



EXCEL

2016 EXPERT

Certification Guide

Microsoft®

Excel 2016

Expert Certification Guide

Lesson 1: Advanced Formatting

Lesson Objectives

The objectives of this lesson are to use some of the advanced formatting features in Excel. Upon completion of this lesson, you should be able to:

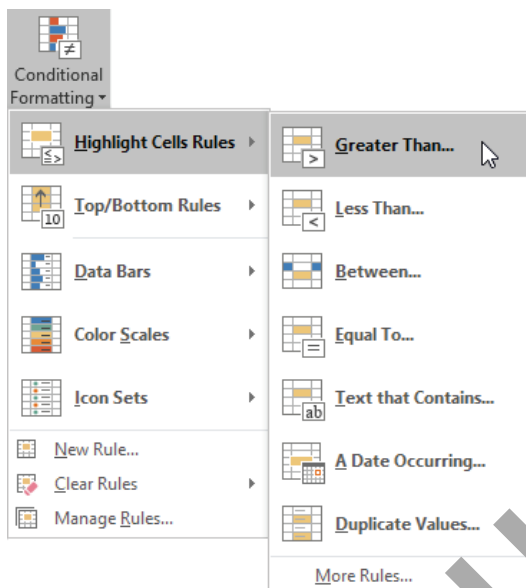
- ☐ use basic conditional formatting
 - ☐ manage conditional formatting rules
 - ☐ create custom conditional formatting rules using formulas
 - ☐ customize formats for numbers, accounting, date and time data types
 - ☐ customize numeric and date/time data to display in international formats
 - ☐ use international currency symbols
 - ☐ create and modify cell styles
 - ☐ use custom color formats
 - ☐ create and modify custom themes
 - ☐ use +Body and +Heading fonts
-

Conditional Formatting

Basic Conditional Formatting

Objective 2.2.1

You can use conditional formatting to change the appearance of a cell (within certain limitations), depending on that cell's value. The cell format will change automatically when the cell value changes, triggering a different conditional formatting rule. This saves time for you and eliminates errors in having to make the format changes manually.



The Excel 2016 Core courseware covered the topic of using the Ribbon to create conditional formats. The Ribbon method is easy to use and enables you to create the most frequently used conditional formats. Behind the scenes, the Ribbon method creates conditional formatting rules. You can also create these rules directly by using the New Formatting Rule dialog box. Click **New Rule** or **More Rules** in one of the Conditional Formatting drop-down menus to open the New Formatting Rule dialog box.

The New Formatting Rule dialog box has the following rule types available:

Format all cells based on their values

The main application of this rule is to display indicators that show how the values in a range of cells relate to each other. For example, you may want cells with the highest values to show in red (hot), while the cells with the lowest values show in blue (cold). Excel will choose gradient colors between the red and blue for all other cells with the data values in between the two extremes.

You can choose one of four main types of indicators: a 2-color scale, a 3-color scale, a data bar, or an icon set. Further, you can choose from several different types of icons for the icon set.

New Formatting Rule

Select a Rule Type:

- Format all cells based on their values
- Format only cells that contain
- Format only top or bottom ranked values
- Format only values that are above or below average
- Format only unique or duplicate values
- Use a formula to determine which cells to format

Edit the Rule Description:

Format all cells based on their values:

Format Style: 2-Color Scale

Minimum: Type: Lowest Value, Value: (Lowest value), Color: [Color Picker]

Maximum: Type: Highest Value, Value: (Highest value), Color: [Color Picker]

Preview: [Color Gradient Bar]

OK Cancel

Format only cells that contain

The most commonly used rule, offering a wide variety of operators to select the cells to highlight, such as between, greater than, and equal to. Cells that meet that rule will be highlighted with the same formatting.

