

Excel - Conditional Formatting & Data Validation



**IT Training
St. George's, University of
London**

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If you have a St. George's username and password you can access all the files that goes with this manual.

Files can be found in a folder on the **N** drive in the **IT Training** folder named:
Excel - Conditional Formatting & Data Validation

N:\IT Training\ **Conditional Formatting & Data Validation**

UNDERSTANDING CONDITIONAL FORMATTING

As the name suggests, **conditional formatting** is a type of formatting that is applied to cells or ranges when certain conditions are met. These conditions are set, but can quite often be

customised and edited, in **rules** that have been programmed into Excel. There are two types of conditional formatting – **values-based** formatting and **trend-based** formatting.

What Happens With Conditional Formatting

With **conditional formatting**, cells in a specified range are coloured or shaded according to certain conditions which are outlined in **rules**.

Values-Based Conditional Formatting

With **values-based** conditional formatting, cells in the range are examined and their shading and colouring is based on whether they meet the conditions of the rule. This type of formatting allows you to see whether values in a range are **greater than** a certain value, **less than** a certain value, **equal** to a certain value, or fall **between** ranges. You can also display the **top ten**, **bottom ten**, **top 10%**, **bottom 10%**, and **above** and **below averages** with this type of formatting.

In all cases a dialog box will appear which allows you to modify the rule based on what is required. Basically, the dialog box allows you to specify a value or a range of values for the rule, and to determine the colour of the shading used. Below is an example of the dialog box for applying the **Between** rule.

			C	D	E	F	G	H	I
1	Quarterly Used Vehicle Sales								
2									
3	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total
4	BMW	3 Series	15,900	5,740	26,850	28,455	3,200	7,223	87,368
5		5 Series	24,300	15,200	6,590	5,940	7,900	43,211	103,141
6		7 Series	4,500	3,420	32,700	2,540	4,300	2,050	49,510
7		X3	9,766	3,400	4,556	15,200	6,590	47,100	86,612
8		X5	84,500	15,400	70,300	3,420	32,700	2,300	208,620
9		Z3	11,000	6,539	8,900	2,050	5,940	4,300	38,729
10		Z4	12,400	4,500	5,900	47,100	2,540	5,600	78,040
11	Ford	Ecstasy	7,223	4,200	8,332	23,441	4,778	4,220	52,194

Trend-Based Conditional Formatting

With **trend-based** conditional formatting, colouring is applied to all of the cells in the range. The depth of the colouring is determined by the values shown in each cell relative to the overall total of the range. This allows you to instantly spot higher, lower and median values in the range and to see the trend of the numbers. The formatting can be applied in the form of **coloured bars**, **coloured scales** and even **icons**.

	A	B	C	D	E	F	G	H	I
1	Quarterly Used Vehicle Sales								
2									
3	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total
4	BMW	3 Series	15,900	5,740	26,850	28,455	3,200	7,223	87,368
5		5 Series	24,300	15,200	6,590	5,940	7,900	43,211	103,141
6		7 Series	4,500	3,420	32,700	2,540	4,300	2,050	49,510
7		X3	9,766	3,400	4,556	15,200	6,590	47,100	86,612
8		X5	84,500	15,400	70,300	3,420	32,700	2,300	208,620
9		Z3	11,000	6,539	8,900	2,050	5,940	4,300	38,729
10		Z4	12,400	4,500	5,900	47,100	2,540	5,600	78,040
11	Ford	Ecstasy	7,223	4,200	8,332	23,441	4,778	4,220	52,194

Coloured scales

Icons

Coloured bars

FORMATTING CELLS CONTAINING VALUES

A common analysis requirement is to see what values in a worksheet are greater than a specific amount. For example, you may want to see which salespeople have achieved better than

their set targets. This can be done using the **Greater Than** option which appears under **Highlight Cell Rules** in the **Conditional Formatting** menu on the **HOME** tab.

Try This Yourself:

Open File Before starting this exercise you **MUST** open the file *E1321 Conditional Formatting_1.xlsx...*

1 Select the range **I4:I45**

2 Click on the **HOME** tab, click on **Conditional Formatting** in the **Styles** group, then point to **Highlight Cells Rules** to display a menu of options, as shown

3 Select **Greater Than** to display the **Greater Than** dialog box

With Live Preview, the cells in the range that meet the condition are highlighted...

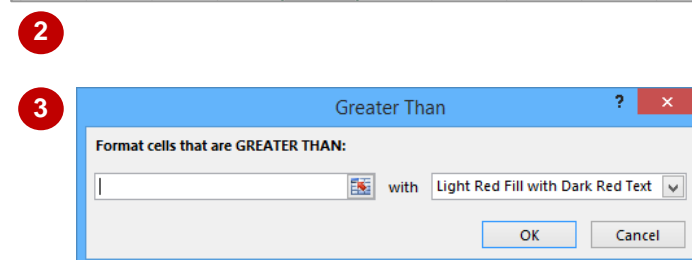
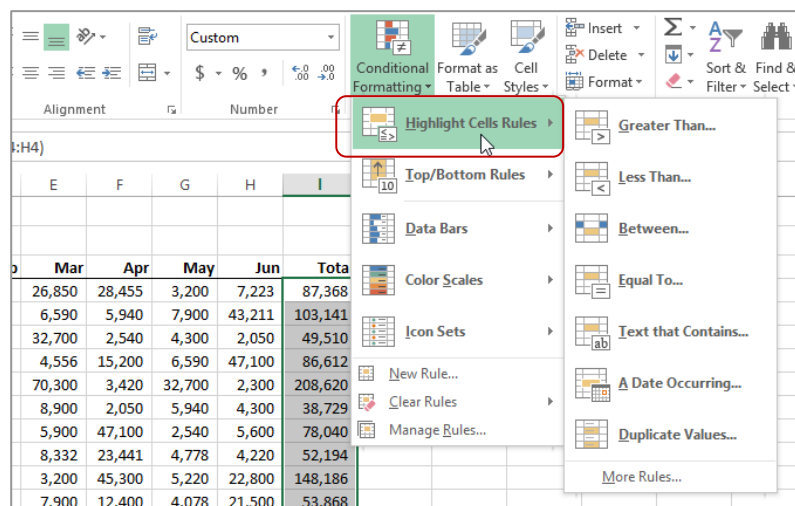
4 In **Format cells that are GREATER THAN:** type **90000**

Notice how the formatting changes...

5 Click on the drop arrow for **with**, then select **Green Fill with Dark Green Text** to change the colour of the shading

6 Click on **[OK]** to apply the formatting

7 Click in a blank cell to deselect the range and see the formatting more clearly



	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total
3									
4	BMW	3 Series	15,900	5,740	26,850	28,455	3,200	7,223	87,368
5		5 Series	24,300	15,200	6,590	5,940	7,900	43,211	103,141
6		7 Series	4,500	3,420	32,700	2,540	4,300	2,050	49,510
7		X3	9,766	3,400	4,556	15,200	6,590	47,100	86,612
8		X5	84,500	15,400	70,300	3,420	32,700	2,300	208,620
9		Z3	11,000	6,539	8,900	2,050	5,940	4,300	38,729
10		Z4	12,400	4,500	5,900	47,100	2,540	5,600	78,040
11	Ford	Ecstasy	7,223	4,200	8,332	23,441	4,778	4,220	52,194
12		Explorer	43,211	28,455	3,200	45,300	5,220	22,800	148,186
13		Fiesta	2,050	5,940	7,900	12,400	4,078	21,500	53,868
14		Mercury	47,100	2,540	4,300	35,400	18,900	43,900	152,140
15		Mustang	23,441	4,778	5,600	4,500	4,300	9,025	51,644
16		Raven	45,300	5,220	4,220	4,200	5,900	7,223	72,063
17	GMH	Adventurer	12,400	4,078	22,800	28,455	8,332	43,211	119,276
18		Traveller	35,400	18,900	21,500	5,940	3,200	2,050	86,990
19	Hyundai	Elantra	34,500	42,000	43,900	2,540	7,900	47,100	177,940

For Your Reference...

To **format cells containing specific values**:

1. Select the range
2. Click on the **HOME** tab, then click on **Conditional Formatting** in the **Styles** group
3. Point to **Highlight Cell Rules**, then select **Greater Than**
4. Set the options as required and click on **[OK]**

Handy to Know...

- The **Greater Than** conditional formatting option is very literal. If, for example, you ask it to format values over 90,000 it will only format values that are over 90,000 – any value of 90,000 will not be formatted.

CLEARING CONDITIONAL FORMATTING

Excel will compound conditional formats. For example, you can apply a **Greater Than** format, then come back and apply a **Less Than** format. The original format will remain, depending upon

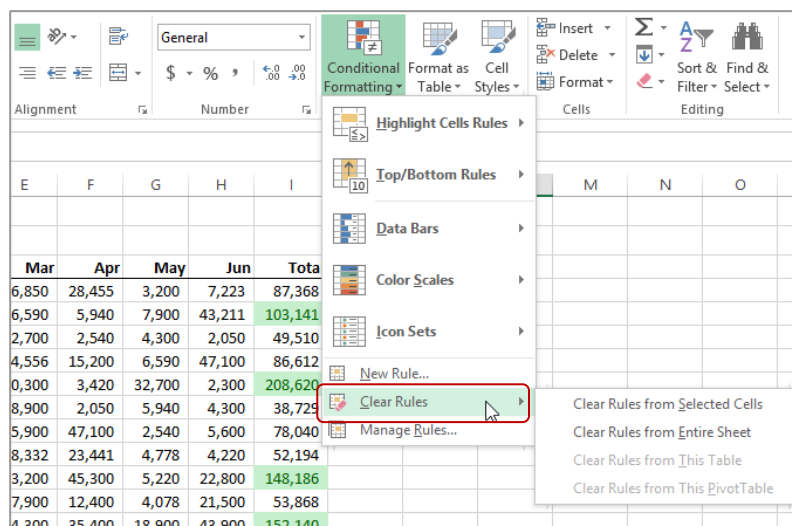
what is required in the second format. Unless you want compounding formats, you should **clear** any previous formats from the worksheet before applying a new one.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file *E1321 Conditional Formatting_2.xlsx...*

- 1 Click on the **HOME** tab, then click on **Conditional Formatting** in the **Styles** group to display a menu of options
- 2 Point to **Clear Rules** to display a menu of options
- 3 Select **Clear Rules from Entire Sheet** to clear all the formatting from the entire worksheet



2

3	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total
4	BMW	3 Series	15,900	5,740	26,850	28,455	3,200	7,223	87,368
5		5 Series	24,300	15,200	6,590	5,940	7,900	43,211	103,141
6		7 Series	4,500	3,420	32,700	2,540	4,300	2,050	49,510
7		X3	9,766	3,400	4,556	15,200	6,590	47,100	86,612
8		X5	84,500	15,400	70,300	3,420	32,700	2,300	208,620
9		Z3	11,000	6,539	8,900	2,050	5,940	4,300	38,729
10		Z4	12,400	4,500	5,900	47,100	2,540	5,600	78,040
11	Ford	Ecstasy	7,223	4,200	8,332	23,441	4,778	4,220	52,194
12		Explorer	43,211	28,455	3,200	45,300	5,220	22,800	148,186
13		Fiesta	2,050	5,940	7,900	12,400	4,078	21,500	53,868
14		Mercury	47,100	2,540	4,300	35,400	18,900	43,900	152,140
15		Mustang	23,441	4,778	5,600	4,500	4,300	9,025	51,644
16		Raven	45,300	5,220	4,220	4,200	5,900	7,223	72,063
17	GMH	Adventurer	12,400	4,078	22,800	28,455	8,332	43,211	119,276
18		Traveller	35,400	18,900	21,500	5,940	3,200	2,050	86,990
19	Hyundai	Elantra	34,500	42,000	43,900	2,540	7,900	47,100	177,940
20	KIA	Micro	500	4,300	9,025	4,778	4,300	2,300	25,203

3

For Your Reference...

