Microsoft Excel 2013™ Charts (Level 3)

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Introduction

Microsoft Excel’s charting capabilities are excellent. Many people just use Excel to store data and then create graphs. This course is designed not just to show you some of the more obvious features (such as Chart Type) but also some of the more obscure settings.
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The Data Set

Begin by typing in some data:

1. Start Microsoft Excel as usual (or press <Ctrl n> for a new workbook)
2. In cell A1, type the number -1 then press <Ctrl Enter> to stay in the cell
3. Drag the cell handle (the green square in the bottom right-hand corner of the cell) down to cell A12—the cells should all show the number -1
4. Click on the AutoFill Options button and choose Fill Series—you should now have numbers -1 to 10

Creating a Chart

Now that you have some data, you can draw a simple chart. In this first exercise, you’ll see exactly how Excel uses this data to do this:

1. Check that the data (cells A1 to A12) is still selected—it’s a good idea to select the data first
2. Move to the INSERT tab and note the different types of chart available in the Charts group, including Recommended Charts and PivotChart.

Tip: Recommended Charts is new in Excel 2013, and allows you to get Excel to pick the best chart(s) for your data (although you don’t have to follow the recommendations). It’s certainly worthwhile at least checking this.

3. Click on [Recommended Charts] and choose the first Recommended Chart of a Clustered Column by clicking [OK]

A chart should appear on the current worksheet (centrally placed). You’ll see later how to place charts on their own separate sheets.

Note the following:

a. Excel 2013 has 3 extra chart buttons,
   ![Chart Elements], ![Chart Styles] and ![Chart Filters]
b. All twelve values are plotted
c. The horizontal (x) axis is labelled 1, 2, 3…12 (reflecting the row numbers) and is equally spaced
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d. The columns are drawn in the centre of each division and only occupy part of the space.

e. The vertical (y) axis is labelled from -2 to 12 in steps of 2.

You’ll see later how to change some of these settings. First, change the data to give the series a heading:

4. Type xxx into cell A1 (and press <Enter>)

You’ll find that xxx is interpreted as another zero value (the first two column divisions are both empty) and that the vertical axis is automatically redrawn as there are no longer any negative values.

5. Press <Ctrl a> to select the data again then repeat steps 2 & 3

A second chart appears (placed over the old one) but this time:

a. Only eleven values are plotted
b. The value in cell A1 is used for the chart title
c. The vertical (y) axis starts at 0

To see both charts:

6. Move the mouse cursor into the chart and then hold down the mouse button
7. Drag the new chart to a new position on the right of the screen
8. Drag the old chart to the left, so you can compare the two, then <Delete> it

Next, try deleting and adding some data to the new chart:

9. Click on cell A2 then right click and choose Delete… - press <Enter> for [OK] to Shift cells up – only 10 values are plotted and the horizontal axis changes accordingly

10. Select cells A4 to A6 then right click and choose Insert…

11. Choose Shift cells down then press <Enter> for [OK] - three new (zero) values are added towards the left of the chart

12. Press <Ctrl z> to [Undo] the last command and remove the new values

13. Click on cell A11 and, using the cell handle, drag down to cell A14 to add three extra values – this time, the new values are not added to the chart

14. Press <Ctrl z> to [Undo] the last command and remove the new values

This last exercise demonstrated that Excel knows which cells contain the cell range being plotted and that only changes made within that range are reflected in the chart.

Next, try adding a second set of data:

15. Click on cell B1 and type yyy (press <Enter>)

16. In cell B2, type 10 followed by pressing <Enter>, and in cell B3, type 9 followed by pressing <Enter>.

17. Select cells B2 and B3, and double click on the cell handle – this should fill down to cell B11 (11 being the last row which has a value in it), showing the values 10 to 1 in reverse order

18. Drag through cells B1 to B11 then right click and Copy them
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19. Click on the chart, and then on the [Paste] icon on the HOME ribbon to add the new values to the chart.

You’ll find that the horizontal axis is still labelled 1 to 10, but that a second column has been added to each division. Another change is that the chart title has disappeared (and will have to be added manually).

20. Repeat steps 18 and 19 - you’ll find that a third column appears, a second set of yyy values

21. Press <Ctrl z> to [Undo] the last action – you don’t need these but it’s useful to know that you can plot the same data twice (as you’ll see later)

Modifying the Chart Settings

A chart is composed of various elements, any of which can be modified to your own requirements. These include:

- The Chart and Plot Area
- The Chart Title
- The Legend
- The Axes and Axis Titles
- The Date Series (including Data Values and Labels)
- The Gridlines

To see exactly where these elements are:

1. Click on the chart and then the [Chart Elements] button (the green plus) – a list of the CHART ELEMENTS appears:
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2. Move over each element in turn using the mouse, noting the area of the chart covered.

