People's Resource Center

Excel 1
Module 5 – Charts and Auto Fill

Module Overview

This is a portion of the Introduction to Excel course. During Introduction to Excel you will learn the basics of working with spreadsheets.

This module will continue to expand on your knowledge of functions and formulas from the prior modules with the addition of Auto fill. Additionally, this module will focus on the many different types of Charts available in Excel.
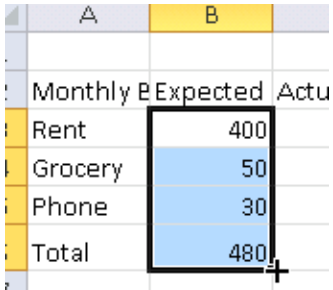
Contents

This module of Excel will review functions and formulas as well as review the Auto Fill process. Charts will also be covered during this module.
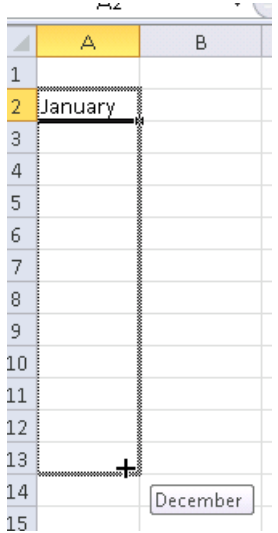
1. Auto Fill

As mentioned during prior lessons, the auto fill is a tool used to assist with copying and pasting information (including formulas & functions) in Excel.

1.1.   Auto Fill

As a reminder, in the bottom right corner of a selected cell or range of cells there is a small black square known as the fill handle. When the mouse pointer is directly on top of the fill handle the mouse pointer will change to the thin plus sign. This is your visual clue that you can AutoFill by dragging the fill handle down or to the right.

+	Fill Handle "Auto Fill"	Used to copy cell contents to adjacent cells. To use, hover your mouse over the bottom left corner of the selected cell or cells. Click and drag to fill or copy contents into new cells.	

Excel can auto fill numbers, dates, and even word patterns. We will try an example with entering months.

Follow Me	**Create new worksheet auto fill Months**
	1. Open a new worksheet in Excel 2. Type **January** into A2. 3. Left click once in A2 to select it again. 4. Hover over the bottom right corner of the cell, auto fill handle, until the cursor changes to look like the auto fill. 5. Click and drag to cell A13. 6. Select B1 7. Type **2010** 8. In C1, type **2011** 9. Us the auto fill to complete the years through present. Select both B1 and C1 to auto fill. *It is important to fill in two numbers in this case because otherwise Excel will complete the pattern in unexpected ways such as fill in each column with the same number.*

1.2. Auto fill and Formulas

In addition to completing numbers, dates, and some word patterns, the auto fill function is most powerful when copying formulas.

Follow Me	Add data and formulas
	1. Starting in B2, fill in a number between 0 and 100 for each month of 2010, 2011, 2012, and 2013 (If you like you can fill in all years) 2. Type **Total** into A14 3. In B14 enter the following formula **=B2+B3+B4+B5+B6+B7+B8+B9+B10+B11+B12+B13**

SUM		X ✓ fx	=B2+B3+B4+B5+B6+B7+B8+B9+B10+B11+B12+B13				
	A	B	C	D	E	F	G	H
1		2010	2011	2012	2013	2014	2015	
2	January	8	0	94	84			
3	February	76	60	100	20			
4	March	3	15	50	19			
5	April	94	38	81	44			
6	May	24	16	41	100			
7	June	81	62	1	26			
8	July	18	10	2	41			
9	August	67	44	85	87			
10	Septembe	98	83	54	97			
11	October	16	94	1	63			
12	Novembe	23	68	60	40			
13	Decembe	72	82	8	71			
14	Total	=B2+B3+B4+B5+B6+B7+B8+B9+B10+B11+B12+B13						

4. Hit enter when finished, the answers may vary if alternative numbers are used.
5. Reselect B14
6. Using the auto fill, copy the formula into C14, D14, and E14.