To **clear conditional formatting**:

1. Click on the **HOME** tab, then click on **Conditional Formatting** in the **Styles** group
2. Point to **Clear Rules**, then select an option

Handy to Know...

- You can clear the conditional formatting from a selected range by clicking on the **HOME** tab, then in the **Styles** group, selecting **Conditional Formatting > Clear Rules > Clear Rules from Selected Cells**. This is useful if you have conditional formatting within the worksheet that you wish to retain.

MORE CELL FORMATTING OPTIONS

There are a number of options under **Highlight Cells Rules** on the **Conditional Formatting** menu that are handy to know about and use. These include the ability to format **less than** a

value, format for values **between** two values, and format for values **equal** to a specific value.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file *E1321 Conditional Formatting_3.xlsx...*

- 1 Select the range **C4:H10**
This includes all of the sales for BMW motor vehicles...
- 2 Click on the **HOME** tab, click on **Conditional Formatting** in the **Styles** group, then point to **Highlight Cells Rules** to display a menu of options
- 3 Select **Less Than** to display the **Less Than** dialog box
- 4 Type **15000** to see how many months had model sales less than **15,000**
At this stage we want to use more of these commands so we'll cancel the previous one...
- 5 Click on **[Cancel]** to cancel the formatting
- 6 Repeat steps 2 to 5 to see the formatting for the **Between** setting and the **Equal To** setting
- 7 Click on **[Cancel]** to cancel the formatting

3	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total
4	BMW	3 Series	15,900	5,740	26,850	28,455	3,200	7,223	87,368
5		5 Series	24,300	15,200	6,590	5,940	7,900	43,211	103,141
6		7 Series	4,500	3,420	32,700	2,540	4,300	2,050	49,510
7		X3	9,766	3,400	4,556	15,200	6,590	47,100	86,612
8		X5	84,500	15,400	70,300	3,420	32,700	2,300	208,620
9		Z3	11,000	6,539	8,900	2,050	5,940	4,300	38,729
10		Z4	12,400	4,500	5,900	47,100	2,540	5,600	78,040
11	Ford	Ecstasy	7,223	4,200	8,332	23,441	4,778	4,220	52,194

1

3

Less Than ? x

Format cells that are LESS THAN:

43,275 with Light Red Fill with Dark Red Text

OK Cancel

3	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total
4	BMW	3 Series	15,900	5,740	26,850	28,455	3,200	7,223	87,368
5		5 Series	24,300	15,200	6,590	5,940	7,900	43,211	103,141
6		7 Series	4,500	3,420	32,700	2,540	4,300	2,050	49,510
7		X3	9,766	3,400	4,556	15,200	6,590	47,100	86,612
8		X5	84,500	15,400	70,300	3,420	32,700	2,300	208,620
9		Z3	11,000	6,539	8,900	2,050	5,940	4,300	38,729
10		Z4	12,400	4,500	5,900	47,100	2,540	5,600	78,040
11	Ford	Ecstasy	7,223	4,200	8,332	23,441	4,778	4,220	52,194

4

6

Between ? x

Format cells that are BETWEEN:

22,663 and 63,888 with Light Red Fill with Dark Red Text

OK Cancel

For Your Reference...

To **format cells containing specific values**:

1. Select the range, then click on the **HOME** tab
2. Click on **Conditional Formatting** in the **Styles** group
3. Point to **Highlight Cells Rules**, select an option, apply the settings as necessary, then click on **[OK]**

Handy to Know...

- When applying conditional formatting, if you inadvertently click on **[OK]** instead of **[Cancel]**, you can either use the **Clear Rules** option or the **Undo** tool in the **Quick Access Toolbar** to remove the unwanted formatting.

TOP TEN ITEMS

Conditional formatting can be used in a worksheet to highlight upper and lower values. For example, it is often interesting to know your top 10 customers, or the top 10% of products

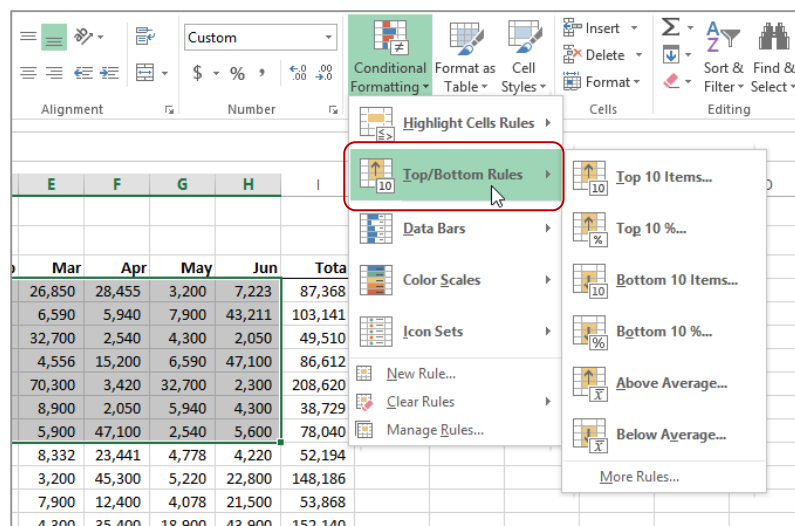
sold in the last year. This can be achieved using the **Top/Bottom Rules** menu which can be accessed from the **Conditional Formatting** menu.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file *E1321 Conditional Formatting_4.xlsx...*

- 1 Select the range **C4:H10**
- 2 Click on the **HOME** tab, click on **Conditional Formatting** in the **Styles** group, then point to **Top/Bottom Rules** to see the available options
- 3 Select **Top 10 Items** to display the **Top 10 Items** dialog box – shading will now be applied to the top 10 items in the range
- 4 Click on the down spinner arrow next to the quantity until **5** appears, as shown
The top 5 items in the range will now be coloured...
- 5 Click on **[OK]** to apply the formatting
- 6 Click outside the range to deselect it and see the results more clearly
- 7 Click on **Conditional Formatting** in the **Styles** group, then select **Clear Rules from Entire Sheet** to clear the formatting



2

3



4



3	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total
4	BMW	3 Series	15,900	5,740	26,850	28,455	3,200	7,223	87,368
5		5 Series	24,300	15,200	6,590	5,940	7,900	43,211	103,141
6		7 Series	4,500	3,420	32,700	2,540	4,300	2,050	49,510
7		X3	9,766	3,400	4,556	15,200	6,590	47,100	86,612
8		X5	84,500	15,400	70,300	3,420	32,700	2,300	208,620
9		Z3	11,000	6,539	8,900	2,050	5,940	4,300	38,729
10		Z4	12,400	4,500	5,900	47,100	2,540	5,600	78,040
11	Ford	Ecstasy	7,223	4,200	8,332	23,441	4,778	4,220	52,194

6

For Your Reference...

To **format** the **top ten items**:

1. Select the range
2. Click on the **HOME** tab, click on **Conditional Formatting** in the **Styles** group, then point to **Top/Bottom Rules**
3. Select an option

Handy to Know...

- Don't confuse the **Top 10 Items** with the **Top 10%** – the former displays only 10 results while the latter can display a variable amount of results based on what fits into the top ten percent category.

MORE TOP AND BOTTOM FORMATTING OPTIONS

The **Top/Bottom Rules** option in the **Conditional Formatting** menu provides a number of useful options for displaying upper and lower ranges in your data. You can display the

top and bottom <n> number of values, the top and bottom percentage, and whether values are above or below average.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file *E1321 Conditional Formatting_5.xlsx...*

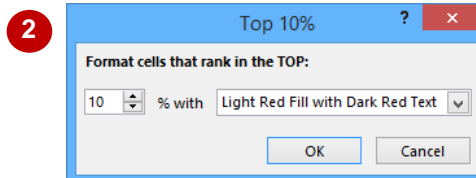
1 Select the range **C4:H10**
This includes all of the sales for BMW motor vehicles...