3. Click away from the chart so that the CHART ELEMENTS list disappears.

Tip: You can also add elements to the chart using the [Add Chart Element] button on the CHART TOOLS DESIGN tab.

Area and Line Settings

The following instructions apply to both the Chart Area and Plot Area (and, indeed, to any area on a chart – here, the coloured columns, for example).

1. Click on the edge of the chart followed by moving to the CHART TOOLS FORMAT tab.

2. Click on the list arrow attached to the right of the [Chart Elements] button – the top one in the far left Current Selection group and select Chart Area.

3. Click on the [Format Selection] button below (you can also right click on an element to format it) – a Format Chart Area task pane appears on the right:

An equivalent task pane appears for all the other elements too, with similar options from which you can choose. In fact, the options for any area (e.g. the Plot Area) are often very similar.

4. Click on [FILL].
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5. Change the fill option from Automatic to Solid fill – the chart area will change colour (possibly to black) and further options appear

6. Click on the [Fill Color] button to the right of Color and select either a different Theme Color, Standard Color or from More Colors...

7. Use the sliding Transparency scale to make the colour more/less intense – note that the cell gridlines show through (they wouldn’t if the chart was on its own chart sheet)

8. Change the fill option to Gradient fill – a different set of options appear

9. Try changing the Preset gradients, Type and Direction - the Gradient stops settings let you change the colour, position, transparency and brightness of any multi-band fill

10. Change the fill option to Picture or texture fill – here you can use your own picture file or any online picture file for the chart area, or a pre-defined texture

11. Click on Texture and explore what’s provided

12. Explore the options under Tile picture as texture, which let you move the texture around and rescale it

13. Untick the Tile picture as texture option and you’ll see the texture is more stretched

14. End this section by changing the fill option back to Automatic (this colour may be different from the original automatic colour)

Next, look at the Border. These settings can be applied to any line (e.g. an axis).

15. Click on BORDER in the Format Chart Area task pane on the right – new options show:

   - **BORDER**
   - No line
   - Solid line
   - Gradient line
   - Automatic

   - Color
   - Transparency
   - Width
   - Compound type
   - Dash type
   - Cap type
   - Join type
   - Begin Arrow type
   - Begin Arrow size
   - End Arrow type
   - End Arrow size
   - Rounded corners

16. Solid line is very similar to the Solid fill you saw earlier, and Gradient line matches Gradient fill

17. End by setting the border colour back to Automatic (if you have made any changes- to see them, it’s easiest to click away from the chart)

18. Experiment by changing the Width, Compound type and Dash type
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19. The **Cap type** and **Join type** aren’t really applicable here, but you can try **Rounded corners**

20. Click on the [x] in the **Format Chart Area** task pane to **close** that task pane

21. Press <Ctrl z> (as many times as you need) to [Undo] any changes you don’t like

**Axis Settings**

Next, look at the axis settings:

1. Click on the **CHART TOOLS FORMAT** tab
2. Click on the **list arrow** attached to the right of the [Chart Elements] button and select **Horizontal (Category) Axis**
3. Click on the [Format Selection] button below – a Format Axis task pane appears on the right:

   ![Format Axis Task Pane](image)

   **AXIS OPTIONS**
   - **Axis Type**
     - Automatically select based on data
     - Text axis
     - Date axis
   - **Vertical axis crosses**
     - Automatic
     - At category number
     - At maximum category
   - **Axis position**
     - On tick marks
     - Between tick marks
     - Categories in reverse order

   ![Tick Marks, Labels, Number Options](image)

Under **AXIS OPTIONS**, the **Axis Type** has no effect here (but you might need it for dates).

4. **Vertical axis crosses** lets you move the vertical axis so that it crosses at a value other than 0 – try **At maximum category** (the vertical axis moves to the right of the chart)

5. Try **At category number** and set a value (e.g. 5) and press <Enter> (this doesn’t look good as the axis appears in the middle of the chart)

6. End by resetting **Vertical axis crosses** to **Automatic** (the axis moves back to the left)

The **Axis position** option, **On tick marks** isn’t particularly useful here, but would allow you to label a single set of columns with the axis label against each column (currently the columns are in the centre of each division).
7. Tick *Categories in reverse order* – the series swap places and the axis is labelled 10, 8, 6 ... (the y-axis moves to the right)

8. **Untick** *Categories in reverse order* so that the y-axis moves back to the left

9. Click on **TICK MARKS**

The *Interval between marks* affects the number of little lines denoting the divisions – there’s no need to change this here

10. Click on **LABELS**

11. Under **Interval between labels**, set *Specify interval unit* to 2 and press <Enter> - the axis is now labelled 1, 3, 5 ...

