

Microsoft Excel for Beginners



Microsoft Excel for Beginners

2.0 hours

This is a basic computer workshop. Microsoft Excel is a spreadsheet program. We use it to create reports that need calculations and charts. In this workshop we will learn how to move around and work inside the spreadsheet.

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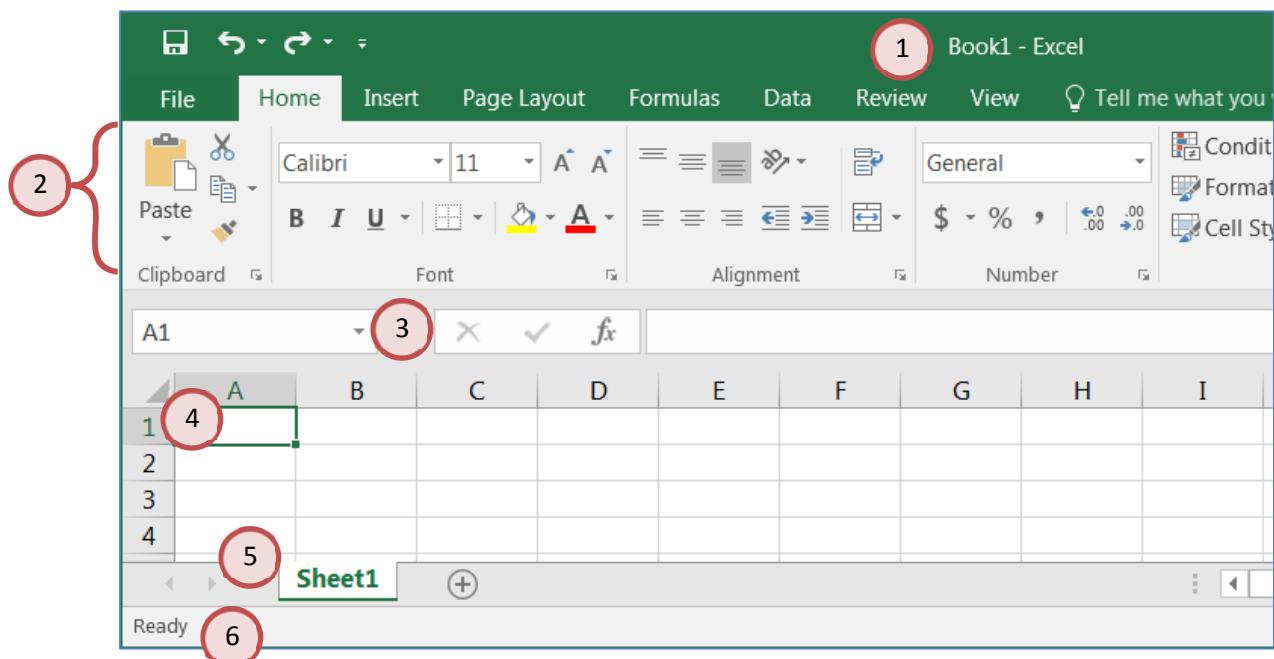
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Vocabulary

Microsoft Excel is a spreadsheet program. We use it to create reports that need calculations and charts.

1. An Excel file is called a **Workbook**.
 - Default title is Book1
2. **Ribbon** broken into **Tabs** (Home, Insert, Page Layout...)
 - Tabs broken into groups (Clipboard, Font, Alignment)
3. **Name box** (left) and **formula bar** (right)
 - Name box shows address of current cell
 - Formula bar shows contents of current cell
4. **Columns** Headings are Lettered, **Rows** Headings are Numbered
 - Columns of a building, rows of chairs
5. Worksheet navigation buttons, Worksheet tabs
 - Sheet1
6. **Status bar**
 - Excel behaves differently depending on the current "mode"



Status Bar Modes

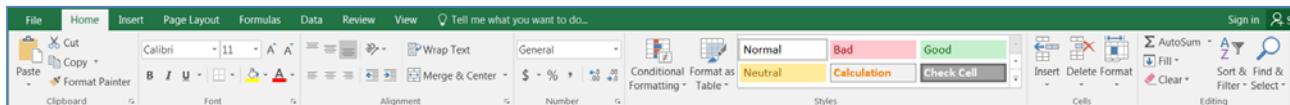
- **Ready** mode. This means nothing is being *entered* or *edited* on the spreadsheet.
- **Enter** mode. This mode is when you are doing data entry, just typing in the contents.
- **Edit** mode. Edit the contents of the current cell. Double-click on a cell with data in it, or click inside the formula bar for this mode.
- **Point** mode. Used when linking to cell addresses within a formula or from an Excel dialog window.

Keyboard Navigation

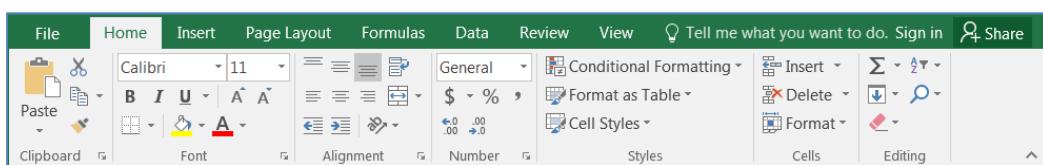
| Key | Ready | Enter | Edit | Point |
|-------------|---|-------|------|--|
| Enter | Move Down | | | Accept changes and move down |
| Shift-Enter | Move Up | | | Accept changes and move up |
| Tab | Move Right | | | Accept changes and move right |
| Shift-Tab | Move Left | | | Accept changes and move Left |
| Arrow Keys | Moves to another cell | | | Moves between characters in cell Points to an address of a cell |
| Home | Moves to first column | | | Points to cell in column A |
| Ctrl-Home | Moves to the beginning cell of the worksheet (A1) | | | Points to the beginning of the worksheet |

Ribbon

The images of Excel in this packet were copied from a wide screen monitor. With the wide screen the ribbon is stretched across the window and I can see all the buttons. If you are working on a narrower window, Excel will try to clump the groups together and the layout may look a little different than the ones shown here, but all the buttons will be there.



Here we can see how the font group is now three buttons high, and how some of the buttons like Cut and Copy have lost their text labels.



Clipboard

Cut, Copy and Paste are clipboard features built into Windows. The clipboard is a temporary storage place for pictures and data. The Windows clipboard can only store one item at a time. Microsoft Office has a Multi-Clipboard that can store 24 items, but the Paste button and the shortcuts for the Paste option only correspond to the most recently copied item. The clipboard pane must be displayed to be able to use this feature.

Cut – Copies selection to the clipboard. If the selection is text or an image, it will disappear. If it's a cell, Excel waits until you paste it to delete the original cell.

Copy – Copies selection to the clipboard.

Paste – Retrieves most recent text/object on the clipboard.

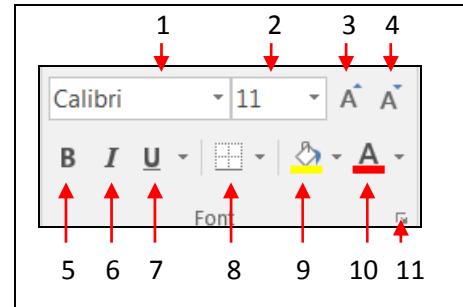


Formatting Cells

The most formatting options are found on the **Home Tab**. All the options can be found in the Format Cells window. This contains several tabs to help us format the contents of our spreadsheet. This window can be opened by using the  **More Options** button at the end of the **Format**, **Alignment** and **Number** groups. You can also use the Keyboard Shortcut – **Ctrl-1** or choose **Format Cells...** from the right-click shortcut menu.

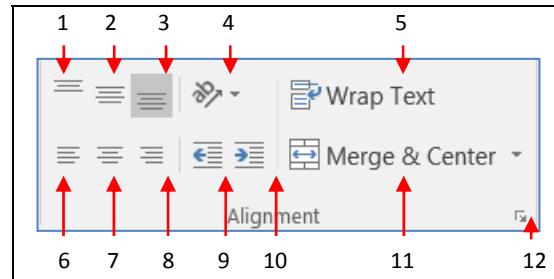
Font

1. **Font** – Sets the font of the selected cell(s). Fonts are different ways to show the same letters.
2. **Font Size** – Sets the size of the letters (the font). Larger numbers give larger fonts.
3. **Increase Font** – Increases the font size
4. **Decrease Font** – Decreases the font size
5. **Bold** – Makes the selected cell(s) **Bold**
6. **Italic** – Makes the selected cell(s) *Italicized*
7. **Underline** – Makes the selected cell(s) Underlined. The drop down has a double underline.
8. **Borders** – Adds and removes borders for the selected cell(s). The drop down has More Borders...
9. **Fill Color** – Changes the background color of the selected cell(s).
10. **Font Color** – Changes the color of the font of the selected cell(s).
11. **More Options** – This button will open the Format Cells dialog window.



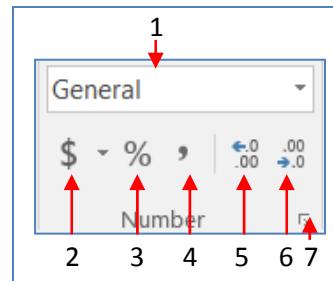
Alignment

1. **Top Align** – Vertically aligns to the top of the cell.
2. **Middle Align** – Vertically aligns to middle of the cell.
3. **Bottom Align** – Vertically aligns to the bottom of the cell.
4. **Orientation** – Rotates the contents of the cell to the currently displayed option.
5. **Wrap Text** – Displays contents on multiple lines within the cell's column width.
6. **Align Text Left** – Horizontally aligns the contents to the left side of the column.
7. **Center** – Horizontally aligns the contents to the center of the cell.
8. **Align Text Right** – Horizontally aligns the contents to the right side of the cell.
9. **Decrease Indent** – Decreases the space between the text and the cell border
10. **Increase Indent** – Increases the space between the text and the cell border
11. **Merge and Center** – Joins selected (adjacent) cells into one cell and centers the result. If there is data in more than one cell, Excel will only keep the information from the upper left cell.
12. **More Options** – This button will open the Format Cells dialog window to the Alignment Tab.



Number

1. **Number Format** – Allows you to change the way numeric values are displayed on the spreadsheet. The drop down arrow gives you a list of the most common formats, including a *More Number Formats* option.
2. **Currency Style** – Sets the selected cell(s) to the *Currency Style*, this style keeps the dollar signs on the left side of the cell, and the number on the right side. The drop down arrow gives you a list of other currency formats, such as the Euro (€).
3. **Percent Style** – Sets the selected cell(s) to the *Percent Style*, this style has zero decimal places. Keyboard shortcut - Ctrl-Shift-%. This button can be reset through **Cell Styles** on the Home Tab.
4. **Comma Style** – Sets the selected cell(s) to the *Comma Style*, this style has a comma for every thousand and two decimal places. This button can be reset through
5. **Increase Decimal** – Increases the number of decimal places showing to the right of the decimal.
6. **Decrease Decimal** – Decreases the number of decimal places showing to the right of the decimal.
7. **More Options** – This button will open the Format Cells dialog window to the Number Tab.



Cells Structures

There are a set number of cells within a Microsoft Excel worksheet. In the Ribbon versions (2007 and later) there are 16,384 columns and 1,048,576 rows. As you insert and delete structures, you are not reducing the number of cells, merely shifting where your data lies on the defined worksheet. Think about moving a painting around on a wall. You're not changing the wall, just the position of the painting.

Inserting

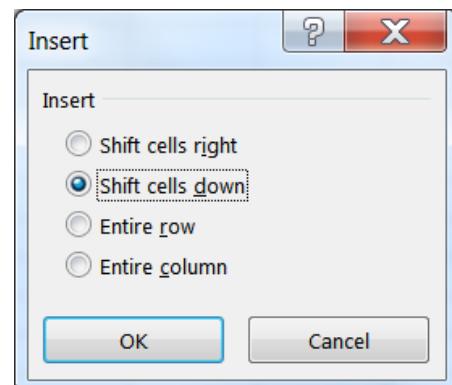
We use **Insert** to make new cells, columns, and rows.

Excel determines what you are trying to insert based on your selection. If a full column is selected, Excel will assume you mean a full column and it will skip the Insert window.

You can insert a cell, row, or column by doing one of the following:

- ⇒ Press Shift - Ctrl - = on the keyboard (ctrl plus)
- ⇒ or from the **Home** tab, in the **Cells** group, choose **Insert**
- ⇒ or open the Right-click menu and choose insert.

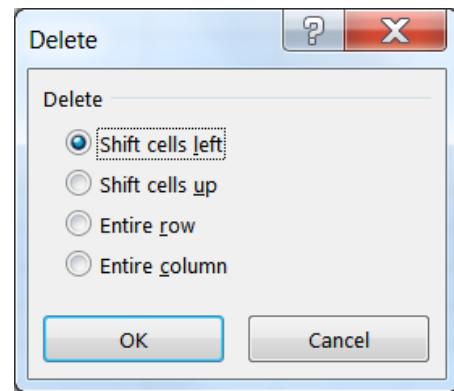
- To insert multiple at once, select the number of cells/rows/columns you would like to insert and follow the steps above.
- The size and format of the new space is determined by the previous row or column.
- This will push the existing cells, columns, or rows to the right or down to make room for the new cells.



