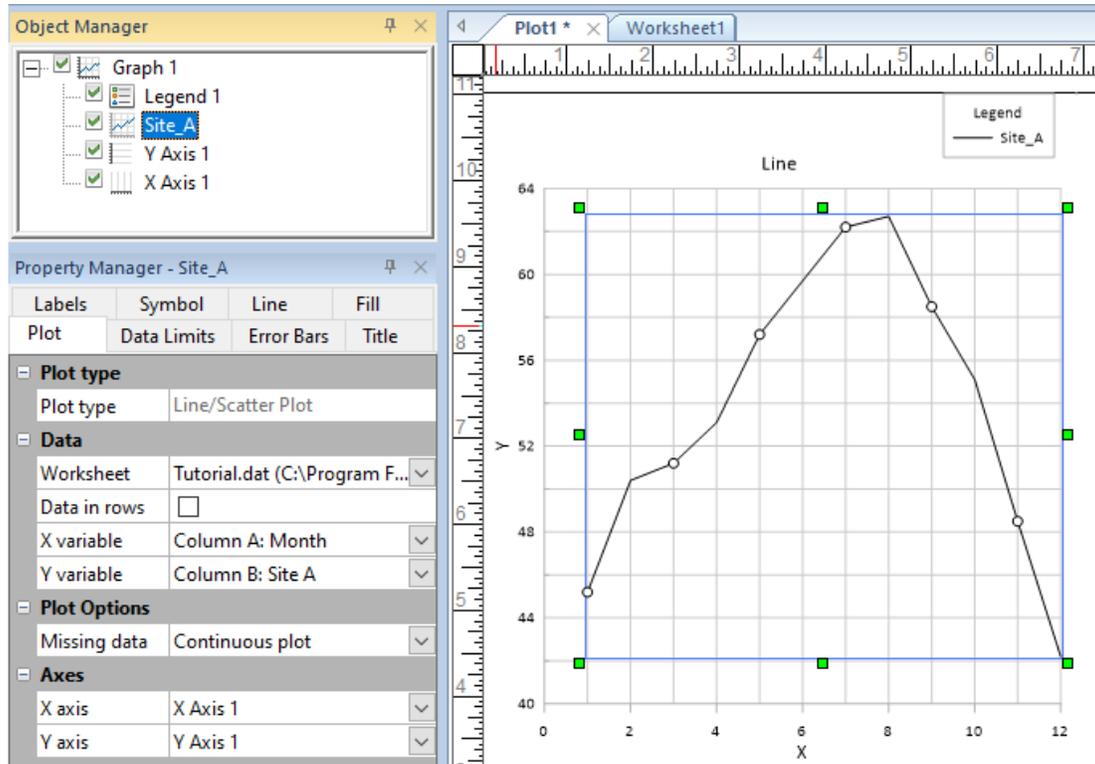
Lesson 2 - Creating a Graph

You can create graphs in several ways in **Grapher**. Graphs can be created with the graph wizard, from the **Home | New Graph** commands, from the worksheet, and from templates. We will use the most common method for the tutorial, creating a graph through the **Home** tab **New Graph** group. We will create a line/scatter plot from an existing data set.

To create a line plot graph:

1. If the worksheet window is still open, click the *Plot1* tab. Alternatively, you can create a new plot window by clicking the **File | New | Plot** command.
2. Click the [Home | New Graph | Line/Scatter | Line Plot](#) command.
3. In the **Open Worksheet** dialog, select the *Tutorial.xlsx* file you saved in Lesson 1. You can select the file in the file list section or in the *Open worksheets* section at the bottom of the dialog. You can open the *Tutorial.dat* sample file if you did not complete Lesson 1.
4. Once the file is selected, click the *Open* button.

A line plot is created using the default properties. By default, **Grapher** uses the first two columns containing numeric or date/time data in the data file. In this example, the X values are in column A and the Y values are in column B. Depending on how you have **Grapher** configured, you will see the line plot window, the **Object Manager**, and the **Property Manager**. Those two windows are described in more detail throughout the tutorial.



The line plot is created with the default settings.

Changing the Line/Scatter Plot Properties

You can edit any of the plot properties after the graph has been created. You can edit the columns used to create the plot, the plot line color, the symbol display, and label display, add fill to the plot, or change just about anything you see on the plot.

Every object in a plot has its own set of properties. For example, each axis, legend, and the main plot itself have specific properties that you can define to change dozens of aspects of the plot. The **Property Manager** contains all of the properties for the selected object on multiple tabs (or pages). A line/scatter plot contains Plot, Data Limits, Error Bars, Title, Labels, Symbol, Line, and Fill property tabs. Click the tab name to open the property page. You may need to click on the  or  buttons next to the section names to access the properties, as discussed in the Property Manager help topic.

To change the style of the line in the plot:

1. Select the plot by clicking *Site_A* in the **Object Manager**.
2. In the **Property Manager**, select the Line page.
3. Set *Style* to *.1 in. Dash*.
4. In the *Plot Line Properties* section, set the *Width* to *0.03 in (0.08 cm)*.

Adding a New Plot

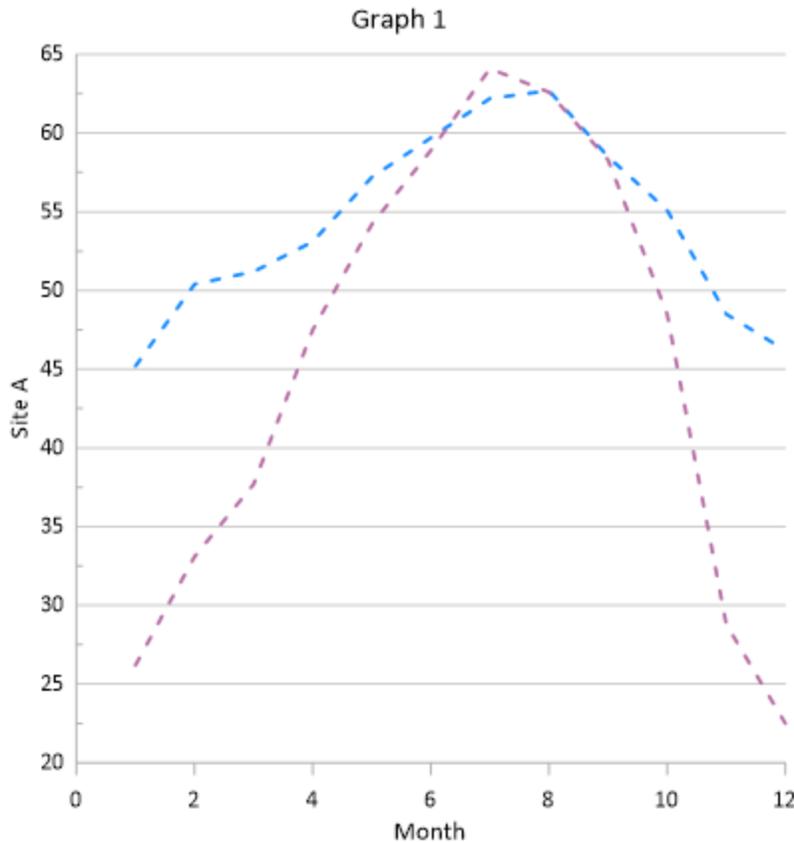
You can add several plots to one graph in **Grapher**. In *Tutorial.xlsx*, columns B through I are additional Y data, making it simple to add additional plots to the graph. To add a plot to the graph:

