

Excel: Charting



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Abstract: *Excel: Charting* is a workshop for students who want to learn how to use Excel to create and edit charts, modify chart options, and format chart objects, as well as use trendlines, forecasts, and error bars to present data graphically.

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Introduction

A *chart* is a graphic representation of worksheet data that can offer visual analysis of information. Excel offers a variety of different charts. Some chart types are set with a two-dimensional (2-D) perspective, while other chart types are set with a three-dimensional (3-D) perspective. There are a number of built-in formats for each chart type and custom formatting is available to create exactly the chart desired. A chart may be created on an existing worksheet, a separate worksheet, or in a different document altogether. A chart created within an existing worksheet that includes the charted data is referred to as an *embedded chart*; it is saved as part of the worksheet. A chart that is created on a separate worksheet is known as a *chart sheet*. Both types of charts are linked to the source worksheet and are updated when the source data is edited. Charts can also be embedded into other Microsoft Office applications, like Word or PowerPoint.

Objectives

- Create and edit charts
- Modify chart options
- Format chart objects
- Apply trendlines and error bars

Prerequisites

Excel: Introduction or equivalent knowledge.

Related Training Available from Instructional Services

All workshops offered by Instructional Services are free to KU students, staff, faculty, and [approved affiliates](#).

To learn more about or register for workshops, receive automatic announcements of upcoming workshops, and track workshops you've registered for and have attended, visit www.lib.ku.edu/instruction/workshops. For further workshop related questions, please email training@ku.edu.

Definitions

Term	Definition
Cell Range	A series of selected or related cells.
Axis	A line that borders one side of the <i>plot area</i> , providing a frame of reference for measurement or comparison in a chart. For most charts, data values are plotted along the value axis, which is usually vertical (the y-axis), and categories are plotted along the category axis, which is usually horizontal (the x-axis).

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Term	Definition
Gridlines	Lines that you can add to a chart to make it easier to view and evaluate data. Gridlines extend from the <i>tick marks</i> on an <i>axis</i> across the <i>plot area</i> .
Data Label	A label that provides additional information about a <i>data marker</i> , which represents a single data point or value that originates from a worksheet cell. Data labels can be applied to a single data marker, an entire <i>data series</i> , or all data markers in a chart. Depending on the chart type, data labels can show values, names of data series or categories, percentages, or a combination of these.
Data Series	A group of related data points that are plotted in a chart. Each data series in a chart has a unique color or pattern and is represented in the chart <i>legend</i> . You can plot one or more data series in a chart. Pie charts have only one data series.
Data Marker	A bar, area, dot, slice, or other symbol in a chart that represents a single data point or value that originates from a worksheet cell. Related data markers in a chart constitute a <i>data series</i> .
Plot Area	In a 2-D chart, the area that's bounded by the <i>axes</i> and includes all <i>data series</i> . In a 3-D chart, the area that's bounded by the <i>axes</i> and includes the data series, category names, <i>tick-mark</i> labels, and axis titles.
Legend	A box that identifies the patterns or colors that are assigned to the <i>data series</i> or categories in a chart.
Trendline	A graphical representation of the trend, or direction, of data in a series. Trendlines are used for the study of problems of prediction, also called regression analysis. You can add trendlines to <i>data series</i> in unstacked 2-D area, bar, column, line, stock, xy (scatter), and bubble charts.
Error Bars	Graphic bars that express potential error (or degree of uncertainty) relative to each <i>data marker</i> in a series. You can add y error bars to <i>data series</i> in 2-D area, bar, column, line, xy (scatter), and bubble charts. Bubble and xy charts can also display x error bars. You can select error bars and format them as a group.
Data Table	A grid that can be added to some charts and contains the numeric data used to create the chart. The data table usually is attached to the category <i>axis</i> of the chart and replaces the <i>tick-mark</i> labels on the category axis.
Tick Marks	Tick marks are small lines of measurement, similar to divisions on a ruler, that intersect an <i>axis</i> . Tick-mark labels identify the categories, values, or series in the chart. Tick-mark labels come from the cells on the worksheet used to create the chart.

Creating a Chart

Using the Chart Wizard

Excel's Chart Wizard leads you through the steps for creating a chart. There are four main dialog boxes the Chart Wizard presents to you during the process. Once the chart is created, you can access any one of the dialog boxes to edit the chart.