Deleting

We use **Delete** to remove cells, columns, and rows. Excel determines what you are trying to delete based on your selection. You can delete a cell, row, or column by doing one of the following:

- ⇒ Press Shift - Ctrl - - on the keyboard (Ctrl Minus)
- ⇒ or from the **Home** tab, in the **Cells** group, choose **Delete**
- ⇒ or open the Right-click menu and choose insert.



- To delete multiple at once, select the number of cells/rows/columns you would like to delete and follow the steps above.
- This will completely remove the structure, formatting and all, and the rows/columns/cells will shift into this place. If you only intended to delete the contents not the cells, undo and use the Clear Contents option instead.

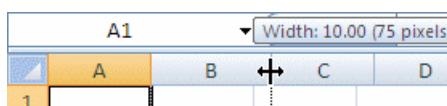
Cell Size (Row Height/Column Width)

You cannot resize one cell; the structure is dependent on the entire row and column where it resides. The Row Height and Column Width settings can be found under the **Format** menu in the **Cells** group of the **Home** tab.

Adjusting with the Mouse

When we resize we are growing away from the left.

To resize the column, place your mouse cursor between the lines of the column headings. The current column heading is in a box; all you need to do is resize the box to make it wider. Put your mouse along the right side of the heading box until you see the resizing arrow pointing in two directions. Click and drag away from the column letter. When you let go of the mouse, the column will resize.

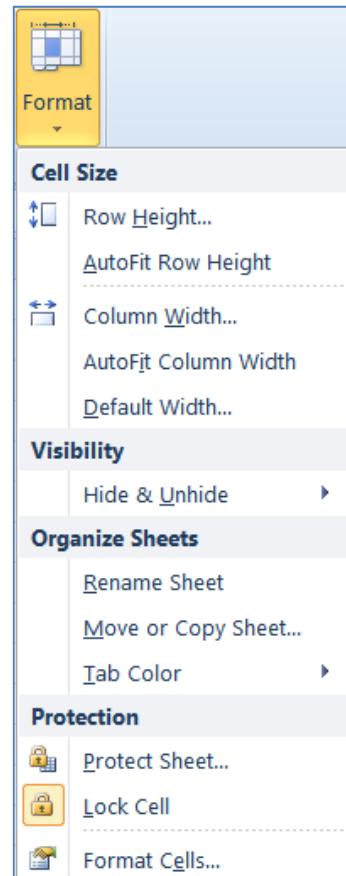


To resize the row, place your mouse cursor between the lines of the row headings. The current row heading is in a box; all you need to do is resize the box to make it wider. Put your mouse along the bottom side of the heading box until you see the resizing arrow pointing in two directions. Click and drag away from the row number. When you let go of the mouse, the row will resize.

Auto-fitting

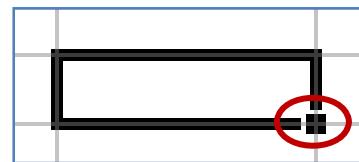
You can use the option found on the Format menu, or place your mouse cursor between the headings, with the two-way arrow to help resize, and double-click. The row or column should AutoFit to the largest data length within its structure.

- To resize multiple at once, select the cells you would like to fit and follow the steps above. If you are using double-click to auto-fit, the entire column/row structures must be selected.



Fill Handle

The **Fill Handle** is in the bottom right corner of the selected cell. When you place your mouse over this *handle*, it changes from a thick white cross, to a thin black cross. Once you see the thin cross (no arrows) you can click and drag the cell to fill its contents in a single direction (up, down, left or right). If you want to go in two directions, you must first complete one way, let go of the mouse and then drag the handle in the second direction.



When you use the **Fill Handle** to pull down a single number or plain text, it will copy the data. When you use the **Fill Handle** to pull down a text with numbers, a date, a month or a weekday it will fill in a series.

| | | | | | |
|------|-----|--------|--------|----------|----------|
| Text | 123 | Exam 1 | 2/1/02 | February | Friday |
| Text | 123 | Exam 2 | 2/2/02 | March | Saturday |
| Text | 123 | Exam 3 | 2/3/02 | April | Sunday |

When you select two or more numbers (including dates) and then use the **Fill Handle**, Excel will fill in the series, following the original pattern of the selected cells. It can only follow simple addition and subtraction patterns.

| | | | |
|-----|---|-----|---------|
| 123 | 5 | 100 | 2/01/17 |
| 124 | 4 | 110 | 2/08/17 |
| 125 | 3 | 120 | 2/15/17 |
| 126 | 2 | 130 | 2/22/17 |

Building an Equation

You can directly type in values, but that data stays constant. If you want to have the answers to your equations update as you change your data, you should use the cell addresses. You will see the cell addresses change colors so you can tell which ones are used in your equation.

Type in the exact cell address

Cells are labeled by their row and column headings. Rows are numbered and go horizontally across (rows of chairs) and columns are lettered and go vertically top to bottom (columns of a building). When we refer to the address of a cell, we use the column letter then the row number such as A1.

- Click in the cell where the answer will appear
- Press the Equal sign (=)
- Type in the cell address you want to use in your equation
- Accept the answer or press the next math operator (+, -, *, /, ^)

| | A | B | C |
|---|---|---|--------|
| 1 | 1 | 2 | =a1+b1 |
| 2 | | | |

Use the mouse to point to the cell address

The mouse and arrow keys are both "pointers". If you press the equal sign and then use the mouse to click on another cell, Excel will put you into a "POINT" mode, and place the address of the cell you clicked on in your equation.

- Click in the cell where the answer will appear
- Press the Equal sign (=)
- Use the mouse to click on the cell you want to use in your equation
- Accept the answer or press the next math operator (+, -, *, /, ^)

| | A | B | C |
|---|---|---|-----|
| 1 | 1 | 2 | =A1 |
| 2 | | | |

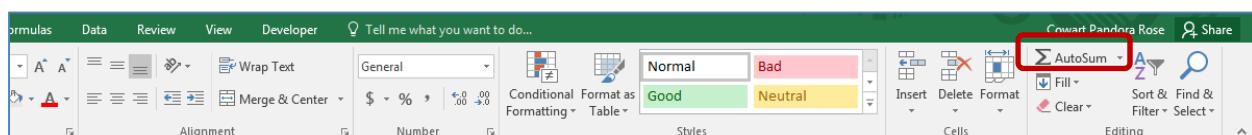
Mathematical Operations

To let Excel know you expect it to "do math" you need start your cell with an equal sign (=).

- | | | | |
|---|-------|--------|-----|
| - Addition, plus sign (+) | = 5+2 | result | 7 |
| - Subtraction, hyphen (-) (also used for negative) | = 5-2 | result | 3 |
| - Multiplication, asterisk (*) | = -5 | result | -5 |
| - Division, slash (/) | = 5*2 | result | 10 |
| - Exponent/Power, caret (^) | = 5/2 | result | 2.5 |
| | = 5^2 | result | 25 |

AutoSum

We can build equations to do math on a large number of cells, but there are functions built into Excel that can help us automate the most common ones: Sum, Average, Count, Maximum, Minimum. On the far right of the Home tab you'll find the sigma (Σ).



When you click on the word AutoSum, you'll get a sum function. There is a dropdown list at the end of the button that will show more function options.

The AutoSum button looks for numbers above or to the left of the cell to choose the range (the set) of numbers.

Make sure to press enter or click the check to accept as soon as the function shows up. If you click outside the cell while you see the function, you may break the equation.

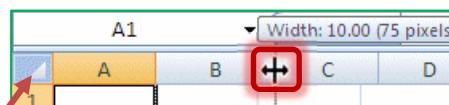
A screenshot of an Excel spreadsheet. The table has columns A, B, and C. Rows 1, 2, and 3 contain numerical values: 123, 456, and 789 respectively. Row 4 starts with the formula '=SUM(A1:A3)' in cell A4. A red box highlights the checkmark icon in the formula bar, which is used to accept the formula. A tooltip below the formula bar says 'SUM(number1, [number2], ...)'. The formula bar also shows '=SUM(A1:A3)'.

Exercise 1: Customers

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P |
|----|-----------|-----------|----------------|---------------|----|-------|---------|-----------|---|---|---|---|---|---|---|---|
| 1 | LAST | FIRST | ADDRESS | CITY | ST | ZIP | BALANCE | DUEDATE | | | | | | | | |
| 2 | Adams | Annie | 6831 NW 4th | Gainesville | FL | 32655 | 236 | 2/10/2017 | | | | | | | | |
| 3 | Appleton | April | PO Box 45 | Starke | FL | 32689 | 467 | 9/25/2018 | | | | | | | | |
| 4 | Arlington | Arnold | 234 SE 45th | Gainesville | FL | 32597 | 128 | 12/5/2017 | | | | | | | | |
| 5 | Brown | Bobbie | 234 Peter | Gainesville | FL | 32597 | 17 | 3/25/2017 | | | | | | | | |
| 6 | Bruce | Butch | 3243 SE 4th | Gainesville | FL | 32608 | 106 | 5/5/2016 | | | | | | | | |
| 7 | Cappers | Cathy | RR 2 Box 6 | Waldo | FL | 34567 | 392 | 9/15/2016 | | | | | | | | |
| 8 | Carlson | Carly | 1943 NW 1st | Gainesville | FL | 32567 | 432 | 5/25/2018 | | | | | | | | |
| 9 | Clark | Carl | 9213 Kiwi | Gainesville | FL | 32667 | 64 | 6/10/2016 | | | | | | | | |
| 10 | Dawson | Debbie | 832 Hook | Gainesville | FL | 32658 | 265 | ##### | | | | | | | | |
| 11 | Edwards | Edgar | 5233 NW 1st | Gainesville | FL | 32653 | 617 | ##### | | | | | | | | |
| 12 | Ellis | Emily | PO Box 55 | Gainesville | FL | 32689 | 364 | ##### | | | | | | | | |
| 13 | Engle | Elizabeth | 9420 Zucc | Gainesville | FL | 32684 | 311 | 6/20/2016 | | | | | | | | |
| 14 | Finch | Frank | 409 SW 92nd | Jacksonville | FL | 32608 | 157 | 2/25/2018 | | | | | | | | |
| 15 | Fuller | Francie | 123 South | Gainesville | FL | 32156 | 368 | 5/15/2018 | | | | | | | | |
| 16 | Gentle | Gary | 9420 Horseshoe | Gainesville | FL | 32684 | 415 | 2/15/2017 | | | | | | | | |
| 17 | Glass | Gloria | 2343 Kale | Gainesville | FL | 32597 | 68 | 2/10/2017 | | | | | | | | |
| 18 | Henderson | Harriet | 2980 Radio | Gainesville | FL | 32608 | 501 | 1/15/2016 | | | | | | | | |
| 19 | Huey | Harley | 9023 Hera | Waldo | FL | 32658 | 319 | 7/5/2016 | | | | | | | | |
| 20 | Iccabob | Isaac | 93 Gator | RJacksonville | FL | 32268 | 486 | 9/15/2018 | | | | | | | | |
| 21 | Jacks | Jerry | 559 Colibri | Gainesville | FL | 32655 | 409 | 7/20/2018 | | | | | | | | |
| 22 | Jacobs | Julie | 2039 Lem | Gainesville | FL | 32597 | 109 | 7/20/2018 | | | | | | | | |
| 23 | Jacobsen | Jeffery | 1398 NE 8th | Gainesville | FL | 32567 | 392 | ##### | | | | | | | | |
| 24 | Jenkins | Jennifer | 78349 Los | Gainesville | FL | 32658 | 17 | 9/10/2016 | | | | | | | | |

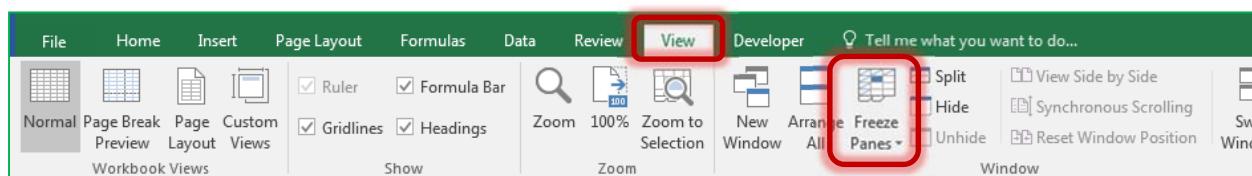
Resizing Columns

- Put your mouse on the line between any two Column letters. It will turn into a 2-way arrow.
 - Hold down the mouse button and drag to resize
 - Double-click between the headings to "AutoFit"
- Select the entire worksheet by clicking on the triangle above the Row 1, left of the Column A
 - Try to resize any Column; all the selected columns will change
 - Double-click between the headings to have it "Auto fit"



