



**Microsoft Excel 2016  
Beyond the Basics  
Course Notes**

Sample

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## COURSE OBJECTIVES

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By the end of this course you will be able to

- Create an accurate chart, using supplied data, without referring to notes.
- Correctly update a chart to include new data, referring to notes if necessary.
- Correctly create a trend line on a chart to forecast ahead without referring to notes.
- Accurately create specified sparkline, referring to notes if necessary.
- Create a simple worksheet that uses absolute cell references, without referring to notes.
- Correctly name cells in a worksheet, without referring to notes.
- Correctly create a workbook, consisting of several worksheets, that contains accurate 3D formulas referring to notes if necessary.
- Accurately link multiple workbooks together, referring to notes if necessary.
- Briefly describe how a hyperlink can be used to connect to other sheets.
- Create a worksheet correctly using the IF function, referring to notes if necessary.
- Correctly count and sum specified data, referring to notes if necessary.
- Correctly use a lookup function in a worksheet to extract a value from a list of values, referring to notes if necessary.
- Correctly sort a list of data, and accurately filter data using the Filter feature, without referring to notes.

# MODULE 1 – WORKING WITH CHARTS AND SPARKLINES

## OBJECTIVES

At the end of this section you will be able to:

- Create an accurate chart, using supplied data, without referring to notes.
- Correctly update a chart to include new data, referring to notes if necessary.
- Correctly create a trend line on a chart to forecast ahead without referring to notes.
- Accurately create specified sparkline, referring to notes if necessary.

## INTRODUCTION

Excel is a powerful and sophisticated spreadsheet package that also offers database and charting facilities. An Excel 2016 worksheet consists of a grid 16,384 columns wide (column XFD) by 1,048,576 rows deep. The intersection of a row and column is known as a cell. This means one worksheet contains 17,179,869,184 cells. A workbook can contain as many sheets as the computer memory can cope with. However, the limited memory of the computer also means it is not possible to store data in all of these cells.

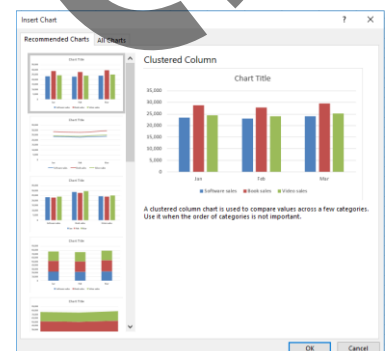
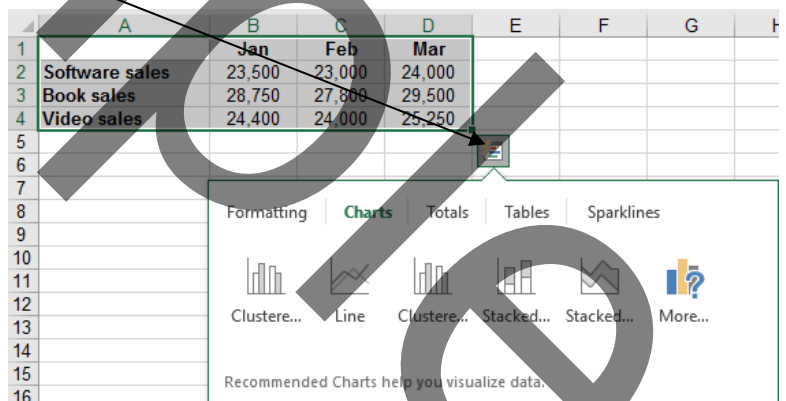
## CHARTS

### To create a chart

There are several ways to create a chart in Excel.

### To create a chart using Quick Analysis

1. Select the data, including column and rows titles that you want on the chart.
2. Point and click on the *Quick Analysis* smart tag that is displayed at the bottom-right of the selection.
3. Select the **Charts** tab in the floating *Quick Analysis* pane.
4. Point to the chart icon that you require. A live preview is shown on the worksheet. Click on the icon to create the chart.
5. If the chart type you want is not shown then click on the *More Charts* icon. The dialog on the right will be shown. Click on the *All Charts* tab to choose from the large list a chart categories and chart types within those categories. This will create a chart embedded in the current worksheet.