3	Decembe	72	82	8	71
4	Total	580	572	577	692
5					

7. Save the file as **Sales** under My Documents/Excel1

Notice that in the example above, the cell references in the formula change "relative" to their new column letter. This means when you copy the formulas to the other cells, you are still adding the 12 cells above the cell where the formula is located. This is called relative cell references. This is the normal case; you don't have to do anything special to achieve this result. A Copy followed by Paste will produce the same kind of change in cell reference; that is relative cell references in formulas will be preserved. Drag & Drop (Move) or Cut and Paste assumes you simply want to relocate the formulas *without* changing them. That is, the formulas will remain unchanged and the relative cell references will not be preserved.

1.3. Absolute Cell Reference

In some cases there may be parts of the formula that you will not want to change when copying or auto filling formulas. To do this you need to tell Excel which part of the cell reference should not change (the row or the column). To do this, put a **$** in front of the part you do not want to change.

Allow changes	A1
Do not change the Row	A$1
Do not change the Column	$A1
Do not change either (always the same cell)	A1

In our example of Sales, let's assume that every year, the cost of running the business is the same.

Follow Me	**Calculate Cost**
	1. Type **Annual Cost** in B16 2. In C16 we will enter the annual cost of **25** 3. Type **Profit** in A17 4. In B17 enter **=B14-C16** *Without an absolute reference the auto fill will change both cells to the next cell in the same direction the cell is filled.* 5. Using the auto fill, to copy the formula in B17 over to C17, D17, and E17. *C17, D17, and E17 are not being calculated correctly if you select them you will notice they are using the correct annual total but they are not subtracting the annual cost in C16.* *In this particular case we do not want the column in the cell reference C16 to change, so we put a $ in front of the C.* 6. Correct B17 to **=B14-$C16** 7. Use the auto fill to copy the correct formula in B17 over to C17, D17, and E17. 8. Save your work.

SUM   =E14-$C16

|	A	B	C	D	E
1		2010	2011	2012	2013
2	January	8	0	94	84
3	February	76	60	100	20
4	March	3	15	50	19
5	April	94	38	81	44
6	May	24	16	41	100
7	June	81	62	1	26
8	July	18	10	2	41
9	August	67	44	85	87
10	Septembe	98	83	54	97
11	October	16	94	1	63
12	Novembe	23	68	60	40
13	December	72	82	8	71
14	Total	580	572	577	692
15					
16		Annual Cost	25		
17	Profit	555	547	552	=E14-$C16

2. Charts

Charting the data in your worksheet is not only fun, but it provides another dimension in analyzing data. If you were tracking daily temperatures in a worksheet, it would be difficult to see the trend or the fluctuations using just the numbers. However, if you turn those numbers into bars on a chart, the picture becomes much clearer. The value of a visual portrayal increases as the amount of data increases.