The other options aren’t so useful. *Major/Minor type* (under **TICK MARKS**) lets you position the tick marks relative to the axis. *Distance from axis* (under **LABELS**) moves the labels closer to or further away from the axis, and *Label Position* lets you move the labels away from the axis or hide them completely (None).

12. Click on **NUMBER** – by default, it is *Linked to source*, but you can change the *Category* (currently *General* to *Number*) to let you set the number of decimal places etc. (just like formatting inside a cell)

13. Click on the [x] in the *Format Axis* task pane to **close** that task pane

Moving to the vertical (y- or value) axis:

14. Click on [Chart Elements] and choose **Vertical (Value) Axis** then on [Format Selection]

The options here are the same as before except for the **Axis Options**. These are significantly different because the values aren’t fixed by Excel, but are determined by the data.

**AXIS OPTIONS**

**Bounds**
- Minimum: 0.0
- Maximum: 12.0

**Units**
- Major: 2.0
- Minor: 0.4

**Horizontal axis crosses**
- Automatic
- Axis value: 0.0
- Maximum axis value

**Display units**: None

- Show display units label on chart
- Logarithmic scale: Base 10
- Values in reverse order

15. Set **Maximum to 10**

16. Set **Major to 2**

17. Set **Minor to 1**

To see the effect of fixing the minor units:

18. Under **TICK MARKS**, change *Minor type* to **Outside**
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Very small tick marks should now appear at values of 1, 3, 5 etc. on the vertical axis (you will need to look very closely to see them)!

19. Click on the [x] in the Format Axis task pane to close that task pane
20. Back on the spreadsheet, change the data value in B7 to 15 and press <Enter> – the chart shows it as 10 (the maximum axis value)
21. Click on the chart, move to the CHART TOOLS FORMAT tab and repeat step 14
22. Next to Maximum, click on the [Reset] button to set it back to Auto to cater for any larger values automatically – now the appropriate column extends up to 15
23. Click on the [x] in the Format Axis task pane to close that task pane
24. Reset the data value in B7 back to 5

Column Separation, Pattern Fill and Gridlines

Next, have a look at some of the options associated with the data:

1. Click on the chart then move to the CHART TOOLS FORMAT tab and click on [Chart Elements]
2. Choose Series “xxx” followed by [Format Selection] – the Format Data Series task pane appears on the right:

   ![Format Data Series](image)

3. Drag the Series Overlap bar to the far right so it reaches 100% - the two columns are drawn on top of each other
4. Drag the Series Overlap bar to the far left so it reaches -100% - the columns are separated by a gap (bigger than the original)
5. Drag the Gap Width bar to the far right so it reaches 500% - the columns become very thin
6. Drag the Gap Width bar to the far left so it reaches 0% - the columns are much wider and touch each other
7. Set Series Overlap to 0% (you can also type in values) and the columns completely fill the axis
8. Finally, set Plot Series On to Secondary Axis – a second axis (0 to 12) appears on the right and the one set of columns is partly hidden by the other (but you could change the transparency to see the values)
9. Press <Ctrl z> (as many times as you need) to [Undo] all the previous changes
10. Click on the [x] in the Format Data Series task pane to close that task pane

As well as being able to format a whole data series, you can also do the same with a single data point/column:

11. Use the <right_arrow> key to move along the series to a particular column (you could also click on it with the mouse) – the handles are now showing on just the one column, and the task pane should have changed its name to Format Data Point
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12. Click on the [Fill & Line] icon

13. Click on [Fill]

14. Change the colour of the column by choosing **Solid fill** and a **different Color**

Alternatively, you may want to use Pattern Fill to distinguish columns (especially if you are printing them in black and white). This allows you to use cross-hatching etc. on the columns, bars or pie slices. Obviously, you would normally change all the columns in a series but, here, just change the selected one.