### To create a chart using Recommended Charts

1. Select the data, including column and rows titles that you want on the chart.

2. On the Insert tab of the Ribbon, in the *Charts* group, click on the **Recommended Charts** button.
3. Choose from the *Recommended Charts*, or click on the *All Charts* tab for more options. This will create a chart embedded in the current worksheet.

### To create a chart

1. Select the data, including column and rows titles that you want on the chart.
2. Select the **Insert** tab of the Ribbon.
3. In the *Charts* group, click on the button corresponding to the chart type you wish to use.
4. From the displayed list click on the sub-chart type that you want. This will create a chart embedded in the current worksheet.



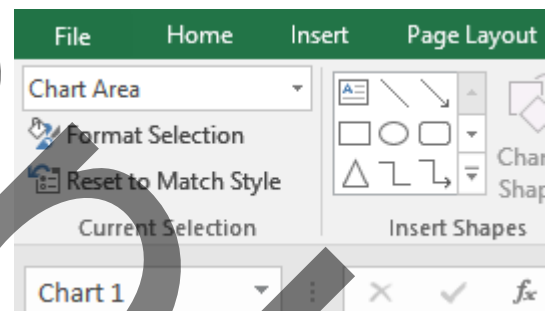
In the *Charts* group, click on the button corresponding to the chart style you wish to use. This will create a chart embedded in the current worksheet.

### Chart Options

By using the **Format** Ribbon, the various objects within the chart, such as the X axis and Y axis, titles, text alignment, and chart area can all be formatted to appear in a different style or display with different colours, fonts, border styles, etc.

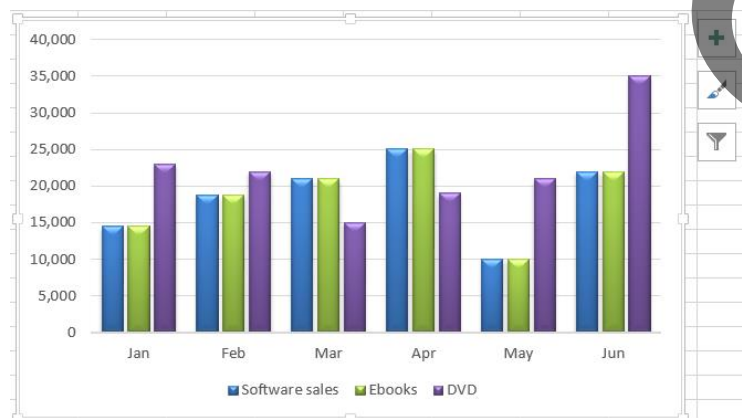
### To change a chart object's format

1. Select the chart.
2. Display the **Format** ribbon.
3. Select the object to format by either pointing and clicking on the chart object, or selecting it using the drop-down selector menu in the *Current Selection* group as shown here on the right.
4. Make your changes as required.

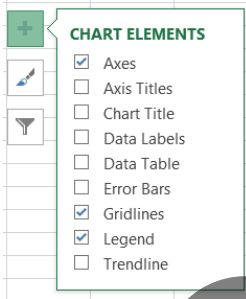


### Chart Icons

Whenever a chart is selected, three icons are displayed in the top-right corner. These are used to control *Chart Elements*, *Chart Styles* and *Chart Filters*.



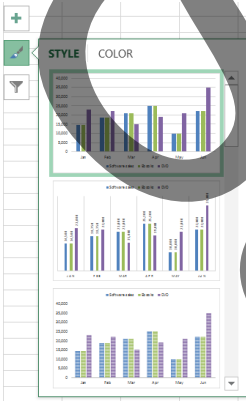
## Chart Elements



Click on the top icon to display a list of chart elements that can be selected or deselected as required. There are many different elements you can add to a chart to help you clarify your data: from axis lines to trendlines, from data labels to data tables. Furthermore, each element has many different options; for example, a trendline can be one of six different trendline types.

This feature also supports Live Preview, so even if you don't know what each element is, you can easily preview what the chart would look like with any element added by hovering your mouse on the element.

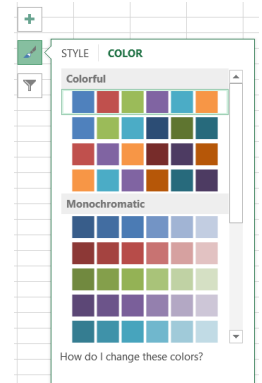
The checklist will only show elements that are applicable to your specific chart type – all non-applicable elements will be automatically hidden to reduce confusion and clutter.