Follow Me	Create Chart for 2010 Sales

1. Select the data for the chart by selecting A1 through B13.
2. Select a 2-D Line chart by clicking the Line drop down icon on the Insert tab of the ribbon (Charts group).
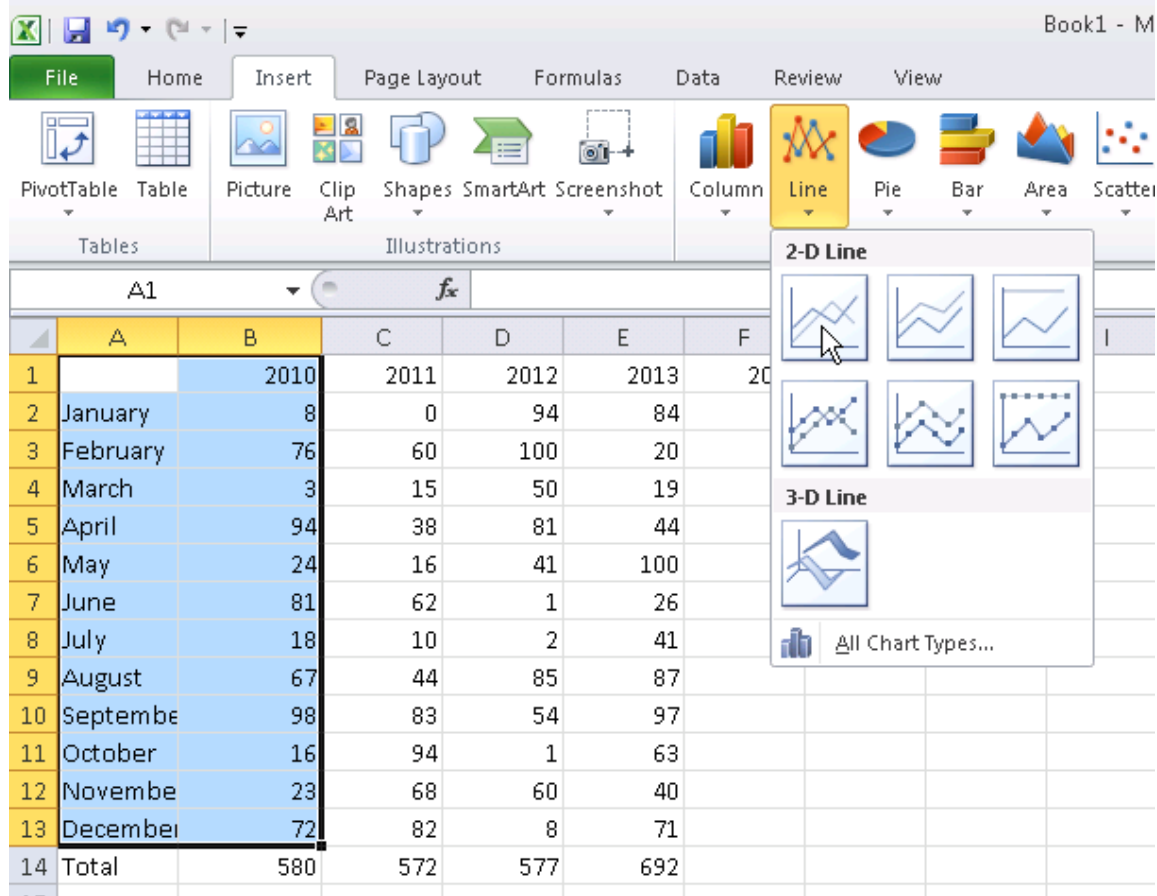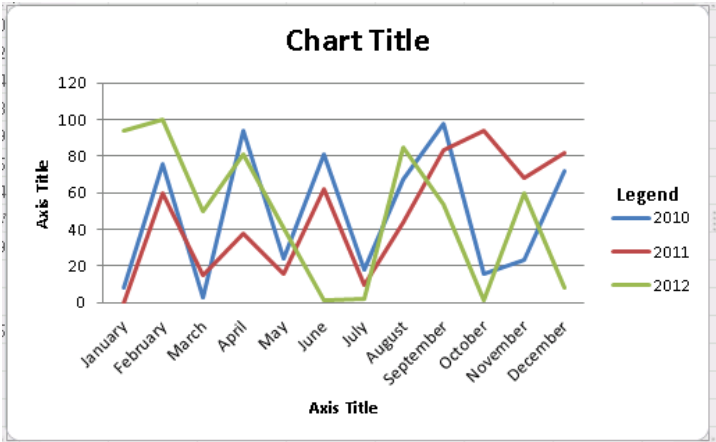

2.1.   Parts of a Chart

Each chart or graph will have similar parts which can be shown or hidden and edited. The pictures below show each of the parts available for charts.