15. Still under **Fill**, choose **Pattern Fill**

16. Choose a **Pattern** and set the required colour for both the **Foreground** and **Background**

17. Click on the [x] in the Format Data Point task pane to **close** that task pane, then press `<Ctrl z>` (as many times as you need) to **Undo** the previous pattern/colour changes on the single data column

The final element which you’ve yet to explore is the set of **gridlines**:

18. Click on the chart then move to the **CHART TOOLS FORMAT** tab and click on **[Chart Elements]**

19. Choose **Vertical (Value) Axis Major Gridlines** followed by **[Format Selection]** – the **Format Major Gridlines** task pane appears on the right:

20. Change the **Dash type** to a **dashed line**
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21. Click on the [x] in the Format Major Gridlines task pane to close that task pane.

22. Press <Delete> and the gridlines disappear - press <Ctrl z> to [Undo] the deletion.

There are other elements, not present on this particular chart, which will be looked at later.

Tip: If you double click on a chart element, the task pane to format that element is displayed on the right. Try it now, if you like, then [Close] the Format task pane.

The Chart Tools Format Tab

You've already looked at a couple of the buttons in the first, Current Selection, group. The other groups are similar to what you would find on the DRAWING TOOLS FORMAT tab. The Insert Shapes group can be used to bring in other shapes onto your spreadsheet or chart. The Shape Styles group is essentially another way to format a shape (instead of using the [Format Selection] button). You may prefer using these buttons instead:

1. Click on [Chart Elements] and choose (for example) Plot Area

2. Next, click on the more arrow at the foot of the scroll bar on the right of the [Style] (Abc) buttons in the Shape Styles group.

3. Move the mouse cursor around the styles – the element changes to match the current selection. Click away from the gallery of shape styles.

4. If you have chosen a style by mistake, press <Ctrl z> to [Undo] it.

If you want to set your own style, you do so using the three Shape buttons to the right of the [Style] (Abc) buttons:

5. Click on the words [Shape Fill] and explore what’s available – there’s no need to change anything.

6. Next, do the same with the [Shape Outline] button.

7. Finally, try out the [Shape Effects] button – here you can also set a Glow, Soft Edges etc.

8. If you have made any changes, press <Ctrl z> to [Undo] them.

The buttons in the WordArt Styles group are all greyed out, as you aren’t using any WordArt here. To see what these do (though it’s unlikely you’ll ever use them):

9. Click on [Chart Elements] and choose Chart Area.

10. Move the mouse over the styles provided (you can click on the more arrow to see more) – if you accidentally choose one press <Ctrl z> for [Undo].

Similarly, the Arrange group is largely irrelevant here (if you had two or more charts overlapping then you could use the buttons here to bring one to the front or send it backward). The final group is Size:

11. Use the [Shape Height] and [Shape Width] buttons to set the exact size of the chart – either type in the dimensions you want or use the arrow keys to make the chart bigger or smaller.

12. Click on the group arrow on the right of the Size group to display the Format Chart Area task pane on the right with SIZE and PROPERTIES options.

13. Click on PROPERTIES tab and note default is to Move and size with cells.

14. Click on the [x] in the Format Chart Area task pane to close that task pane.

15. Finally, right click on the column J heading (or any of those behind the chart) and choose Delete – the chart becomes narrower – press <Ctrl z> to [Undo] the column deletion.
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To stop this happening, the option under PROPERTIES (step 13) needs setting to Move but don’t size with cells. Try this, if you like, then repeat step 15.

The Chart Tools Design Tab

1. Click on the chart and then click on the CHART TOOLS DESIGN tab at the top – the following ribbon will show (or something very similar):

The CHART TOOLS DESIGN ribbon allows you to add chart elements, choose a quick layout, use built-in chart styles, look at the selected data, and change the chart type. You can also move a chart onto its own chart sheet as follows:

2. Click on the [Move Chart] button on the far right of the ribbon – a dialog box appears:

3. Choose New Sheet and change the name from Chart1 to MyChart – press <Enter> for [OK]

Your chart is moved to a separate sheet, filling the whole screen, which makes it much easier to see what’s going on.

Adding a Chart Title

1. Click on the [Add Chart Element] button (the first button on the ribbon)
2. Click on Chart Title and choose Above Chart – a Chart Title placeholder/box is added
3. Type Any Title then press <Enter> - your typing is now shown in the placeholder

Note that you can use the mouse to drag the title (and most chart elements) to any position you like.

4. Click on the [Add Chart Element] button again, then on Chart Title and choose More Title Options… – the Format Chart Title task pane appears on the right:
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The FILL and BORDER settings under TITLE OPTIONS can be used to change the background colour and border of the chart title placeholder respectively.