2 Click on the **HOME** tab, click on **Conditional Formatting** in the **Styles** group, point to **Top/Bottom Rules**, then select **Top 10%** to display the **Top 10%** dialog box

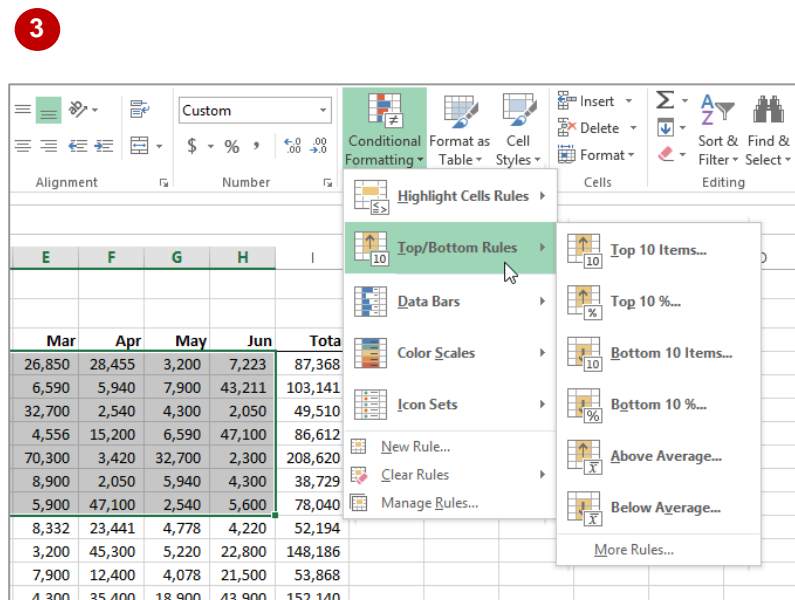
3 Spend a few moments studying the results

4 Click on **[Cancel]** to clear any formatting

5 Repeat steps 2 and 3 to select the **Bottom 10 Items**, **Bottom 10%**, **Above Average**, and **Below Average** options to view the results



3	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total
4	BMW	3 Series	15,900	5,740	26,850	28,455	3,200	7,223	87,368
5		5 Series	24,300	15,200	6,590	5,940	7,900	43,211	103,141
6		7 Series	4,500	3,420	32,700	2,540	4,300	2,050	49,510
7		X3	9,766	3,400	4,556	15,200	6,590	47,100	86,612
8		X5	84,500	15,400	70,300	3,420	32,700	2,300	208,620
9		Z3	11,000	6,539	8,900	2,050	5,940	4,300	38,729
10		Z4	12,400	4,500	5,900	47,100	2,540	5,600	78,040
11	Ford	Ecstasy	7,223	4,200	8,332	23,441	4,778	4,220	52,194



5

For Your Reference...

To **format cells** for **top** or **bottom**:

1. Select the range
2. Click on the **HOME** tab, click on **Conditional Formatting** and point to **Top/Bottom Rules**
3. Select an option, apply the desired settings and click on **[OK]**

Handy to Know...

- The up and down spinner arrows next to the values in the **conditional formatting** dialog boxes allow you to refine your conditional formatting for the number of items and the percentage of items.

WORKING WITH DATA BARS

It is sometimes difficult to spot patterns or trends when confronted with a worksheet full of figures. Conditional formatting allows you to colour cells so that you can see how the figures move from

high value to low value. **Data bars** provide colour accents to cells in the selected range. The width of the accents depends on the data value and its size relative to the overall total value.

Try This Yourself:

Open File
Before starting this exercise you **MUST** open the file *E1321 Conditional Formatting_6.xlsx*...

1 Select the range **C11:H11**
This range represents the total monthly sales of BMW vehicles...

2 Click on the **HOME** tab, click on **Conditional Formatting** in the **Styles** group, then point to **Data Bars** to see the available options

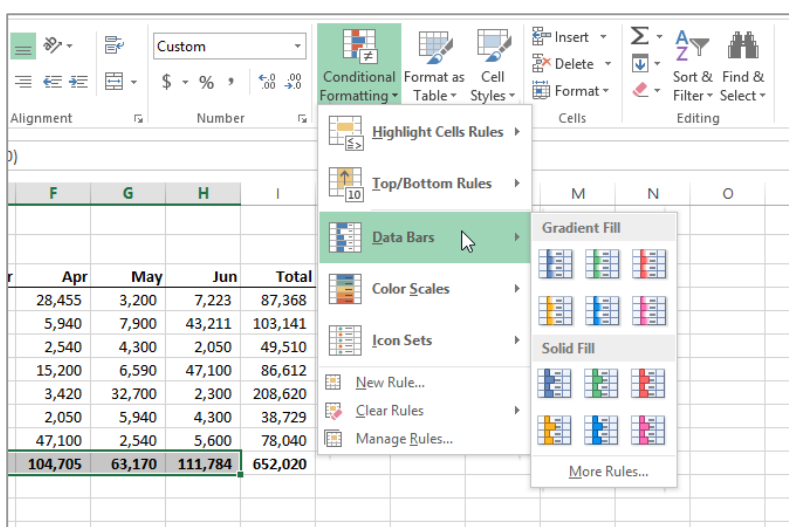
3 Point to the options to see a Live Preview of the result

4 Click on **Orange Data Bar** under **Gradient Fill**, then click outside the range to deselect it

The bars indicate the size of each value relative to the total

3	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total
4	BMW	3 Series	15,900	5,740	26,850	28,455	3,200	7,223	87,368
5		5 Series	24,300	15,200	6,590	5,940	7,900	43,211	103,141
6		7 Series	4,500	3,420	32,700	2,540	4,300	2,050	49,510
7		X3	9,766	3,400	4,556	15,200	6,590	47,100	86,612
8		X5	84,500	15,400	70,300	3,420	32,700	2,300	208,620
9		Z3	11,000	6,539	8,900	2,050	5,940	4,300	38,729
10		Z4	12,400	4,500	5,900	47,100	2,540	5,600	78,040
11	Total		162,366	54,199	155,796	104,705	63,170	111,784	652,020
12									

1



2

3	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total
4	BMW	3 Series	15,900	5,740	26,850	28,455	3,200	7,223	87,368
5		5 Series	24,300	15,200	6,590	5,940	7,900	43,211	103,141
6		7 Series	4,500	3,420	32,700	2,540	4,300	2,050	49,510
7		X3	9,766	3,400	4,556	15,200	6,590	47,100	86,612
8		X5	84,500	15,400	70,300	3,420	32,700	2,300	208,620
9		Z3	11,000	6,539	8,900	2,050	5,940	4,300	38,729
10		Z4	12,400	4,500	5,900	47,100	2,540	5,600	78,040
11	Total		162,366	54,199	155,796	104,705	63,170	111,784	652,020
12									

4

For Your Reference...

To **use data bars** to **highlight values**:

1. Select the range
2. Click on the **HOME** tab, then click on **Conditional Formatting** in the **Styles** group
3. Point to **Data Bars** and select an option

Handy to Know...

- To change to a different **Data Bar** colour, select the required range, click on the **HOME** tab, then click on **Conditional Formatting** in the **Styles** group, point to **Data Bars** and click on an option to apply it.

WORKING WITH COLOUR SCALES

Using **colour scales**, you can highlight the values of cells in a selected range relative to the total value of all cells in that range. After selecting a colour scale, each cell in the range is shaded

with a different hue and intensity of one of the colours in the scale, dependent upon its value relative to the overall selection total.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file *E1321 Conditional Formatting_7.xlsx...*

- 1 Select the range **C4:H4**
This is the vehicle monthly sales for the 3 Series BMW vehicles...
- 2 Click on the **HOME** tab, click on **Conditional Formatting**, then point to **Colour Scales** to see the options available
- 3 Point to the colours to see a Live Preview of the result how coloured shading appears across the selected range
- 4 Select **Green-Yellow-Red Colour Scale**
- 5 Select the range **C7:H8**
This is the vehicle monthly sales for the X Series BMW...
- 6 Repeat steps 2 and 4 to apply **Green-Yellow-Red Colour Scale** shading
- 7 Click outside the range to deselect it and see the results

3	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total
4	BMW	3 Series	15,900	5,740	26,850	28,455	3,200	7,223	87,368
5		5 Series	24,300	15,200	6,590	5,940	7,900	43,211	103,141
6		7 Series	4,500	3,420	32,700	2,540	4,300	2,050	49,510
7		X3	9,766	3,400	4,556	15,200	6,590	47,100	86,612
8		X5	84,500	15,400	70,300	3,420	32,700	2,300	208,620
9		Z3	11,000	6,539	8,900	2,050	5,940	4,300	38,729
10		Z4	12,400	4,500	5,900	47,100	2,540	5,600	78,040
11	Total		162,366	54,199	155,796	104,705	63,170	111,784	652,020
12									

1

3	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total
4	BMW	3 Series	15,900	5,740	26,850	28,455	3,200	7,223	87,368
5		5 Series	24,300	15,200	6,590	5,940	7,900	43,211	103,141
6		7 Series	4,500	3,420	32,700	2,540	4,300	2,050	49,510
7		X3	9,766	3,400	4,556	15,200	6,590	47,100	86,612
8		X5	84,500	15,400	70,300	3,420	32,700	2,300	208,620
9		Z3	11,000	6,539	8,900	2,050	5,940	4,300	38,729
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4

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11	Total		162,366	54,199	155,796	104,705	63,170	111,784	652,020
12									

5

3	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total
4	BMW	3 Series	15,900	5,740	26,850	28,455	3,200	7,223	87,368
5		5 Series	24,300	15,200	6,590	5,940	7,900	43,211	103,141
6		7 Series	4,500	3,420	32,700	2,540	4,300	2,050	49,510
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8		X5	84,500	15,400	70,300	3,420	32,700	2,300	208,620
9		Z3	11,000	6,539	8,900	2,050	5,940	4,300	38,729
10		Z4	12,400	4,500	5,900	47,100	2,540	5,600	78,040
11	Total		162,366	54,199	155,796	104,705	63,170	111,784	652,020
12									

7

For Your Reference...

To use **colour scales** to **highlight values**:

1. Select the range
2. Click on the **HOME** tab, click on **Conditional Formatting** in the **Styles** group, then point to **Colour Scales**
3. Select an option

Handy to Know...

- With a three colour option, Excel divides the values according to the number of cells in the range and then applies a scale of hues. In the **Green-Yellow-Red Colour Scale** option the first colour (**Green**) is applied to the highest value, while the last colour (**Red**) is applied to the lowest.