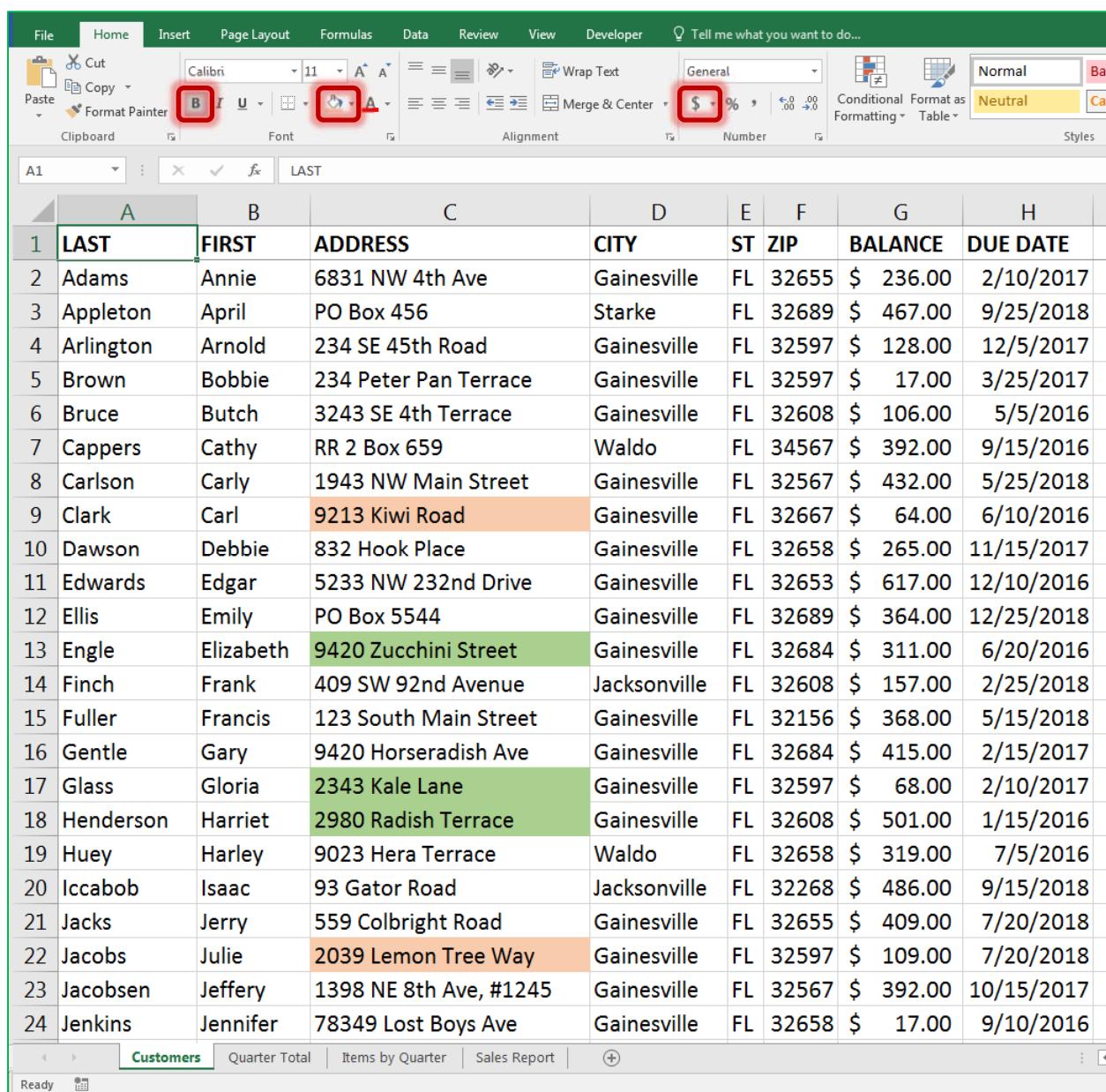
Freeze Panes (Lock Titles to Top of Page)

- Press **Ctrl-Home** on the keyboard to return to Cell A1
- Turn to the **View** Tab in the Ribbon
- Find the Option Freeze Panes
 - Choose **Freeze Top Row**
 - Scroll down through the worksheet to see the titles in Row 1 stay at the top



Format

- 1) Click on the Row Heading for Row 1 (click on the number **1**) to select the entire row
 - From the Home Tab, or right-click menu, choose **B** for bold
- 2) Click on the Column Heading for Column G to select the entire Column
 - From the **Home** Tab, choose **\$** for an accounting format
 - Adjust the Column width again
- 3) Find a street name with a "fruit" address and use the **Fill button** (the bucket ) to shade it a peach/orange color
 - Change a few of them to match
- 4) Find a street name with a "vegetable" address and use the Fill bucket to shade a greenish color
 - Change a few of them to match



| | A | B | C | D | E | F | G | H |
|----|-----------|-----------|------------------------|--------------|----|-------|-----------|------------|
| 1 | LAST | FIRST | ADDRESS | CITY | ST | ZIP | BALANCE | DUEDATE |
| 2 | Adams | Annie | 6831 NW 4th Ave | Gainesville | FL | 32655 | \$ 236.00 | 2/10/2017 |
| 3 | Appleton | April | PO Box 456 | Starke | FL | 32689 | \$ 467.00 | 9/25/2018 |
| 4 | Arlington | Arnold | 234 SE 45th Road | Gainesville | FL | 32597 | \$ 128.00 | 12/5/2017 |
| 5 | Brown | Bobbie | 234 Peter Pan Terrace | Gainesville | FL | 32597 | \$ 17.00 | 3/25/2017 |
| 6 | Bruce | Butch | 3243 SE 4th Terrace | Gainesville | FL | 32608 | \$ 106.00 | 5/5/2016 |
| 7 | Cappers | Cathy | RR 2 Box 659 | Waldo | FL | 34567 | \$ 392.00 | 9/15/2016 |
| 8 | Carlson | Carly | 1943 NW Main Street | Gainesville | FL | 32567 | \$ 432.00 | 5/25/2018 |
| 9 | Clark | Carl | 9213 Kiwi Road | Gainesville | FL | 32667 | \$ 64.00 | 6/10/2016 |
| 10 | Dawson | Debbie | 832 Hook Place | Gainesville | FL | 32658 | \$ 265.00 | 11/15/2017 |
| 11 | Edwards | Edgar | 5233 NW 232nd Drive | Gainesville | FL | 32653 | \$ 617.00 | 12/10/2016 |
| 12 | Ellis | Emily | PO Box 5544 | Gainesville | FL | 32689 | \$ 364.00 | 12/25/2018 |
| 13 | Engle | Elizabeth | 9420 Zucchini Street | Gainesville | FL | 32684 | \$ 311.00 | 6/20/2016 |
| 14 | Finch | Frank | 409 SW 92nd Avenue | Jacksonville | FL | 32608 | \$ 157.00 | 2/25/2018 |
| 15 | Fuller | Francis | 123 South Main Street | Gainesville | FL | 32156 | \$ 368.00 | 5/15/2018 |
| 16 | Gentle | Gary | 9420 Horseradish Ave | Gainesville | FL | 32684 | \$ 415.00 | 2/15/2017 |
| 17 | Glass | Gloria | 2343 Kale Lane | Gainesville | FL | 32597 | \$ 68.00 | 2/10/2017 |
| 18 | Henderson | Harriet | 2980 Radish Terrace | Gainesville | FL | 32608 | \$ 501.00 | 1/15/2016 |
| 19 | Huey | Harley | 9023 Hera Terrace | Waldo | FL | 32658 | \$ 319.00 | 7/5/2016 |
| 20 | Iccabob | Isaac | 93 Gator Road | Jacksonville | FL | 32268 | \$ 486.00 | 9/15/2018 |
| 21 | Jacks | Jerry | 559 Colbright Road | Gainesville | FL | 32655 | \$ 409.00 | 7/20/2018 |
| 22 | Jacobs | Julie | 2039 Lemon Tree Way | Gainesville | FL | 32597 | \$ 109.00 | 7/20/2018 |
| 23 | Jacobsen | Jeffery | 1398 NE 8th Ave, #1245 | Gainesville | FL | 32567 | \$ 392.00 | 10/15/2017 |
| 24 | Jenkins | Jennifer | 78349 Lost Boys Ave | Gainesville | FL | 32658 | \$ 17.00 | 9/10/2016 |

Exercise 2: Quarter Total

Turn to the next worksheet at the bottom of the window, **Quarter Total**.

Fill Handle

- 1) If needed, Move to Cell A1

- a. Hover your mouse over the bottom right corner of the cell until it turns into a thin crosshair/plus sign. This is called the **Fill Handle**.
- b. Drag the Fill Handle down to the bottom of Row 5
- c. Cells A1 through A5 now all say Quarter
- d. **UNDO!**

- 2) Move to Cell A2

- a. In Cell A2 type: 1st Qtr
- b. Press Enter or click the Check to accept
 - i. If needed, return to Cell A2
- c. Drag the Fill Handle for Cell A2 to the bottom of Row 5
 - i. 1st Qtr, 2nd Qtr, 3rd Qtr, 4th Qtr

| A | B |
|---|----------------|
| 1 | Quarter # Sold |
| 2 | 1 2079 |
| 3 | 2 2095 |
| 4 | 3 2076 |
| 5 | 4 2058 |

Format

- 1) Select titles in Cells A1 and B1

- a. Bold
- b. Bottom Border
- c. Center

- 2) Select the numbers in Cells B2, B3, B4, and B5

- a. **Comma Format**
- b. Decrease Decimals to zero/none

| A | B | C |
|---|----------------|---|
| 1 | Quarter # Sold | |
| 2 | 1st Qtr 2,079 | |
| 3 | 2nd Qtr 2,095 | |
| 4 | 3rd Qtr 2,076 | |
| 5 | 4th Qtr 2,058 | |
| 6 | | |
| 7 | | |

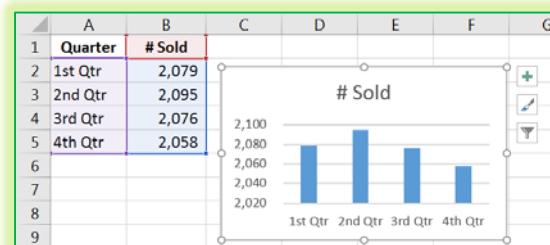
Chart

- 1) Return to Cell A1 (Ctrl-Home)

- 3) From the **Insert** tab, **Recommended Charts**

- a. Opens the *Insert Chart* window

- 2) Click **OK** to accept the Column Chart option



Exercise 3: Items by Quarter

Turn to the next worksheet at the bottom of the window, **Items by Quarter**.

Insert Rows

- 1) Select Row 1 and Row 2
 - Click on the row heading 1 and drag to row heading 2
- 2) Right-click Inside the selection
 - Choose *Insert*

| | A | B | C | D | E |
|---|------|-------|-------|-------|-------|
| 1 | Item | Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4 |
| 2 | AAA | 793 | 672 | 701 | 670 |
| 3 | BB | 684 | 644 | 620 | 631 |
| 4 | C | 602 | 779 | 755 | 757 |

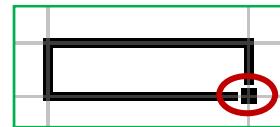
Merged Title

- 1) In Cell A1 type: Quarterly Sales Report
- 2) Select Cells A1 through E1
 - Click the **Merge and Center** button
- 3) Format: Bold, Fill, Border

| | A | B | C | D | E |
|---|------------------------|-------|-------|-------|-------|
| 1 | Quarterly Sales Report | | | | |
| 2 | | | | | |
| 3 | Item | Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4 |
| 4 | AAA | 793 | 672 | 701 | 670 |
| 5 | BB | 684 | 644 | 620 | 631 |
| 6 | C | 602 | 779 | 755 | 757 |

Fill Handle Across

- 1) In Cell B3, delete Qtr 1, and type: 1st Qtr
- 2) Drag the fill handle for Cell B3 across to Cell E3
- 3) Center and Bold the new titles



The **Fill Handle** is the small square in the bottom right corner of a selected cell.

The screenshot shows the Microsoft Excel ribbon with the Home tab selected. In the ribbon, the 'Merge & Center' button under the Alignment group and the 'AutoSum' button under the Editing group are both highlighted with red boxes.

Total Row (AutoSum)

- 1) In Cell A8 type: TOTAL
- 2) In Cell B8 Click on the AutoSum button
 - =SUM(B4:B7)
 - Press Enter or click the check to accept (2079)
- 3) Drag the *Fill handle* in Cell B8 to Cell E8 to fill in the "sum" pattern for each quarter

| | A | B | C | D | E |
|---|------------------------|---------|---------|---------|---------|
| 1 | Quarterly Sales Report | | | | |
| 2 | | | | | |
| 3 | Item | 1st Qtr | 2nd Qtr | 3rd Qtr | 4th Qtr |
| 4 | AAA | 793 | 672 | 701 | 670 |
| 5 | BB | 684 | 644 | 620 | 631 |
| 6 | C | 602 | 779 | 755 | 757 |
| 7 | | | | | |
| 8 | TOTAL | 2079 | 2095 | 2076 | 2058 |

Exercise 4: Sales Report

Turn to the next worksheet at the bottom of the window, **Sales Report**.

Format

- 1) Row 1 -> Bold
- 2) Column B -> Accounting (\$)
- 3) Column C -> Centered Aligned
- 4) Cell C5 -> Right Aligned

| | A | B | C | D |
|---|-------|-------|-----|--------------|
| 1 | Items | Price | Qty | Total |
| 2 | Aaa | | 10 | 5 |
| 3 | Bb | | 15 | 10 |
| 4 | C | | 20 | 20 |
| 5 | | | | GRAND TOTAL: |

Math

Total for each line item will be the Price times the Quantity.