New Formatting Rule

Select a Rule Type:

- Format all cells based on their values
- Format only cells that contain
- Format only top or bottom ranked values
- Format only values that are above or below average
- Format only unique or duplicate values
- Use a formula to determine which cells to format

Edit the Rule Description:

Format only cells with:

Cell Value between and

Preview: No Format Set

Format... OK Cancel

Format only top or bottom ranked values

Apply a specific format to the cells with the highest or lowest values or percentile in a range of cells. For example, you can use this rule to identify the 10% of students with the highest ranking scores in a course.

New Formatting Rule

Select a Rule Type:

- Format all cells based on their values
- Format only cells that contain
- Format only top or bottom ranked values
- Format only values that are above or below average
- Format only unique or duplicate values
- Use a formula to determine which cells to format

Edit the Rule Description:

Format values that rank in the:

Top 10 % of the selected range

Preview: No Format Set

Format... OK Cancel

Format only values that are above or below average

Apply a specific format to cells that are above or below the average of a range of cells. Excel allows you to choose from the mean average or various degrees of standard deviation from the mean average.

The 'New Formatting Rule' dialog box is shown. Under 'Select a Rule Type', 'Format only values that are above or below average' is selected. Under 'Edit the Rule Description', 'Format values that are:' is set to 'above' and 'the average for the selected range'. The 'Preview' section shows 'No Format Set'.

Format only unique or duplicate values

Identify all cells within a range with duplicate or unique values.

The 'New Formatting Rule' dialog box is shown. Under 'Select a Rule Type', 'Format only unique or duplicate values' is selected. Under 'Edit the Rule Description', 'Format all:' is set to 'duplicate' and 'values in the selected range'. The 'Preview' section shows 'No Format Set'.

Use a formula to determine which cells to format Enter a formula that evaluates to TRUE or FALSE to enable the conditional formatting for cells within the range. This formula may reference another cell in the same worksheet, but not another worksheet or workbook.

The 'New Formatting Rule' dialog box is shown. Under 'Select a Rule Type', 'Use a formula to determine which cells to format' is selected. Under 'Edit the Rule Description', 'Format values where this formula is true:' is shown with a text input field and a formula icon. The 'Preview' section shows 'No Format Set'.

A cell may have both a manual format as well as a conditional format applied to it. As long as a cell is not affected by a conditional format, the cell will use the manual format.

Formatting options include only the font styles (regular, bold, italics, or bold and italics), font colors, borders, and background fill patterns. You may not choose different font names or font sizes in a conditional format.

Manage Conditional Formatting Rules

Objective 2.2.3

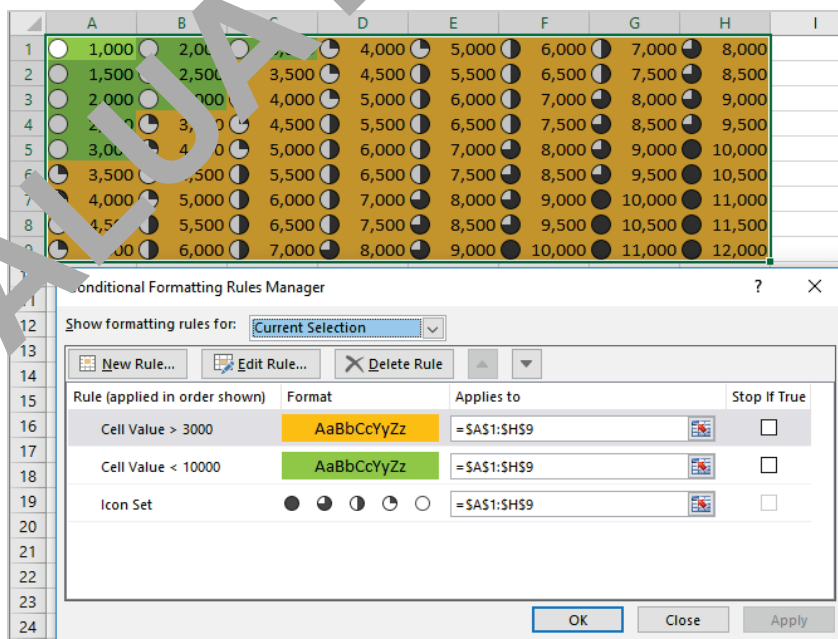
All conditional formatting rules for a worksheet are displayed in the Rules Manager window. To go to the Rules Manager window, click Manage Rules in one of the drop-down menus. You can use the Rules Manager to create new rules, modify existing ones, and delete rules that are no longer needed.