1. Click *Site_A* in the Object Manager to select the existing line plot.
2. Click the **Plot** tab in the **Property Manager**.
3. In the *Add to Graph* section, click *Create* next to the *New plot* field to add a new plot to the graph.

Clicking the *Create* button creates a new line/scatter plot using the same worksheet as the original plot. The same axes and plot properties are also used for the new plot, the plot color is automatically changed. The *X column* stays the same and the *Y column* increments to the next column with data. The new plot is selected after the command is executed. The **Property Manager** title changes to **Property Manager - Site_B** and the *Y variable* changes to *Column C: Site B*.

The *New plot* feature in the **Plot** page only creates plots from the original plot's data file. In addition, not all plot types have this option. When many plot types are selected, the **Graphs | Add to Graph** commands are available. These allow additional axes, duplicate axes, plots from a different data file, legends,

summation plots, and magnifiers to be added to the selected graph. For additional information on this command, see Plot - Add to Graph. The Graph Wizard can also be used to quickly create a graph with multiple plots from a single data file.



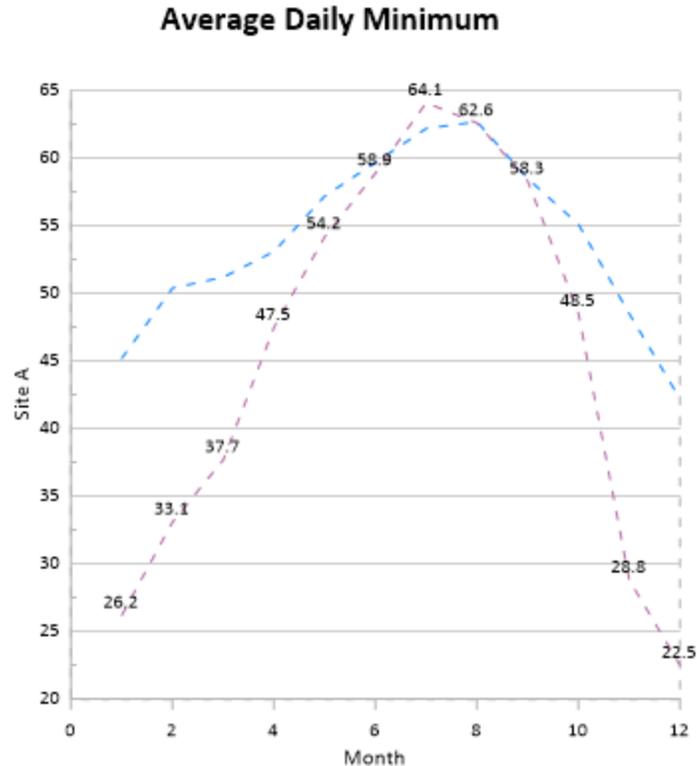
The second line plot is added to the graph using the same axes and properties as the first plot.

Displaying Plot Labels

Labels can be displayed at any data point on the plot. Labels can come from the X or Y data columns or from any other data column in the worksheet. To display labels for the data points:

1. Click *Site_B* in the Object Manager to select the plot.
2. In the Property Manager, click on the **Labels** tab to display the plot labels properties.
3. In the *Label variable* property, select *Column C: Site B* from the list.

The Y data values from column B are shown as data point labels on the plot.



Add plot labels to show values or distinguish between data points.

Moving Labels

Grapher allows you to manually move labels that are displayed for plots and axes with the **Move Labels** command. You can also move axis and graph titles and legend entries with the **Move Labels** command. To move the plot labels:

1. Click *Site_B* in the Object Manager to select the plot.
2. Click the Graph Tools | Plot Tools | Move Labels command. The **Move Labels** command remains highlighted to indicate **Move Labels** mode is active. The first label will appear with a box around it, .
3. Click on the label, hold down the left mouse button, and drag the label to the desired location. Alternatively, press the ARROW keys on the keyboard to move the label a small amount.
4. When you are finished moving this label, click on another label to move it. Repeat the clicking on labels and moving until all labels are in the desired location.
5. When finished, press the ESC key on the keyboard or click the **Graph Tools | Plot Tools | Move Labels** command again to end moving labels mode.

To return the labels to their original positions, you can use the Graph Tools | Plot Tools | Reset Positions command. Labels can be automatically moved to reduce overlap with the Disperse Labels command.