- 1) Go to Cell D2
- 2) From the keyboard Type: =
- 3) With the mouse click on Cell B2 (\$10.00)
 - Cell D2 should now have =B2
- 4) From the keyboard type: *
- 5) With the mouse click on Cell C2 (5)
 - Cell D2 should now have =B2*C2
- 6) Press Enter or click the check to accept
 - Answer: \$50.00
 - If needed return to Cell D2
- 7) Drag the Fill Handle for Cell D2 to Cell D4 to fill in the pattern for the formula

| | A | B | C | D |
|---|-------|----------|-----|--------------|
| 1 | Items | Price | Qty | Total |
| 2 | Aaa | \$ 10.00 | 5 | =B2*C2 |
| 3 | Bb | \$ 15.00 | 10 | |
| 4 | C | \$ 20.00 | 20 | |
| 5 | | | | GRAND TOTAL: |

| | A | B | C | D |
|---|-------|----------|-----|--------------|
| 1 | Items | Price | Qty | Total |
| 2 | Aaa | \$ 10.00 | 5 | \$ 50.00 |
| 3 | Bb | \$ 15.00 | 10 | \$ 150.00 |
| 4 | C | \$ 20.00 | 20 | \$ 400.00 |
| 5 | | | | GRAND TOTAL: |

Grand Total

- 1) Move to Cell D5
- 2) From the Home tab click on the AutoSum \sum
 - =SUM(D2:D4)
- 4) Press Enter or click the check to accept
 - Answer: \$600.00
- 3) Change Cell B2 to \$12.50 and press enter or click the check to accept
 - Grand Total should be \$612.50

| | A | B | C | D |
|---|-------|----------|-----|------------------------|
| 1 | Items | Price | Qty | Total |
| 2 | Aaa | \$ 12.50 | 5 | \$ 62.50 |
| 3 | Bb | \$ 15.00 | 10 | \$ 150.00 |
| 4 | C | \$ 20.00 | 20 | \$ 400.00 |
| 5 | | | | GRAND TOTAL: \$ 612.50 |

Excel 2016: Basics 1

Navigating and Formatting



Microsoft Excel: Basics 1 - Navigating and Formatting

2.0 hours

In this workshop, we will learn keyboard and mouse shortcuts to quickly move through the worksheets and to format the cells. Topics include an introduction to the Excel interface; working with selections; entering and editing data in cells; cut and copy vs. move and duplicate; resizing, inserting and deleting columns and rows; formatting cell fonts, alignments, numbers, borders and shading. Lots of shortcuts! This basic workshop assumes some experience with Microsoft Excel.

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Microsoft Excel: Basics 1 - Navigating and Formatting

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Text Modes

There are three basic text modes in Excel. The current mode can be found on the status bar, at the bottom left corner of the Excel Window.

Ready

- Excel begins in **Ready** mode. This means nothing is being *entered* or *edited* on the spreadsheet. In **Ready** mode, the keyboard arrows, and home/end keys will move you between cells.

Enter

- Excel changes to **Enter** mode when you begin to *enter* data into the cell. You can type directly into any current cell, or double-click on an empty cell to be in Enter mode. In **Enter** mode, the keyboard arrows, and home/end keys will move you between cells.

Edit

- Excel changes to **Edit** mode when you double-click on a cell with data in it, when you click inside the formula bar or when you press the **F2** key on the keyboard, (**F2** will also toggle you between **Edit** and **Enter** mode). **Edit** mode allows you to use the keyboard arrows, and home/end keys to move among the characters within the cell.

Moving Between Cells

Navigating using the keyboard

Enter Key

The **Enter** (sometimes called the Return) key will move the focus down one cell. If you are in **Edit** or **Enter** mode, Excel will accept changes and move down.

- Using the **Shift** key and the **Enter** key will move the focus up one cell.
- Using the **Ctrl** key and the **Enter** key will accept changes and remain on the current cell. This is the same as clicking the ✓ in front of the formula bar.
 - Inside a selection, **Ctrl-Enter** will fill in the contents of the cell being edited into every cell in the selection.
- Using the **Alt** key and the **Enter** key will put in a hard return and force the cell to move to a second line.

Tab Key

The **Tab** key moves the focus one cell to the right. If you are in **Edit** or **Enter** mode, Excel will accept changes and move right.

- Using the **Shift** key and the **Tab** will move the focus one cell left.
- Using the **Ctrl** key and the **Tab** will move you to another Workbook (another Excel file).
- Using the **Alt** key and the **Tab** will move you to another open program on your computer.

Page Up and Page Down Keys

The **Page Up** and **Page Down** keys will move the focus of the current cell to the last visible cell on the previous screen, that is, it moves down one "screenful" of cells.

- Using the **Ctrl** key and the **Page Up** or **Page Down** keys will move to the previous or next Worksheet, respectfully.
- Using the **Alt** key and the **Page Up** or **Page Down** keys moves a "screenful" left or right, respectively.

Arrow Keys

In **Ready** mode and in **Enter** mode the arrow keys will move in the direction they point: up, down, left and right by one cell.

- Using the **Shift** key and the arrows will select a range of cells as you move.
- Using the **Ctrl** key and the arrows will move the current cell to the edge of the current data region (where the data stops/starts).
- Using both the **Shift-Ctrl** and the arrows keys will select all the cells from the current cell to the edge of the current data region.

In **Edit** mode the arrow keys will move you up, down, left and right between the letters and lines within the cell (if you only have one line of text the up and down arrows have no effect).

- Using the **Shift** key and the arrows will select text in that direction
 - Using the **Ctrl** key and the left and right arrows will move word by word
 - **Shift-Ctrl** and the left and right arrows will select text, word by word
-

Home Key

In **Ready** and **Enter** mode, the **Home** key moves to the first column within that row.

- Using the **Shift** key and the **Home** key will select from the current cell to the first column within that row.
- Using the **Ctrl** key and the **Home** key will move to the very top of your worksheet.
- **Shift-Ctrl-Home** will select from the current cell to the very top of the worksheet

In **Edit** mode, the **Home** key moves to the beginning of the cell.

- Using the **Shift** key and the **Home** key will select from where the cursor is blinking to the beginning of the cell.
-

End Key

In **Ready** mode, the **End** key turns on an **End** feature. You will see the "END" appear on the status bar. Once it's on, you can then press an arrow key and it will search in that direction for a change in the cell pattern (with/without data). A similar method can be used by simply using the **Ctrl** key and the directional arrow.

- **Ctrl-End** moves to the last working cell on the worksheet, which is the cell at the intersection of the right-most used column and the bottom-most used row (in the lower-right corner)
- **Shift-Ctrl-End** will select from the current cell to the last (working) cell on the spreadsheet

In **Edit** mode, the **End** key moves to the end of the cell.

- Using the **Shift** key and the **End** key will select from where the cursor is blinking to the end of the cell.
-

Escape Key

The **Esc** (escape) key is the cancel button; if you are editing/entering data in a cell, escape will ignore any changes you have made and return you to the original data or blank cell. This is the same as clicking the **x** in front of the formula bar. **Esc** will close dialog boxes such as Open, and Save As.

Delete Key

In **Ready** mode, the **Delete** key will erase the contents of the cell, not the formatting. To erase the formatting as well, you will need to right-click and choose **Delete...** or choose Delete from the **Home** Tab to literally *delete* the cell from the worksheet. When you do this, you will need to tell Excel where to shift the other cells.

In **Enter** and **Edit** mode, the **Delete** key will erase characters to the right of the cursor.

Backspace Key

In **Ready** mode the **Backspace** key will erase the contents of the cell and put you into enter mode.

In **Enter** and **Edit** mode, Excel will erase characters to the left of the cursor.

- Delete is more universally used throughout Windows to remove objects such as images, table cell contents and files. Backspace is used fundamentally for text only.
-

Navigating Using the Mouse

Single-Click

In **Ready** mode, clicking on any cell will make it the current cell. In **Enter** or **Edit** mode, clicking on a cell will make it the current cell as long as you are not trying to build an equation. If you start a cell with an equals (=), plus (+), or minus (-), Excel will think you are trying to do math. Now a Single-Click will change to a **Point** mode, allowing you to choose cells for use in your equation.

Double-Click

Double-clicking on an empty cell will put the cell into **Enter** mode; double-clicking on a cell with data in it will put the cell in **Edit** mode.

Navigating Using the Mouse and Keyboard

Shift-Click

If you use **Shift** key and the mouse, you can select a range (a set of conjoining cells). Click where you want to start, hold down the **Shift** key and click where you want to stop. Every cell in between will be selected.

Ctrl-Click

If you use the **Ctrl** key and the mouse, you can select various cells (skipping ones in between). You cannot use these for equations but you can apply formatting (i.e. change several cells to red text).

Undo and Redo

Microsoft Excel keeps track of almost every task you perform. If you accidentally delete or change something you did not mean to, you can usually **Undo** whatever you have just done. Excel allows you to **Undo** multiple times, and even to **Redo** things. The **Redo** allows you to undo the undo.

Undo

• The **Undo** feature is used to go back one-step. This button shows an arrow looping counterclockwise. The short-cut key is **Ctrl-Z** and the button in the quick access toolbar at the top of the window.

To do multiple Undo's at once you can click the dropdown arrow next to the undo button and see the list of actions you have performed. You cannot go back and undo a task without undoing all the steps that lead up to that point.

Redo

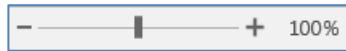
• The **Redo** feature is used to go forward one-step. This button shows an arrow looping clockwise. The short-cut key is **Ctrl-Y** * and the button can be found in the quick access toolbar at the top of the window.

To Redo multiple times, you can click the dropdown arrow next to the redo button and see the list of actions you have undone. You cannot go back and undo a task without undoing all the steps that lead up to that point.

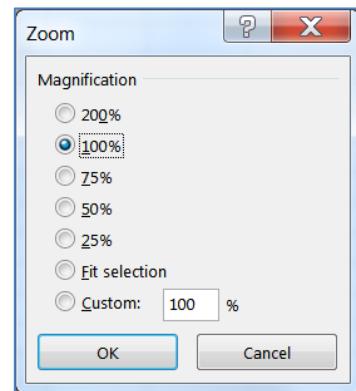
* If there is nothing to *redo*, Excel puts a **Repeat** feature in **Redo**'s place and assigns the short cut key (**Ctrl-Y**) to **Repeat**. For example, if you delete a row, the repeat row will allow you to delete another and another...

Zoom Slider

In the bottom, right corner of your status bar is a Zoom Slider. The percent can be set between 10% and 400%.



- The plus will zoom in and make the worksheet appear larger; the minus will zoom out and make the worksheet appear smaller. This does not change the printout, only the view.
- If you click on the percentage value (100%), the Zoom window will open.



The Clipboard

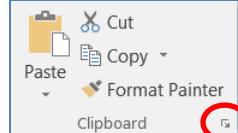
Cut, Copy and Paste are clipboard features built into Windows. The clipboard is a temporary storage place for pictures and data. The Windows clipboard can only store one item at a time. Microsoft Office has a Multi-Clipboard that can store 24 items, but the Paste button and the shortcuts for the Paste option only correspond to the most recently copied item. The clipboard pane must be displayed to be able to use this feature.

Clipboard

If you click the "more" arrow to the right of the word **Clipboard** it will open the Clipboard Panel.

Once the clipboard is open you will see the pane fill with a new item each time you cut or copy. To retrieve an item from the pane, click on the text/item you wish to paste, and it will appear in the selected cell. If you would like to paste all the cells in the order in which they appear you can click the **Paste All** button. The **Clear All** button will erase all items in the clipboard.

To Close the Clipboard, click the Clipboard's "more" arrow, or use the **x** in the upper right corner of the clipboard pane.



Cut

The **Cut** feature is used to *move* cells. This button appropriately shows a pair of scissors for the *cut* option. The short-cut key is **Ctrl-X**.

To use the **Cut** command, you need to first select the cell or a set of conjoining cells, and then choose the **Cut** option. When you choose **Cut** a dashed line marquee (marching ants) will surround the cells, but the data in the cells will still be visible. Click into the cell where you want the upper left most part of your selection to be moved to and press **Enter** or choose **Paste**. Your selection will appear in the designated cell(s), and at the same time disappear from the original location. If your clipboard is not open, you will not be able to **Paste** again.

Copy

The **Copy** feature is used to *duplicate* cells. This button appropriately shows two sheets of paper for the *copy* option. The short-cut key is **Ctrl-C**.

To use the **Copy** command, you need to first select the cell or a set of conjoining cells and then choose the **Copy** option. When you choose **Copy**, a dashed line marquee (marching ants) will surround the selected cells.

Click into the cell where you want the upper left most part of your selection to appear and press **Enter** or choose **Paste**.

- If you choose **Enter**, the dashed line marquee will disappear from your original selection and you will have a duplicate in the designated spot. If your clipboard is not open, you will not be able to **Paste** again.
 - If you choose one of the **Paste** options, the duplicate will appear, but the dashed line marquee continues around your original selection, this is so you can continue to make copies by pasting. You will be able to paste as long as the original selection has the dashed line marquee.
-

Moving and Duplicating with the Mouse

If you put your mouse over the border of the selected cell(s), you will get the Select Arrow.

-  - Hover over the border and *drag* (don't let go of the mouse) and a shadow will follow your mouse. Let go in an empty cell and the selected cell will be *Moved* to the new location. This is an alternative to cut.
 -  - Use the **Ctrl** button while dragging the mouse and you will see a small plus sign added to the shadow. Drag the to an empty cell, be sure to let go of the mouse before the keyboard and Excel will *duplicate* the selection instead of moving it. This is an alternative to copy.
-

Fill Handle

The **Fill Handle** is in the bottom right corner of the selected cell. When you place your mouse over this *handle*, it changes from a thick white selection cross, to a thin black cross. Once you see the darker cross, you can click and drag the cell to fill the original cell's contents into the newly selected cells. The handle allows the mouse to move in a single direction (up, down, left or right). If you want to go in two directions, you must first complete one way, let go of the mouse and then drag again in the second direction.

