Highline Excel 2016 Class 16: Conditional Formatting to Visualize Data

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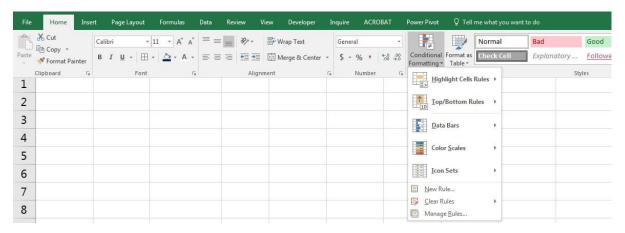
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Conditional Formatting

- Conditional Formatting for cells in a highlighted range requires a logical test that comes out TRUE or FALSE.
 - TRUE = Cell gets Formatting.
 - FALSE = Cell NOT get Formatting.
- 2) Conditional Formatting can be applied to cells with:
 - Built-in features like:
 - 1. Contains a value
 - 2. Top 3 values
 - 3. Above Average
 - 4. Data Bars
 - 5. Color Scales (Heat Map)
 - 6. Icons
 - Logical Formulas:
 - 1. Highlight Row (Record) where cell contains a value.
 - 2. Highlight Row (Record) where sales are below average.
 - 3. Highlight Records that contain the top 3 values.
 - 4. Format Whole Column Based on a condition.
 - 5. Format with complex criteria (AND Logical Test).
 - 6. Format with complex criteria (OR Logical Test).
 - 7. Format Weekends and Holidays.
 - 8. Format items NOT in List.

Apply Conditional Formatting:

1) Home Ribbon Tab, Styles group, Conditional Formatting button:



- 2) Keyboards:
 - Keyboard for New Format Rule dialog box:

Alt, H, L, N

• Keyboard for Manage Rule dialog box:

Alt, O, D

• Keyboard to delete rule:

Alt, O, D, D, Enter

- Keyboard to get to "Format values where this formula is true":
 - 1. Alt, H, L, N, PageDown, Tab

Built-in features to Conditional Formatting

Steps:

- 1) Highlight cells
- 2) Home Ribbon Tab, Styles group, Conditional Formatting button
- 3) Select Rule
- 4) Choose formatting

Built-in Conditional Formatting Options:



Logical Formulas:

- 1) Logical Formulas are formulas that evaluate to TRUE or FALSE
- 2) For Conditional Formatting:
 - Formatting IS Applied when the formula evaluates to:
 - 1. TRUE
 - 2. Any non-zero number
 - Formatting is NOT Applied when the formula evaluates to:
 - 1. FALSE
 - 2. Zero
 - 3. Error
- 3) When you use Logical Formulas to apply Conditional Formatting:
 - Formula has to calculate in every cell in the range!!!
 - Rule to minimize calculation time:
 - 1. Choose formulas that calculate quickly.
 - 2. Use Helper Cells for sub-calculations so that the Conditional Formatting Logical Formula don't have to run the sub-calculation in every cell in the Conditional Formatting range.
- 4) Array Formulas work in the Conditional Formatting dialog box (without using Ctrl + Shift + Enter), but should be avoided if overall spreadsheet calculation time is an issue.

Steps in Creating Conditional Formatting with Formulas:

- 1) Highlight the range of cells. Make a metal note of which cell is the active cell in the highlighted
- 2) range. (The active cell is the light-colored cell.)
- 3) Open the Conditional Formatting Rules Manager dialog (from the Home Ribbon tab, select the Styles group and then select Manage Rules from the Conditional Formatting drop-down).
- 4) Open the New Formatting Rule dialog box (by clicking the New Rule button).
- 5) Select Use a Formula to Determine Which Cells to Format from the "Select a Rule Type" list.
- 6) Click the Format Values Where This Formula Is True text box.
- 7) Create your formula from the point of view of the active cell in the highlighted range. That is, build the formula as if you were placing it into the active cell and then copying it down and over. Remember, whatever the conditional test is that you are creating must be evaluated for each cell to determine whether each cell in the range gets the formatting. So, even if the formula is not actually going into the active cell, the dialog box will copy it throughout the range in memory as if the formula were in the cells in the highlighted range.
- 8) Click the Format button and select any combination of formatting you want from the four tabs (Number, Font, Border, and Fill).
- 9) Click OK in the Format Cells dialog box.
- 10) Click OK in the New Formatting Rule dialog box.
- 11) Click OK in the Conditional Formatting Rules Manager dialog box.