## Chart Styles

Click on the middle icon to display a variety of chart styles that are optimized for the chart type that you currently have selected. These chart styles not only have the power to change the formatting of your chart but they can add, remove, and re-arrange elements on your chart.

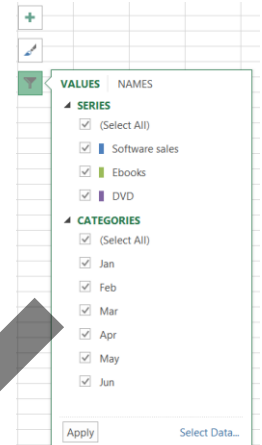
Not only does Excel offer an amazing set of styles it also has the ability to change the base colours used in those styles. If you click the *Color* tab you will see a variety of colour palettes based around the document theme.



## Chart Filters

Click on the bottom icon to display *Chart Filters* which is a list of the variables (series) and categories for an interactive view. Just move your cursor over each item and the relevant content in the illustration will get highlighted.

If you do not want to see a particular set of data then deselect the tick in the relevant check box. Select the check box again to view the data once more.



## Formatting Chart Elements

Any element in a chart can be formatted differently by right-clicking on the element. In addition to a shortcut menu, where the option to **Format...** will be displayed, there will also be a formatting mini-toolbar with easy to select options displayed.

## Adding Data to Charts

### Using the mouse on the original data

When working with a chart that has been activated, you will see that coloured outlines appear round the spreadsheet cells used to plot the data. These outlines have their own 'fill handles' that can be dragged to add or remove chart data.

1. Activate the chart. The relevant data series will be highlighted. Each range will have a different colour border and each border will have a small 'fill handle' handle at the bottom right corner.



2. Drag the handle to incorporate the revised data.

*Note: Dragging to the left, or above, of the existing data will extend the selection in that direction. In these circumstances, the handle does not operate like a 'fill handle.' Therefore, if new data has to be inserted within an existing spreadsheet, insert the data in a new row at the edge of existing data; otherwise, the coloured outlines get broken and can no-longer be seen.*

### Using select data source

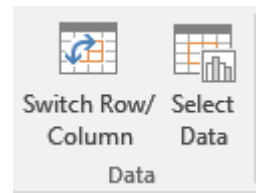
If a new data series has been inserting between data already used in a chart, it will not automatically appear on the existing chart. The *Using the mouse* method above will not work, so use one of the following:

#### Copy and Paste

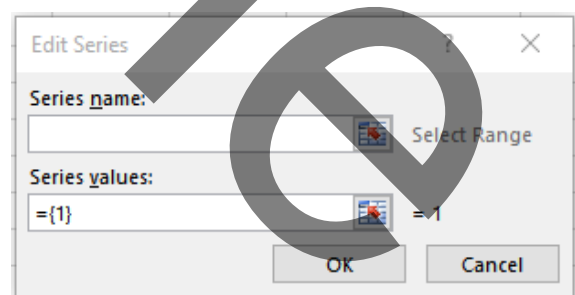
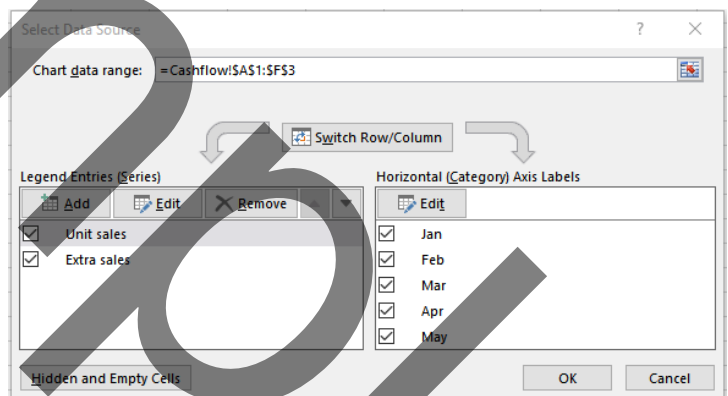
1. Select the new data to include on the chart including any title cells.
2. Click on **Copy** or press **Ctrl** + **C**.
3. Select the chart.
4. Click on **Paste** or press **Ctrl** + **V**. The data will be included on the chart.