When you use the **Fill Handle** to pull down a single number or plain text, it will copy the data.

This is discussed more in depth in the Excel Basics II – Math and Functions workshop handout.

| | |
|------|-----|
| Text | 123 |
| Text | 123 |
| Text | 123 |

Format Painter

 Format Painter The clipboard group has a button called the **Format Painter**.

The **Format Painter** copies the format of selected cells and applies the format to the cells you specify. This button appropriately shows a paintbrush.

Format Painter

Like the look of a particular selection? You can apply that look to other content in the document.

To get started:

1. Select content with the formatting you like
2. Click Format Painter
3. Select something else to automatically apply the formatting

FYI: To apply the formatting in multiple places, double-click Format Painter.

[Tell me more](#)

Paste

When you are copying a cell, the paste button has a long list of possibilities. If you click on the clipboard button itself, it performs the same action as the very first paste option on its pasting menu.

 **Paste** will paste the copied cell contents and formatting

 **Formulas** will paste the formulas without formatting

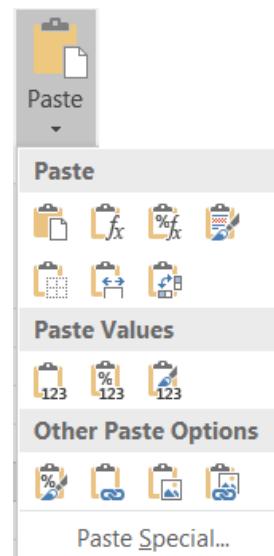
 **Formulas and Number Formatting** will paste the copied cell contents and number formatting

 **Keep Source Formatting** will paste the copied cell contents, number formatting, and cell formats

 **No Borders** will paste the cell contents and formatting, but no borders

 **Keep Source Column Widths** will paste the cell contents, formatting and cell width

 **Transpose** will paste a horizontal set of cells into a vertical set of cells, or a vertical set of cells into a horizontal set of cells



Paste Values

 **Paste Values** will paste the unformatted values instead of the formulas

 **Paste values and number formats** will paste the raw values instead of the formulas, but with the number format from the original cells

 **Values and Source Formatting** will paste the raw values instead of the formulas, but with the number format and cell formats from the original cells

Other Paste Options

 **Formatting** will paste only the formatting from the original cells, not the contents (Format Painter)

 **Paste Link** will link the new cell to the old such that any changes to the old data will be made here

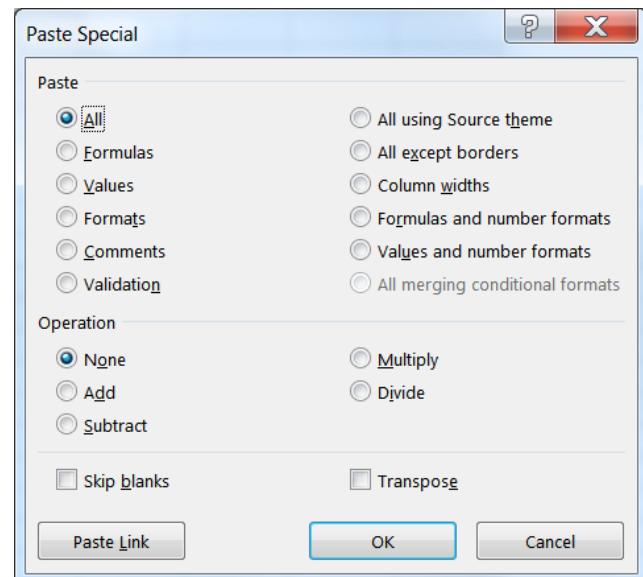
 **Paste Picture** will create a floating picture based on the copied cells

 **Paste Linked Picture** will create a floating picture based on the copied cells that are linked to the original value so changes made in the original data will be reflected in the picture.

Paste Special

The **Paste Special** option can be found on the shortcut (right-click) menu, and the **Paste** dropdown menu (see previous page). If this option is grayed out, it means that nothing is currently on the clipboard. If the copied item is from outside of Excel, you will get a customized screen to paste as text, pictures, or links. If you have copied from inside of Excel, you will get the following options.

- **All:** paste cell contents and formatting
- **Formulas:** paste the formulas staying true to the absolute and relative references
- **Values:** paste only the raw numbers
- **Formats:** pastes only cell formatting
- **Comments:** pastes comments attached to the cell, but not the data
- **Validation:** pastes data validation rules for the copied cells to the paste area
- **All using Source theme:** pastes only theme of original cells
- **All except borders:** pastes cell contents and all formatting except the border lines surrounding the original cells
- **Column widths:** pastes the width of a column (or range) to another column (or range)
- **Formulas and number formats:** pastes formulas and all number formatting
- **Values and number formats:** pastes the raw numbers and number formatting
- **All merging conditional formats:** pastes formulas, formatting and conditional formatting



Operation Options

- The Paste Special Operation option allows you to specify a mathematical operation.
 - **Example:** A1:A2 are copied onto B1:B2, using an Add Operation

The diagram illustrates the 'Add' operation. On the left, a 3x4 grid represents the source range A1:A2. The first two columns (A and B) contain values 1, 2, and 4 respectively. An arrow points from this grid to a second 3x4 grid on the right, representing the destination range B1:B2. The second column of this second grid (B) contains values 1, 2, and 6, which are the sum of the corresponding values in the first two columns of the source grid (1+1=2, 2+2=4).

| | A | B | C |
|---|---|---|---|
| 1 | 1 | 2 | |
| 2 | 2 | 4 | |
| 3 | | | |

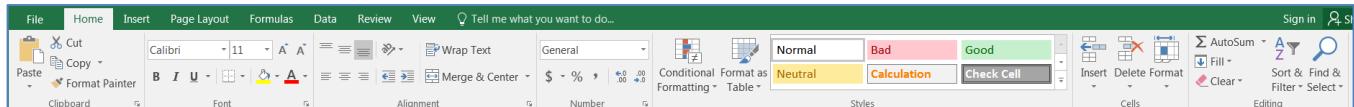
| | A | B | C |
|---|---|---|---|
| 1 | 1 | 3 | |
| 2 | 2 | 6 | |
| 3 | | | |

Other Options

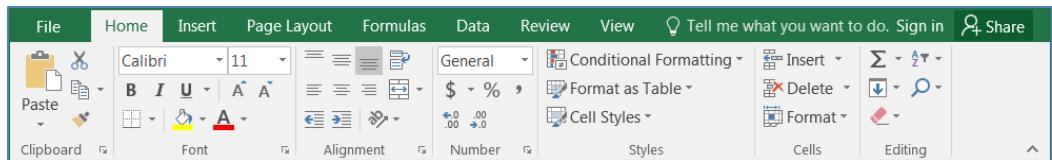
- **Skip blanks** - Avoids replacing values in your paste area when blank cells occur in the copy area.
- **Transpose** - Changes columns of copied data to rows, and rows of copied data into columns.
- **Paste Link** - Links the pasted data to the active worksheet.

A Note About the Ribbon

The images of Excel in this packet were copied from a wide screen monitor. With the wide screen, the ribbon is stretched across the window and I can see all the buttons. If you are working on a narrower window, Excel will try to clump the groups together and the layout may look a little different from the ones shown here, but all the buttons will be there.



Here we can see how the font group is now three buttons high, and how some of the buttons like Wrap Text have lost their text labels.

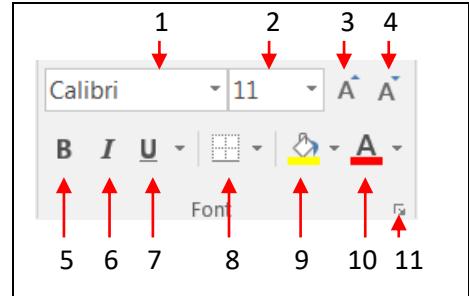


Formatting Cells

The most formatting options are found on the **Home Tab**. All the options are in the Format Cells window. This contains several tabs to help us format the contents of our spreadsheet. This window can be opened by using the **More Options** button at the end of the **Format**, **Alignment** and **Number** groups. You can also use the Keyboard Shortcut – **Ctrl-1** or choose **Format Cells...** from the right-click shortcut menu.

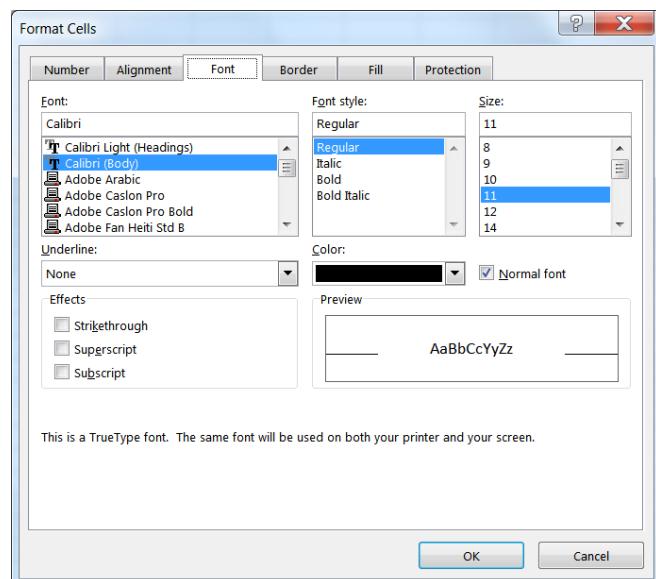
Font - Ribbon

1. **Font** – Sets the font of the selected cell(s). Fonts are different ways to show the same letters.
2. **Font Size** – Sets the size of the letters (the font). Larger numbers give larger fonts. You can type a custom size into this box. Excel will allow you to use the numbers 1 through 409, including half sizes.
3. **Increase Font** – Increases the font to the next Font Size on the list
4. **Decrease Font** – Decreases the font to the next Font Size on the list
5. **Bold** – Makes the selected cell(s) **Bold**. Shortcut keys are Ctrl-B and Ctrl-2.
6. **Italic** – Makes the selected cell(s) *Italicized*. Shortcut keys are Ctrl-I and Ctrl-3.
7. **Underline** – Makes the selected cell(s) Underlined. Shortcut keys are Ctrl-U and Ctrl-4. The drop down arrow lets you choose between single and double underlines.
8. **Borders** – Adds and removes borders for the selected cell(s). The drop down arrow will provide a long menu of border possibilities. To get to the dialog box for more control you can choose **More Borders...**
9. **Fill Color** – Changes the background color of the selected cell(s). By default, the cells have "No Fill"; this is not the same as a White Background.
10. **Font Color** – Changes the color of the font of the selected cell(s).
11. **More Options** – This button will open the Format Cells dialog window.



Font - Format Cells Window

- **Font** sets the font, the shape of the letters of the selected cell(s) or text.
- **Font Style** offers four options. **Regular**, **Italic**, **Bold**, **Bold Italic**.
- **Size** sets the size of the letters (the font).
- **Underline** places a line under the data.
- **Color** changes the color of the font.
- **Normal Font** will reset the selected cells to the default values, which are set in the Excel Options.
- **Strikethrough** places a single line through the value in the cell.
- **Superscript** raises and shrinks the selected text, used in text like 3^{rd} and x^2 . (Superman goes up)
- **Subscript** lowers and shrinks the text, used in text such as H_2O and HA_1C . (Subway goes down)



Border - Format Cells Window

By default, the gridlines around the cells of your spreadsheet do not print. If you would like them to print, you can turn them on from the Page Layout Tab; click the Print check box under the Gridlines option.

The Font group of the Home Tab has a borders button . This button has multiple border options, but for more customizations, you can come to this window.

Line

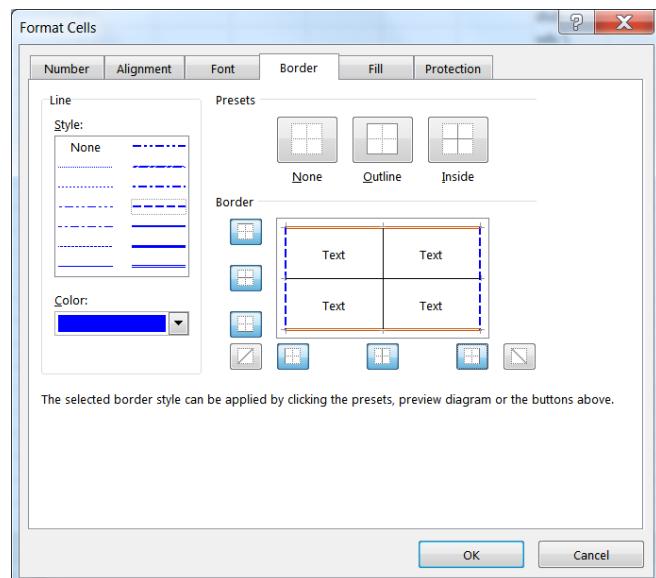
You can choose a line style and a line color that you would like for your border. The line style/color you choose will not be applied until you choose a Preset or a Border option.

Presets

There are three preset border options: **None** (no borders), **Outline** (Top, left, right, bottom borders), and **Inside** (inner borders). These will be created based on the line style and color selected.

Border

The Border group does more than show a preview of the preset options, it allows you to choose to turn on or off any border (top, middle, bottom, diagonal left, left, center, right, diagonal right). Select the line style and color and then click within the preview window, or on the actual border button to see the change. To turn off the border, click on the border or border button again, or choose the **None** option from the Presets.