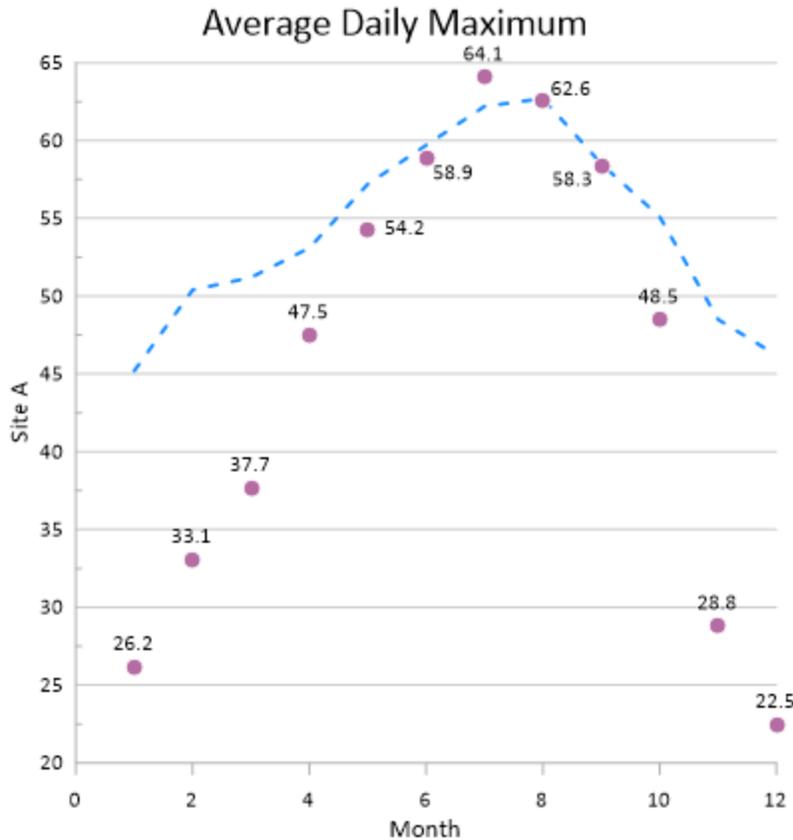
Adding a Graph Title

Graph properties control settings that affect the entire graph, such as titles, background line and fill colors, and fill patterns that fill between multiple plots. Let's edit the graph title and add a fill between the plots in the graph.

To add a graph title:

1. Click on the *Graph 1* object in the **Object Manager** to select the entire graph.
2. Click on the **Title** tab in the **Property Manager**.
3. In the *Text* property field, delete *Graph 1* and type the graph title, *Average Daily Maximum*.
4. Click the  button next to *Font* to open the section, if necessary.
5. Highlight the current *Size (points)* value and change it to 24.

The *Text* and *Font* properties can be used to quickly add and modify a simple text title. The **Text Editor** can be used to add multiple lines and various fonts, sizes, and colors to the title.



Add a graph title to display additional information about the graph.

Adding a Fill Between Plots

Adding a fill between the two plots will help indicate the difference in values for the plots. Color gradients and/or transparency can be used to enhance the appearance of the fill.

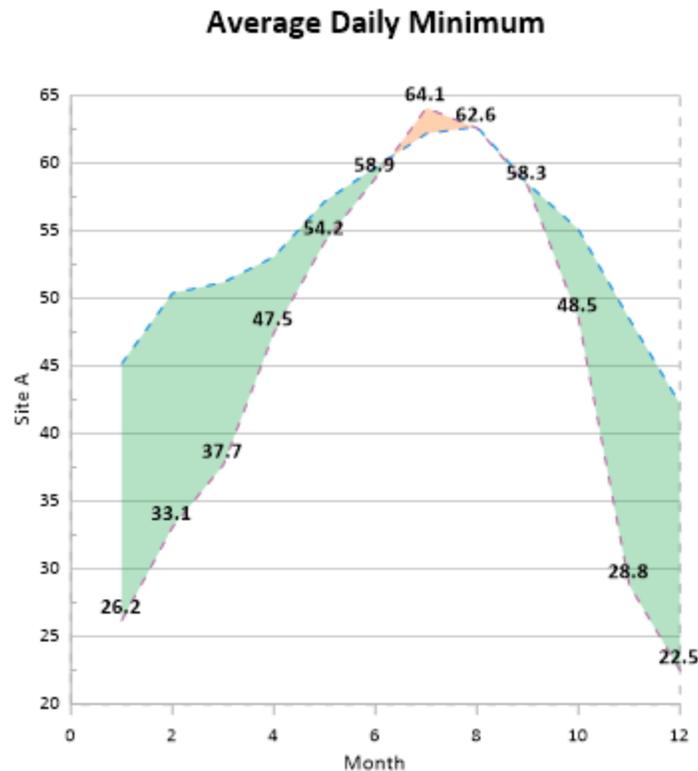
Sometimes, when we add an advanced or complex feature to **Grapher**, we create one or more Knowledge Base articles. To help you become acquainted with our KBs, try to use this article to learn how to add fill colors [Assigning Different Fill Colors Above and Below Intersecting Plots In Grapher](#).

You can also use these steps to add fill between the plots:

1. Click *Graph 1* in the **Object Manager** to select the graph.
2. Click the **Fill** tab in the **Property Manager**.
3. In the *Between Plots Fill Properties* section, click *Add* in the *Add fill* field. The *Fills* list will be updated with *Fill 1*.
4. Set the *Plot 1* property to *Site_A*.
5. Set the *Plot 2* property to *Site_B*.

6. In the Fill style (Plot 1 > Plot 2) section, select a *Solid Pattern* and a *Grass Green Foreground color* for the fill where Plot 1 is greater than Plot 2.
7. In the Fill style (Plot 2 > Plot 1) section, select a *Solid Pattern* and an *Orange Foreground color* for the fill where Plot 2 is greater than Plot 1.
8. Type *30* in the *Foreground opacity* property for each plot to set the opacity to 30%.

A semi-transparent green fill has been added between the Site_A line plot and Site_B scatter plot.



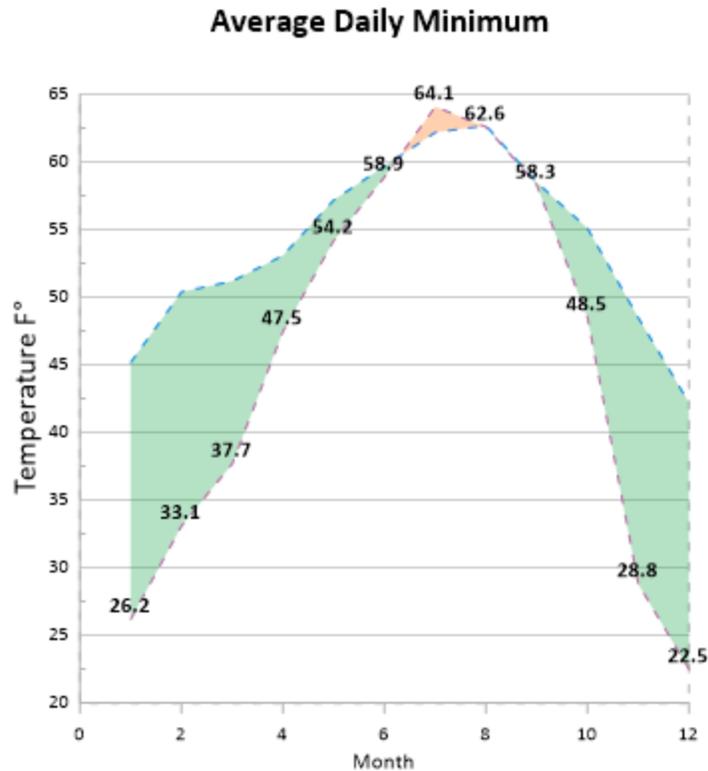
The fill between plots highlights the difference in values.