Chart Title – A name for your chart, used to display quick information on the chart.

Data Series – A group of related values, such as all the values in a single row or column in the spreadsheet.

Axis – A line that serves as a major reference for plotting data in a chart. In most charts there will be two axes, the X-axis (horizontal) and Y-axis (Vertical). These should always be labeled with both the name and unit being measured. Note: Pie charts do not have axes.

Legend – A key that identifies additional information.

Note: Once a chart has been created and each time a chart is selected, three new tabs are shown on the ribbon under the heading "Chart Tools". These new tabs – Design, Layout, and Format – enable editing of the chart. If the chart is not selected, the Chart Tools tabs do not show on the ribbon.

Each of the parts or elements of the chart can be added or changed from the ribbon Layout tab. The most common items to include or change are labels and axes.
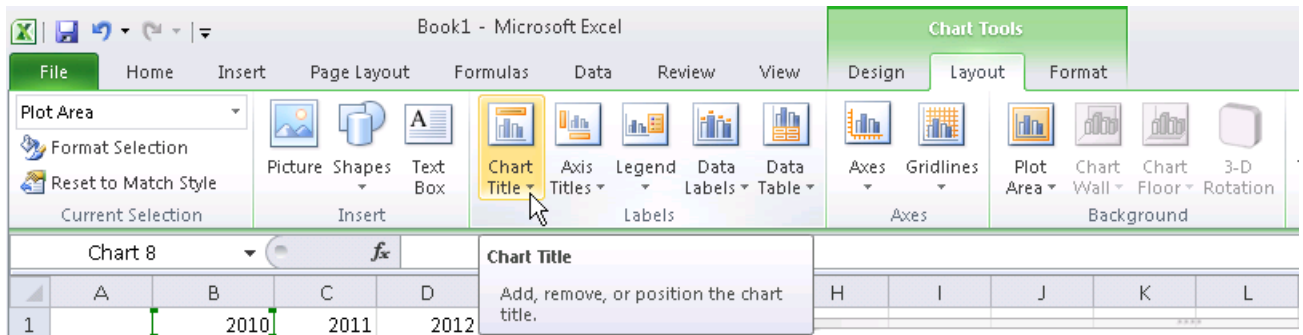