Conditional Formatting is Volatile: it Recalculates Often and can Slow Overall Spreadsheet Calculation Time.

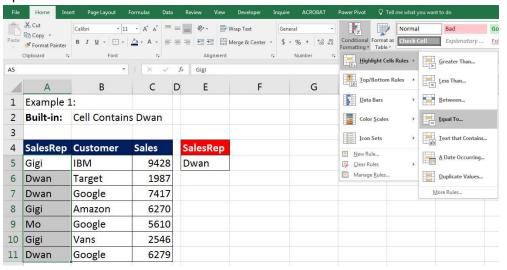
- 1) Conditional Formatting is **recalculated** for cells that are visible on the screen
 - Large screens have more cells to calculate than small screens.
 - Zoomed out has more cells to calculate than zoomed in.
 - Scrolling up or down causes Conditional Formatting to recalculate.
- 2) Conditional Formatting is **recalculated** when actions occur such as:
 - Entering a formula.
 - Inserting a column.
 - Recalculating with the F9 key.
- 3) Conditional Formatting created with Logical Formulas slows down calculation in two ways:
 - 1. Recalculation (like scrolling or entering a formula)
 - 2. Formula has to calculate before formatting is applied.
- 4) When you use Logical Formulas to apply Conditional Formatting:
 - Choose formulas that calculate quickly
 - Use Helper Cells for sub-calculations so that the Conditional Formatting Logical Formula don't have to run the sub-calculation in every cell in the Conditional Formatting range.

Example 1: Built-in Feature: Cell Contains

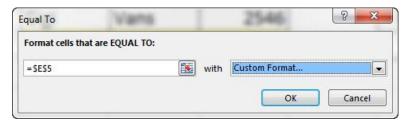
Visual Steps for using Built-in Conditional Formatting Feature

Steps:

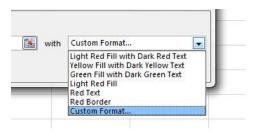
1) Highlight range and go to Home Ribbon Tab, Styles group, Conditional Formatting button, Highlight Cells Rule, Equal to:



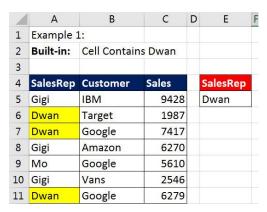
2) Enter cell with criteria into Equals To dialog box:



3) You can change the default Formatting by clicking "with" textbox and choosing "Custom Format":



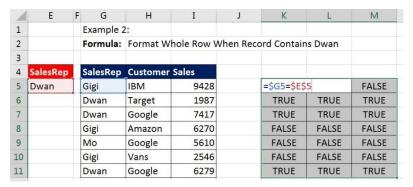
4) Result:



Example 2: Logical Formula: Highlight Row (Record) where cell contains a value.

Visual Steps for Conditional Formatting with a Formula.

1) Start by building Formula in cells to test the pattern of TRUEs and FALSEs:



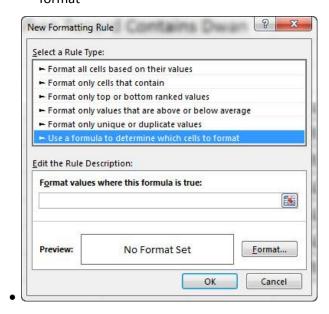
2) Highlight entire range and make sure the active cell is in the upper corner.