#### Using Select Data

1. Select the chart.
2. The **Chart Tools, Design** ribbon is automatically displayed.
3. In the *Data* group on the ribbon, choose **Select Data**.
4. The *Select Data Source* dialog is displayed.



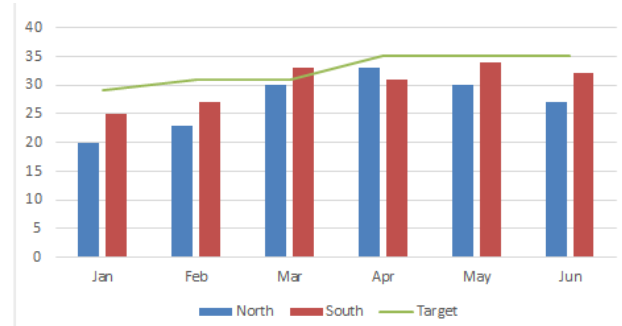
5. The Chart data range is highlighted in the dialog. Either re-select the complete new range of data in your worksheet and then click on **OK** – (this is the preferable action), or follow steps 6 onwards.
6. Click on the **Add** option on the left.
7. In the *Edit Series* dialog, click in the *Series Name* box. Then select on your worksheet the cell that contains the text title to be used for the legend, for the new data series.
8. Click in the *Series values* box and delete the contents there, then in the worksheet select the cells containing the data you want added to the chart.
9. Finally, click on **OK**.



## Working with Combo Charts

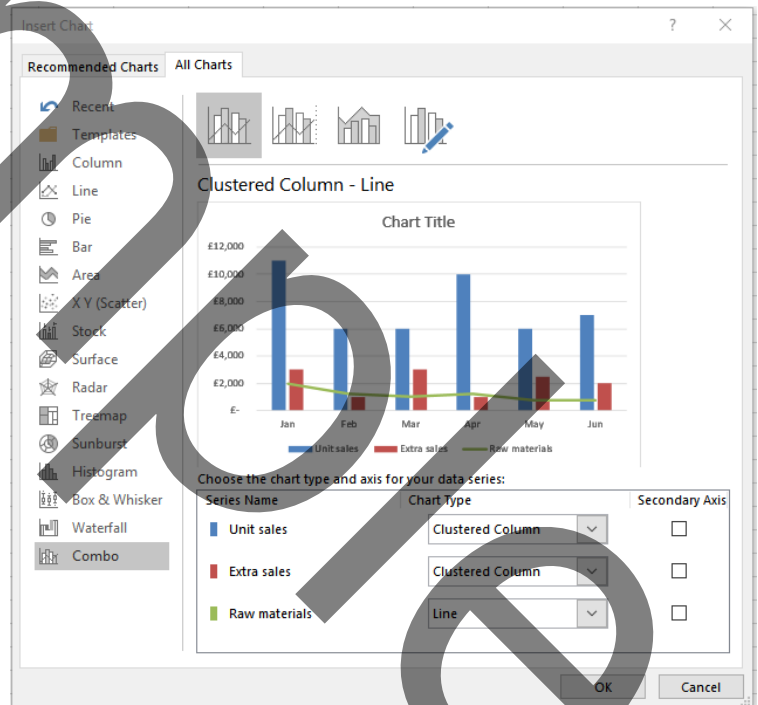
Combo charts combine two or more chart types to make the data easy to understand, especially when the data is widely varied. Shown with a secondary axis, a combo chart is even easier to read.

In the example shown on the right, the sales target is shown as a line chart to help analyse if individual sales have met or exceeded the monthly target. In another situation, you could be plotting values on a chart that are in a different scale of values compared to the rest. Here a secondary axis might help.



### To create a combo chart

1. In the worksheet, select the data you want to include in the chart, including any row and column titles.
2. Select the **Insert** tab of the Ribbon.
3. In the *Charts* group, click on the **Recommended Charts** button.
4. Select the *All Charts* tab at the top of the dialog.
5. Select *Combo* in the chart types in the left-hand pane.
6. The dialog should now look like this shown on the right. A live preview of the chart is displayed in the dialog.
7. Below the preview, select the chart types you require for each series using the various drop-down selectors. If the scale of values is different for a specific series, consider ticking the *Secondary Axis* check box for that series. (If you do select a secondary axis option, you might want to add axis data labels to help viewers understand which axis scale belongs to which series.)
8. Finally, click on **OK**.