The ribbon Design tab can be used to reselect the data and to quickly change the layout of the chart to another default. The color and effects can be changed through this tab as well.
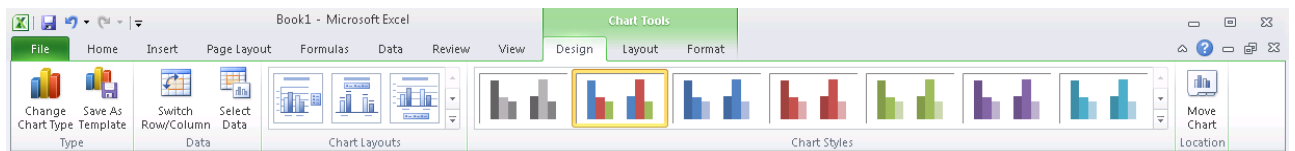
Follow Me	**Add Axis Title**
	1. Select the Chart if not already selected.
	2. Once the chart is selected new tabs appear on the ribbon under Chart Tools.
	3. Select Layout 3 on the ribbon Design tab (Chart Layouts group)
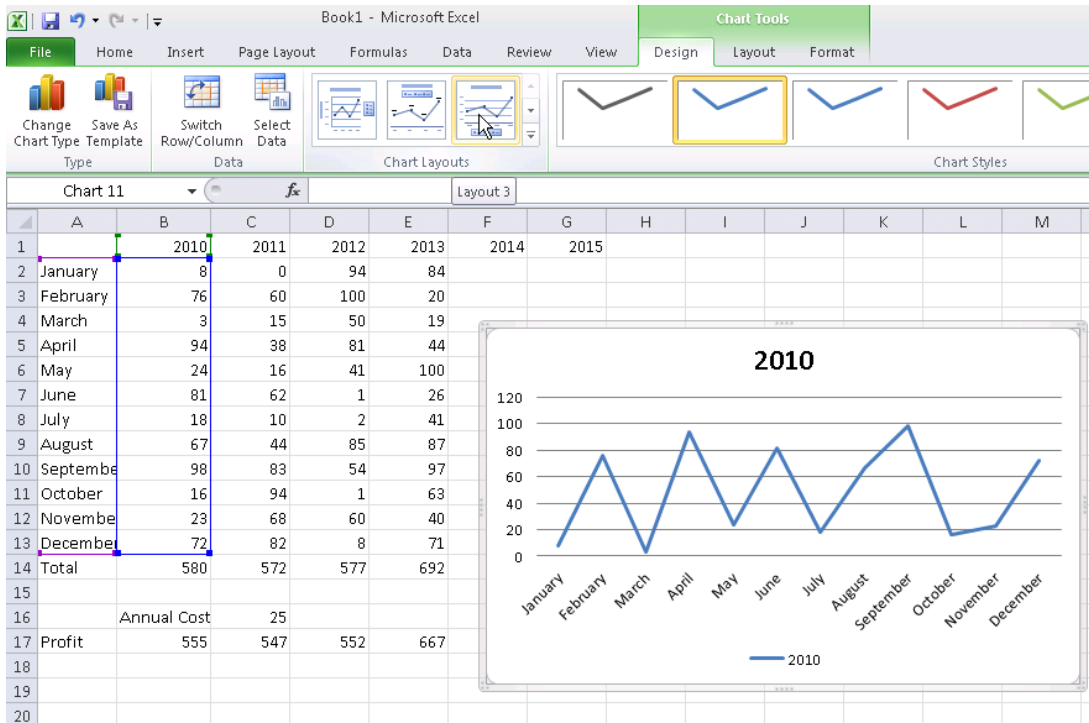
4. To add a vertical axis title, select Rotated Title from the drop down in the ribbon layout tab (Labels group). See picture to the right for details.
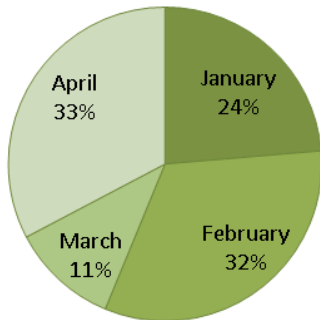5. Type **Sales in USD** hit enter to confirm.
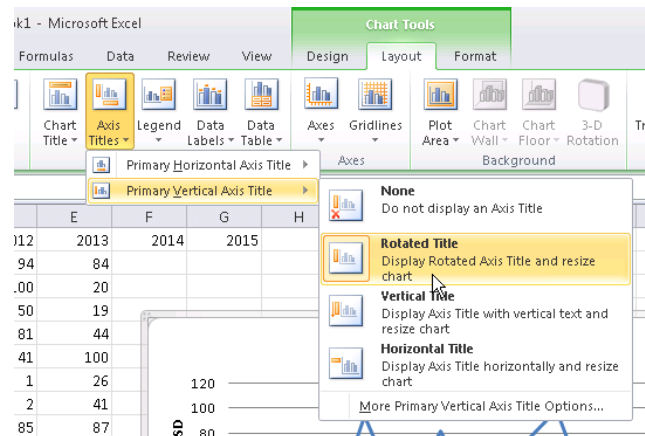
2.2.   Types of Charts

Choosing the correct chart for your data is critical to ensure the inserted chart adds value and is not confusing or misleading. One good way to ensure you have chosen the correct chart is to understand what question can be answered by the chosen chart.

2.2.1. Pie Charts

Average Sales - First Quart by Month

A pie chart looks like a circle (or a pie) cut up into segments. Pie charts are used to show how the whole of something breaks down into parts. Often when showing percentages a pie chart will be used.