WORKING WITH ICON SETS

Using colours to conditionally format ranges in a worksheet is fine providing that your readers are capable of interpreting and indeed even seeing colours. In lieu of colouring a conditionally

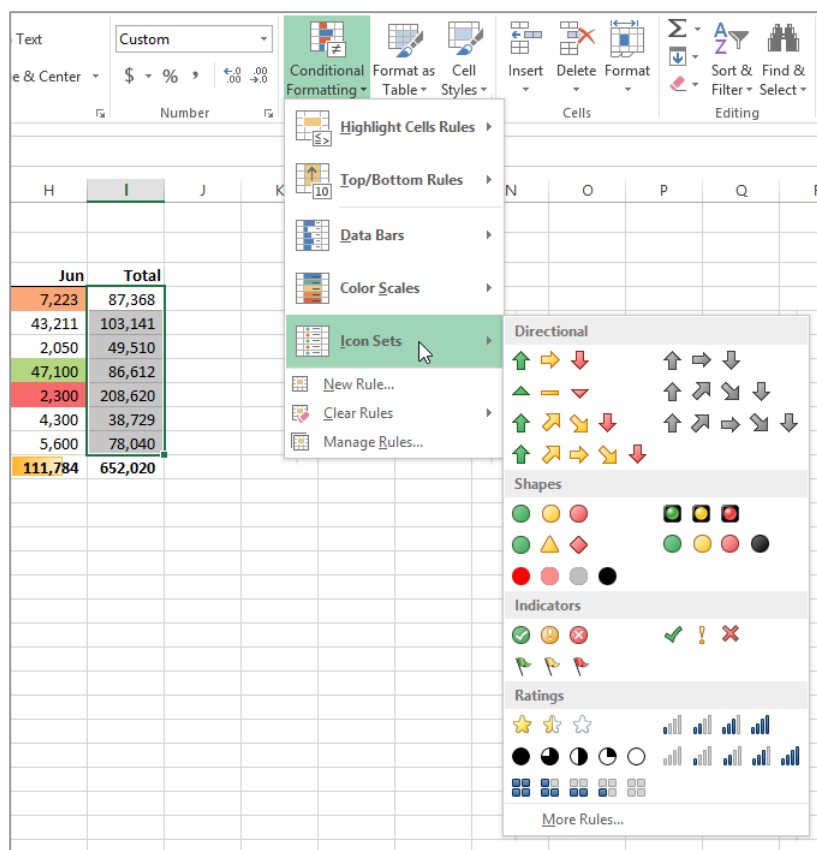
formatted range, you can apply **icons** to the range. With **icons** a symbol is placed next to a cell to indicate the position of that value relative to the range total.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file *E1321 Conditional Formatting_8.xlsx...*

- 1 Select the range **I4:I10**
This is the total sales for each BMW model over six months...
- 2 Click on the **HOME** tab, click on **Conditional Formatting** in the **Styles** group, then point to **Icon Sets** to see a gallery of options
- 3 Point to the options to see a Live Preview of the result in the spreadsheet
- 4 Under **Indicators**, click on **3 Symbols (Uncircled)** to select this option and apply it to the selected range
The hash (#) symbols next to the icons show the column is too narrow to display the values...
- 5 In the column header area, double-click on the right margin of column **I** to widen it to fit the content
- 6 Click outside the range to view the result



2

	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total
4	BMW	3 Series	15,900	5,740	26,850	28,455	3,200	7,223	87,368
5		5 Series	24,300	15,200	6,590	5,940	7,900	43,211	103,141
6		7 Series	4,500	3,420	32,700	2,540	4,300	2,050	49,510
7		X3	9,766	3,400	4,556	15,200	6,590	47,100	86,612
8		X5	84,500	15,400	70,300	3,420	32,700	2,300	208,620
9		Z3	11,000	6,539	8,900	2,050	5,940	4,300	38,729
10		Z4	12,400	4,500	5,900	47,100	2,540	5,600	78,040
11	Total		162,366	54,199	155,796	104,705	63,170	111,784	652,020
12									

6

For Your Reference...

To use **icon sets** to **highlight values**:

1. Select the range
2. On the **HOME** tab click on **Conditional Formatting** and point to **Icon Sets**
3. Select an option

Handy to Know...

- Using the **3 Symbols (Uncircled)** conditional formatting option, there are three icons that are applied according to the rule of **thirds** in the range. Values that fall within the top third receive the tick icon, values in the second third receive the exclamation mark, and the values in the last third receive the cross.

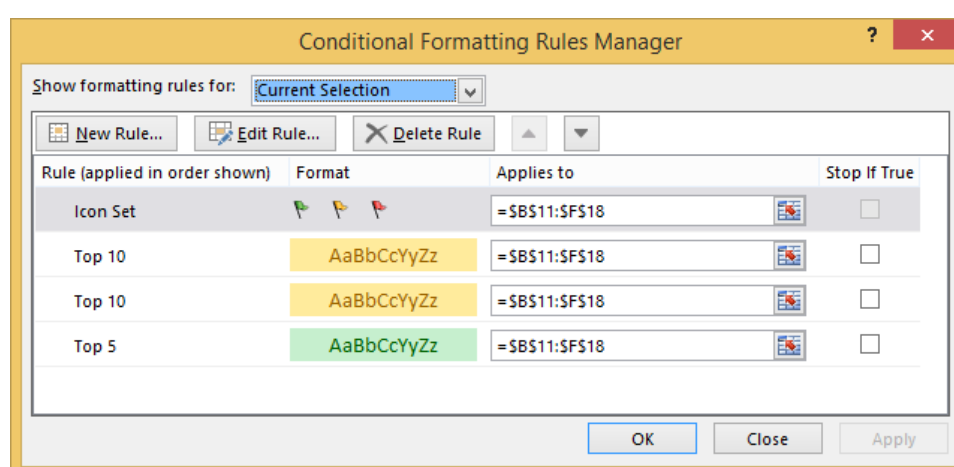
THE CONDITIONAL FORMATTING RULES MANAGER

Each rule that you apply to a cell range is controlled by the **Conditional Formatting Rules Manager**. You can use this feature to edit rules, change the order in which multiple rules are

evaluated, delete rules, or change any of the conditional formatting or formula criteria.

The Conditional Formatting Rules Manager

You can access the **Conditional Formatting Rules Manager** dialog box by selecting the cells that are controlled by the rules that you wish to change, clicking on the **HOME** tab, then in the **Styles** group clicking on **Conditional Formatting** and selecting **Manage Rules**. In this dialog box you can specify whether you are changing the rules for the current selection of cells, the current worksheet, or another worksheet in the current workbook, before changing the order of precedence for rule evaluation and editing, adding and deleting rules as required. When you have made all of the required changes, click on **[Apply]**, then click on **[OK]**.



Conditional Formatting Rules Precedence

When two or more conditional formatting rules apply to a range of cells, these rules are evaluated in order of precedence by how they are listed in the dialog box. A rule that is higher in the list has greater precedence than a rule that is lower in the list. By default, new rules are always added to the top of the list and therefore have a higher precedence; however you can change the order of precedence by using the **[Move Up]** and **[Move Down]** arrow buttons in the dialog box.

The Stop If True Check Box

Clicking in the **Stop If True** check box for a rule so that it appears ticked will cause the conditional formatting process to stop after applying that rule if it is true for a cell. For example, if the first rule in the list is applied to cells with a value lower than 100 and **Stop If True** is ticked for this rule, the conditional formatting process will stop here and no other rules will be applied to cells with a value lower than 100. However, the process will continue for cells to which that rule does not apply (i.e. cells with values higher than 100). If **Stop If True** is not selected, subsequent rules can be applied in conjunction with each other.

Note that you cannot select or clear the **Stop If True** check box if the rule formats by using a data bar, colour scale or icon set.

CREATING CUSTOM RULES

You can use logical formulas to specify formatting criteria to create more complex conditional formatting. For example, you may wish to change the font colour of values that are

over target or budget, and use a different font colour for values that are under target or budget. You can edit an existing rule or create a new rule to apply a formula to the formatting criteria.

Try This Yourself:

Open File

Before starting this exercise you **MUST** open the file E1321 Conditional Formatting_11.xlsx...

1

Select the sales figures in cells **C5:C16**

2

Click on the **HOME** tab, then in the **Styles** group click on **Conditional Formatting** and select **New Rule** to display the **New Formatting Rule** dialog box

3

Click on **Use a formula to determine which cells to format** to select it

4

Click in **Format values...** and type **=C5>=INDIRECT("\$B\$"&ROW())**

This formula checks each sales value in column C against its corresponding target value in column B...

5

Click on **[Format]** to display the **Format Cells** dialog box, then on the **Font** tab select **Bold** in **Font Style** and **Green** in **Colour**

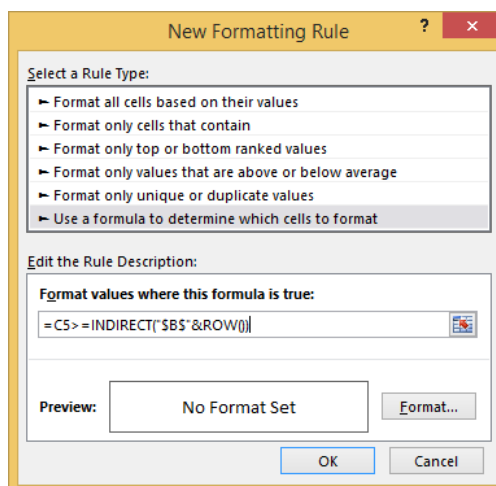
6

Click on **[OK]** to close the **Format Cells** dialog box, then click on **[OK]** to close the **New Formatting Rule** dialog box to see how the conditional formatting formula affects your data

7

Repeat steps **1** to **6** to create a new rule with the formula **=C5<=INDIRECT("\$B\$"&ROW())** and make the formatting **Italic** and **Red**

4



	A	B	C	D	E	F	G
1	Performance by Month						
2							
3							
4						Previous	
5		Target	Sales	Status	Variance	Month	Trend
5	Sales Person A	20000	23,400	⬆️	3,400	25,494	⬆️ 2,094
6	Sales Person B	20000	18,700	⬆️	-1,300	16,500	⬆️ -2,200
7	Sales Person C	20000	27,000	⬆️	7,000	23,400	⬆️ -3,600
8	Sales Person D	20000	22,509	⬆️	2,509	21,591	⬆️ -918
9	Sales Person E	20000	19,404	⬆️	-596	26,494	⬆️ 7,090
10	Sales Person F	20000	24,344	⬆️	4,344	24,399	⬆️ 55
11	Sales Person G	20000	18,654	⬆️	-1,346	15,400	⬆️ -3,254
12	Sales Person H	20000	24,209	⬆️	4,209	23,001	⬆️ -1,208
13	Sales Person I	20000	22,411	⬆️	2,411	20,000	⬆️ -2,411
14	Sales Person J	20000	32,595	⬆️	12,595	29,404	⬆️ -3,191
15	Sales Person K	20000	12,500	⬆️	-7,500	11,494	⬆️ -1,006
16	Sales Person L	20000	28,890	⬆️	8,890	27,494	⬆️ -1,396
17							

7

For Your Reference...

To **create new conditional formatting rules**:

1. Select the cell range to be formatted
2. On the **HOME** tab click on **Conditional Formatting** and select **New Rule**
3. Use the **New Formatting Rule** dialog box to create the rule, then click on **[OK]**

Handy to Know...

- You can enter cell references in a formula by selecting cells directly in a worksheet. Selecting cells in the worksheet inserts absolute cell references. If you wish for Excel to adjust the references for each cell in the selected range, use relative cell references.