You may apply multiple conditional formats to a range of cells at the same time. For example, one rule may be to display a certain color if the value is less than 3,000; another rule to display a different color if the value is between 3,000 and 10,000; and a third rule if the value is greater than 10,000. In this situation, the rules do not conflict with each other and one of them will be in effect at any given time.

Suppose instead that one rule is where the value is less than 10,000 and another rule is where the value is greater than 3,000. In this case, the two rules overlap. Generally, the rule listed higher than the other in the Rules Manager will override the other. This is known as *rule precedence*. However, both will take effect if they do not conflict; for example, where one rule is to display an icon set and the other is to display a background fill color.

In the example at the right, the top two rules conflict with each other as both are setting background fill formats. Because the rule at the top takes precedence, all cells with a value greater than 3,000 have an orange background. The remaining cells have a green background because they meet the second condition of < 10,000.

The third rule applies to all cells because an icon set format does not conflict with the background fill.



The rules in the Rules Manager window apply in reverse sequence to when they were added; that is, the latest rule added is always placed at the top of the list, and takes precedence over any rules below it. The sequence of these rules can be changed; simply select a rule and click Move Up or Move Down.

Note that you can also apply manual formatting to a cell using the Format Cells dialog box or by changing the formatting settings directly from the Ribbon. If the cell also has a conditional format, then the conditional format will always take precedence over the manual formatting.

Note: The conditional formatting feature changed drastically in Excel 2007 compared to earlier versions of Excel. In earlier versions you were limited to colors, fonts, and borders, and support a maximum of three rules. In addition, the new rule precedence procedure dealt with overlapping rules by applying only the first rule that was evaluated to be true. Any other rule listed lower was ignored. If you need the conditional formatting to behave like the Excel versions earlier than 2007, click **Stop If True** in the Rules Manager window.

Learn to apply conditional formats to cells

This exercise is a quick refresher of basic conditional cell formatting.

- 1 Open *New York Temperatures* from the student data files folder and save it as *New York Temperatures Basic Formatting - Student*.

This worksheet shows the average monthly temperature for New York City from 2000 to 2015. You will create a conditional format using the Ribbon to set the fill color to blue for any cell that contains a temperature value of less than 32 degrees Fahrenheit (when water turns to ice).

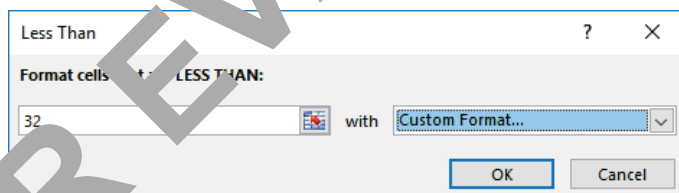
- 2 Select the cell range **B2:M17**.
- 3 On the Home tab, in the Styles group, click **Conditional Formatting**, then click **Highlight Cells Rules, Less Than**.

The Less Than dialog box is displayed with default values entered for you.

- 4 In the Less Than dialog box, enter: **32** in the first entry box, then click the drop-down button in the right list box and click **Custom Format**.

Because the Custom Format option was selected, the Format Cells dialog box is now displayed.

- 5 In the Format Cells dialog box, click the **Fill** tab, then click the blue standard color (bottom line, third from the right) and click **OK**.