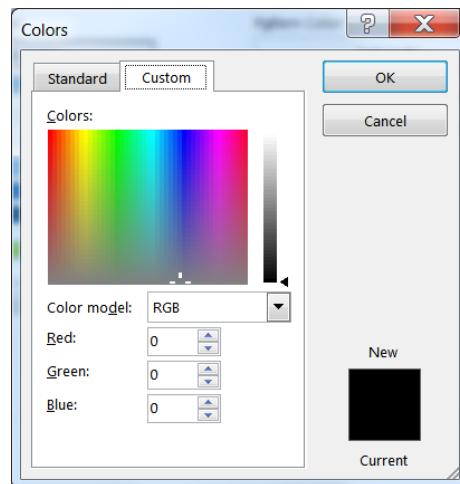
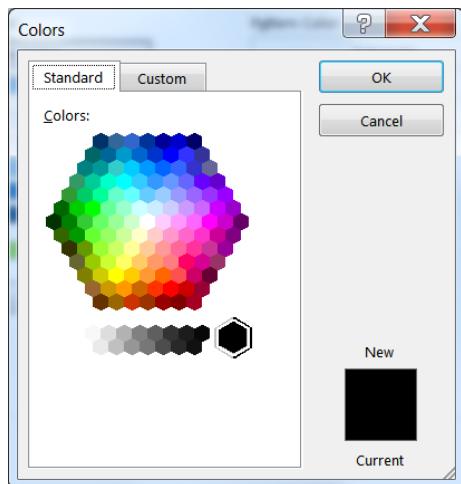
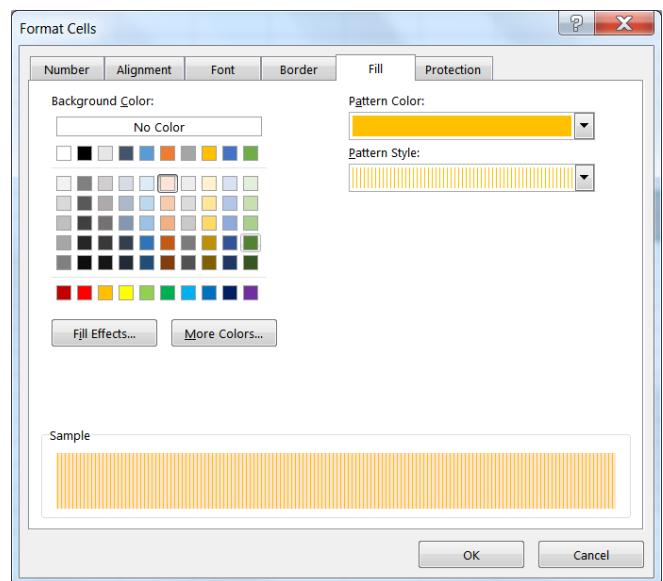
Fill - Format Cells Window

By default, the cell background has no color. The Font group of the Home Tab has a fill button . This button has multiple fill options, but for more control, you can open the Format Cells Window.

Background Color

The Background Color shows the same palette of colors we see on the Home Tab. Click on a color to choose it as your new background color.

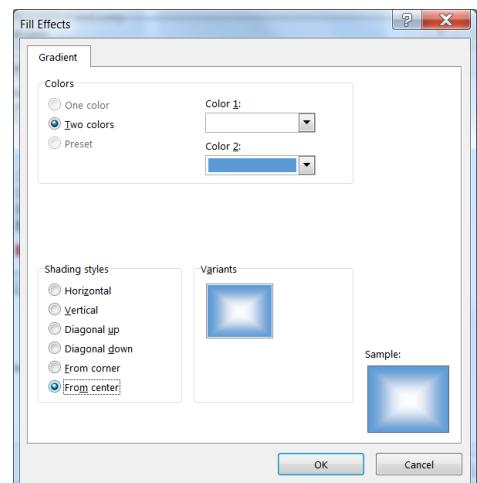
More Colors... If the color palette is not sufficient, you can use the More Colors button. This will give you a honeycomb of multiple color options. If you want to go even deeper, you can choose to **Custom** build a color.



Fill Effects...

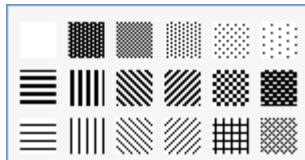
The gradient gives the cells more depth of color by showing almost a 3-D effect as it changes one color to another.

| | | | | | | | | | |
|---|---|---|--|---|---|---|---|---|---|
| 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 |



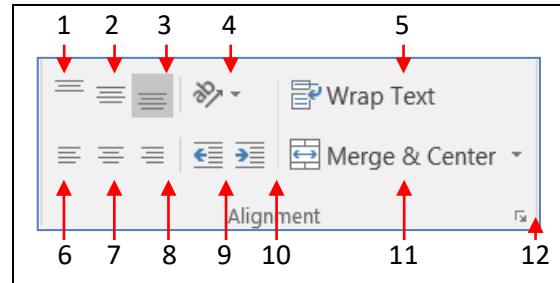
Patterns

A pattern allows us to put lines and hash marks in the background of our cell(s). Along with the pattern that will fill in the background, you have the ability to choose the Pattern Color.



Alignment - Ribbon

1. **Top Align** – Vertically aligns to the top of the cell.
2. **Middle Align** – Vertically aligns to the middle of the cell.
3. **Bottom Align** – Vertically aligns to the bottom of the cell.
4. **Orientation** – Rotates the contents of the cell to the currently displayed option.
5. **Wrap Text** – Displays contents on multiple lines within the cell's column width.
6. **Align Text Left** – Horizontally aligns the contents to the left side of the column.
7. **Center** – Horizontally aligns the contents to the center of the cell.
8. **Align Text Right** – Horizontally aligns the contents to the right side of the cell.
9. **Decrease Indent** – Decreases the space between the text and the cell border for Left, Right and Distributed horizontal alignments.
10. **Increase Indent** – Increases the space between the text and the cell border for Left, Right and Distributed horizontal alignments.
11. **Merge and Center** – Joins selected (adjacent) cells into one cell and centers the result. If there is data in more than one cell, Excel will only keep the information from the upper left cell. The drop down arrow offers a few more options, including Merge Cells and Unmerge Cells. **Merge and Center** will merge the cells from the rows and columns into one large cell. The **Merge Across** option will merge the cells across the columns but not the rows.
12. **More Options** – This button will open the Format Cells dialog window to the Alignment Tab.

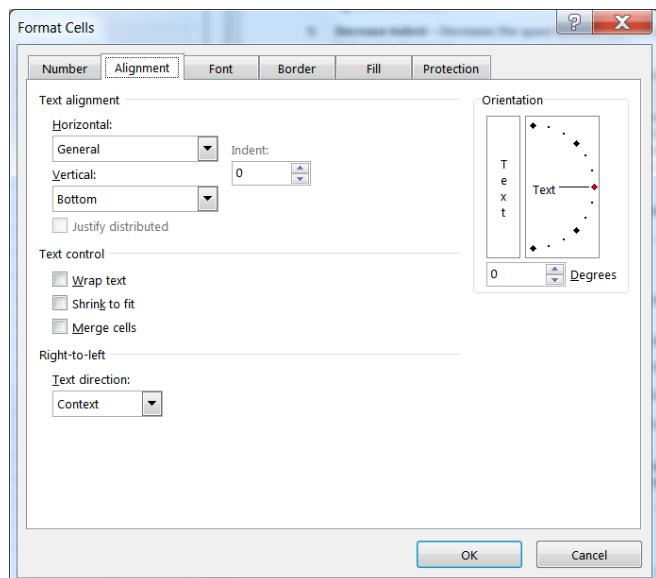


Alignment - Format Cells Window

Text Alignment

Horizontal: By default, Excel has a **General** Horizontal Format, this means that Text is aligned left and numbers are aligned right.

- **Fill** will repeat the contents of the cell as many times as will fit within the width of the column.
- **Justify** keeps the text even on both sides of the cell, as a "full justified" paragraph.
- **Center Across Selection** will center the text in the first cell of across the selection of cells.
- **Distributed** spreads the text out such that text is as evenly distributed as possible. If there is only one word, this option will center the text.
- **Justify distributed** is available when you have chosen a distributed Horizontal alignment. If you choose this option, you will not be able to use an indent with the distributed text.



Vertical: By default, Excel's Vertical alignment is the bottom of the cell. There are four other options: Top, Center, Justify and Distributed. Top, Center, and Bottom are self-explanatory.

Justified and Distributed vertical alignments will wrap your text so that the contents fit within the column width and will place blank space between the lines as necessary to have the words touching the top and bottom of the cell. If there is only one line of text Justified text will remain at the top of the cell, Distributed in the Middle.

The **Indent:** option only available with the alignments that offer (Indent) in the list.

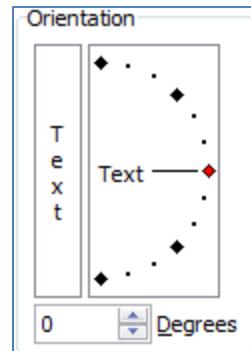
| | | | |
|----|------|------|------|
| 0° | Text | 90° | Text |
| | | | |
| V | | Text | |
| e | | | |
| r | | | |
| t | | | |
| i | T | | |
| c | e | | |
| a | x | | |
| I | t | 0° | 90° |

Orientation

These tools allow you rotate your text within 180 degrees, from left side to right side, as well as arranging each letter into a single column.

When you change the orientation, you the borders will follow the slant of the text.

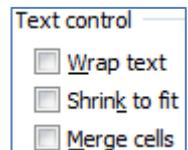
For the least amount of distortion, try to stay with the 90°, 45°, 0°, -45° and -90° values.



Text Control

The text controls are toggle options. If the box is checked, the option is on; if the box is blank, the option is off. If a light gray check appears in the box, then some cells have the option and some do not; click once to turn on the option for all selected cells, and again to turn off for all selected cells.

- **Wrap Text** will keep text inside its own cell by creating multiple lines.
- **Shrink to fit** will reduce the size of the text such that it appears smaller when the column is not wide enough to show its true size.
- **Merge Cells** will join the selected (adjacent) cells into one cell. If there is data in more than one cell, Excel will only keep the information from the upper left cell.



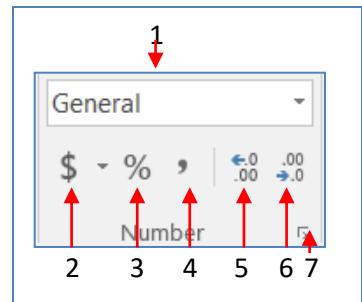
| | | | | |
|--|---------------|-------------------|--|--|
| | General text | How now brown cow | | |
| | Wrapped Text | How now brown cow | | |
| | Shrink to Fit | How now brown cow | | |
| | Merge Cells | How now brown cow | | |
| | | | | |

Right to Left

This option specifies the reading order and alignment for different languages. Text is usually entered to the left of the cursor; in some languages, it is expected to go to the right of the cursor. This setting will adjust the flow of data, if your computer is set to the correct language.

Number - Ribbon

1. **Number Format** – Allows you to change the way numeric values are displayed on the spreadsheet. The drop down arrow gives you a list of the most common formats, including a *More Number Formats* option.
2. **Currency Style** – Sets the selected cell(s) to the *Currency Style*, this style keeps the dollar signs on the left side of the cell, and the number on the right side. The drop down arrow gives you a list of other currency formats, such as the Euro (€).
3. **Percent Style** – Sets the selected cell(s) to the *Percent Style*, this style has zero decimal places. Keyboard shortcut - Ctrl-Shift-%. This button can be reset through **Cell Styles** on the Home Tab.
4. **Comma Style** – Sets the selected cell(s) to the *Comma Style*, this style has a comma for every thousand and two decimal places. This button can be reset through
5. **Increase Decimal** – Increases the number of decimal places showing to the right of the decimal.
6. **Decrease Decimal** – Decreases the number of decimal places showing to the right of the decimal.
7. **More Options** – This button will open the Format Cells dialog window to the Number Tab.



Number - Format Cells Window

Most of the categories have options for you to choose. For example, with a *Number* category you decide how many decimal places, if there should be a comma separation at every 1000, and how to display the negative values.

Dates and Times are numbers, if a date loses its format, Excel will display the numerical representation of the value. You can change it back to a date/time format from the General drop down on the ribbon, or from the Date or Time categories in the Format Cells window.

There are a few Special formats such as include Zip Codes, Phone Numbers and Social Security Numbers. If you type in 3525551234, and if the cell has a Special "Phone Number" format the cell will display (352) 555-1234.

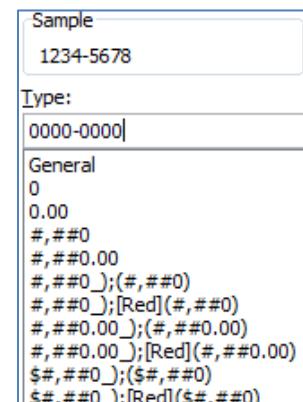
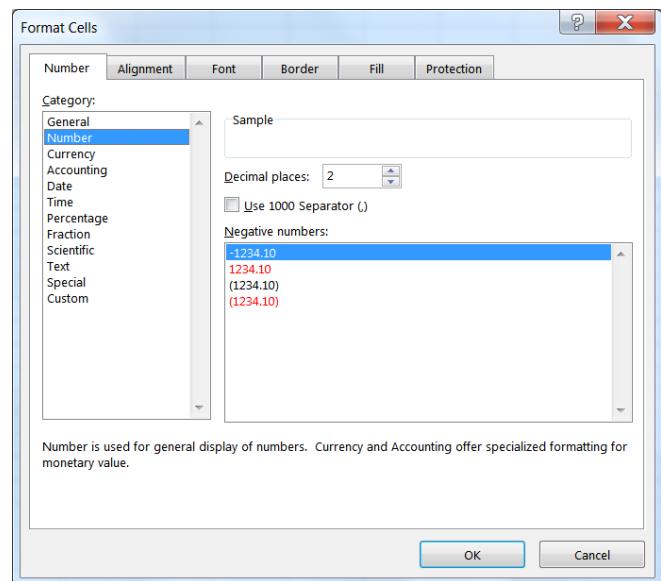
It is possible to create Custom Formats. For example, if you wanted to create a column of UFIDs, you may choose to create a custom format of 0000-0000. This would ensure that all eight characters are required, and there is a hyphen in the middle. If we type in 123, we will see 0000-0123.