MANAGING RULES

Conditional formatting rules can be created, edited, deleted and viewed in the **Conditional Formatting Rules Manager** dialog box. When two or more conditional formatting rules apply to

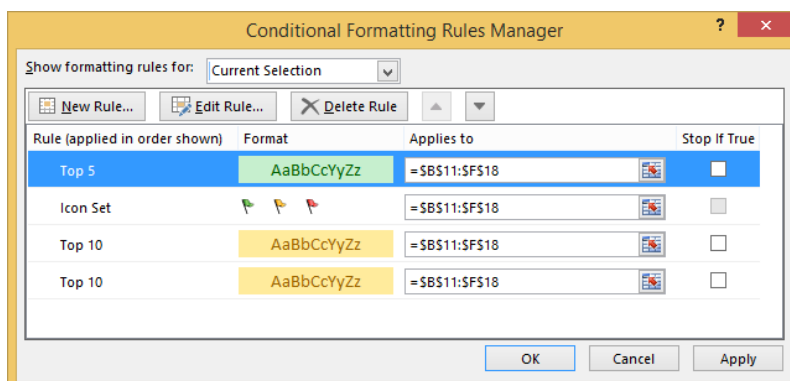
a range of cells, these rules are evaluated in the order in which they are listed in this dialog box. You can change the order to give some rules precedence over others.

Try This Yourself:

Open
File

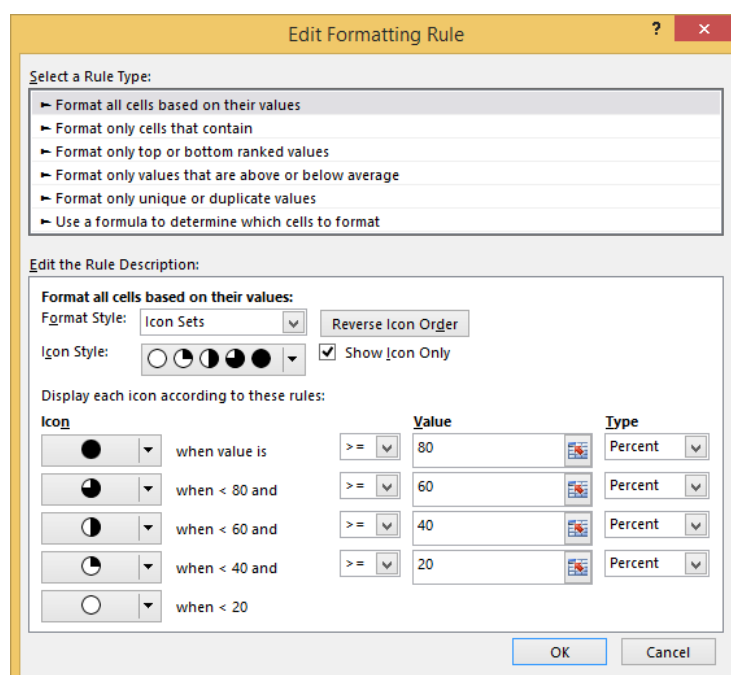
Before starting this exercise you **MUST** open the file E1321 Conditional Formatting_12.xlsx...

- 1 Select the range **B11:F18**, click on the **HOME** tab, then in the **Styles** group click on **Conditional Formatting** and select **Manage Rules**
- 2 Click on the last rule (**Top 5**), then click on **Move Up** three times to move it to the top of the list
- 3 Click on **[Apply]** to apply the change to the worksheet
- 4 Click on the **Icon Set** rule, then click on **[Edit Rule]** to display the **Edit Formatting Rule** dialog box
- 5 Click on the drop arrow for **Icon Style** and select **5 Quarters**, click on **Show Icon Only** so it appears ticked as shown, click on **[OK]** then click on **[Apply]**
- 6 Click on the first **Top 10** rule to select it, click on **[Edit Rule]**, in **Select a Rule Type** click on **Format only values that are above or below average** to change the rule type, click on **[OK]**, then click on **[Apply]**
- 7 Click on the remaining **Top 10** rule to select it, then click on **[Delete Rule]**
The rule is removed from the list...
- 8 Click on **[Apply]**, then click on **[OK]** to return to the worksheet



2

5



For Your Reference...

To **manage conditional formatting options**:

1. Select the cell range containing the formatting to manage
2. On the **HOME** tab, click on **Conditional Formatting** and select **Manage Rules**
3. Select the rule you wish to change, then make the necessary changes

Handy to Know...

- If you copy cells that have conditional formatting applied to other workbooks, the formatting is not copied or applied.
- You can edit rules using the **More Rules** option on each of the individual conditional formatting rules options, such as **Data Bars**, **Colour Scales** and so on.

CLEARING RULES

There may be times when you will need to permanently remove a rule from a selected range without affecting other rules for that range. You can delete conditional formatting rules from a

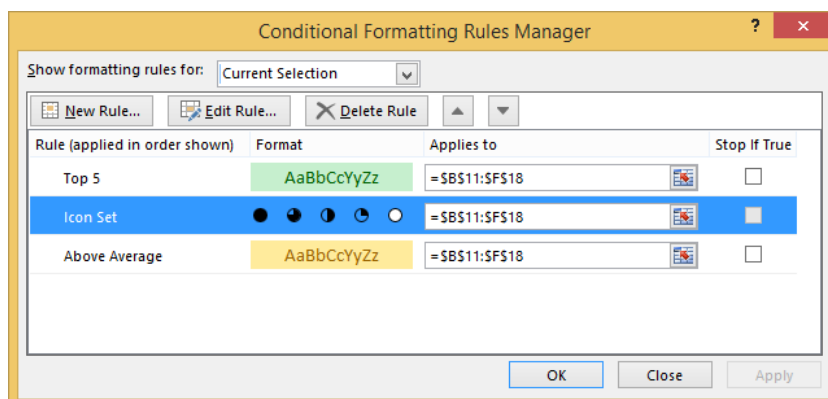
worksheet using the **Conditional Formatting Rules Manager** dialog box. You can also **clear** rules from different elements of your data.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file *E1321 Conditional Formatting_13.xlsx...*

- 1 Select the range **B11:F18**, click on the **HOME** tab, then in the **Styles** group click on **Conditional Formatting** and select **Manage Rules** to display the **Conditional Formatting Rules Manager** dialog box
- 2 Click on the **Icon Set** rule to select it
- 3 Click on **[Delete Rule]**, then click on **[OK]** to remove the rule and close the dialog box
- 4 Select the range **J11:J18**, then on the **HOME** tab click on **Conditional Formatting** and select **Clear Rules > Clear Rules from Entire Sheet**
All conditional formatting is now removed from the worksheet...
- 5 Save and close the workbook



2

4

	E	F	G	H	I	J	K
7					The Percentage Per Flavour		
8							
9		41-55	56+	Total	Flavour	Total	
10							
11		25	45	127	Vanilla	14%	
12		23	12	89	Strawberry	10%	
13		24	20	186	Chocolate	21%	
14		63	48	225	Coffee	25%	
15		13	23	87	Caramel	10%	
16		5	4	49	Lime	5%	
17		17	22	86	Blue Heaven	10%	
18		10	6	51	Other	6%	
19							

	E	F	G	H	I	J	K
7					The Percentage Per Flavour		
8							
9		41-55	56+	Total	Flavour	Total	
10							
11		25	45	127	Vanilla	14%	
12		23	12	89	Strawberry	10%	
13		24	20	186	Chocolate	21%	
14		63	48	225	Coffee	25%	
15		13	23	87	Caramel	10%	
16		5	4	49	Lime	5%	
17		17	22	86	Blue Heaven	10%	
18		10	6	51	Other	6%	
19							

For Your Reference...

To **clear conditional formatting rules**:

1. If clearing from a range, select the range first
2. Click on the **HOME** tab, then in the **Styles** group click on **Conditional Formatting**
3. Point to **Clear Rules**, then select the required option

Handy to Know...

- There are options to clear rules for **This Table** and **This PivotTable** as well as **Selected Cells** and **Entire Sheet**.

PRACTICE EXERCISE

Conditional Formatting



Tasks:

Completed:

Before starting this exercise you MUST have completed all of the topics in the chapter Conditional Formatting...

- 1** Open the workbook called **PE_Conditional Formatting.xlsx** (it can be found in the same folder as the student files)
- 2** In the range **C4:H9** highlight all of the cells where sales has been below **10,000**
- 3** In the range **I4:I9** highlight in *green* all of the cells where the sales has been between **53,000** and **75,000**
- 4** Add orange data bars to the range **I12:I16**
- 5** Format the range **C12:H12** with a **Green-Yellow-Red** colour scale
- 6** Format the range **C15:H15** with the **3 Symbols (Circled)** icon set
- 7** Highlight the top **30%** of sales in the range **C19:H21**
When all of these steps have been completed your worksheet should appear similar to that shown on the next page...
- 8** Use the **Save As** command to save the workbook as **PE_Conditional Formatting (Completed).xlsx**

PRACTICE EXERCISE SAMPLE

Conditional Formatting

	A	B	C	D	E	F	G	H	I	J
1	Quarterly Used Vehicle Sales									
2										
3	Make	Model	Jan	Feb	Mar	Apr	May	Jun	Total	
4	Ford	Ecstasy	7,223	4,200	8,332	23,441	4,778	4,220	52,194	
5		Explorer	43,211	28,455	3,200	45,300	5,220	22,800	148,186	
6		Fiesta	2,050	5,940	7,900	12,400	4,078	21,500	53,868	
7		Mercury	47,100	2,540	4,300	35,400	18,900	43,900	152,140	
8		Mustang	23,441	4,778	5,600	4,500	4,300	9,025	51,644	
9		Raven	45,300	5,220	4,220	4,200	5,900	7,223	72,063	
10										
11										
12	Toyota	Activa	3,900	28,455	5,670	22,800	4,200	43,900	108,925	
13		Celica	12,500	5,940	52,220	4,300	35,400	9,025	119,385	
14		Corolla	5,800	2,500	31,250	5,600	4,500	7,223	56,873	
15		Landcruiser	19,655	4,587	23,100	4,220	4,200	43,211	98,973	
16		R4	4,078	22,800	4,200	22,800	28,455	2,050	84,383	
17										
18										
19	Mitsubishi	Lancer	5,940	7,900	47,100	4,300	35,400	5,220	105,860	
20		Magna	2,540	4,300	2,300	5,600	4,500	4,078	23,318	
21		Pajero	15,200	6,590	24,600	4,220	4,200	18,900	73,710	
22										
23										

UNDERSTANDING DATA VALIDATION

The aim of **data validation** is to ensure the accuracy of the data that is entered and this can be achieved using a range of approaches. You can provide information for the user, identify and

reject incorrect values, display error messages and provide a list of valid options that can be entered into the cell. The following describes these options in more detail.