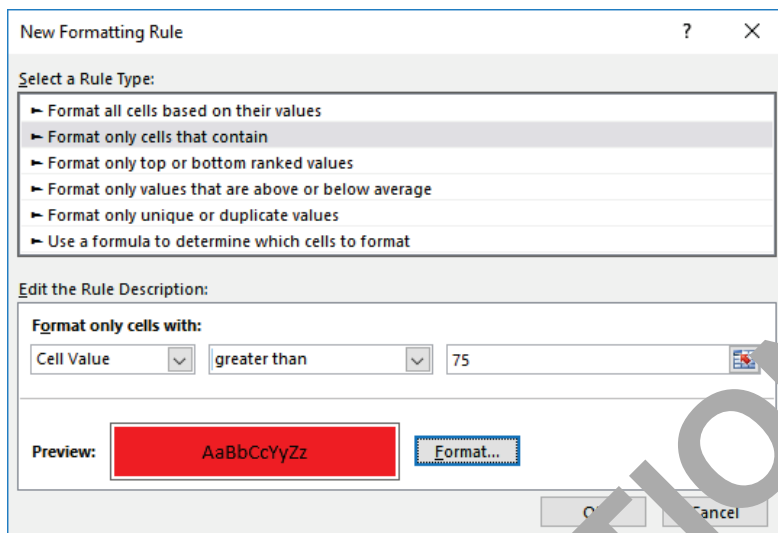


- 6 In the Less Than dialog box, click **OK**.

Create another conditional cell format – this time using the New Formatting Rule dialog box – to set the fill color to red for any cell that contains a temperature value of greater than 75 degrees Fahrenheit.

- 7 On the Home tab, in the Styles group, click **Conditional Formatting**, then click **New Rule**.
- 8 In the New Formatting Rule dialog box, click **Format only cells that contain** in the Select a Rule Type list.

- 9 In the Edit the Rule Description section, click the drop-down button in the second list box and click **greater than**. In the right-most text box, enter: 75.
- 10 Click the **Format** button.
- 11 In the Format Cells dialog box, click the **red** standard color (bottom row, second from the left), and click **OK**.



- 12 In the New Formatting Rule dialog box, click **OK** to complete the creation of the conditional formatting rule.

Assume that the blue color is too dark. You can change an existing rule at any time.

- 13 On the Home tab, in the Styles group, click **Conditional Formatting**, then click **Manage Rules**.
- 14 Click the bottom rule (Cell Value < 32), then click **Edit Rule**.

You can change the formatting criteria in this window.

- 15 In the Edit Formatting Rule dialog box, click **Format**.
- 16 In the Format Cells dialog box, click the **light blue** standard color (bottom row, fourth from the right), then click **OK**.
- 17 In the Edit Formatting Rule dialog box, click **OK**. In the Conditional Formatting Rules Manager dialog box, click **OK**.
- 18 Click in a blank cell of the worksheet.

The screen should now look similar to the following example:

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2	2000	31.3	37.3	47.2	51.0	63.5	71.3	72.3	72.7	66.0	57.0	45.3	31.1
3	2001	33.6	35.9	39.6	54.2	63.8	72.9	73.2	78.7	67.7	58.5	52.7	44.1
4	2002	39.9	40.6	44.1	56.1	60.7	71.4	78.8	77.7	70.2	55.2	46.0	36.0
5	2003	27.5	30.1	43.1	49.8	58.7	68.3	75.8	76.7	67.9	55.1	50.0	37.6
6	2004	24.7	35.0	43.5	53.6	65.2	71.2	74.5	74.2	69.3	56.0	48.2	38.4
7	2005	31.3	36.5	39.4	55.1	58.9	74.0	77.5	79.7	73.3	57.9	49.6	35.9
8	2006	40.9	35.7	43.1	55.7	63.1	71.0	77.9	75.8	66.6	56.2	51.9	43.6
9	2007	37.5	28.2	42.2	50.3	65.2	71.4	75.0	74.0	70.3	63.6	45.4	37.0
10	2008	36.5	35.8	42.6	54.9	60.1	74.0	78.4	73.8	68.8	55.1	45.8	38.1
11	2009	27.9	36.7	42.4	54.5	62.5	67.5	72.7	75.7	66.3	55.0	51.1	35.9
12	2010	32.5	33.1	48.2	57.9	65.3	74.7	81.3	77.4	71.1	58.1	47.9	32.1
13	2011	29.7	36.0	42.3	54.3	64.5	72.3	80.2	75.3	70.0	57.1	43.3	34.3
14	2012	37.3	40.9	50.9	54.8	65.1	71.0	78.8	76.7	68.8	58.0	43.9	41.5
15	2013	35.1	33.9	40.1	53.0	62.8	72.7	79.8	74.6	67.9	60.2	45.1	38.6
16	2014	28.7	31.7	37.7	52.3	64.0	72.5	76.1	74.5	69.7	59.6	45.3	40.5
17	2015	29.9	24.1	38.1	54.3	68.5	71.2	78.8	79.0	74.4	58.0	52.8	50.8