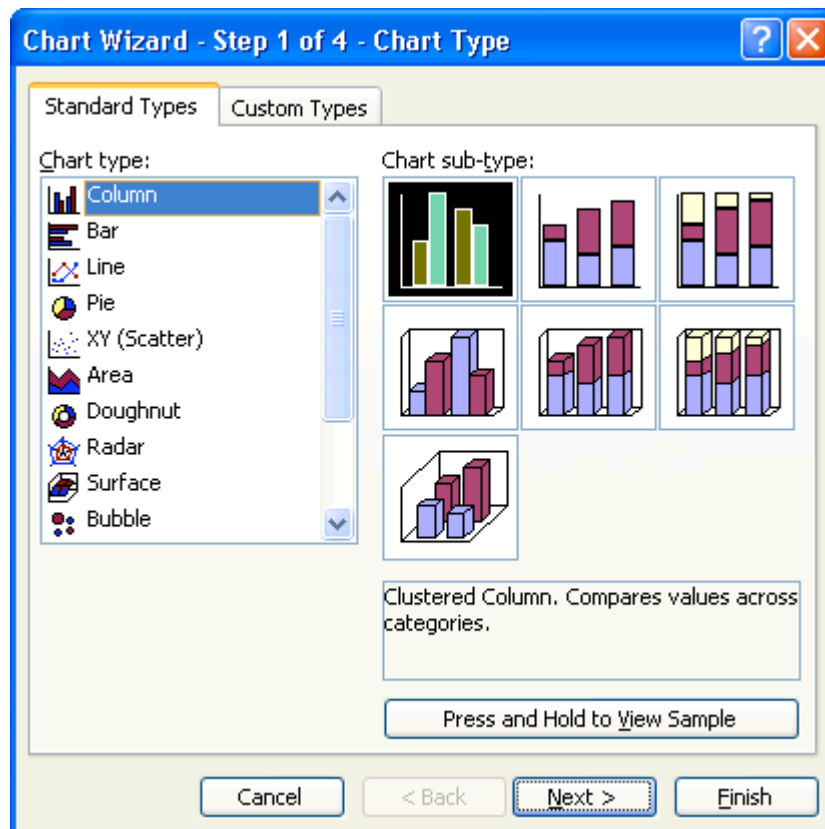
To create a chart using the Chart Wizard, use the following steps:

1. Click and drag across the cells that contain the data you want to chart. The cell selection can include any data labels that you want to display on the chart.
2. Click the **Chart Wizard** button on the **Standard** toolbar:



Chart Wizard Button

Excel displays the **Chart Type** dialog box:

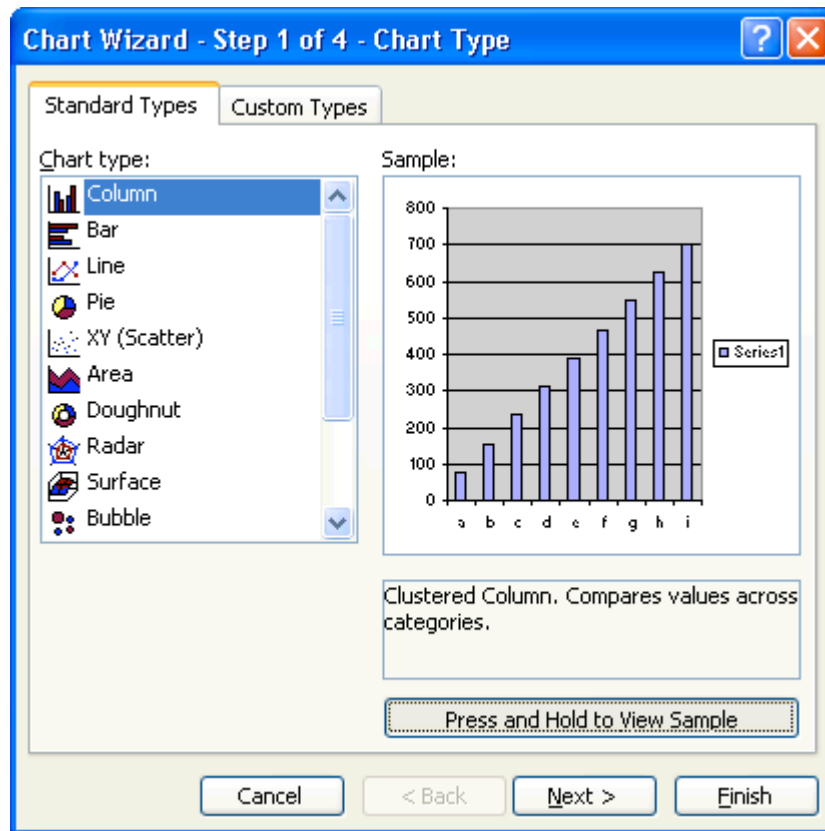


3. In the **Chart type** list, click the chart type you want.
4. Under **Chart sub-type**, click the chart sub-type you want.