Validation Criteria

You can specify the range of values allowed in a cell. If a user attempts to enter a value outside the specified range, an error message will display. For example, you could limit the possible entries in a cell to numbers between 1 and 12.

Input Messages & Error Messages

You can create messages to give specific help about the type and range of data required in a cell. Input messages appear when you click on the cell before entering data, while error messages appear when the user has entered an invalid number into a cell. You can even create customised error messages to provide specific information about the range of values that are valid.

	A	B	C	D	E	F	G	H	I	J
1										
2		Alpheius Global Enterprises Auckland Office								
3										
4										
5										
6				Employee Details						
7										
8	Staff ID	Title	First Name	Last Name	Date Hired	Position	Department	Salary	Hours Worked	Dinner Allowance
9										
10	106				18/11/2013					
11										
12										
13										
14										
15										
16										

This is an example of an input message

Drop-Down Lists

Drop-down lists can be attached to cells to provide a list of valid options for a user. This is ideal where there is a limited number of possible values for a cell, such as the days of the week.

Formulas

As well as being able to set specific limits for values, you can use formulas to create dynamic ranges of values. For example, the **Today()** function can be used to calculate today's date. As validation criteria, this could be used to ensure that a user does not enter a future date in a cell, or to ensure that the date is not too far in the past.

Customised Validation Criteria

As well as a range of standard validation options, you can build quite sophisticated customised validation criteria.

CREATING A NUMBER RANGE VALIDATION

One of the simplest types of data validation is to restrict data to a specific number range. The data validation is set so that Excel expects you to type a number in the cell, and the number must fall

between a set minimum and maximum value. Any other data, such as text or a number outside of the range is rejected. This is ideal for large volumes of data entry and helps to reduce the risk of error.

Try This Yourself:

Open File Before starting this exercise you **MUST** open the file *E1365 Data Validation_1.xlsx...*

1 Ensure that the **Payroll** worksheet is active, then click in cell **A10** to select the cell

2 Click on the **DATA** tab, then click on the top half of **Data Validation** in the **Data Tools** group

This will display the Settings tab of the Data Validation dialog box...

3 Click on the drop arrow for **Allow** in **Validation criteria**, then select **Whole number**

4 Click in **Minimum**, then type **100**

5 Press **Tab**, then type **199** in **Maximum**

6 Click on **[OK]**

Nothing appears to have happened to the cell, but the validation criteria will control what you can type into it

1

	A	B	C	D	E	F	G	H
1								
2		Alpheus Global Enterprises						
3		Auckland Office						
4								
5								
6								
7								
8	Staff ID	Title	First Name	Last Name	Date Hired	Position	Department	Salary
9								
10								
11								
12								

2

The Data Validation dialog box is shown with the 'Settings' tab selected. Under 'Validation criteria', 'Allow' is set to 'Any value' and 'Ignore blank' is checked. 'Data' is set to 'between'. There are 'Clear All', 'OK', and 'Cancel' buttons at the bottom.

5

The Data Validation dialog box is shown with the 'Settings' tab selected. Under 'Validation criteria', 'Allow' is set to 'Whole number' and 'Ignore blank' is checked. 'Data' is set to 'between'. The 'Minimum' is set to 100 and the 'Maximum' is set to 199. There are 'Clear All', 'OK', and 'Cancel' buttons at the bottom.

For Your Reference...

To **apply** a **number range** as **data validation**:

1. Click on the cell that you want to apply the validation to
2. Click on the **DATA** tab, then click on the top half of **Data Validation**
3. Select an option in **Allow**, set the values, then click on **[OK]**

Handy to Know...

- The **Data Validation** dialog box can be used to limit the data to any value, to whole numbers or to decimals. You can also use it to set a maximum and minimum length for information entered into a cell, irrespective of whether it is text, a value or a formula. This setting is called **text length**.

TESTING A VALIDATION

Any **data validation** applied to a worksheet should be **tested** thoroughly before it is unleashed on any unsuspecting users. You must ensure that it not only prevents or dissuades the

entry of invalid numbers, but that you have allowed for all possible situations. You must also ensure that any messages that appear explain clearly how to correct the error that has been made.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file *E1365 Data Validation_2.xlsx...*

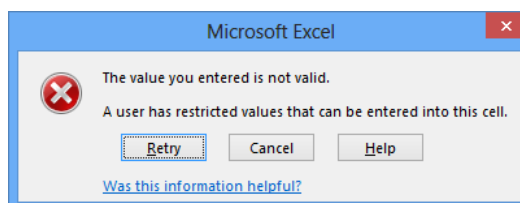
1 Ensure the **Payroll** worksheet tab is selected and cell **A10** is active

2 Type **1**, then press
As this number falls outside of the range specified for this cell (i.e. 100 – 199), a message box will appear...

3 Click on **[Retry]**
This will select the contents of the cell so that you can type another number...

4 Type **106**, then press
This time the number is within the acceptable range, so the message box does not reappear and the number is accepted

2



3

	A	B	C	D	E	F	G
1							
2		Alpheus Global Enterprises					
3		Auckland Office					
4							
5							
6							
7							
8	Staff ID	Title	First Name	Last Name	Date Hired	Position	Department
9							
10	1						
11							

4

	A	B	C	D	E	F	G
1							
2		Alpheus Global Enterprises					
3		Auckland Office					
4							
5							
6							
7							
8	Staff ID	Title	First Name	Last Name	Date Hired	Position	Department
9							
10	106						
11							

For Your Reference...

To **test data validation**:

1. Try entering a range of values within and outside of the defined range
2. If an error message appears, click on **[Retry]** or **[Cancel]**

Handy to Know...

- When you are dealing with a cell that has validation criteria applied to it be aware that if you type text into that cell when it is expecting numbers, the same non-specific error message will be displayed.

CREATING AN INPUT MESSAGE

An **input message** is a message that is displayed when you click on a cell. This provides clear guidance to the user about the values that are expected for a cell. It is far more satisfying

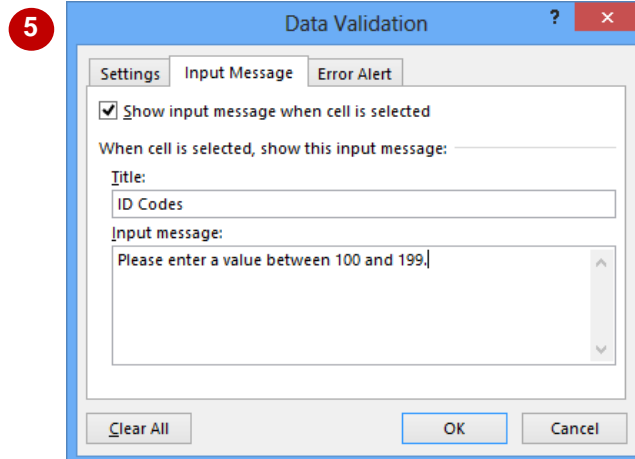
than being faced with a non-specific error message and not knowing how to fix the problem. Input messages should be used with validation criteria to ensure the best possible results.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file *E1365 Data Validation_3.xlsx...*

- 1 If necessary, click in cell **A10** to select the cell
- 2 Click on the **DATA** tab, then click on the top half of **Data Validation** in the **Data Tools** group
- 3 Click on the **Input Message** tab of the **Data Validation** dialog box
- 4 Click in **Title**, then type **ID Codes**
- 5 Click in **Input message**, then type **Please enter a value between 100 and 199.**
- 6 Click on **[OK]**
As cell **A10** is still selected, the input message is displayed



6

	A	B	C	D	E	F	G	H
1								
2		Alpheus Global Enterprises						
3		Auckland Office						
4								
5								
6								
7								
8	Staff ID	Title	First Name	Last Name	Date Hired	Position	Department	Salary
9								
10	106							
11								
12								
13								
14								
15								

For Your Reference...

To **create** an **input message**:

1. Click in the cell
2. Click on the **DATA** tab, then click on the top half of **Data Validation**
3. Click on the **Input Message** tab
4. Complete the fields, then click on **[OK]**

Handy to Know...

- On the **Input Message** tab of the **Data Validation** dialog box, by clicking on the option **Show input message when cell is selected** until it appears *without* a tick, you can disable the input message without having to delete it permanently.

CREATING AN ERROR MESSAGE

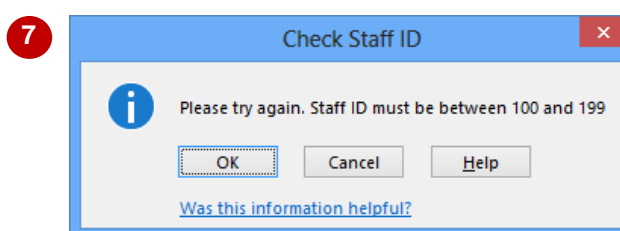
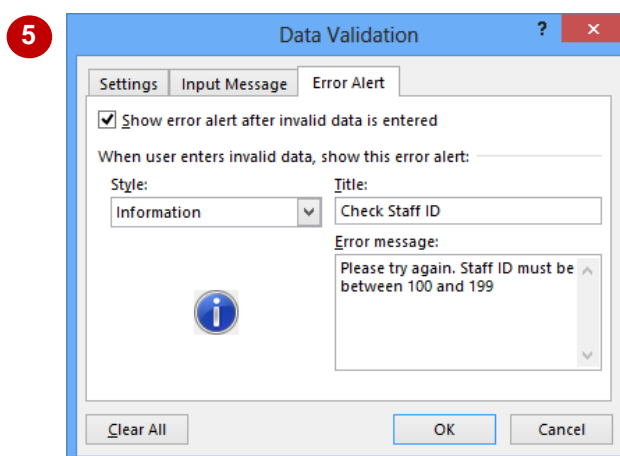
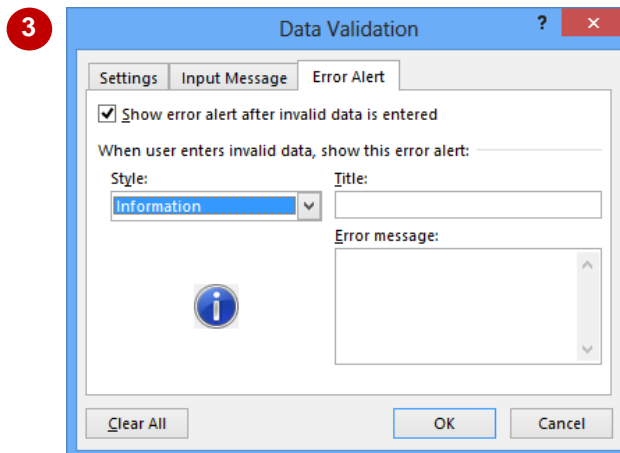
Error messages enable you to replace the standard alerts with something more meaningful. The message "Please enter a value between 100 and 199." indicates that there is an error and

clearly explains what is required. Users will find it much easier to complete their tasks if they know exactly what is expected. The three error message styles are **Stop**, **Warning** and **Information**.