5. Click on TEXT OPTIONS and then TEXT FILL – here, by changing the Color of the Solid fill, you change the colour of the chart title text. Try it if you want. Note that it has no font settings, so you cannot change the font or font size from here.

6. Click on the [x] in the Format Chart Title task pane to close that task pane

7. Right click on the chart title and choose Font...

8. In the Font dialog box that appears, you can change the Latin text font and the Size (as well as the Font color) – make any changes and then click [OK]

Adding Axis Titles

1. Click on the [Add Chart Element] button

2. Click on Axis Titles and choose Primary Horizontal – an Axis Title box is added below the x-axis

3. Type Row Numbers then press <Enter> - your typing is now shown in the box

4. Repeat step 2 but choose Primary Vertical

5. Type Data Values then press <Enter>

The More Axis Title Options... are very similar to those you saw for the Chart Title.

6. To change any font settings, right click on either or both of your axis titles and choose Font... – make any changes and then click [OK]

Adding a Legend

1. Click on the [Add Chart Element] button

2. Click on Legend button and note the pre-set alternative positions – choose Right to put the legend on the right-hand side of the chart

3. Repeat the previous 2 steps and then choose More Legend Options... - the Format Legend task pane appears on the right:

4. Note the options, then click on the [x] in the Format Legend task pane to close that task pane

Excel lets you format not just the whole legend but individual entries within it:

5. Move the mouse over the Series “xxx” Legend Entry and click the mouse button to select it – you may have to do this 2 times (when selected, it has little circles around it)
Microsoft Excel 2013 Charts

6. Right click and choose Fill followed by No Fill – the xxx columns disappear from the chart
7. Press <Ctrl z> to [Undo] the fill colour change and redisplay the xxx columns

Adding Data Labels

1. Click on the [Add Chart Element] button
2. Click on Data Labels and choose Outside End – numbers, showing the data values in cells A2 to B11, appear above the top of each column

Again, each set of labels can be positioned (or formatted) differently:

3. Right click on any data label and choose Format Data Labels... - the Format Data Labels task pane appears on the right:

   ![Format Data Labels Task Pane]

   - **LABEL OPTIONS**
     - Label Contains:
       - [ ] Value From Cells
       - [ ] Series Name
       - [ ] Category Name
       - [x] Value
       - [x] Show Leader Lines
       - [ ] Legend key
     - Separator:
     - Reset Label Text
   - Label Position:
     - [ ] Center
     - [ ] Inside End
     - [ ] Inside Base
     - [x] Outside End

4. Change the Label Position to Inside End, then click on the [x] in the Format Data Labels task pane to close that task pane

You can even position (or format) an individual label:

5. Click on any of the currently-selected data labels to select just that one
6. Now, repeat steps 3 and 4, changing the Label Position to Center (remember, you can even drag it to a particular position)
7. Click on TEXT OPTIONS at the top and, this time, change the Fill Color to match that of the column – the label disappears
8. Press <Ctrl z> twice to undo the changes to the colour and position of the label
If you want to display the data in tabular form on the chart, add a *Data Table*:

9. Click on the [Add Chart Element] button
10. Click on Data Table followed by No Legend Keys – the data appears in a table below the chart
11. Repeat the previous 2 steps, but choose More Data Table Options... - the Format Data Table task pane appears on the right:

12. Note the extra settings then tick Show Legend Keys - click on the [x] in the Format Data Table task pane to close that task pane
13. End by hiding the Data Table – click on the [Add Chart Element] button, click on Data Labels and choose None

**Making Changes to the Axes and Gridlines**

To remove the row number labels from the horizontal x-axis:

1. Click on the [Add Chart Element] button
2. Click on Axes and choose More Axis Options... - the Format Axis task pane appears on the right
3. Click on LABELS, and then for the Label Position choose None – the numbers disappear – press <Ctrl z> to reinstate them
4. Click on the [x] in the Format Axis task pane to close that task pane

To make changes to the vertical y-axis:

5. Right click on a number on the vertical y-axis and choose Format Axis... – the Format Axis task pane appears on the right, specifically referring to the vertical y-axis
6. Tick the Logarithmic Scale box
7. Having noted the effect, untick the Logarithmic Scale box
8. Click on the [x] in the Format Axis task pane to close that task pane

To hide or show gridlines:

9. Click on the [Add Chart Element] button, choose Gridlines and then Primary Major Horizontal – the gridlines disappear (assuming they were there to begin with)
10. Repeat the previous step, but choose Primary Major Vertical – vertical gridlines appear
11. Press <Ctrl z> twice to undo the changes to the gridlines

Note that you can also display the Format Major Gridlines task pane (seen earlier) by choosing More Gridline Options... The major and minor gridlines can be formatted separately by selecting them before issuing the command. Single gridlines cannot be formatted differently from the rest.
Microsoft Excel 2013 Charts

Trendlines

You can add a trendline (best fit line) to your chart as follows:

1. Click on the [Add Chart Element] button
2. Click on Trendline and choose Linear
3. A dialog box asks whether you want a trendline for the xxx or yyy data – choose xxx (click on [OK])

A line is now drawn through the top of each xxx data column. Here, the line fits perfectly as the data values increase regularly by one each time. A trendline is calculated using the statistical technique called regression. Don’t worry if you know nothing about this – just be aware that regression works out the best fit, based on the data.

4. Click on the Sheet 1 tab (at the bottom) to move to the data sheet and then change the data value in cell A2 to 5 – on moving back to the chart sheet (click on the MyChart tab), note how the line moves to try to fit the new value
5. Press <Ctrl z> to [Undo] the change to the data and then move back to the chart sheet

Such lines can even be used for forecasting extra values:

6. Click on the [Add Chart Element] button then on Trendline again, but choose Linear Forecast (for xxx) – two extra values are added to the chart
7. Press <Ctrl z> to [Undo] the extra values
8. Click on the [Add Chart Element] button then on Trendline again and choose More Trendline Options… (based on xxx) – the Format Trendline task pane appears on the right:
Microsoft Excel 2013 Charts

As you can see, there are many other types of trend/regression lines that you can fit to your data. You can also forecast both backwards and forwards and you can display the equation of the line.

9. Try out the different TRENDLINE OPTIONS then reset to Linear
10. Under Forecast, set Forward to 4 periods
11. Tick Display Equation on Chart
12. Tick Display R-squared value on chart
13. Click on the [x] in the Format Trendline task pane to close that task pane

Don’t worry if you don’t understand the equation or R-squared value (the value of 1 means that you have a perfect fit, and you choose the TRENDLINE OPTION which maximizes it) – normally you only display these if you know what they indicate. Searching on Excel’s online help for trendline will give you more information.

14. Press <Ctrl z> (as many times as you need) to [Undo] all the above changes apart from the first one that added the linear trendline

Adding Error Bars

To add error bars to the chart:

1. Click on the [Add Chart Element] button
2. Click on Error Bars and choose Standard Error – up and down bars are added at the top of each column

By choosing Standard Error, you have equal-sized bars on each column (the Standard Error is a fixed value).

3. Repeat the previous steps, but choose Percentage – the bars are different sizes this time, each being 5% of the data value (i.e. for 10, both the up and down bar is 0.5, giving an overall bar 1 unit high)
4. Repeat steps 1 and 2, but choose More Error Bars Options… for the xxx Series - the Format Error Bars task pane appears on the right:
Microsoft Excel 2013 Charts

Here, you can choose exactly how you want your error bars shown. Usually you want both Minus and Plus, but you don’t have to. The default here is to have a Fixed value, but another option is Custom.

5. Choose the option Custom then on [Specify Value] – a Custom Error Bars dialog box appears:

6. Click on the Sheet1 tab and then drag through cells C2 to C11 to set the Positive Error Value
7. Repeat step 6 for the Negative Error Value (deleting the current setting) then press <Enter> for [OK]
8. Click on the [x] in the Format Error Bars task pane to close that task pane
9. Click on the Sheet1 tab and type the following data into cells C2 to C11:

   1 1 2 2 1 3 2 0 1 0

On moving back to the chart (click on the MyChart tab), you’ll find these values are used for the error bars.

Quick Layouts

Excel provides you with some quick layouts for the different elements that can appear on a chart.

1. Click on the CHART TOOLS FORMAT tab followed by the [Quick Layout] button in the Chart Layouts group
2. A number of built-in chart layouts are displayed. Clicking on Layout 9 (the third layout in the third row), for example, gives you a basic chart layout with a chart title, axis titles and a legend. This would be a good layout to choose after you have first created your chart
3. Since our chart already has a trendline and error bars on it, press <Ctrl z> to [Undo] the latest change to the chart layout

Chart Styles

The Chart Styles group on the CHART TOOLS DESIGN ribbon contains pre-defined styles which help make colouring your chart simple and can give a very professional look.