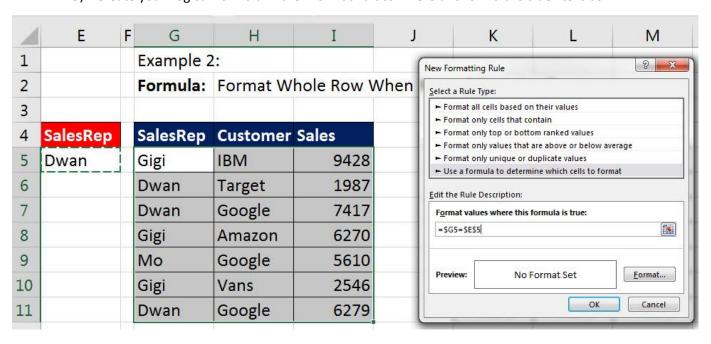
Home Ribbon Tab, Styles group,
Conditional Formatting button, select
New Rule (keyboard: Alt, H, L, N)



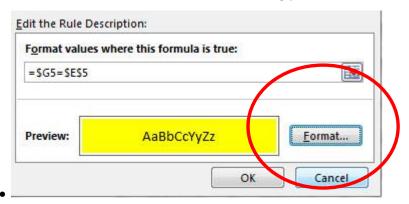
4) In the "New Formatting Rule" dialog box, select "Use a Formula to determine which cells to format"



5) Create your Logical Formula in the "Format values where this formula is true" text box.



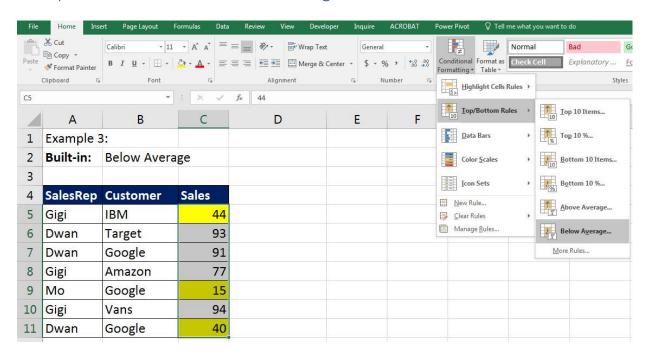
6) Be sure to click Format Button and add the formatting you would like.



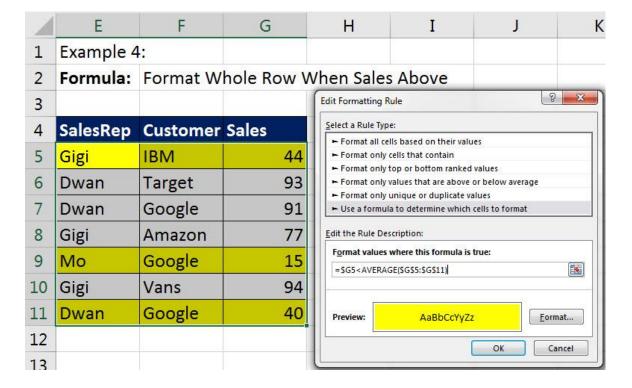
7) Result:



Example 3: Built-in Feature: Below Average



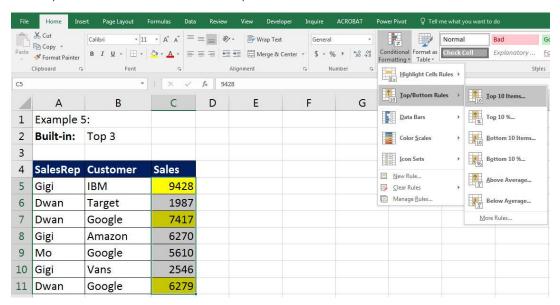
Example 4: Logical Formula: Highlight Row (Record) where sales are below average.



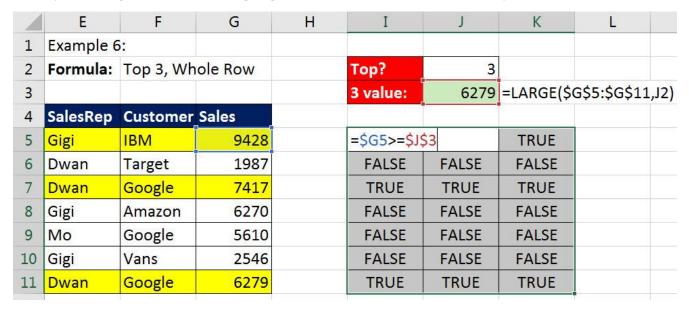
Note:

- AVERAGE function had to calculate in every cell!
- This can slow down calculation in spreadsheet if:
 - 1. Ranges are large.
 - 2. There are many formulas.
 - 3. There are many different types of conditional formatting.