0 – required number

– optional number

; – designates format for negative numbers

[red] – change color of text red



Cells Structures

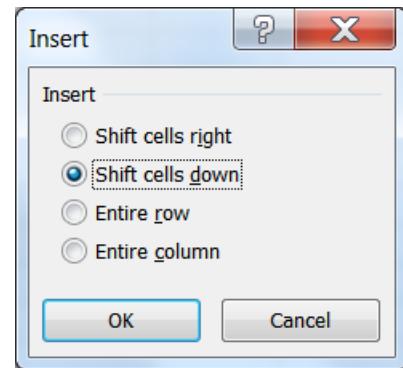
There are a set number of cells within a Microsoft Excel worksheet. In the Ribbon versions (2007 and later), there are 16,384 columns and 1,048,576 rows. As you insert and delete structures, you are not reducing the number of cells, merely shifting where your data lies on the defined worksheet. Think about moving a painting around on a wall. You are not changing the wall, just the position of the painting.

Inserting

We use **Insert** to make new cells, columns, and rows. Excel determines what you are trying to insert based on your selection. If a full column is selected, Excel will assume you mean a full column and it will skip the Insert window.

You can insert a cell, row, or column by doing one of the following:

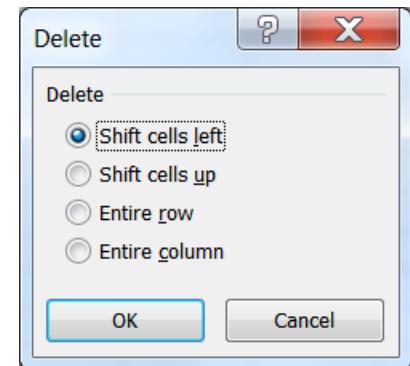
- ⇒ Press Shift - Ctrl - = on the keyboard (ctrl plus)
 - ⇒ or from the **Home** tab, in the **Cells** group, choose **Insert**
 - ⇒ or open the Right-click menu and choose insert.
-
- ❖ To insert multiple at once, select the number of cells/rows/columns you would like to insert and follow the steps above.
 - ❖ The size and format of the new space is determined by the previous (above or left) row or column.
 - ❖ This will push the cells, columns, or rows away to the left and down to make room for the new cells.



Deleting

We use **Delete** to remove cells, columns, and rows. Excel determines what you are trying to delete based on your selection. You can delete a cell, row, or column by doing one of the following:

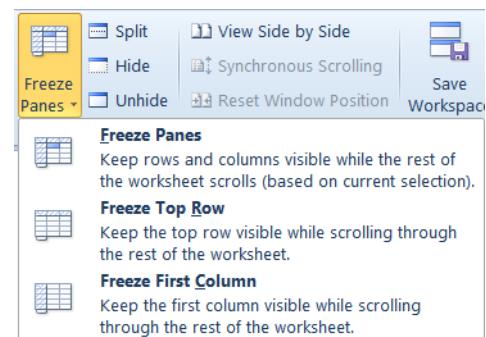
- ⇒ Press Shift - Ctrl - - on the keyboard (ctrl minus)
 - ⇒ or from the **Home** tab, in the **Cells** group, choose **Delete**
 - ⇒ or open the Right-click menu and choose insert.
-
- ❖ To delete multiple at once, select the number of cells/rows/columns you would like to delete and follow the steps above.
 - ❖ This will completely remove the structure, formatting and all, and the rows/columns/cells will shift into this place.
 - ❖ If you only intended to delete the contents not the cells, undo and use the Clear Contents option instead.



View Freeze Titles

To keep the titles on the top and/or left side of the screen as you move around the worksheet, you need to freeze them into place. You can freeze the very first column, the very first row, or from your current position. If you want from your current position, everything above and to the left of the select cell will stay in place as you move around the worksheet. You will still be able to edit, the "freeze" refers to movement only.

You will find this option on the **View** tab, in the **Window** group. Once you have frozen your panes, you will have an option to **Unfreeze** to release the cells.



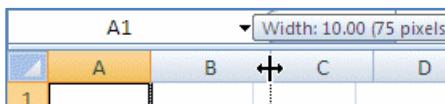
Cell Size (Row Height/Column Width)

You cannot resize one cell; the structure is dependent on the entire row and column where it resides. The Row Height and Column Width settings can be found under the **Format** menu in the **Cells** group of the **Home** tab.

Adjusting with the Mouse

When we resize we are growing away from the top left.

To resize the column, place your mouse cursor between the lines of the column headings. The current column heading is in a box; all you need to do is resize the box to make it wider. Put your mouse along the right side of the heading box until you see the resizing arrow pointing in two directions. Click and drag away from the column letter. When you let go of the mouse, the column will resize.



To resize the row, place your mouse cursor between the lines of the row headings. The current row heading is in a box; all you need to do is resize the box to make it wider. Put your mouse along the bottom side of the heading box until you see the resizing arrow pointing in two directions. Click and drag away from the row number. When you let go of the mouse, the row will resize.

Auto-fitting

You can use the option found on the Format menu, or place your mouse cursor between the headings, with the two-way arrow to help resize, and double-click. The row or column should AutoFit to the largest data length within its structure.

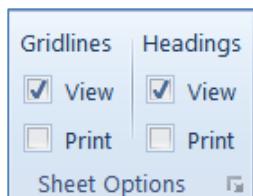
- ❖ To resize multiple at once, select the cells you would like to fit and follow the steps above. If you are using double-click to auto-fit, the entire column/row structures must be selected.

Gridlines

Printing Gridlines

By default, the gridlines seen on the screen do not print, so we often use borders to show the boundaries of our cells. However, borders get tricky, and it does not take much to have them go awry. A better choice might be to have Excel print the gridlines.

You can find this option on the Sheet page of the **Page Setup** window, but it is easier to find on the **Page Layout** tab, in the **Sheet Options** group. From here, you can decide to print the Gridlines and the Headings, as well as decide if you want to view them on the screen.



Headings refer to the column letters and row numbers.

Print Titles

If you want your own custom titles, not the *headings*, use the **Print Titles** option on the **Page Layout** Tab in the **Page Setup** group.

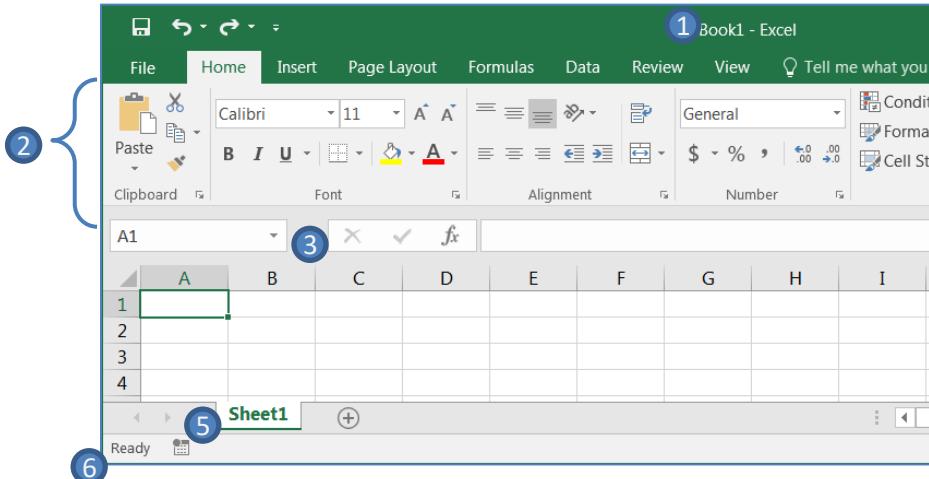


Shortcut Keys

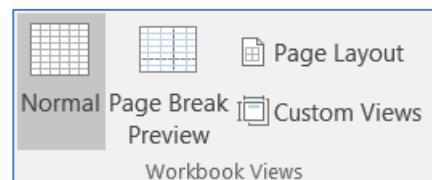
There are many ways to complete tasks in Excel: using the menus; using the toolbars; using the shortcut (right-click) menu; and using the keyboard shortcuts. Here is a list of some of the keyboard shortcuts available in Excel.

| | | | |
|--------|-----------------------|--------------------|----------------------------------|
| Ctrl-A | – Select All | F1 | – Help |
| Ctrl-B | – Bold | F2 | – Edit/Enter Mode |
| Ctrl-C | – Copy | Shift-F2 | – New Comment |
| Ctrl-D | – Fill Down | Shift-F3 | – Insert Function |
| Ctrl-F | – Find | Ctrl-F3 | – Name Manager |
| Ctrl-G | – Goto | F5 | – Goto |
| Ctrl-H | – Replace | F7 | – Spell Check |
| Ctrl-I | – Italicize | Ctrl-F4 | – Close Workbook |
| Ctrl-K | – Hyperlink | Alt-F4 | – Exit Excel |
| Ctrl-L | – Create a List/Table | Alt-Tab | – Switch between Programs |
| Ctrl-N | – New Workbook | Ctrl-Tab | – Switch between Excel Workbooks |
| Ctrl-O | – Open Workbook | Alt-F | – Opens File Menu |
| Ctrl-P | – Print | Alt-H | – Home Tab |
| Ctrl-R | – Fill Right | Alt-N | – Insert Tab |
| Ctrl-S | – Save | Alt-P | – Page Layout Tab |
| Ctrl-T | – Create a List/Table | Alt-M | – Formula Tab |
| Ctrl-U | – Underline | Alt-A | – Data Tab |
| Ctrl-V | – Paste | Alt-R | – Review Tab |
| Ctrl-W | – Close Workbook | Alt-W | – View Tab |
| Ctrl-X | – Cut | Alt-X | – Add-Ins Tab |
| Ctrl-Y | – Redo | Alt-F8 | – Macros |
| Ctrl-Z | – Undo | Ctrl ` | – Formula View |
| Ctr1-1 | – Format Cells | Ctrl-Shift-F | – Format Cells Window |
| Ctr1-2 | – Bold | Ctrl-Alt-Tab | – Increase Indent |
| Ctr1-3 | – Italicize | Ctrl-Alt-Shift Tab | – Decrease Indent |
| Ctr1-4 | – Underline | Ctrl-Shift-% | – Percentage style |

Class Exercise



- Vocabulary
 1. An Excel file is called a Workbook.
 - Each workbook starts with one worksheet, but can have hundreds of worksheets.
 2. Ribbon broken into tabs (Home, Insert, Page Layout...)
 - Tabs broken into groups (Clipboard, Font, Alignment)
 3. Name box and formula bar
 4. Columns Lettered, Rows Numbered, individual Cells
 - Columns of a building, rows of chairs
 5. Worksheet navigation buttons, Worksheet tabs
 6. Status bar
 - Excel behaves differently depending on what "mode" you are in
- Move around Excel
 1. Ctrl-→
 - Column XFD (16,384 - 2^{14}) columns – SET AMOUNT)
 2. Ctrl-↓
 - 1,048,576 rows (2^{20} – SET AMOUNT)
 3. Ctrl-Home
 - Always returns to the top
- Working area
 1. Type the letter "A" in cell G12 and press enter to accept
 2. From the View Tab choose Page Break Preview
 - If needed, close the pop up message
 - Notice most of the area is grayed out, but you can still click in the cells
 3. Click way down in the bottom right and type the letter "A", and press enter to accept
 - The print area should snap to that cell. Every page in between A1 and that last cell will be printed.
 4. Move up one cell and press Delete (If you use backspace you will also need to press enter.)
 - The print area should snap back into place
 5. From the Workbook Views in the View Tab choose Normal view
 6. Ctrl Home
 7. Delete data in G12



- Change Zoom
 1. From the View tab, click on **Zoom** button to change to 200%,
 2. Change Zoom Manually to 150%
 3. Play with + & - buttons on the zoom slider in the bottom right of the window
 - *See Page 4 of this handout*
 4. Change Zoom back to 200%
 5. Ctrl-Home
- Moving around
 1. Use keyboard arrows to move up, down, left and right
 2. Use enter and tab to move down and over
 3. Use Shift-Enter and Shift-Tab to move up and back
- Selecting Multiple Cells with the mouse
 1. Drag mouse from middle of a cell diagonally across to another cell
- Difference between Tab/Enter and Arrows
 1. Make a selection of cells (about three by three)
 2. Use the enter key to move between the cells
 3. Use the tab key
 4. Use an arrow key
 - Tab and Enter will stay within the selected range. Arrow keys like the mouse, are pointers. They point to a location. Enter and tab are meant for data entry, they accept and move on.
- Selecting Multiple Cells with the keyboard
 1. Click in a cell, hold down the **Shift** key and click into another cell.
 2. Let go of the **Shift** key and click anywhere to drop your selection.
 3. Click in a cell, hold down the **Shift** key and at the same time use the arrow keys
- Entering Text (Enter Mode)
 1. In all lower case letters, type in cell B2
 - big city store
 - Notice the status bar will change as soon as you begin to type from READY to ENTER
- Editing Text (Edit Mode)
 1. Double-click to "get inside" cell B2
 2. Change first letter of each word to uppercase
 - Big City Store
 3. Press Ctrl-Enter to accept.
- Editing Text (Edit Mode)
 1. Click inside the Formula bar, and notice your status is now **Edit**.
 - The **Cancel** and **Accept** buttons between the name box and the formula bar are available when you are in Edit, Enter, and Point modes.