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5. Click **Press and Hold to View Sample** to see a preview of your chart:



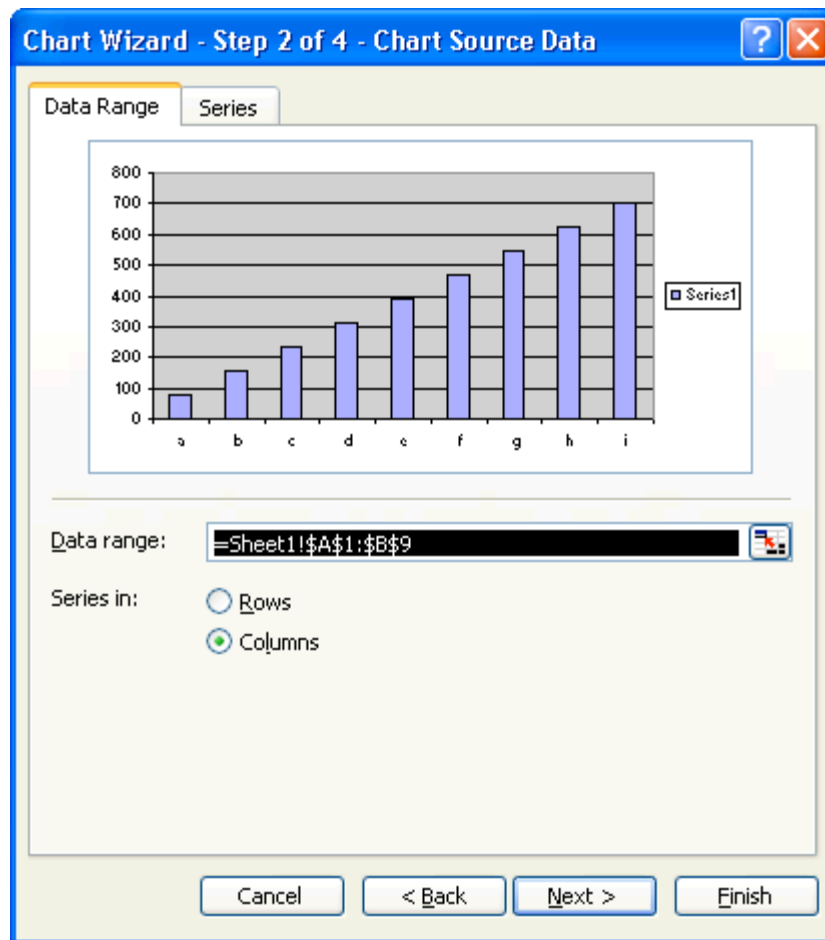
Excel displays a miniature version of the chart type you have selected.

6. Release the mouse button after you view the sample.

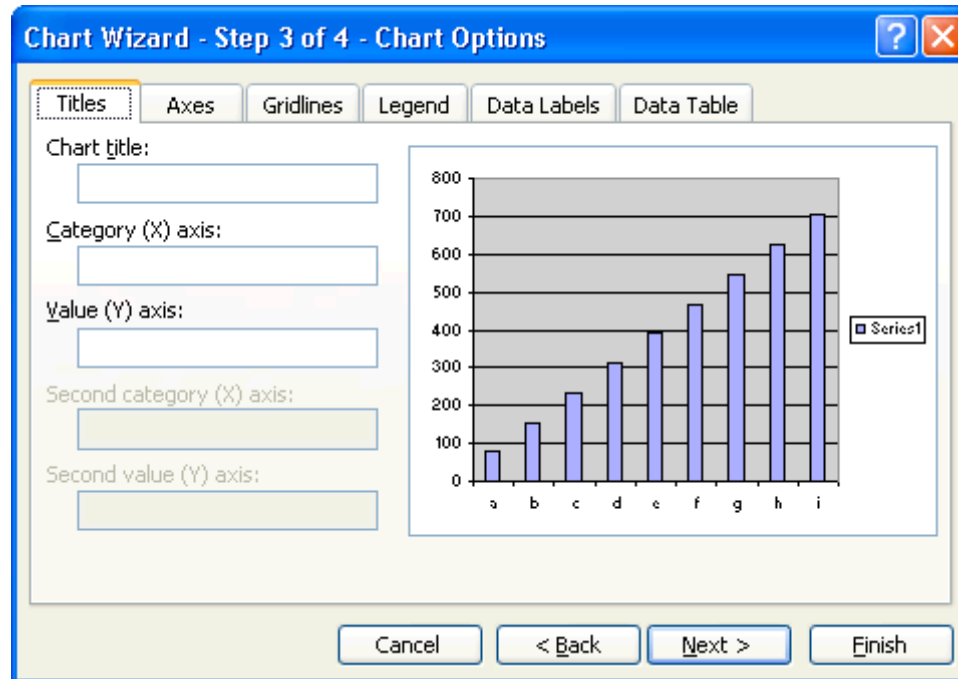
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7. Click **Next**. Excel displays the **Chart Source Data** dialog box.