Lesson 3 - Editing Axes

Grapher's axes can be modified to fit any design needs. The axis scale, axis length, tick mark spacing, tick mark labels, axis titles, colors, etc. can all be customized. Once the axis is selected, all of the axis properties are displayed in the Property Manager. Standard axes have Axis, Break Axis, Ticks, Labels, Link Axis, and Line tabs. The axis title options are on the **Axis** tab. By default, the axis title is linked to the first row in the data file. In this example, we will change the Y axis title.

1. Click *Y Axis 1* in the **Object Manager** to select the Y axis.
2. Click the **Axis** tab in the **Property Manager** to edit the axis properties.
3. In the *Title* section, click the  button in the *Text* field. The Text Editor opens.
4. In the **Text Editor** dialog, highlight and delete the current linked text, <<@B1>>.
5. Type the word *Temperature (F)*.
6. Click in the space just before the *F* and click the  button.
7. In the **Symbol Properties** dialog, change the *Symbol Set* to *Calibri* and select the degree symbol, *Number 144*. Click *OK* to return to the **Text Editor**. Alternatively, you can click in the space before the *F* and press and hold the ALT key while typing the number *0176*. This will also insert the symbol, without opening the **Symbol Properties** dialog. This is a good method to use when inserting Unicode or international characters in any text box.
8. Next, let's change the properties of the axis title. In the **Text Editor**, click and drag to highlight the text *Temperature (° F)*.
9. Highlight the current font size and type *18*, to make the font 18 points. The font size is located to the right of the font name in the upper left corner of the dialog. Only the highlighted text changes size, so be sure to select all of the text.
10. Click *OK* to close the **Text Editor** and save the changes to the axis title.

The text *Temperature (°F)* now appears along the Y axis.



Add axis titles by selecting the axis and then adding the Text in the **Axis** page of the **Property Manager**.

Changing the Tick Mark Spacing

Tick marks are a means of indicating units of measure and are typically equally spaced like the lines on a ruler. Tick marks are the lines that emerge perpendicularly from an axis. Normally, the major tick marks are longer and the minor tick marks are shorter and appear between the major tick marks. For example, in the tutorial graph the major tick mark spacing on the Y axis is five units, e.g., 40, 45, 50, etc. In addition, there is a single unlabeled minor tick mark between each set of major tick marks. In the following exercise, the tick spacing is changed to one for the X axis. To change the tick mark spacing:

1. Click on the *X Axis 1* in the Object Manager to select it.
2. In the Property Manager, click the **Ticks** tab to open the tick mark properties.
3. Click the next to *Major Ticks*, if necessary.
4. Change the *Spacing* from 2 to 1. To change the *Spacing*, highlight the existing number 2, type the new number 1, and press ENTER on your keyboard. The word *Auto* is automatically replaced with the word *Custom*, indicating a custom spacing value.

5. Click the next to *Minor Ticks*, if necessary. If either the *Show ticks on top* or *Show ticks on bottom* options are selected in the *Minor Ticks* section, clear the check boxes.

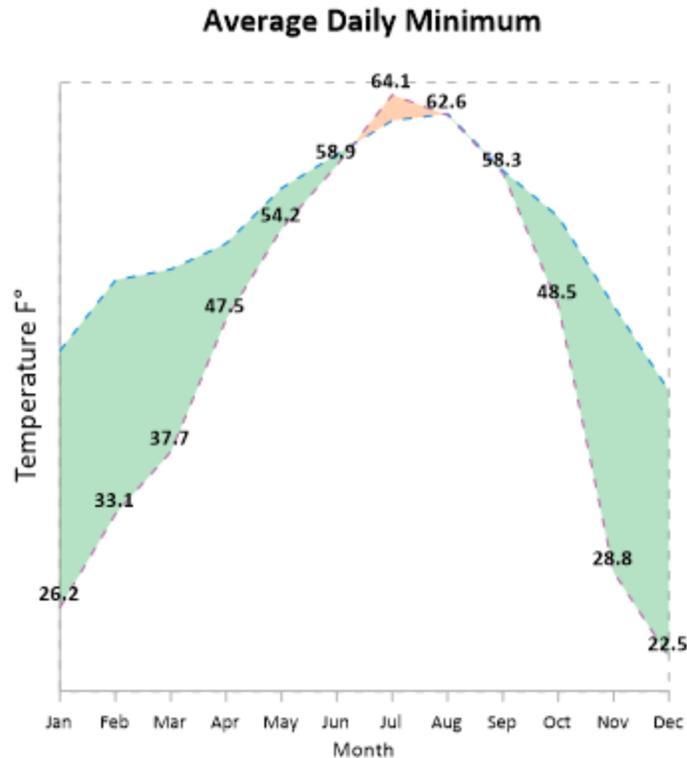
Now the major tick marks spacing is 1, and no minor tick marks are displayed.

Changing the Tick Labels

Tick labels can be displayed using different label sources including *Automatic*, *Date/Time*, and *From worksheet*. Automatic labels are the default, however there may be situations where either using either a number to represent date/-time values or labels directly from a worksheet source may be useful. For this tutorial, we will change the X Axis labels to use a data column from the worksheet where we have tick label names specified. To change the tick labels source:

1. Click on the *X Axis 1* in the Object Manager to select it.
2. In the Property Manager, click on the **Labels** tab to open the tick label properties.
3. Click the word *Automatic* next to the *Label source* option and select *From worksheet* in the list. This displays the *Worksheet* properties in the **Labels** page.
4. Next to *Worksheet*, click the word *None* to display a list of open worksheets and the *Browse* option. The *Browse* option would be used to select a worksheet that is not already open. In this tutorial, the worksheet we want to use is already open. Select the *Tutorial.xlsx* file from the list (or *Tutorial.dat* if you are using the sample file).
5. Next to the *Data variable* property, click the current column and select *Column A: Month*.
6. Next to the *Label variable* property, click the current column and select *Column J: Month Name*.

The graph updates with the worksheet labels defined by the text in Column J of the worksheet.