You can also format a cell manually. However, it will be overridden by the conditional format.

- 19** Click cell **B6**, then click the **Fill Color** drop-down button in the Ribbon, then click the **Theme Colors** section of the drop-down menu, click the **Gold, Accent 4, Lighter 40%** color.

Now test the conditional formatting rules in some of the cells.

- 20** Click cell **F5**, and enter: **31**.

- 21** Click cell **C5**, and enter: **75.1**.

- 22** Click cell **B6**, and enter: **40**.

- 23** Click the **Undo** button in the Quick Access Toolbar once to undo the change to cell B6.

Cell B6 is now back to the light blue background color, and the manually set yellow background is no longer visible. You can remove the conditional formatting from a selected range of cells or from the entire worksheet.

- 24** On the Home tab, in the Styles group, click **Conditional Formatting**, then click **Clear Rules, Clear Rules from Entire Sheet**.

Notice that the manual formatting in cell B6 from step 19 is now taking effect because the conditional formatting has been removed.

- 25** With cell B6 still selected, click the **Fill Color** drop-down button in the Ribbon, then click **No Fill** in the drop-down menu.

- 26** Save the workbook.

Custom Conditional Formatting Using a Formula

Objective 2.2.2

If the predefined conditional formatting rules cannot provide what you are looking for, you can also create a customized one using a formula.

In the example below, the formula **=A\$1=\$B\$19** is used for a new conditional format on the cell range A1:M14.

New Formatting Rule ? X

Select a Rule Type:

- Format all cells based on their values
- Format only cells that contain
- Format only top or bottom ranked values
- Format only values that are above or below average
- Format only unique or duplicate values
- Use a formula to determine which cells to format

Edit the Rule Description:

Format values where this formula is true:

=A\$1=\$B\$19

Preview: AaBbCcYyZz

OK Cancel

	A	B	C	D	E	F	G
1	Year	Jan	Feb	Mar	Apr	May	Jun
2	2000	31.3	37.3	47.2	51.0	63.5	71.1
3	2001	33.6	35.9	39.6	54.2	63.8	72.1
4	2002	39.9	40.6	44.1	56.1	60.7	71.1
5	2003	27.5	30.1	43.1	49.8	58.7	68.1
6	2004	24.7	35.0	43.5	53.6	65.2	71.1
7	2005	31.3	36.5	39.4	55.1	58.9	74.1
8	2006	40.9	35.7	43.1	55.7	63.1	72.1
9	2007	37.5	28.2	42.2	50.3	65.2	71.1
10	2008	36.5	35.8	42.6	54.9	61.1	74.1
11	2009	27.9	36.7	42.4	54.5	62.1	67.1
12	2010	32.5	33.1	48.2	57.9	55.3	71.1
13	2011	29.7	36.0	42.3	51.3	51.5	72.1
14	2012	37.3	40.9	50.9	5	5	71.1
15	2013	35.1	33.9	40.1	53.0	62.8	72.1
16	2014	28.7	31.7	37.1	51.3	64.0	72.1
17	2015	29.9	24.1	34.1	54.1	68.5	71.1
18							
19		Feb	2001				