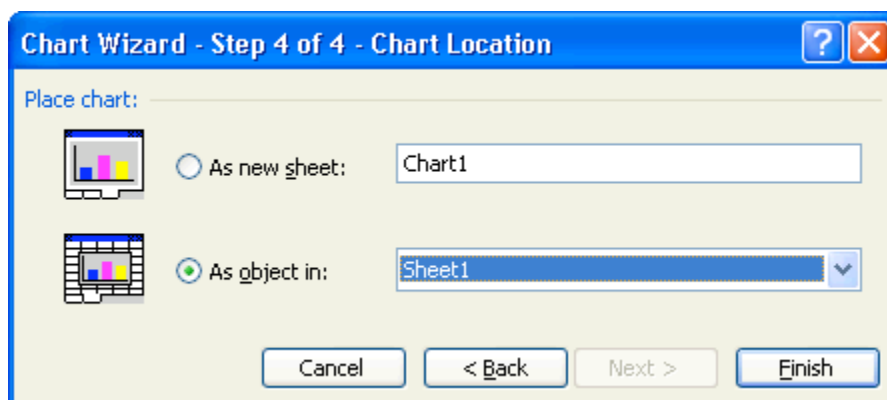
8. To display the data properly you can change the chart orientation to read the data in **Rows** or in **Columns** by selecting the appropriate option.
9. Click **Next**. Excel will display the **Chart Options** dialog box.



10. There are several options to add to your chart. For example you can:

- a. Add titles for the chart and its axes
- b. Modify the scale of the chart axes
- c. Add or remove gridlines
- d. Control the placement of the chart legend
- e. Add value or percent labels to each data series
- f. Add a data table to your chart

11. Click **Next**. Excel displays the **Chart Location** dialog box:



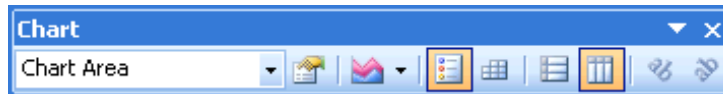
12. Choose to create the chart either as a new sheet or as an object embedded in the existing sheet.

13. Click **Finish** to complete the process.

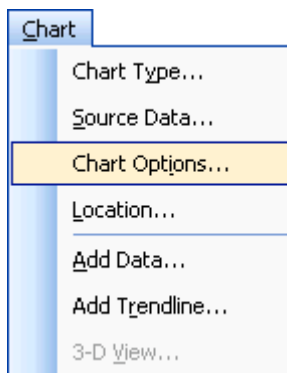
Modifying Charts

Once your chart is created, you can modify the look of your chart as well as the data that is displayed in it.

When you click on a chart to select it, the **Chart** toolbar becomes available. (If the **Chart** toolbar does not display, you can click the **View** menu, point to **Toolbars**, then click **Chart**.)




You can access any of the four steps of the Chart Wizard from the **Chart** menu:



The Chart Wizard steps can be accessed in the Chart menu.

Using either the **Chart** toolbar or the **Chart** menu, you can make changes to the structure of your chart. For example:

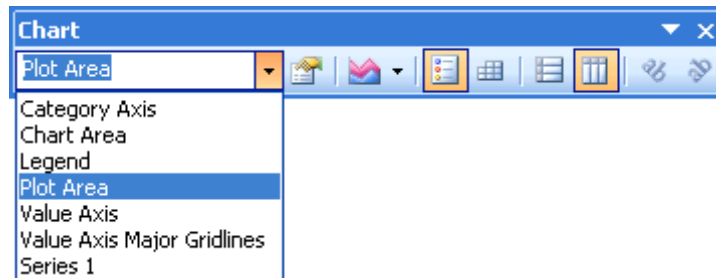
- You can change the chart type by using the **Chart Type** command on the **Chart** menu or using the **Chart Type**  button on the **Chart** toolbar.
- You can add more data to your chart by using the **Source Data** command on the **Chart** menu.
- You can add/remove data labels on your chart by using the **Chart Options** command on the **Chart** menu.
- You can move an embedded chart to its own chart sheet by using the **Location** command on the **Chart** menu.