Example 5: Built-in Feature: Top 3 values



Example 6: Logical Formula: Highlight Records that contain the top 3 values



Note:

- LARGE function does NOT have to calculate in every cell in the Conditional Formatting range.
- Advantage to using a helper cell to calculate sub-calculations is that when the spreadsheet recalculates, only one cell has to calculate the LARGE value.

Example 7: Built-in Feature: Data Bars

- 1) Data Bars creates an "In-Cell Bar Chart".
 - Max = Longest Bar.
 - Min = Shortest Bar.
- 2) Example:

Student Grades on 50 Point Quiz

Limits	Frequency	
Score <= 10	15	
10 < Score <= 20	33	
20 < Score <= 30	55	
30 < Score <= 40	70	
40 < Score <= 50	13	

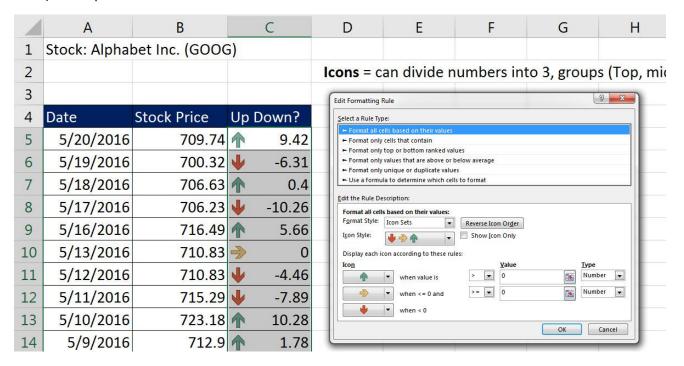
Example 8: Built-in Feature: Color Scales (Heat Map)

- 1) Color Scale = Ranks number by color.
- 2) 3 colors:
 - Red = bottom 1/3 of values, Darkest Red = Min.
 - White = middle 1/3 of values, White = Mid-point (Median).
 - Blue = top 1/3 values, Darkest Blue = Max.
- 3) Example:

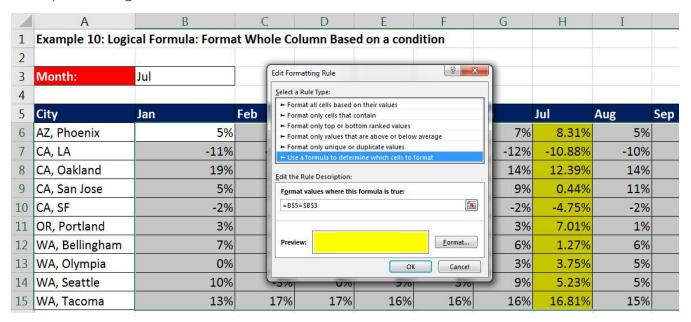
Percentage Cha	nge in Sale	s from Last	Year:									
City	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AZ, Phoenix	4%	5%	8%	9%	5%	7%	7%	4%	8%	2%	5%	9%
CA, LA	-12%	-12%	-13%	-12%	-14%	-13%	-12%	-11%	-14%	-13%	-15%	-14%
CA, Oakland	18%	14%	16%	16%	13%	13%	12%	13%	16%	12%	15%	11%
CA, San Jose	3%	14%	0%	11%	13%	7%	0%	9%	11%	6%	4%	4%
CA, SF	-3%	-4%	-4%	-5%	-7%	-3%	-6%	-3%	-3%	-5%	-7%	-2%
OR, Portland	2%	1%	2%	0%	-3%	2%	6%	0%	6%	-1%	4%	5%
WA, Bellingham	6%	6%	3%	0%	9%	5%	1%	5%	3%	1%	2%	6%
WA, Olympia	0%	-6%	-2%	4%	3%	2%	3%	3%	5%	5%	3%	2%
WA, Seattle	9%	-5%	-1%	8%	2%	7%	4%	4%	11%	-2%	4%	6%
WA, Tacoma	12%	16%	17%	16%	15%	16%	15%	13%	13%	15%	16%	16%