You can customize tick labels to display values from a column in the worksheet.

If the axis labels or the axis title overlap or need to be moved slightly, the Graph Tools | Plot Tools | Move Labels command can be used to move the axis labels just as the plot labels were moved earlier in the tutorial.

Adding a Secondary Linked Axis

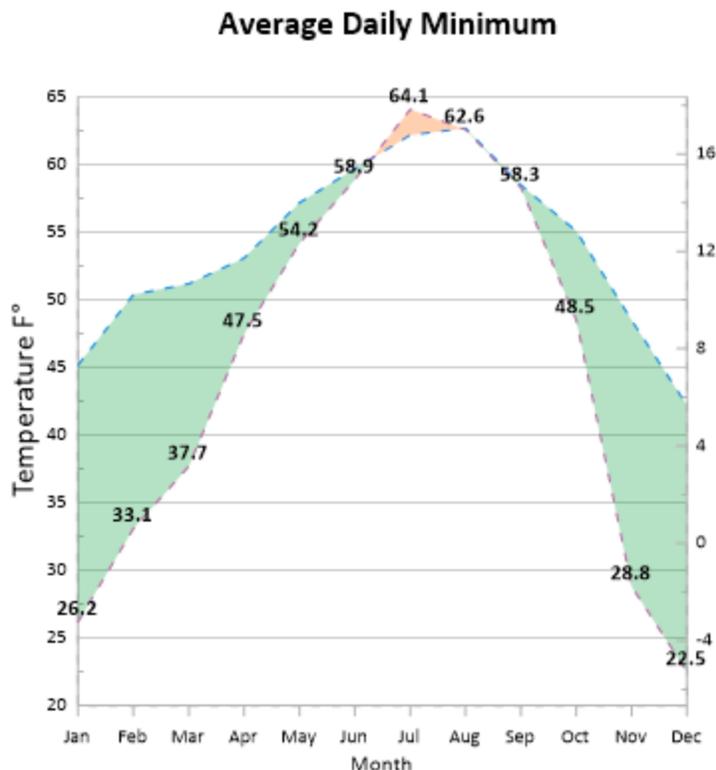
Secondary axes are used to display different scales on the graph. In this example we will add a second Y axis to display temperature in degrees Celsius.

To add a linked axis:

1. Click on the *Graph 1* object in the Object Manager.
2. Click the Graph Tools | Add to Graph | Axis | Y Axis command to add a second Y axis.
3. In the Position Y Axis 2 dialog, check the *Flip tick marks and labels* check box.
4. Click *OK*.
5. Click the Link Axis tab in the Property Manager to link the new axis.
6. In the *Link axis* field, click *X Axis 1* and select *Y Axis 1* from the list.
7. Check the *Link limits* check box.

8. In the *Limits* $Y = F(X) =$ field, highlight the current text, type $(X-32)*5/9$, and press ENTER. The axis limits automatically update to apply the equation to the dependent axis limits. X in the equation refers to the controlling axis. So, the values have 32 subtracted from them and then they are multiplied by 5/9 to convert Fahrenheit values to Celsius values for the new dependent axis.
9. We also want the axis to stay located in the same relative position when the graph moves. Check the boxes next to *Link X position* and *Link Y position*. Now, when any portion of the graph is moved, the axis will also move.
10. Click the **Line** tab to open the *Y Axis 2* line properties.
11. In the *Grid Line Properties* section, clear the *Major tick grid line* option to remove the *Y Axis 2* grid lines.
12. Click the **Ticks** tab to open the *Y Axis 2* tick mark properties.
13. In the *Major Ticks* section, select the *Show ticks on left* option.

Now the secondary Y axis is displayed to the right of the graph with a degrees Celsius scale. When the graph is moved or the axis limits change, the *Y Axis 2* automatically updates to stay in the same relative location and the same relative axis limits as *Y Axis 1*. Use the processes from the previous lessons to add an axis title, change the tick mark spacing, and move any overlapping labels if you desire.



Add multiple axes to display alternate scales on the graph.

Lesson 4 - Adding and Editing a Legend

Legends provide information for interpreting a graph. You can add a legend for most plot types. Typically, legends are linked to the graph so that any changes made to the graph are automatically updated in the legend. The legend features, such as font and legend placement, can be customized.

To add a legend:

1. Select the entire graph or select any part of the graph by clicking on an object in the graph, such as *Y Axis 1* or *Site_B*.
2. Click the Graph Tools | Add to Graph | Legend command. A legend with similar to the image below will appear with default values.



3. Drag the legend to any position you want.

Changing the Number of Symbols

The number of symbols in a legend can be set from zero to three. To change the number of symbols:

1. Click on *Legend 1* in the **Object Manager** to select the legend.
2. In the Property Manager, click on the **Legend** tab to open the legend properties.
3. Click the number 2 next to the **Number of symbols** option and select 1 from the list. The legend is updated to display only one symbol.

Changing the Symbol Size

By default, legend symbols are the same type and size as the symbols in the plot. You can change the size of a legend symbol in the **Legend** properties.

To change the legend symbol size to a custom value:

1. Click on *Legend 1* in the **Object Manager** to select the legend.
2. In the **Property Manager**, click on the **Entries** tab.
3. Select *Site_A* in the *Entry* property in the **Individual Entries** section.
4. Use the controls in the *Sample size* property to set the symbol size to 0.3 inches.

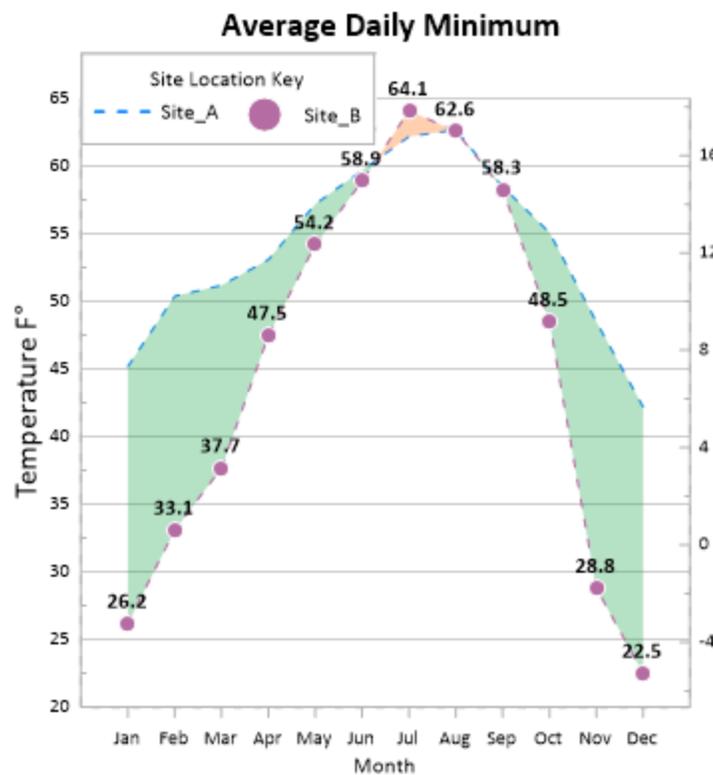
The symbol size for Site A in the legend is now 0.3 inches, i.e. slightly larger than the symbols in the plot.