1. Click on the [Change Colors] button to choose a different colour scheme. Note that the following Chart Styles will change colours accordingly
2. Move your mouse along the different chart styles on the ribbon to get a preview of how the chart would look
3. Now click on the [More] arrow at the bottom of the Chart Styles scroll bar to see further styles
4. Choose the Style that you prefer most – the chart should change accordingly
Microsoft Excel 2013 Charts
Changing the Chart Type

In the **Type** group on the ribbon, the [Change Chart Type] button lets you change the type of chart if you selected the wrong type when you first created the chart, or want to see how the data would look using a different chart type.

1. Click on the [Change Chart Type] button – the following dialog box appears:

![Change Chart Type dialog box](image)

**Note** that in this version of Excel (2013), you can get Excel to show you its’ Recommended Charts (this is also available for Pivot Tables). Make sure the **All Charts** tab is selected at the top.

2. Choose the [3-D Column] chart (the one in the top row on the far right) and press <Enter> for **OK**. You will probably find that the trendline and error bars disappear

3. Move to the CHART TOOLS FORMAT tab and click on the list arrow of the [Chart Elements] button on the far left – note how the list of elements has grown

4. From the list, click on Chart Area followed by the [Format Selection] button below it– the Format Chart Area task pane appears on the right

5. Click on the [Effects] icon
Microsoft Excel 2013 Charts

6. Click on 3-D Rotation and the following options will show:

7. Under 3-D ROTATION, change the X Rotation, Y Rotation and Perspective to change your view of the chart (you can use the up/down arrows to change the degrees)

8. Investigate some of the other options, if you like, then click on the [x] in the Format Chart Area task pane to close that task pane

9. Move back to the CHART TOOLS DESIGN tab and repeat steps 1 and 2, this time choosing Line followed by [Line with Markers] (fourth in the set of Line charts) – press <Enter> for [OK]

Not all chart types are suitable for all types of data, as you’ll see next. Searching on Excel’s online help for chart types will give you further information on what available chart types there are in Excel, and which type of data is most suitable for which chart.

10. Click on the [Change Chart Type] button, choose Pie and click on [OK] – you’ll find that a pie chart can only plot one data series at a time

11. If you click on one of the pie slices and drag it out, the pie slices separate

12. If you click on one of the pie slices and drag the slice in as far as you can, all the slices come together again
Microsoft Excel 2013 Charts

13. If you click on an individual slice (to select that slice) and drag it outwards, only that slice will be exploded individually.

14. Click away from the slice (in the background) then click on the [Change Chart Type] button.

15. On the left, click on XY Scatter and choose the sixth option at the top for a Bubble chart – click on [OK].

The bubbles are drawn too large - to resize them:

16. Right click on any of the bubbles and choose Format Data Series...

17. Change Scale bubble size to 15 and press <Enter> - the bubbles are resized.

18. Click on the [x] in the Format Data Series task pane to close that task pane.

There isn’t time to explore in detail all the different chart types/subtypes here, but you’re welcome to do so.

Combination Charts

Excel lets you combine certain chart types onto a single chart – for example you could have both a column and a line. To demonstrate this, start with a new chart.

1. Move back to the data – click on the Sheet1 tab at the bottom.

2. Select cells A1 to A11 then move to the INSERT tab and click on the [Insert Line Chart] icon in the Charts group – note that you can choose the Chart Type here (you don’t have to do so on the CHART TOOLS DESIGN tab).

3. Choose [Stacked Line] (the second in the top row) - a chart appears, as before.

4. Next, right click on the data (A1 to A11 should still be selected) and Copy it.

5. Right click on the top edge of the chart and click on the icon under Paste Options: to Paste in a second set of xxx values – the line adds the old values to the new.

6. Right click on the top line, to select it, and choose Change Series Chart Type...

7. Select [Clustered Column - Line] (the first one in theCombo group) then press <Enter> for [OK].

You now have a combination chart. The line isn’t a trendline. To prove this:

8. Change the data in cell A2 to 0 – press <Enter> to plot the new value (the line is no longer straight).

X-Y Charts

In all the charts you have seen so far, the horizontal (x-) axis isn’t actively used. It has been simply numbered 1 to 10, which essentially indicates the data row in the data set (i.e. data values in A2 and B2 are in row 1 etc.). If you want to plot one set of data values against another, then you MUST use an X-Y (Scatter) Chart.