Example 9: Built-in Feature: Icons

- 1) Icons = can divide numbers into 3, groups (Top, middle, bottom)
- 2) SIGN function delivers:
 - Delivers -1 when number is negative.
 - Delivers 0 when number is zero.
 - Delivers 1 when number is positive.
- 3) Example:



Example 10: Logical Formula: Format Whole Column Based on a condition



Example 11: Logical Formula: Format with complex criteria (AND Logical Test)

1) AND Logical Test with AND function:

4	SalesRep	Customer	Sales	SalesRep	Customer			
5	Gigi	IBM	9428	Dwan	Google	=AND(\$A5	=\$ <mark>E\$5,</mark> \$B5	=\$F\$5)
6	Dwan	Target	1987			AND(logical1, [lo	ogical2], [logical3],)	FALSE
7	Dwan	Google	7417			TRUE	TRUE	TRUE
8	Gigi	Amazon	6270			FALSE	FALSE	FALSE
9	Мо	Google	5610			FALSE	FALSE	FALSE
10	Gigi	Vans	2546			FALSE	FALSE	FALSE
11	Dwan	Google	6279			TRUE	TRUE	TRUE

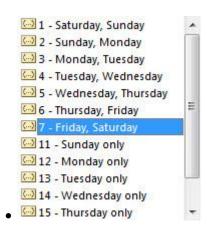
Example 12: Logical Formula: Format with complex criteria (OR Logical Test)

1) OR Logical Test with MATCH function (Is Item in List?):

	Α	В	C	D	E	F	G	Н	I	J
1	Example 11: Logical Formula: Format with complex criteria (AND & OR Logical Tests)									
13										
14	SalesRep	Customer	Sales		Customer					8.4
15	Gigi	IBM	9428		Google			=MATCH(\$	B15,\$E\$15	\$E\$17,0)
16	Dwan	Target	1987		Amazon			#N/A	#N/A	#N/A
17	Dwan	Google	7417		IBM			1	1	1
18	Gigi	Amazon	6270					2	2	2
19	Мо	Google	5610					1	1	1
20	Gigi	Vans	2546					#N/A	#N/A	#N/A
21	Dwan	Google	6279					1	1	1

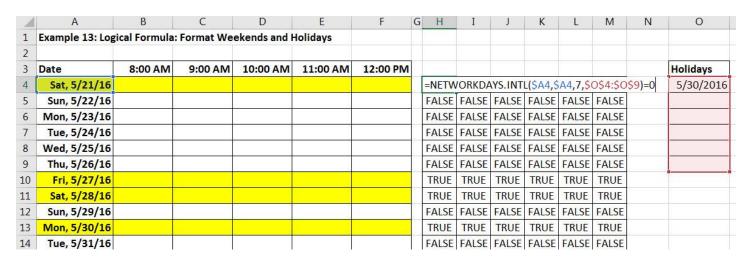
Example 13: Logical Formula: Format Weekends and Holidays

- 1) NETWORKDAYS.INTL function counts working days:
 - NETWORKDAYS.INTL(start_date , end_date , weekend , holidays)
 - weekend argument drop-down list:



- Normally it will count the number of weekdays between a start and end date.
- But if you give it the same start and end date, the function can only deliver either a one (1), it is a weekday, or zero (0), it is a weekend or holiday.

2) Example:



Example 14: Logical Formula: Format items NOT in List

1	A	В	С	D	Е	F	G
1	Example 14: Logical Formula: Format items NOT in List						
2	"		Is the book missing from our library shelves?				
3			Is item is List 2 NOT in List 1?				
4							
5	Books Counted In Inventory Count		Library Database List of ALL Books				
6	List 1	37	List 2				
7	The Da Vinci Code (Dan Brown)		The Stone Diaries (Carol Shields)		=ISNA(MA	TCH(C7,\$	\\$7:\$A\$99,0))
8	Pride and Prejudice (Jane Austen)		The Lord of the Rings: Two Towers (Tolkien)		FALSE		
9	To Kill A Mockingbird (Harper Lee)		The Da Vinci Code (Dan Brown)		FALSE		
10	Gone With The Wind (Margaret Mitchell)		The Bourne Identity (Robert Ludlum)		FALSE		
11	The Lord of the Rings: Fellowship of the Ring (Tolkien)		East of Eden (John Steinbeck)		TRUE		
12	The Lord of the Rings: Two Towers (Tolkien)		Angela's Ashes (Frank McCourt)		FALSE		
13	Anne of Green Gables (L.M. Montgomery)		Life of Pi (Yann Martel)		FALSE		
14	Outlander (Diana Gabaldon)		The Grapes of Wrath (John Steinbeck)		FALSE		
15	A Fine Balance (Rohinton Mistry)		Catch-22 (Joseph Heller)		FALSE		
16	Harry Potter and the Goblet of Fire (Rowling)		Bible		FALSE		
17	Angels and Demons (Dan Brown)		The Secret Garden (Frances Hodgson Burnett)		FALSE		
18	Harry Potter and the Order of the Phoenix (Rowling)		A Woman of Substance (Barbara Taylor Bradford)		FALSE		
19	Memoirs of a Geisha (Arthur Golden)		The Celestine Prophecy (James Redfield)		TRUE		
20	Harry Potter and the Philosopher's Stone (Rowling)		The Great Gatsby (Fitzgerald)		FALSE		

Further Reference for Conditional Formatting:

1) Highline Excel 2013 Class Video 40: Conditional Formatting Basic To Advanced 50 Examples

https://www.youtube.com/watch?v=GRfe4bHsjhl

2) Gantt Charts in Excel Playlist of Videos

https://www.youtube.com/playlist?list=PLrRPvpgDmw0mgjYXj7j9r2N9ObRXY45tn

Cumulative List of Keyboards Throughout Class:

- 1) Esc Key:
 - i. Closes Backstage View (like Print Preview).
 - ii. Closes most dialog boxes.
 - iii. If you are in Edit mode in a Cell, Esc will revert back to what you had in the cell before you put the Cell in Edit mode.
- 2) **F2 Key** = Puts formula in Edit Mode and shows the rainbow colored Range Finder.
- 3) SUM Function: Alt + =
- 4) Ctrl + Shift + Arrow = Highlight column (Current Region).
- 5) Ctrl + Backspace = Jumps back to Active Cell
- 6) Ctrl + Z = Undo.
- 7) **Ctrl + Y** = Undo the Undo.
- 8) **Ctrl + C** = Copy.
- 9) **Ctrl + X** = Cut.
- 10) **Ctrl + V** = Paste.
- 11) Ctrl + PageDown = expose next sheet to right.
- 12) Ctrl + PageUp = expose next sheet to left.
- 13) Ctrl + 1 = Format Cells dialog box, or in a chart it opens Format Chart Element Task Pane.
- 14) **Ctrl + Arrow**: jumps to the bottom of the "**Current Region**", which means it jumps to the last cell that has data, right before the first empty cell.
- 15) Ctrl + Home = Go to Cell A1.
- 16) Ctrl + End = Go to last cell used.
- 17) Alt keyboards are keys that you hit in succession. Alt keyboards are keyboards you can teach yourself by hitting the Alt key and looking at the screen tips.
 - Create PivotTable dialog box: Alt, N, V
 - ii. Page Setup dialog box: Alt, P, S, P
 - iii. Keyboard to open Sort dialog box: Alt, D, S
- 18) ENTER = When you are in Edit Mode in a Cell, it will put thing in cell and move selected cell DOWN.
- 19) CTRL + ENTER = When you are in Edit Mode in a Cell, it will put thing in cell and keep cell selected.
- 20) TAB = When you are in Edit Mode in a Cell, it will put thing in cell and move selected cell RIGHT.
- 21) SHIFT + ENTER = When you are in Edit Mode in a Cell, it will put thing in cell and move selected cell UP.
- 22) SHIFT + TAB = When you are in Edit Mode in a Cell, it will put thing in cell and move selected cell LEFT.
- 23) **Ctrl + T** = Create Excel Table (with dynamic ranges) from a Proper Data Set.
 - i. Keyboard to name Excel Table: Alt, J, T, A
 - ii. **Tab** = Enter Raw Data into an Excel Table.
- 24) Ctrl + Shift + ~ (`) = General Number Formatting Keyboard.
- 25) **Ctrl + ;** = Keyboard for hardcoding today's date.
- 26) Ctrl + Shift +; = Keyboard for hardcoding current time.
- 27) Arrow Key = If you are making a formula, Arrow key will "hunt" for Cell Reference.
- 28) Ctrl + B = Bold the Font
- 29) Ctrl + * (on Number Pad) or Ctrl + Shift + 8 = Highlight Current Table.
- 30) Alt + Enter = Add Manual Line Break (Word Wrap)
- 31) Ctrl + P = Print dialog Backstage View and Print Preview
- 32) **F4 Key** = If you are in Edit mode while making a formula AND your cursor is touching a particular Cell Reference, F4 key will toggle through the different Cell References:
 - i. A1 = Relative
 - ii. \$A\$1 = Absolute or "Locked"