Formatting Chart Objects

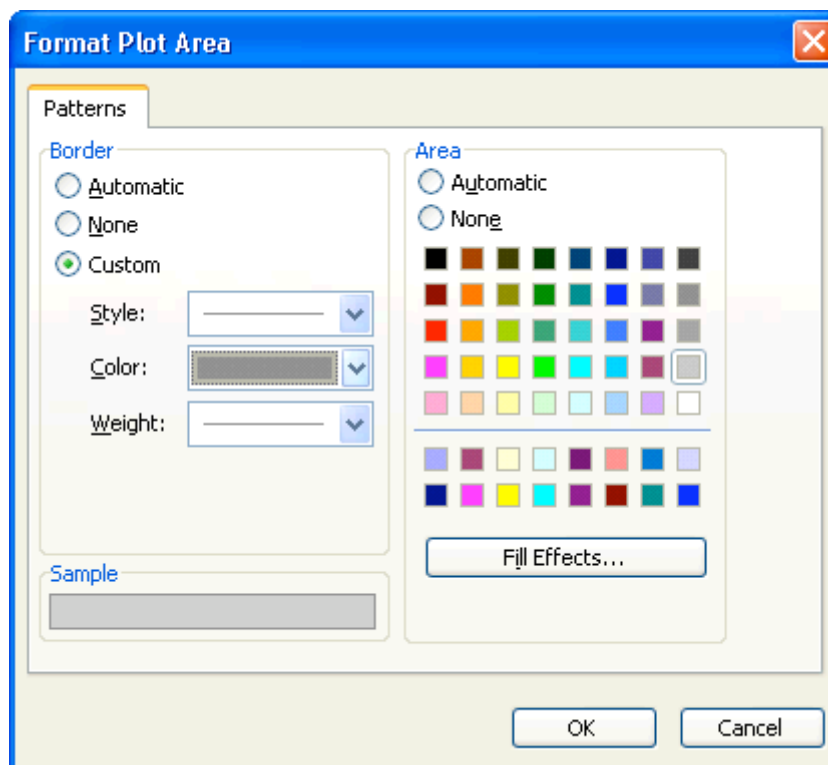
Excel creates charts by bringing several different graphic objects together. Most individual objects can be selected and modified as needed. The key is to first select the object you want to modify. The **Chart** toolbar can be very helpful when selecting the appropriate object because it contains a list of all of the objects on your chart. Once you have selected the object you want to format, click the **Format** menu.

Formatting the Color of the Plot Area

1. Click the **Chart Objects** drop-down list on the **Chart** toolbar.



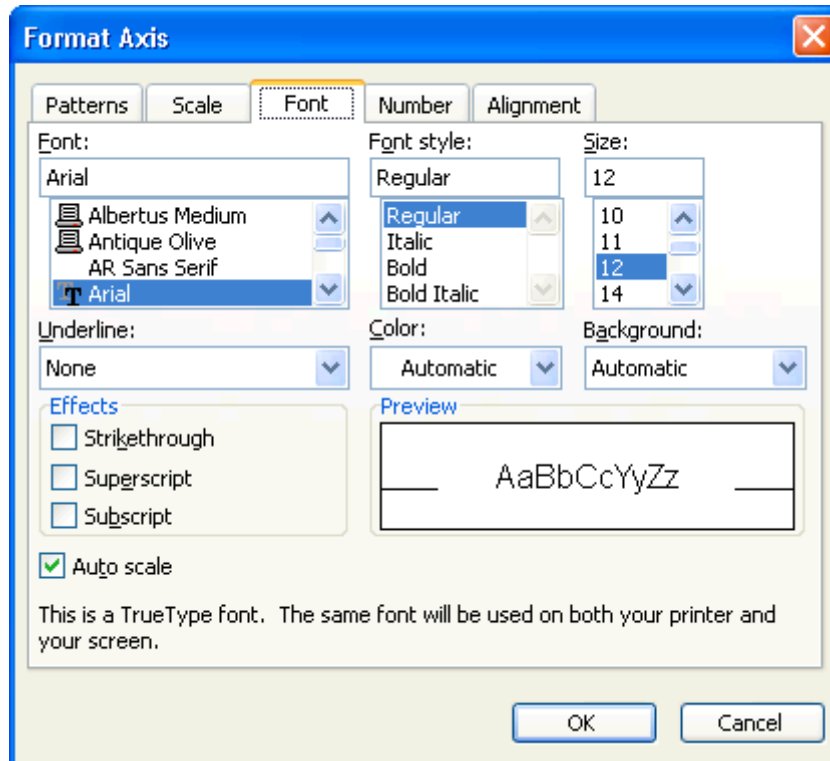
2. Select **Plot Area** from the list.
3. Click the **Format**  button.
4. Click the **Color** drop-down palette in **Format Plot Area** dialog box.



5. Click to select a color from the color palette.
6. Click **OK** to accept the change.

Changing the Font of an Axis

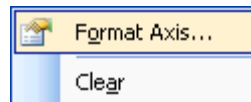
1. Double-click the y-axis line.
2. Click the **Font** tab of the **Format Axis** dialog box.