Note: To change the type of symbol in the legend, you must also change the symbol in the plot by clicking on *Site_A* in the **Object Manager** and then clicking on the **Symbol** property tab. You can change the symbol type, fill, etc., in those properties.

Creating Multiple Columns in the Legend

Longer legends may need to be split into multiple columns to make the best use of the page space. To separate a legend into multiple columns:

1. Click on *Legend 1* in the **Object Manager** to select the legend.
2. In the **Property Manager**, click the **Legend** tab.
3. Highlight the value next to the *Number of columns* option. Type the value 2, and press ENTER on the keyboard. The legend is updated to show the two columns.



All properties of the legend can be modified.

Lesson 5 - Working with the Script Recorder

Scripter is Golden Software's automation program. You may record your actions in **Grapher** with the **Script Recorder** rather than writing the scripts manually in **Scripter**. See the *Script Manager, Introducing Scripter, and Script Recorder* help topics for more information about automation. The *Grapher Automation* book in the table of contents contains all of the help topics related to automation.

The **Script Recorder** can be used for many tasks. We will provide one scenario to demonstrate the **Script Recorder**. For example, let's say that you receive a data file once a quarter. The file has the same file name each quarter and the same number of columns, but the information contained in the file updates each time. Each quarter you need to create the graphs and then export the graph for reports. You can automate this process with the **Script Recorder** to save time and increase efficiency.

The graph in this example is fairly simple for time's sake, but keep in mind that complex graphs are very well suited to automation. We will record the process of creating a graph, changing some features of a graph, and adding a fit curve. The creation of this graph uses the features included in the previous lessons and includes a few new items. If you do not understand part of the directions, review the material in the previous lessons or consult the online help.

The Script Manager can be used to view scripts as they record.

1. Select the **View | Display | Script Manager** option to display the **Script Manager**.

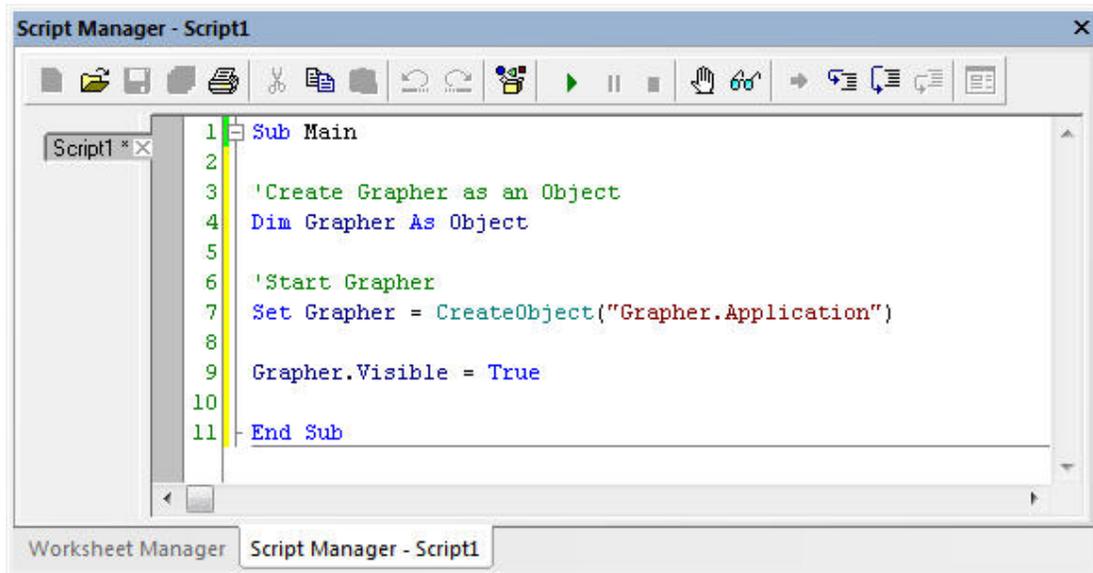
A check mark is displayed next to visible managers. By default, the **Script Manager** is located at the right of the **Grapher** window, tabbed with the **Worksheet Manager**. Click the **Script Manager** tab to view the **Script Manager**. Right-click in the **Script Manager** to access the menu commands.

Start Recording

The **Automation** tab is used to start and stop recording scripts. Help for **Grapher** automation and Basic Language help information can also be accessed on the **Automation** tab.

To start recording, Click the **Automation | Scripts | Record** command.

The **Record** button changes to **Stop Recording** to indicate that the script is recording. Information appears in the **Script Manager** as soon as recording begins. This code starts **Grapher** when the script is run later. Every action taken will be recorded in the script manager, until the recording is stopped.