- iii. **A\$1** = Mixed with Row Locked (Relative as you copy across the columns AND Locked as you copy down the rows)
- iv. **\$A1** = Mixed with Column Locked (Relative as you copy down the rows AND Locked as you across the columns)
- 33) Ctrl + Shift + 4 = Apply Currency Number Formatting
- 34) **Tab key** = When you are selecting a Function from the Function Drop-down list, you can select the function that is highlighted in blue by using the Tab key.
- 35) **F9 Key** = To evaluate just a single part of formula while you are in edit mode, highlight part of formula and hit the F9 key.
 - i. If you are creating an Array Constant in your formula: Hit F9.
 - ii. If you are evaluating the formula element just to see what that part of the formula looks like, REMEMBER: to Undo with Ctrl + Z.
- 36) Alt, E, A, A = Clear All (Content and Formatting)
- 37) Evaluate Formula One Step at a Time Keyboard: Alt, M, V
- 38) Keyboard to open Sort dialog box: Alt, D, S
- 39) Ctrl + Shift + L = Filter (or Alt, D, F, F) = Toggle key for Filter Drop-down Arrows
- 40) Ctrl + N = Open New File
- 41) **F12** = Save As (Change File Name, Location, File Type)
- 42) Import Excel Table into Power Query Editor: Alt, A, P, T
- 43) Ctrl + 1 (When Chart element in selected): Open Task Pane for Chart Element
- 44) **F4 Key** = If you are in Edit mode while making a formula AND your cursor is touching a particular Cell Reference, F4 key will toggle through the different Cell References:
 - i. **A1** = Relative
 - ii. \$A\$1 = Absolute or "Locked"
 - iii. **A\$1** = Mixed with Row Locked (Relative as you copy across the columns AND Locked as you copy down the rows)
 - iv. **\$A1** = Mixed with Column Locked (Relative as you copy down the rows AND Locked as you across the columns)
- 45) Keyboard to open Scenario Manager = Alt, T, E
- 46) Ctrl + Tab = Toggle between Excel Workbook File Windows
- 47) **Ctrl + Shift + F3** = Create Names From Selection
- 48) Ctrl + F3 = open Name Manager
- 49) **F3** = Paste Name or List of Names
- 50) Alt + F4 = Close Active Window
- 51) Window Key + Up Arrow = Maximize Active Window
- 52) **Ctrl + Shift + Enter** = Keystroke to enter Array Formulas that: 1) have a function argument that requires it, or 2) whether or not you are entering the Resultant Array into multiple cells simultaneously.
- 53) Ctrl + / = Highlight current Array
- 54) Data Validation Dialog Box: Alt, D, L
- 55) **F11** = Create Chart on a new sheet
- 56) Alt + F11 = Create Chart on currently selected sheet.

New In This Video:

- 57) New Format Rule dialog box: Alt, H, L, N
- 58) Delete conditional Formatting Rule: Alt, O, D, D
- 59) Manage Rule dialog box keyboard: Alt, O, D
- 60) "Format values where this formula is true": Alt, H, L, N, PageDown, Tab