1. First, select your data – here select A1 to B11.

2. Move to the INSERT tab, click on the [Insert Scatter (X, Y) or Bubble Chart] button in the Charts group and choose Scatter (the first).

The new scatter chart (which has replaced the previous combo chart) only plots the yyy values – the xxx values are used to position them along the horizontal axis. Note the gap between the first two points (because A2 is still set to 0) and also how the points are plotted at their exact position on the horizontal axis.

3. Change the value in cell A11 to 11 – the last point moves further along the axis.

4. Select the yyy series again (drag through cells B1 to B11), right click on the selection and Copy the data.
Microsoft Excel 2013 Charts

5. Right click on the top edge of the chart and click on the icon under Paste Options: to Paste in a second set of y-values (these are plotted on top of the first, in a different colour)

6. Right click on any of the new values and choose Change Series Chart Type...

7. Select [Clustered Column - Line] (the first one in the Combo group) then press <Enter> for [OK]

You’ll find that the columns don’t all appear where you want them – they aren’t making use of the horizontal axis. Here, you can’t create the combination chart you might have hoped for.

8. Press <Ctrl z> to [Undo] the chart type change

9. Right click on any of the new values and choose Format Data Series...

10. Set Plot Series On to Secondary Axis – click on the [x] in the Format Data Series task pane to close that task pane

11. Right click on a number on the new axis on the right and choose Format Axis...

12. Under AXIS OPTIONS, change Maximum to 20 then press <Enter> - you can now see both the xxx and yyy series of data on the chart

13. Click on the [x] in the Format Axis task pane to close that task pane

This last exercise shows you the value of a secondary axis – if you have two series with different scales of numbers (e.g. one set with values up to 10 and another with values up to 1000) then you can plot them on the same graph by making use of a second axis. Here, you don’t need the duplicate series so:

14. Click on any of the new values in the yyy series (to select the series) then <Delete> them – that data series will disappear from the chart (the original data remains in the spreadsheet)

Next, try adding some error bars:

15. On the CHART TOOLS DESIGN tab, click on the [Add Chart Element] button

16. Click on Error Bars and choose Standard Error – both horizontal and vertical error bars appear

17. Click on any of the horizontal bars and <Delete> it (you’ll find that all the horizontal error bars disappear)

The Data Group

The two buttons in the Data group let you change the data currently being used for the chart.

1. Click on the [Select Data] button – the following dialog box appears:

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Select Data Source

Chart data range: =Sheet1!A$1:S$81

Legend Entries (Series)

- Add
- Edit
- Remove

- yyy

Horizontal (Category) Axis Labels

0
1
2
3
4
5

OK Cancel

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Microsoft Excel 2013 Charts

2. Now click on [Add] – the Edit Series dialog box appears:

3. Click in the empty Series X values: box then drag through cells C2 to C11
4. Move to the Series Y values: box and <Delete> the current setting
5. Now drag through cells B2 to B11 to set this to =Sheet1!$B$2:$B$11 - press <Enter> for [OK]
6. Note the change to the chart then [Remove] the new Series2 values - click [OK]
7. Finally, click on the [Switch Row/Column] button – the graph changes quite a bit, maybe to something not quite expected! Press <Ctrl z> for [Undo]

The Switch Row/Column button does have its uses. If your data was typed in across the columns (instead of down the rows) then you would be making use of it. By default, Excel expects your data to be in rows.

Copying Charts into other Documents

Charts can also be copied to a Word document (or other software, such as PowerPoint or Access) by using [Copy] and [Paste]. When pasting into Word, it is advisable to use Paste Special via the [Paste] button, as this gives you the options of pasting the chart as a picture and/or as a linked object.

The default is to paste the chart as a Microsoft Office Graphic Object. This allows you to make changes to the chart in the normal way (right click and choose Format) but can cause problems if you change its size. Another option is to paste it as a Microsoft Excel Chart Object. When you double click on this, to edit it, it loads up Excel where you can not only make changes to the chart but to the data on the other sheet tabs. Again, however, if you change the size of the chart in your Word document, the text (chart/axes titles, legend etc.) doesn’t change causing the chart itself to shrink.

The best way to preserve how the chart looks is to paste it as a Picture (e.g. JPEG). Not only can you change the size with the layout intact but you can easily rotate it should you want it appearing sideways on an A4 page. The disadvantage of this is that any changes to the chart must be made in Excel – you would then have to copy it back into your Word document.

To see an example of copying an Excel chart to Word, see the document Microsoft Word 2013: Graphics.