There are two important rules to remember about this formula:

- The formula must result in a TRUE or FALSE value.
- If the formula contains any cell references, the formula must be entered as if it was being entered into the upper left corner cell of the selected range. In the example above, the upper left corner cell for this range of cells receiving the conditional formatting is cell B1. Therefore the cell formula =A\$1=\$B\$19 is evaluated for that cell. However, if the cell range selected for the conditional format is B2:M14, the equivalent formula must be =B\$2=\$B\$19.

Notice that if the formula contains cell references, the references may be relative, absolute or mixed. For all other cells in the cell range in which the conditional format rules apply, Excel will automatically adjust the relative and mixed cell references. Absolute cell references and the absolute part of mixed cell references will not change from cell to cell. Using the above example again, in cell C1 the formula will adjust to =C\$1=\$B\$19, but for cell C2 the formula will also be =C\$1=\$B\$19. For both cells C1 and C2, the formula evaluates to TRUE and therefore the conditional format will activate for these cells.

Learn to customize conditional formatting using a formula

This exercise demonstrates how to use a formula to apply conditional formatting.

- 1 With *New York Temperatures* open, save it as *New York Temperatures Formatting Formulas - Student*.

Using the same New York City temperatures, create a conditional format to highlight an entire column based on the month value you enter into a cell.

- 2 Enter the following values into the worksheet:

Cell	Value
B19	Feb
C19	2001

Excel automatically formatted cell C19 using the same settings as the cells above containing numbers. Clear this formatting so that it shows as a year value without the decimal digits.

- 3 Select cell **C19** again, then on the Home tab, in the Editing group, click **Clear**, and click **Clear Formats**.

- 4 Select the cell range **A1:M17**.
- 5 On the Home tab, in the Styles group, click **Conditional Formatting**, then click **New Rule**.
- 6 In the New Formatting Rule dialog box, click **Use a formula to determine which cells to format** in the Select a Rule Type list.
- 7 In the Format values where this formula is true text box, type: `=A1=B19`.
- 8 Click the **Format** button.
- 9 In the Format Cells dialog box, under the Fill tab, click the **green** standard color (bottom row, fifth from the right), and click **OK**.
- 10 In the New Formatting Rule dialog box, click **OK** to complete creating the conditional formatting rule.

In the worksheet, only cell C1 is highlighted in green, because it is the only cell in which the formula entered in step 7 evaluates to the value of True (for this cell the formula is adjusted to `=C1=B19`). The conditional format can be modified so that the entire column is highlighted in green.

- 11 Click **Conditional Formatting** in the Ribbon, then click **Manage Rules**.
- 12 With the sole rule already selected, click **Edit Rule**.
- 13 In the Format values where this formula is true box, change the formula to: `=A$1=$B$19` and click **OK**.
- 14 In the Conditional Formatting Rules Manager dialog box, click **OK**.

The entire column is now highlighted: every cell (not just C1) in the cell range C1:C14 will now have the formula in the conditional format adjusted to `=A1=B19`.

Add another custom conditional format to highlight the entire row for the year value entered into cell C19.

- 15 Ensure that the range **A1:M17** is still selected, then click **Conditional Formatting**, then click **New Rule**.
- 16 In the New Formatting Rule dialog box, click **Use a formula to determine which cells to format** in the Select a Rule Type list.
- 17 In the Format values where this formula is true text box, type: `=$A1=$C$19`.
- 18 Click the **Format** button, then click the **orange** standard color (bottom row, third from the left), and click **OK**.
- 19 In the New Formatting Rule dialog box, click **OK** to complete creating the conditional formatting rule.
- 20 Click in any blank cell outside of the range A1:M17 to view the results of the conditional formatting.