Some examples of questions that can be answered by pie charts include:

-Which part was the greatest?

-Which part was the least?

In the example to the left we can quickly see that April and February were similar and March was least. This can be important if the expectation was that each month would be similar.

2.2.2. Line Graphs

Line graphs are typically used to show trends or changes over time. Line graphs show relationships between data.

Some examples of questions that can be answered by line graphes include:

-Is this going up?

-Is this going down?

-Is there a high or low point?

Line graphs can be used to graph different things to see if a trend holds up. For example do ice cream sales go up when the temperature goes up? This would mean graphing ice cream sales and temperatures over time.

The graph to the right shows that sales are consistantly lower in January than February. The graph also shows that March is has been a poor sales month.
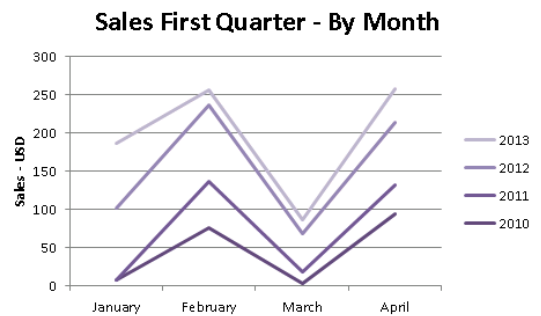
2.2.3. Bar or Column Graphs
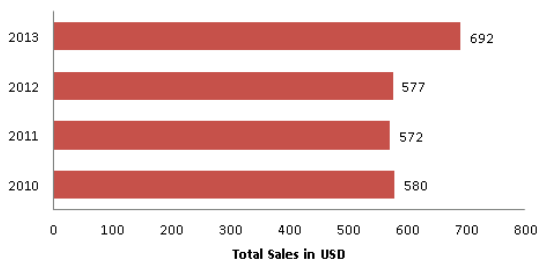
Bar graphs allow you to compare amounts of things in categories. Generally each category would be independent of each other, so if one changed the others would not change

Some examples of questions that can be answered by a bar or column graph include:

-How much is something?

-Is this more or less than something?

-Is something a lot or a little more?

The graph to the left shows us that 2013 had the most sales while 2010, 2011, and 2012 were similar amounts.
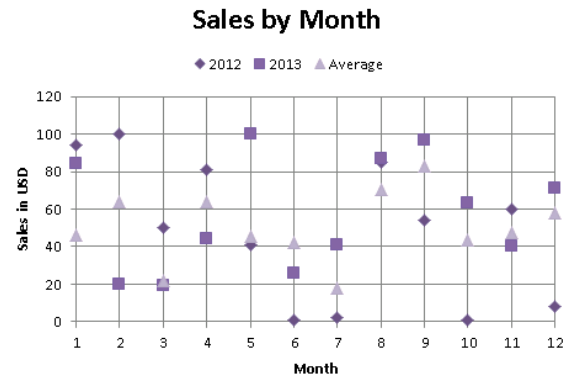
2.2.4. Scatter Charts

Scatter charts, or scatter plots, can be used when one variable is independent and the other is either dependent or independent. Scatter charts use Cartesian coordinates to display values for two variables.

Some examples of questions that can be answered by a scatter chart include:

-How much was a given thing?

-Where any others similar?

The chart to the right shows us that in February there was a large range between 2012 and 2013, the average fell evenly between them. In May 2013 sales were up around $100 which was over double the average and previous year.

Sales by Month

3. Exercises – Now You!

Based on the data in Sales, create two more charts. Try a Pie, Bar, Column, or Scatter chart.

Pick one of your charts:

- Change or Add a Chart Title
- Add or Remove the Legend
- Change the color of the chart
- Add or Remove grid lines
- Add or Remove axis titles
- Move the Chart to another tab
- Change the chart type
- Change the Data or Select Data (Hint: design tab)