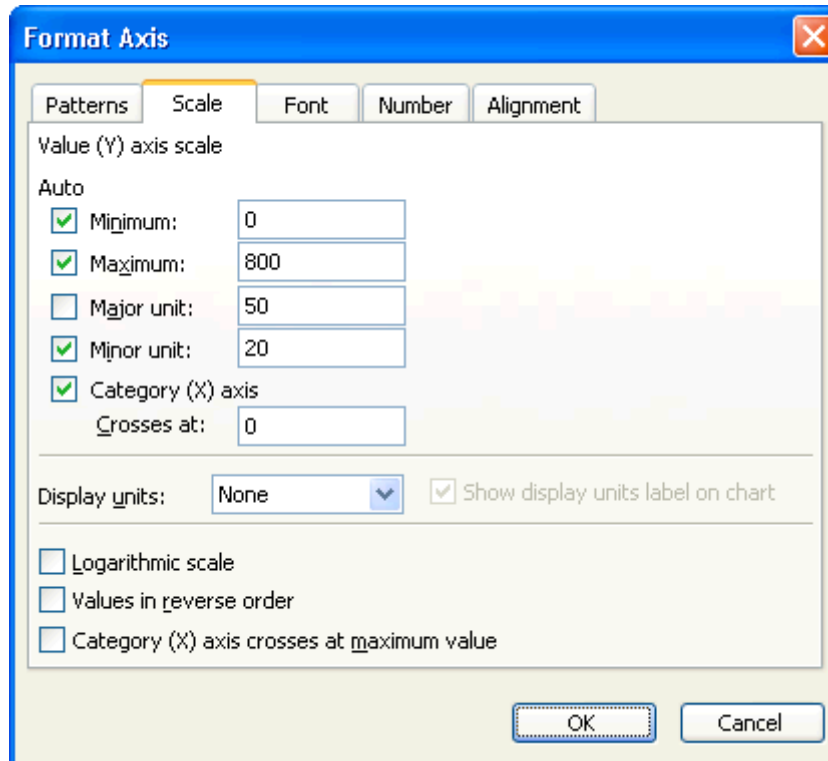
3. Select options such as the **Font**, **Font style**, **Color** and **Size**.
4. Click **OK** to accept the changes.