Try This Yourself:

Same File Continue using the previous file with this exercise, or open the file *E1365 Data Validation_4.xlsx*...

- 1 Click in cell **A10** to select the cell
- 2 Click on the **DATA** tab, click on the top half of **Data Validation** in the **Data Tools** group to display the **Data Validation** dialog box, then click on the **Error Alert** tab
- 3 Click on the drop arrow for **Style**, then select **Information**
Notice that the **Stop** icon has changed to an **Information** icon...
- 4 Click in **Title**, then type **Check Staff ID**
- 5 Click in **Error message**, then type **Please try again. Staff ID must be between 100 and 199.**
- 6 Click on **[OK]**, then ensure cell **A10** is still active
- 7 Type **45**, then press **[Enter]**
Your customised error message will appear...
- 8 Click on **[OK]**
- 9 Click in cell **A10**, type **106**, then press **[Enter]**



For Your Reference...

To **create** an **error message**:

1. Click on the cell then click on the **DATA** tab
2. Click on the top half of **Data Validation**, then click on the **Error Alert** tab
3. Select a **Style**, complete the **Title** and **Error message** fields, then click on **[OK]**

Handy to Know...

- Remember, error messages created using the **Data Validation** dialog box, will only work if you have specified validation criteria for the selected cell.

CREATING A DROP DOWN LIST

If you have a limited number of possible options for a cell, you can create a drop-down list for the user to select from. This ensures that the spelling of choices is consistent and makes it much easier

for the user to complete their data entry tasks. Lists are created using the **Data Validation** settings and a separate list of items is stored in the workbook.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file *E1365 Data Validation_5.xlsx*...

- 1 Click on the **Sources** worksheet tab, then read the list

The *Titles* list has been entered as a named range. We'll use it for the drop-down list...

- 2 Click on the **Payroll** worksheet tab, then click in cell **B10**

- 3 On the **DATA** tab, click on the top half of **Data Validation** in the **Data Tools** group to display the **Data Validation** dialog box, then click on the **Settings** tab

- 4 Click on the drop arrow for **Allow** and select **List**

- 5 Click in **Source**, click on the **Sources** worksheet tab, select cells **A3** to **A7** then click on **[OK]**

Because cell **B10** is selected, a drop arrow will appear...

- 6 Click on the drop arrow for cell **B10** to display a list of titles

- 7 Click on **Mr** to select it and enter it into the cell

2

	A	B	C	D	E	F	G	H
1								
2		Alpheius Global Enterprises						
3		Auckland Office						
4								
5								
6								
7								
8	Staff ID	Title	First Name	Last Name	Date Hired	Position	Department	Salary
9								
10								
11								
12								
13								
14								
15								

3

Data Validation

Settings Input Message Error Alert

Validation criteria

Allow: Whole number [v] [x] Ignore blank

Data: between [v]

Minimum: 100

Maximum: 199

☐ Apply these changes to all other cells with the same settings

Clear All OK Cancel

6

	A	B	C	D	E	F	G	H
1								
2		Alpheius Global Enterprises						
3		Auckland Office						
4								
5								
6								
7								
8	Staff ID	Title	First Name	Last Name	Date Hired	Position	Department	Salary
9								
10								
11		Mr						
12		Mrs						
13		Ms						
14		Miss						
15		Dr						

For Your Reference...

To **create a drop-down list**:

1. Type a list of items and click where you want the list to appear
2. Click on the **DATA** tab, then click on the top half of **Data Validation**
3. On the **Settings** tab select **List** in **Allow**, type the list range in **Source**, click on **[OK]**

Handy to Know...

- When creating a list of items to use in a drop-down list, you can create a range name for the list to make it easier to locate when using the **Data Validation** dialog box. Keeping the list on a separate worksheet helps to protect it. You could also hide the worksheet with the list to better protect it.

USING FORMULAS AS VALIDATION CRITERIA

You can use fixed values as validation criteria if they never change. However, if you need to specify a **dynamic range**, where the values change depending on the conditions stated, you

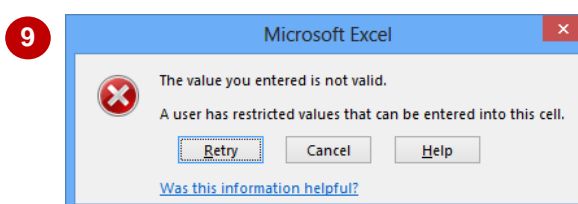
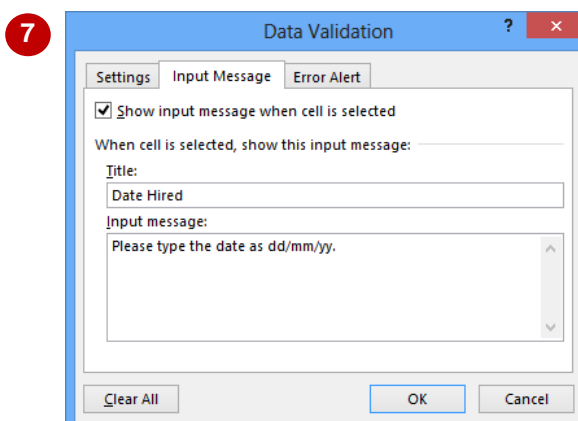
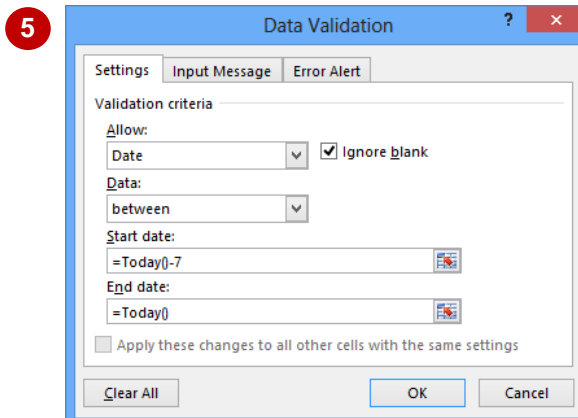
can use a formula. For example, you may want to ensure that the date entered falls within the last week. This can be done by using a **formula** that includes a date function as the validation criteria.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file *E1365 Data Validation_6.xlsx*...

- 1 Click on cell **E10** to select the cell
- 2 Click on the **DATA** tab, click on the top half of **Data Validation** in the **Data Tools** group to display the **Data Validation** dialog box
- 3 Click on the drop arrow for **Allow** and select **Date**
- 4 Click in **Start date** and type **=Today()-7**
- 5 Click in **End date** and type **=Today()**
We'll display an example of the date format required, as a message...
- 6 Click on the **Input Message** tab, then click in **Title** and type **Date Hired**
- 7 Click in **Input message** and type **Please type the date as dd/mm/yy.**
- 8 Click on **[OK]**
- 9 Enter tomorrow's date, then press **[Enter]** to test the validation, then click on **[Retry]** and enter today's date



For Your Reference...

To **use formulas** as **validation criteria**:

1. Click on the cell to apply the validation to
2. On the **DATA** tab click on the top half of **Data Validation** then click on the **Settings** tab
3. Select an option for **Allow**, then type formulas as limits and click on **[OK]**

Handy to Know...

- When using formulas as validation criteria, be sure to use error messages to clearly explain what is expected in the cell, so that the criteria according to the formula are met.

CIRCLING INVALID DATA

Data validation works when a user enters data directly into the cell with validation criteria. Data validation does not work, however, if data is copied into a cell with validation criteria, or if an

invalid entry is made as a result of a formula in the cell or if it is generated through a macro. Excel can identify cells containing **invalid data**, using **red circles**, to highlight them.

Try This Yourself:

Same
File

Continue using the previous file with this exercise, or open the file *E1365 Data Validation_7.xlsx*...

1 Click on the **HR** worksheet tab to display this worksheet

Notice the Staff ID for the last entry was typed incorrectly, where "13" should be "113" – let's copy this entry to a cell with data validation...

2 Click in cell **B21** to select the cell

3 Press **Ctrl** + **C** to copy the cell contents, then click on the **Payroll** worksheet tab and click in cell **A10**

This cell has validation criteria...

4 Press **Ctrl** + **V** to paste the value into the cell, then press **Enter** twice to see the cell more clearly

The error message was not generated. Let's use red circles to highlight the issues...

5 On the **DATA** tab click on the bottom half of **Data Validation** in the **Data Tools** group, and select **Circle Invalid Data**

A red circle indicates the cell with invalid data, according to the validation criteria applied

	Employee Details								
	Staff ID	Title	First Name	Last Name	Date Hired	Position	Department	Salary	Hours Wo
10	Mr				18/11/2013				
11									
12									
13									
14									
15									

3

	Employee Details								
	Staff ID	Title	First Name	Last Name	Date Hired	Position	Department	Salary	Hours Wo
10	112				18/11/2013				
11									
12									
13									
14									
15									

4

	Employee Details								
	Staff ID	Title	First Name	Last Name	Date Hired	Position	Department	Salary	Hours Wo
10	112				18/11/2013				
11									
12									
13									
14									
15									

5

For Your Reference...

To **circle invalid data**:

1. Click on the **DATA** tab
2. Click on the bottom half of **Data Validation** in the **Data Tools** group
3. Select **Circle Invalid Data**

Handy to Know...

- If the Excel window is not maximised, you might not see the tools on the ribbon in their large format, where some tools have a top and bottom half. In this instance, the tool will appear smaller and display a small drop-down arrow at the end of the tool name (equivalent to the "bottom half").

REMOVING INVALID CIRCLES

Data validation circles enable you to effectively audit your worksheets and ensure data integrity. Even if invalid data has managed to appear in cells containing data validation criteria, data

circles will highlight the anomaly for you, enabling you to address any issues. There are two ways to remove invalid data circles: enter valid data into the cell or turn the data circles off.

Try This Yourself:

Open File Before starting this exercise you MUST open the file E1365 Data Validation 8.xls/x...