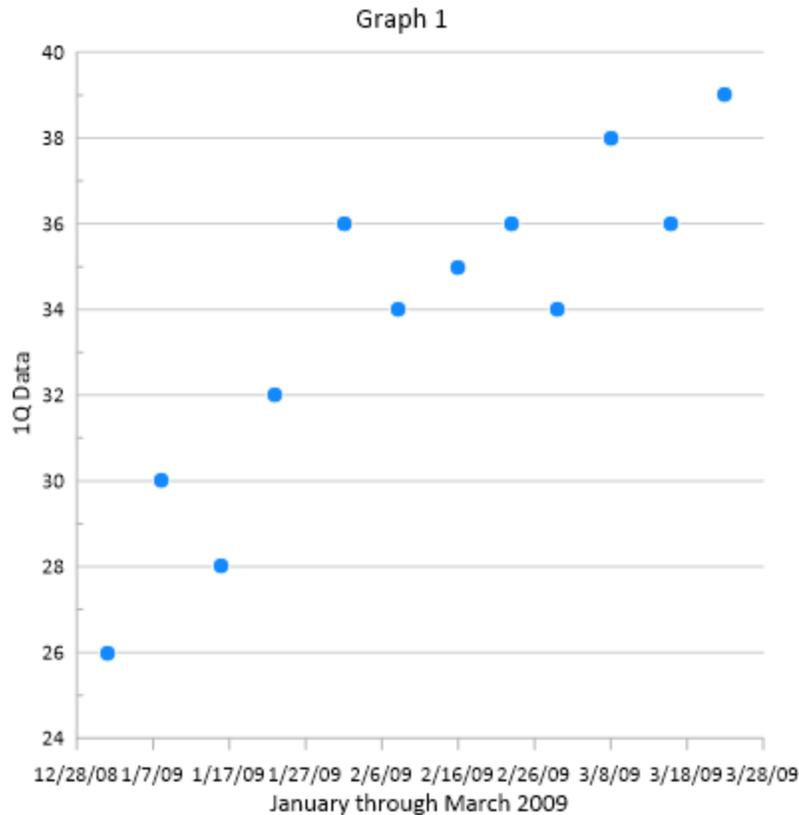
Code is immediately added to the **Script Manager** when script recording begins. This information starts **Grapher** when the script is run later. The text in green with an apostrophe prefix are comments.

Creating a Scatter Plot

To create a line plot in a new plot window:

1. Click the [File | New | Plot](#) command.
2. Click the **Home | New Graph | Line/Scatter | Scatter Plot** command.
3. The **Open Worksheet** dialog appears. Browse to **Grapher's** Samples folder. The location of this folder varies depending on where the software was installed. If the software was installed in the default folder, the path is C:\Program Files\Golden Software\Grapher\Samples.
4. Select the *tutorial script recorder.xls* file.
5. Click *Open* to create the default graph and scatter plot.

A scatter plot is created with the first two available columns using the default properties. **Grapher** can create graphs from data containing date/time information. In this example, column A contains dates, so dates are plotted on the X axis.



The graph is created with the default properties.

Changing the X Axis Date/Time Tick Mark Spacing

Tick marks can be spaced at any desired interval. Tick marks can be changed to show one tick mark every X number of units or can be based on date/time units, such as minutes, days, months, or years. To set the tick marks to display one tick and label per month:

1. Click on the *X Axis 1* in the **Object Manager** to select it.
2. In the **Property Manager**, click on the **Ticks** tab to display the tick mark properties.
3. Click the \oplus to the left of the *Major Ticks* section to expand the major tick options, if necessary.
4. Check the box next to the *Use date/time spacing* option in the *Major Ticks* section.
5. Next to *Date/time spacing*, click *Every Year* to open the **Date/Time Spacing** dialog.
6. Change *Year* to *Month* and click *OK*.

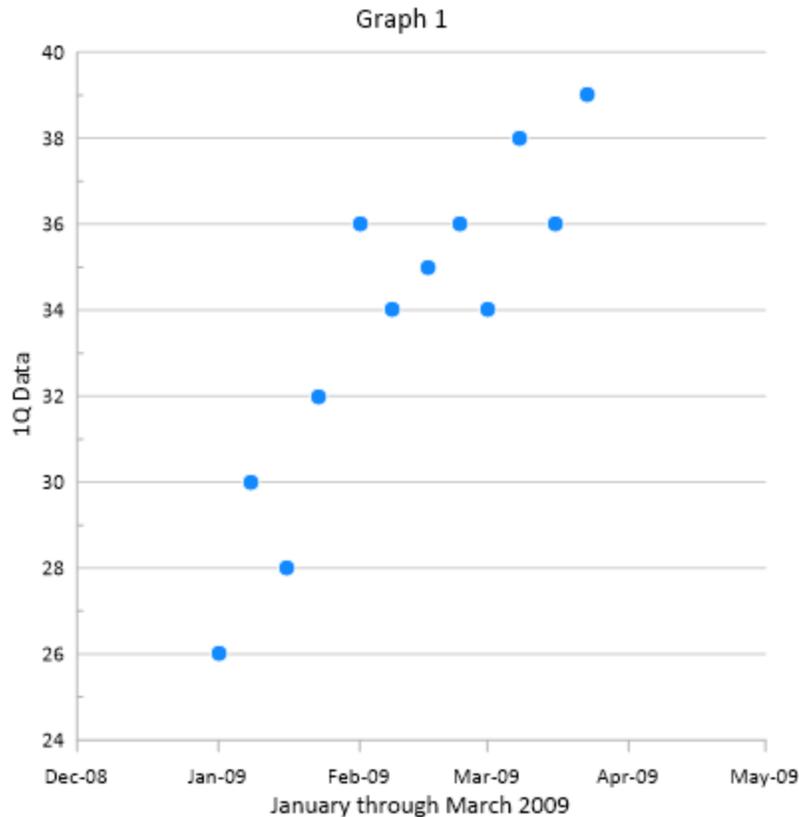
The X Axis major tick marks are now displayed at 1/1/09, 2/1/09, 3/1/09, and 4/1/09.

Changing the X Axis Date/Time Tick Label Format

There are a variety of tick label formatting options available. One of the options is to change the display of the date/time labels. There are many different pre-defined date/time labels available or you can create your own custom label format. To change the major label format from M/d/yy (1/1/2009) to MMM-yy (Jan-09):

1. Click on the *X Axis 1* in the **Object Manager** to select it.
2. In the **Property Manager**, click on the **Labels** tab to display the tick label properties.
3. Click the  to the left of the *General* section to expand the major label options, if necessary.
4. Click the *Select* button next to *Major label date/time format* to open the **Date/Time Format Builder** dialog.
5. Type MMM-yy in the *Date/Time format (edit to change)* field.
6. Click *OK*.

The X Axis tick labels are displayed in the *MMM-yy* format. The month abbreviations are determined by your PC's default language setting. You can force a specific language for date/time labels by adding a language identifier before the date/time format.