Modifying the Scale of an Axis

1. Right-click the y-axis.
2. Select **Format Axis** from the shortcut menu.



3. Click the **Scale** tab in the **Format Axis** dialog box.

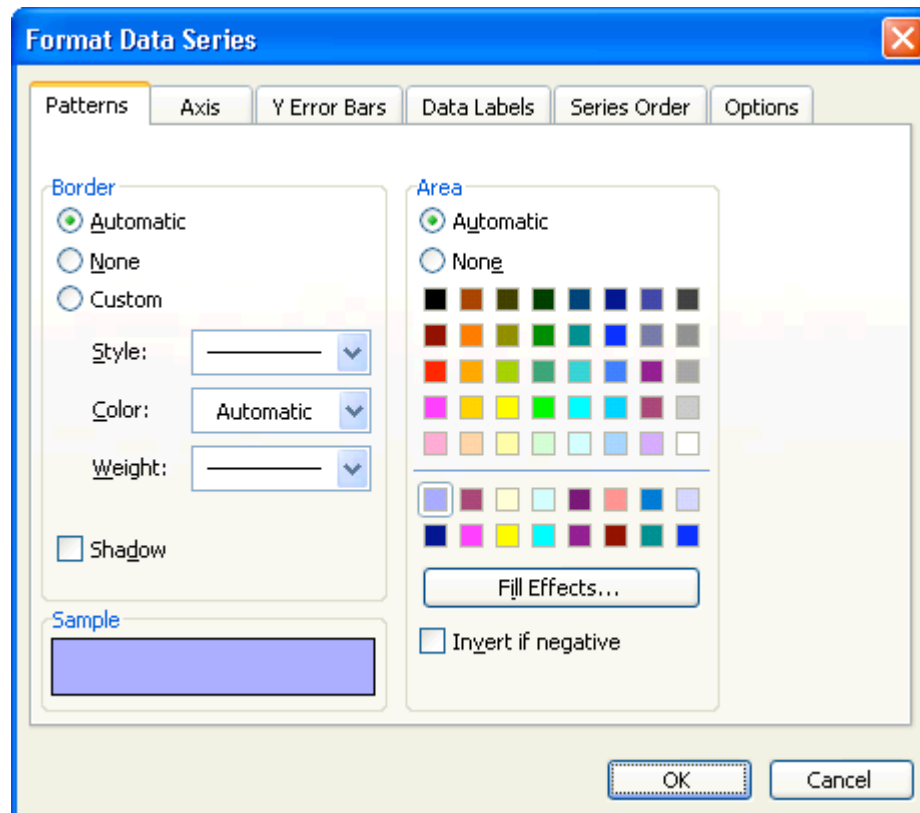


4. Change, for example, the **Major unit** to 50.
5. Click **OK** to accept the changes.

Changing the Color/Pattern of a Data Marker

1. Click on a data series.
2. Click the **Format** menu.
3. Click **Selected Data Series**.

4. Select basic color and/or border options, or click **Fill Effects** for more options.



5. Click **OK** to accept changes.

Plotting a Data Series as a Different Chart Type

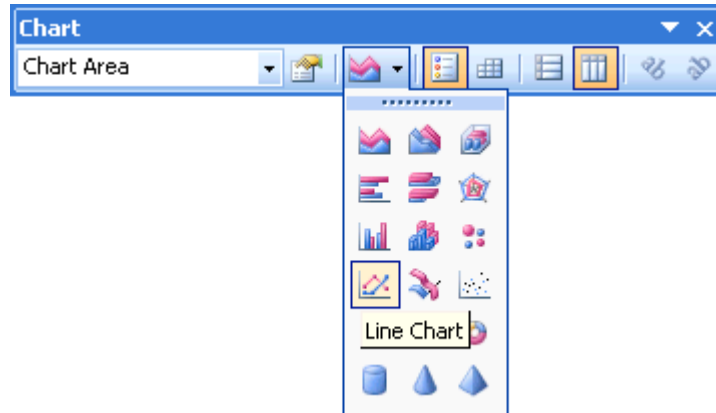
Suppose you want to work with a chart that contains one student's scores. For comparison purposes, you also want include the data that show class averages. However, you would like to see the student's data displayed as a bar chart, and the average data as a line chart.

1. Click on the chart.
2. Click on the data series you want to display as a different chart type.

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3. Click the **Chart Type** menu on the **Chart** toolbar, and select the type you want to use.



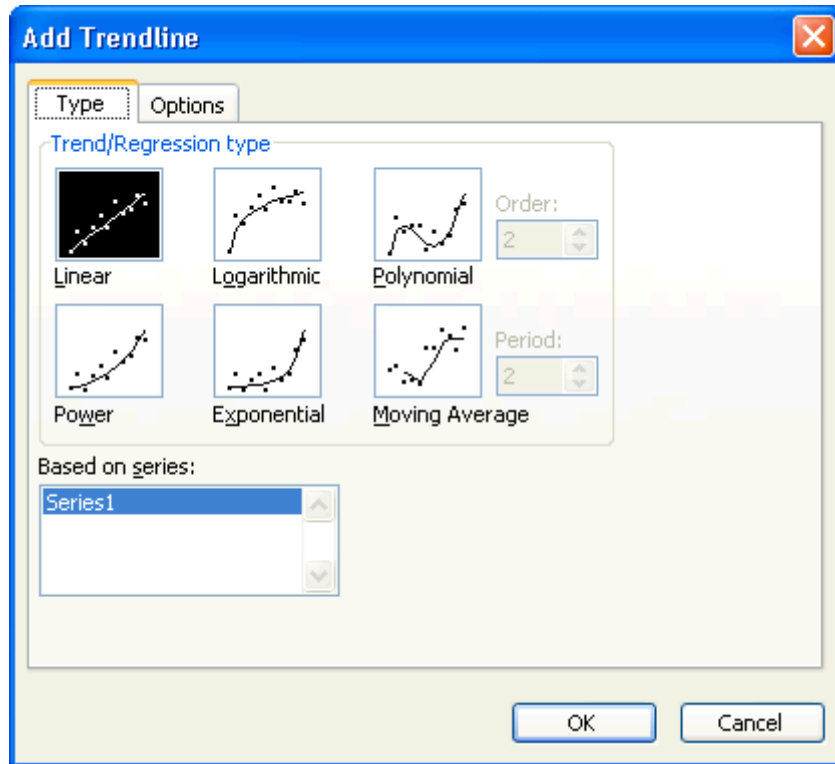
The Chart Type menu on the Chart toolbar

Trendlines

A *trendline* is a graphical representation of the trend, or direction, of data in a series. Trendlines are used for the study of problems of prediction, also called *regression analysis*. You can add trendlines to data series in unstacked 2-D area, bar, column, line, stock, xy (scatter), and bubble charts.

Adding a Trendline to a Chart

1. Click on the chart.
2. Click the **Chart** menu and select **Add Trendline**.



3. In the **Add Trendline** dialog box, select the **Trend/Regression type**.

When you want to add a trendline to a chart, you can choose any of the six different trend/regression types. The type of data you have determines the type of trendline you should use.