- 1 Ensure that the **Payroll** worksheet is active, then click on the **DATA** tab
- 2 Click on the bottom half of **Data Validation** and select **Circle Invalid Data** to see the circles
- 3 Repeat steps **1** and **2** to select **Clear Validation Circles**

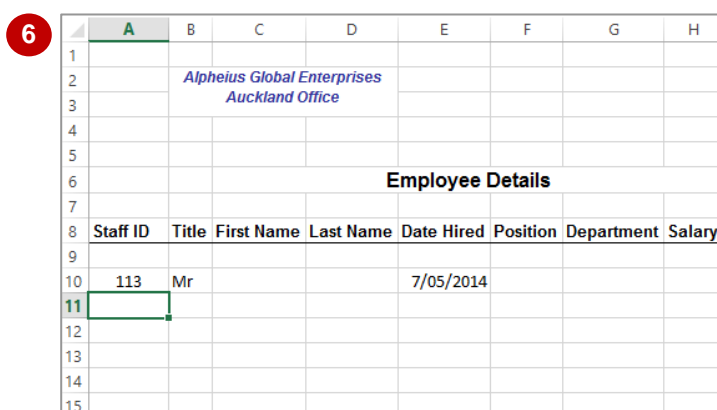
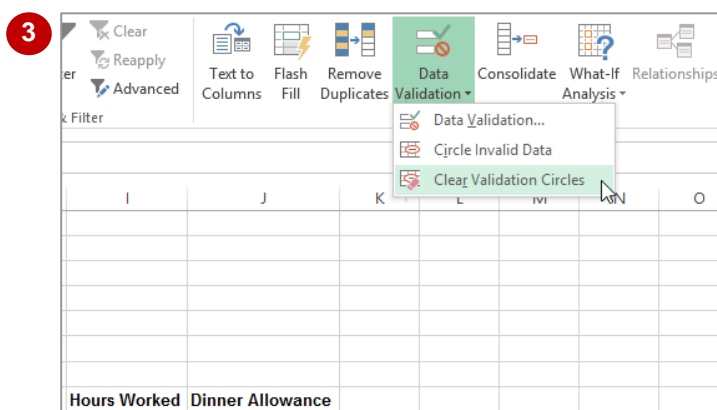
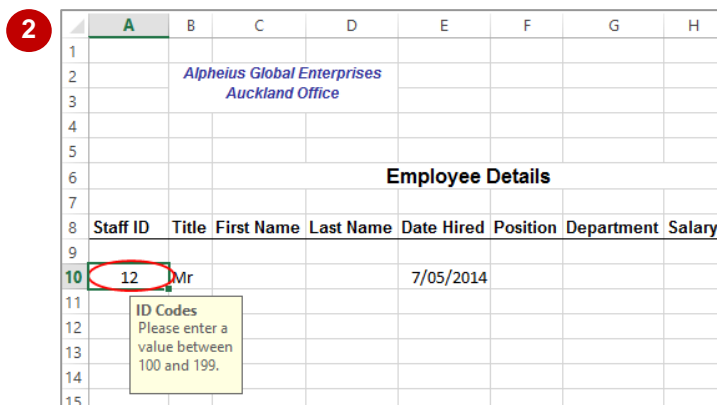
All red circles will be removed from the worksheet. Let's turn them back on and then remove an individual validation circle...

- 4** Repeat step **2** to redisplay the invalid data circle

Let's remove the circle a different way...

- 5 Click in cell **A10** to select the cell with the invalid data

- 6 Type **113** and press 
- Now that the data is no longer invalid, this circle is removed*



For Your Reference...

To *remove invalid data circles*:

1. Type valid data into the cell(s), or
On the **DATA** tab, click on the bottom half of **Data Validation** and select **Clear Validation Circles**

Handy to Know...

- Validation circles are only temporary – they are removed if you save or close a workbook, but you can activate them again at any time.

COPYING VALIDATION SETTINGS

Data validation is usually applied to a range of cells rather than a single cell. The most appropriate way to create data validation is to create and test it in a single cell and then apply

the same validation technique to the rest of the cells. The **Paste Special** dialog box has an option specifically designed to copy validation criteria created using the **Data Validation** dialog box.

Try This Yourself:

Same File

Continue using the previous file with this exercise, or open the file *E1365 Data Validation_9.xlsx...*

1 Click on the **Payroll** worksheet tab, then select **A10:J10**

Cells A10, B10, E10 and J10 have validation rules applied...

2 Press **Ctrl** + **C** to copy the range

3 Select **A11:J20**
This is the destination range...

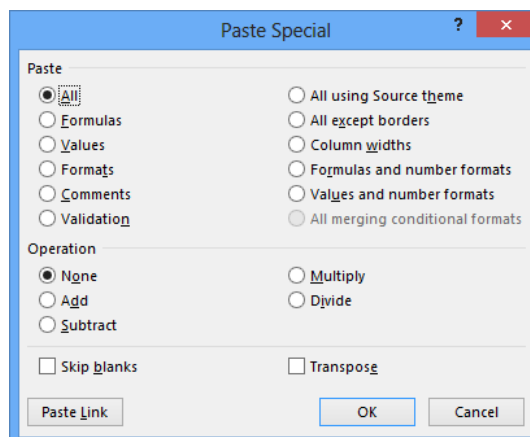
4 Click on the **HOME** tab, then click on the bottom half of **Paste** in the **Clipboard** group and select **Paste Special**

5 Click on **Validation** in **Paste** to select it

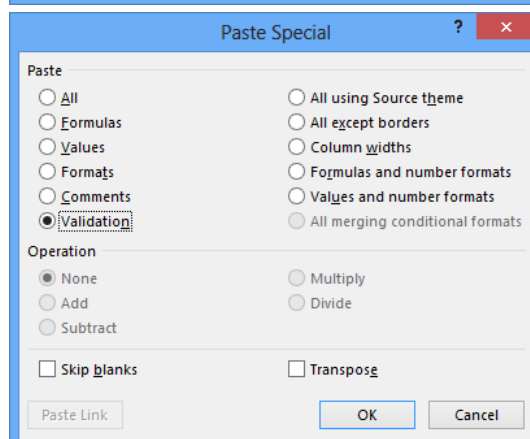
6 Click on **[OK]** to paste the validations

7 Type some test employee data in row 11 to test the validation rules

4



5



7

	A	B	C	D	E	F	G	H
1								
2		Alpheus Global Enterprises						
3		Auckland Office						
4								
5								
6								
7								
8	Staff ID	Title	First Name	Last Name	Date Hired	Position	Department	Salary
9								
10	113	Mr			7/05/2014			
11	100	Ms			4			
12								
13								
14								
15								

For Your Reference...

To **copy data validation**:

1. Select the cells with the data validation, then press **Ctrl** + **C** to copy the contents
2. Select the destination cells
3. On the **HOME** tab, click on the bottom half of **Paste** and select **Paste Special**
4. Click on **Validation** and click on **[OK]**

Handy to Know...

- Copying and pasting validations does not transfer conditional formatting if applied to cells. To copy conditional formatting, copy the cell, then select **Format** in the **Paste Special** dialog box.

PRACTICE EXERCISE

Validating Data

Tasks:**Completed:**

Before starting this exercise you MUST have completed all of the topics in the chapter Validating Data...

- 1** Open the workbook **PE_Validations.xlsx** (it can be found in the same folder as the student files)
- 2** In row **4**, create the following validations:
 - the date **Joined** must be within the last 100 days and not a future date. It should take the format *d/m/yyyy* and include an input message explaining the constraints
 - the **Mail Code** must be between 1 and 5 and include an **Input message** and **Error message** explaining this
 - the **Renewal** due month and the membership **Type** must be entered from drop-down lists created from the ranges **Months** and **Types** respectively
- 3** Copy the validations down the columns to row **30**
- 4** Enter the two additional records as shown on the following page, using dates of choice in the last 100 days

You will need to copy the formulas in cells F23 and H23 down. Your worksheet should look similar to that shown on the following page, although the Renewal Date will vary...
- 5** Use the **Save As** command to save the workbook as **PE_Validations (Completed).xlsx**

PRACTICE EXERCISE SAMPLE

Validating Data

	A	B	C	D	E	F	G	H	I	J
1	Subscriber List									
2										
3	Surname	Name	Joined	Renewal	Type	Amount	Mail Code	Mail	Tickets	
4	Archer	Kevin	30/1/1980	N/A	Life	-	2	Programme	Yes	
5	Bedelis	Fiona	24/12/2008	Dec	Senior	\$400	3	Opera	No	
6	Brown	Paul	4/3/2001	Mar	Student	\$400	1	Brochure	No	
7	Cuff	Brendan	6/6/1996	Jun	Gold	\$1,200	2	Programme	No	
8	Heap	Adam	12/4/1999	Apr	Platinum	\$1,500	1	Brochure	No	
9	Jarvis	Janine	9/11/2012	Nov	Bronze	\$600	3	Opera	No	
10	McMahon	Andrea	3/11/1998	Nov	Silver	\$800	5	Theatre	No	
11	Morton	Samuel	8/9/2002	Sep	Student	\$400	4	Ballet	No	
12	Murphy	Sandra	5/7/1996	Jul	Senior	\$400	1	Brochure	No	
13	O'Donnell	Patrick	25/2/2005	Feb	Student	\$400	4	Ballet	No	
14	Petrovski	Stan	7/3/2006	May	Gold	\$1,200	1	Brochure	No	
15	Reichert	Hans	5/2/1979	N/A	Life	-	1	Brochure	Yes	
16	Rose	Dan	1/8/2011	Aug	Senior	\$400	1	Brochure	No	
17	Simms	Dimitri	7/10/2000	Oct	Platinum	\$1,500	3	Opera	No	
18	Smith	Celia	4/12/2013	Dec	Bronze	\$600	1	Brochure	No	
19	Stephanou	George	29/1/1998	Jan	Silver	\$800	2	Programme	No	
20	Thangarajah	Daljit	3/3/2012	Mar	Student	\$400	5	Theatre	No	
21	Tien	Chi	30/12/2013	Dec	Student	\$400	1	Brochure	No	
22	Wallace	Thomas	22/8/2010	Aug	Platinum	\$1,500	3	Opera	No	
23	Winston	John	2/9/1997	Sep	Gold	\$1,200	1	Brochure	No	
24	Sanderson	Jill	4/1/2014	Jan	Student	\$400	3	Opera	No	
25	Hunter	Cameron	22/2/2014	Feb	Silver	\$800	2	Programme	No	
26										
27										