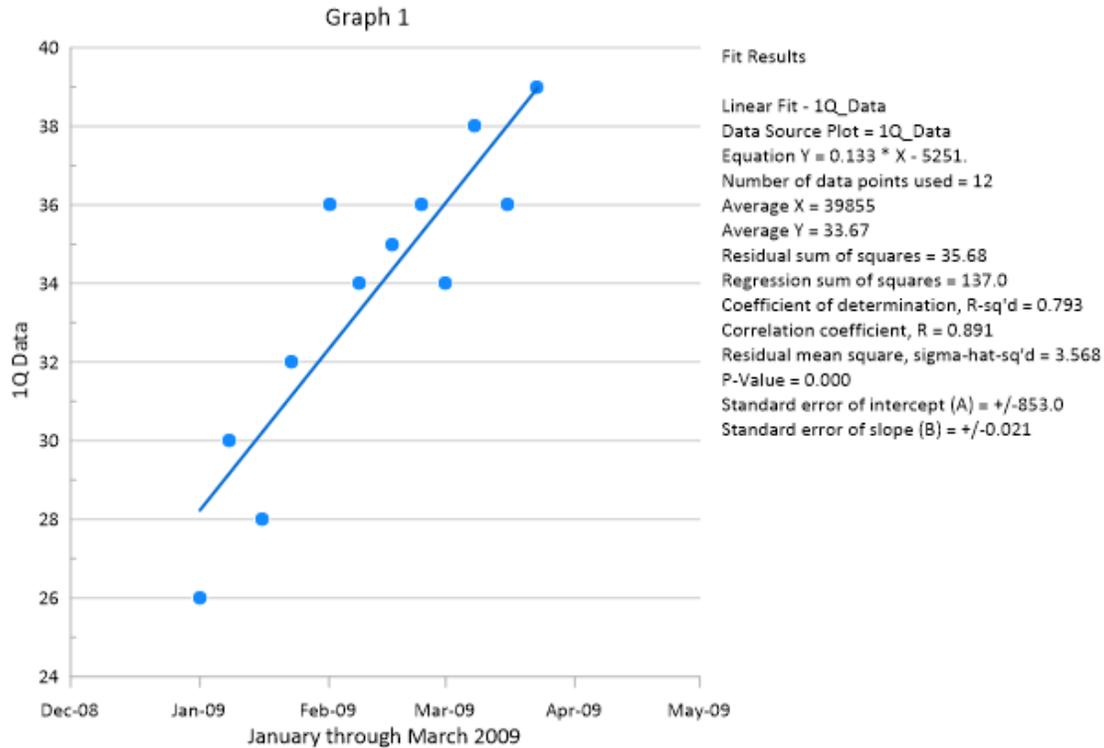
The X Axis date/ time labels can be formatted with a predefined or custom format.

Adding a Fit Curve

Grapher includes many predefined fit curves as well as a tool for creating custom fit curves. XY and histogram data can be fitted, and statistical information can be displayed for the fit curves in the plot or in a report. To add a fit curve,

1. Click *1Q_Data* in the **Object Manager** to select the scatter plot.
2. Click the Graph Tools | Add to Graph | Fit Curve command. A linear fit is added by default.
3. Click *Linear Fit - 1Q_Data* in the **Object Manager** select the fit curve.
4. Click the **Plot** tab in the **Property Manager** to display the fit curve properties.
5. Set the *Significant digits* property to 4.
6. Click *Insert* next to the *Insert into plot document* field to add a table of fit statistics to the plot window. The cursor changes to a cross-hair to indicate draw mode.
7. Click the position in the plot window where you want to add the fit statistics.

Now a linear fit curve and various fit statistics are displayed in the plot window.



Adding fit curves helps explore and understand possible relationships in the data.

Stopping and Saving the Script

Now that the graph has been created, it is time to stop recording and save the script. To stop and save the script:

1. Click the Automation | Scripts | Stop Recording command. The **Save As** dialog appears.
2. Select a save location, such as your *Documents* folder, in the **Save As** dialog.
3. Type *tutorial script recorder* into the *File name* box.
4. Click the *Save* button.
5. Right-click in the **Script Manager** and select **File | Close** to close the script in the **Script Manager**.

The recording is stopped and the *tutorial script recorder.bas* is saved for future use.

Printing the Online Help

The online help topics may be printed. You can print a single topic, a book or section of the Table of Contents.

To print one help topic, click the topic you wish to print and click the *Print* button. If the **Contents** page is open in the help navigation pane, the **Print Topics** dialog appears. Select *Print the selected topic* and click *OK*.

To print one help book, click the **Contents** tab in the help window navigation pane. Click the book you want to print, for example click the *Tutorial* book. Click the *Print* button, and the **Print Topics** dialog appears. Select *Print the selected heading and all subtopics* and click *OK*.

Getting Help

Within **Grapher**, the online help file is opened by clicking the **Home | Help | Contents** command, the **Home | Help | Tutorial** command, the **Automation | Help | Grapher Automation Help** command, or the  button in the upper right corner of the program. You can also quickly search the help by typing a term in the command and help search above the ribbon and clicking *Search help file* in the results list. Alternatively, press F1 at any time to open the help file.

Internet Help Resources

There are several Internet help resources.

- Click the **File | Feedback** commands to send a problem report, suggestion, or information request by email.
- Use the **File | Online** commands to access additional help, including the Golden Software home page, Grapher product page, and the Knowledge base.
- Search our website at www.goldensoftware.com to find [upcoming webinars](#), watch [training videos](#), read the [Golden Software Blog](#), and download the latest **GrapherQuick Start Guide**.
- The **Grapher** help can be viewed in a browser window by navigating to grapherhelp.goldensoftware.com.

Technical Support

Our technical support staff is trained to help you find answers to your questions quickly and accurately. We are happy to answer any of your questions about any of our products, both before and after your purchase. We also welcome suggestions for improvements to our software and encourage you to contact us with any ideas you may have for adding new features and capabilities to our programs.

For customers who have an active subscription or active software maintenance, we offer priority support via Zoom, phone, live chat, and email. To access the **Grapher** general support page and live chat, click the following link: [Grapher support](#).

When contacting us with your question, please have the following information available:

- Your **Grapher** product key, found in the **File | License Info** dialog or in the email received with the download directions
- Your support code (see [Where can I find my support code?](#) for more information)
- Your **Grapher** version number, found in **File | About Grapher**
- The operating system you are using (Windows 10, 11 or higher)
- The steps you took prior to experiencing your problem
- The exact wording of the first error message (if any) that appeared

If you cannot find the answer to your question in the help or the [knowledge base](#), please do not hesitate to contact us:

Email: GrapherSupport@GoldenSoftware.com

Web: www.GoldenSoftware.com

Phone: 303-279-1021

Mail: Golden Software, LLC, PO BOX 281, Golden, Colorado, 80402-0281, USA

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