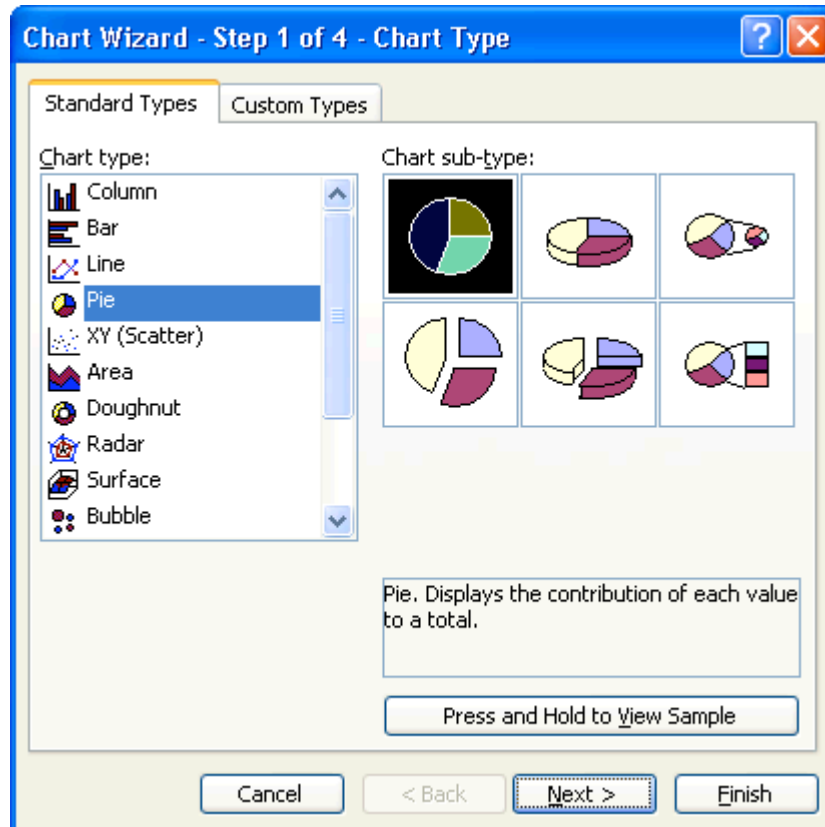
4. Click **OK** to accept the changes.

Pie Charts

A pie chart shows the size of items that make up a data series, proportional to the sum of the items. It always shows only one data series and is useful when you want to emphasize a significant element.

Creating a Pie Chart

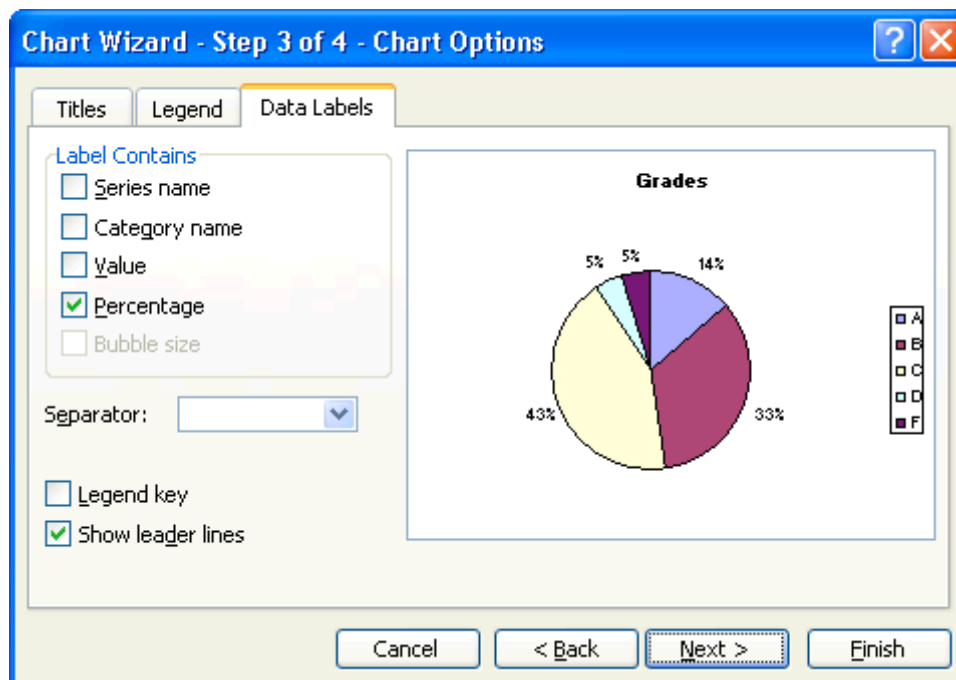
1. Click and drag to select the range of data you want included in your chart.
2. Click the **Chart Wizard** button.
3. In the **Chart Type** dialog box select the **Pie Chart type**.



4. Click a **Chart sub-type**.
5. Click **Next**.
6. In the **Chart Source Data** dialog box, click to change the **Data range** if necessary.
7. Click to change the chart orientation to **Rows** or **Columns** if necessary.
8. Click **Next**.
9. In the **Chart Options** dialog box type in the **Chart title**.

Add Data Labels

10. In the **Chart Options** dialog box, click the **Data Labels** tab.
11. Select an option under **Label Contains**.



12. Click **Next**.
13. In the **Chart Location** dialog box, choose a location for the chart.
14. Click **Finish** to create the chart.

Printing Charts

Charts can be printed as part of a spreadsheet or as a separate object.

Printing an Embedded Chart on a Separate Page

1. Click the chart you want to print to select it.
2. Click the **File** menu and click **Print**.
3. Enter the **Number of copies** you want.
4. Click **OK**.

Getting Additional Help

The Help Desk provides consulting and Q&A help in a variety of ways:

785/864-0200

question@ku.edu

www.ku.edu/~helpdesk

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