## Adding Trend lines to Charts

Adding trend lines to a chart will help you to make forecasts based on the given data. A trend line can be added to any data series, provided it is 2D column, line, bar or scatter chart. The trend line is linked to the data so will update automatically.

### To add a trendline

1. Select the chart.

## EXERCISE 1

1. Open the **Sales** file
2. Create a *combo* chart of all the data. Ensure the Target row is shown as a line. The data for North and South should still be shown as columns. Give the chart a title of *Sales*.
3. The July figures, shown right, can now be entered. Insert these on the spreadsheet, then update the chart.

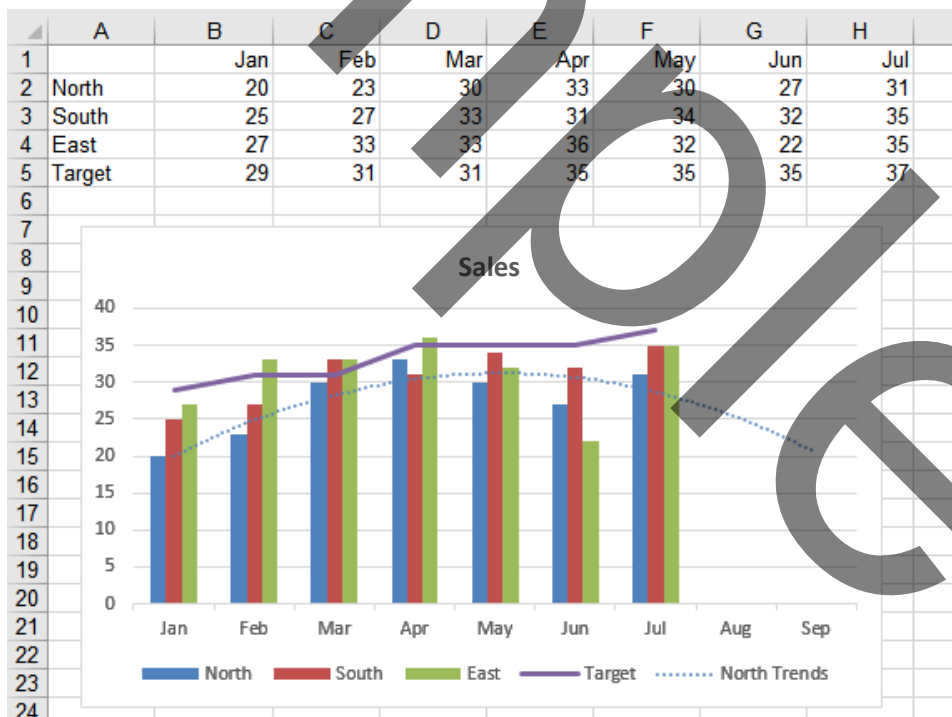
<b>Jul</b>
31
35
37

To get the *Jul* title use the fill handle and drag from Jun using the right-hand mouse button and select **Fill Months**. Alternatively, type 31/7/2015 in cell H1 and copy the format from G1.

4. The East region has now sent in its figures. Insert these on the spreadsheet below South.

<b>East</b>	27	33	33	36	32	22	35
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5. Now update the chart by using the Chart Tools ribbon **Design** tab, *Data* group and selecting the **Select Data** button. Select from A1:H5 then click on **OK**.
6. You will notice that the newly updated chart has caused one of the series to show incorrectly as a *line* chart type. Using the Chart Tools **Design** tab of the Ribbon, and the **Change Chart Type** button, rectify this and change *East* to the correct *Column* type.
7. Add a polynomial trendline for North that forecasts ahead for two periods. Give it a custom name of *North Trends*.
8. The sheet should now look like this below.



9. Close and save the workbook with a new name of **Regional Sales**

## EXERCISE 2

1. Open the **Sales** file
2. Create a *Forecast Sheet* for the North Values that forecasts ahead until the end of September. See how the forecast varies from the trendline on the chart created in the last exercise.
3. Return to *Sheet 1* of the workbook and create line sparklines for the North and South data. Place the sparklines in cells H2:H3.
4. The sheet should now look like this:

	A	B	C	D	E	F	G	H
1		Jan	Feb	Mar	Apr	May	Jun	
2	North	20	23	30	33	30	27	
3	South	25	27	33	31	34	32	
4	Target	29	31	31	35	35	35	

5. Close and save the changes.