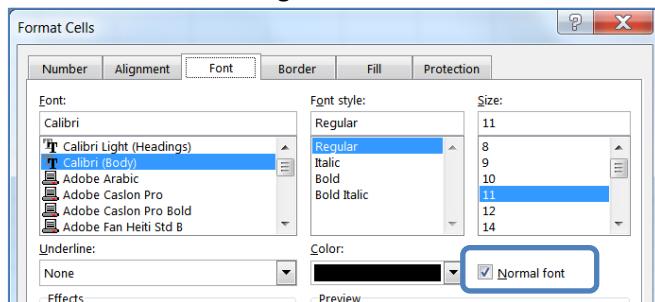
| Name Box | Cancel/Accept | Formula bar |
|----------|---------------|----------------|
| B2 | X ✓ fx | Big City Store |

A B C D E

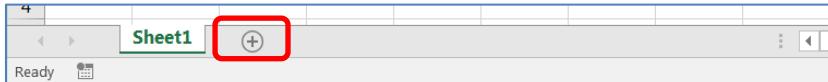
| | | | | |
|---|--|----------------|--|--|
| 1 | | | | |
| 2 | | Big City Store | | |
| 3 | | | | |

-
- Entering Text in Consecutive Cells
 - 1. Type in cell C2
 - Sale
 - 2. Big City Store will be cut off by the Sale. If you're in cell B2, you can look at the Formula bar to see the true contents still read "Big City Store"
 - Adjust Column Widths
 - 1. We cannot change the size of one cell, so we need to adjust the column
 - Place your mouse between the column headings B and C and you will see the 
 - Drag away from column heading B to make the column wider
 - Drag toward column heading B to make the column skinnier
 - Make it so you can only see Big City
 - Move back to the resize double arrow and double-click on the line to AutoFit
 - Now, AutoFit Column C
 - Copy and Paste
 - 1. Copy Cell B2, notice the dashed lines, the marquee, around the cell
 - 2. Paste into another cell, paste into another cell (paste a few...)
 - 3. Read the status bar, press enter to do a 'final paste'
 - Cut and Paste
 - 1. Cut Cell C2, notice the cell does not delete, but we have a marquee
 - 2. Paste into an empty cell
 - Notice the original NOW disappears
 - 3. Cut and Paste "Sale" back into C2
 - Fill Handle
 - 1. Take Fill handle from bottom left of cell C2 and drag it down two cells
 - Creates two more 'Sale' cells
 - Fill handle will be discussed at length in the next class
 - 2. Click anywhere to drop your selection
 - Moving Cells
 - 1. Mouse over the edge of cell C2 until you get the arrows
 - Click and drag to a blank cell to move the cell contents
 - Duplicating Cells
 - 1. Pick up a cell as if to move it and hold down the CTRL key at the same time, move to an empty cell. Let go of the mouse BEFORE the keyboard
 - Use Copy/Cut & Paste or Move/Duplicate Cells to organize your screen
 - 1. Move all the Big City Stores to Column B, Rows 2-8
 - 2. Move all the Sales to Column C, Rows 2-8
 - 3. Delete all extras
 - Move the dataset
 - 1. Select all the data, move the mouse to the edge of the selection to get the arrows
 - 2. Drag the whole block into columns D and E
 - 3. Undo the move
-

- Insert Columns
 1. Right-click on Column Heading B, choose Insert
 2. Do it again so now data lives in D & E
- Formatting Fonts with **Home** tab,
 1. *See page 8*
 2. Format Font (Cell D2)
 3. Format Size (Cell D3)
 - Custom Sizing (size 15)
 - Use Increase and Decrease buttons
 4. Format Bold (D4), Italics (D5) and Underline, Double Underline (D6)
 5. Format Color (D7)
 - View MORE COLORS
 6. Edit Cell D8
 - Double-click to "Get Inside" the cell
 - Double-click each word to format
 - Bold: Big, Italicize: City, Underline: Store
 - Notice the text in the formula bar is not formatted
- Format Fonts with Format Cells window
 1. Format Cell E2 using "More" Button
 - Comic Sans, Bold, 14, Double Underline, Green
- Use Format Painter
 1. In cell E2, click on the format painter
 - Dashed Marquee means we are copying
 - Click on cell D2, all changes happen at once
 2. Try painter again, it turns off
 - Double-click to Keep on, press Esc (escape) to stop
 3. Change all cells to this font
 - Cell D8 won't format, Delete
- Format Column/Row
 1. Click on Column Letter E to select whole column
 - Change color to Red
 2. Right-Click on Row Number 4 to select whole row
 - Change color to Blue
- Format All
 1. Click on blank gray square between Column A and Row 1 to select the whole spreadsheet
 - Open the "more" fonts (Format Cells Window)
 - Choose Normal Font (Click the box as many times as needed to show a check mark)
 - Click OK to see the changes



- Click on the Plus sign next to Sheet 1 to create Sheet 2



- Zoom to 200%

- Starting in B2 type:

1. B2 - Text
2. B3 - 123
3. B4 - *
4. B5 - 2/1
5. The date changes to a different format, but the formula bar shows that Excel assumed the date was for the current year.
6. Notice the data is on different sides of the cell
 - (text, number, text, date)
 - Text on the left
 - Numbers & Dates on the right

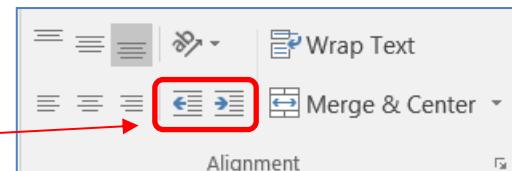
| | B |
|---|-------|
| 2 | Text |
| 3 | 123 |
| 4 | * |
| 5 | 1-Feb |

- Alignments with Toolbar

1. Select Column B
2. From the Alignment Group on the Home tab try the different alignments
 - Left, Center, Right, None (Not left/not center/not right)

- Indent

1. Bold and Underline B2: Text
2. Select B3:B5
 - Increase Indent
 - Decrease Indent
 - Center Text, Increase Indent, pops back to the left
 - Decrease Indent
 - Right Align Text, Increase indent



- Alignments with Menu

1. Select all of Column B
2. Open the more alignments (format cells) window
3. Change the Horizontal option to Fill
4. Click OK and see how the cell contents repeat
 - Type into a cell in column B to see the changes
 - Careful of ones like =- or -=, Excel will think you want an equation and will give you an error message. If you want this pattern, you will need a single quote in front.

- Delete Column

1. Select Column B, press delete on keyboard
2. Type A in cell B2 and Press enter
 - Cell should repeat **AAAAAAAAAA**
 - Delete on the keyboard erases the cell contents, not the formatting
3. Right-click on column B and Choose DELETE
 - Column will be physically removed, along with its formats

- Copy from another worksheet
 1. Turn to Sheet 1
 - Select the first two Big City Stores
 - Copy
 2. Turn to Sheet 2
 - Paste into Cell B2 on Sheet 2
 3. DO NOT ADJUST COLUMN WIDTHS

- Try cell alignments to see what happens when cell's not big enough
 1. Left, center, right, none

- Center Across Selection
 1. Select B2:F2
 2. More Alignments
 - Horizontal: Center Across Selection
 3. Click OK

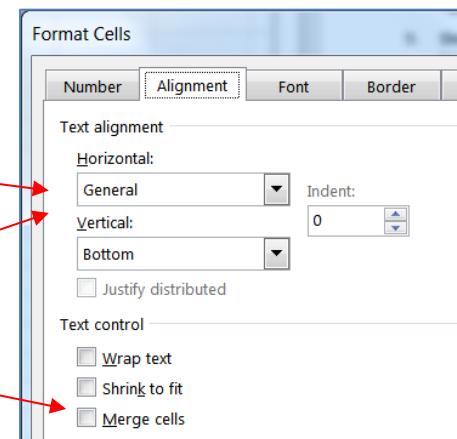
- Center and Merge Selection
 1. Select B3:F3
 2. More Alignments
 - Horizontal: Center
 - Text Control: Merge Cells
 - Notice in the Alignment group, there is a Merge and Center button

- Copy 2 Big City Stores from Sheet 1
 1. Paste into Cell B6 on Sheet 2

- Shrink to fit
 1. Click in Cell B6
 2. Open format cells box, Alignment tab
 - Text Control Shrink to Fit
 3. Click OK
 4. Adjust Column Widths wider, narrower

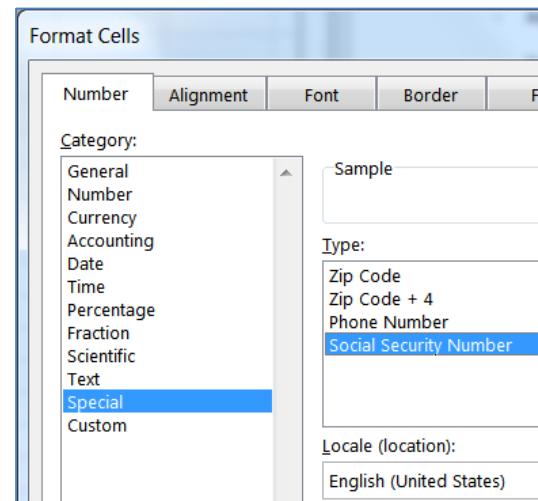
- Wrap Text
 1. Click in Cell B6
 2. Open format cells window, Alignment Tab
 - Text Control turn off Shrink to Fit
 - Text Control turn on Wrap Text
 3. Adjust Column Widths so line goes through the Y in CITY
 - Notice in the Alignment group, there is a wrap text button

- Forced "Enter"
 1. Double-Click in Cell B7
 2. Place your cursor in front of the word City
 3. Press ALT-Enter to force the text to the next line
 4. Repeat in front of Store
 5. Adjust column widths
 6. The bottom of the formula bar can be dragged down to read multiple lines

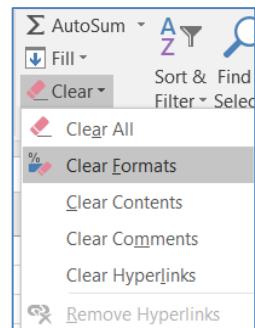


- Vertical alignment
 1. Adjust the column widths so B6 and B7 match
 2. Click in Cell C6, type Sale
 3. Press enter or accept
 4. In cell C6, change the vertical alignment
 - The Top/Middle/Bottom are above the left/center/right buttons
- Text Rotation
 1. In cell C6, click on the Orientation button to slant text
 - Looks like an angled AB next to align bottom
 2. Open Format Cells Window to view all ORIENTATION options

- Click on the Plus sign next to Sheet 2 to create Sheet 3
- Adjust the zoom to 200%
- Decimal places
 1. In cell B2 type:
 - 1.928374650 and press enter
 - This is not the number that shows
 - Move back to that cell and see the true number in the status bar
 2. Use the Increase Decimal button to show the original number
- Too many digits #####
 1. Resize the column to half its current width
 2. Notice the number is still in the formula bar, but the cell displays hashtags. This means the cell is too skinny to display the full number.
 3. Double-click between the column headings to auto fit the cell contents
- Format numbers buttons
 1. Use the Decrease Decimal button until there are no decimals showing
 2. Click on the Dollar sign button
 3. Click on the Percentage button
 4. Click on the Comma style button
 - Edit cell, remove decimal place,
 - Accept
 5. From the drop down list in the number group, click General to remove all formatting
- Format Special Numbers
 1. From the corner of the number group choose the More button
 2. Click on the different options
 - Special -> SSN
 - Click OK



- Click on the Plus sign next to Sheet 3 to create Sheet 4
- Adjust the zoom to 200%
- Fill in data selection
 1. Select B2:D4
 2. Enter numbers 1-9, press enter to maintain the selection
 3. Press delete to clear what you typed
 4. Make sure you still have your nine cells selected
 - Type the number 1
 - press Ctrl-Enter to accept
 - This should enter a 1 into all nine cells at once
 5. Center the numbers
- Format Background Colors
 1. While the values are still selected, click on the fill bucket in the Font group
 2. Open the menu and hover to see a preview of choices
 3. Hover over the white
 - No gridlines
 4. Choose No Fill
- Add Borders
 1. Click on the borders button in front of the bucket in the Font group
 2. Choose ALL BORDERS
 3. Return to the fill and find one you like
 4. Click outside the select to see the result
- Custom borders
 1. Select the dataset (B2:D4)
 2. From the Borders drop down, choose More Borders
 - Pick a line, pick a color, pick a location to put the lines
 3. Click Ok and click outside the selection to see the results
- Clear Formatting
 1. Select the entire sheet (space above Row 1, left of Column A)
 2. In the editing group on the far right of the Home Tab, look for the Clear button
 3. Choose Clear -> Clear Formats
- Format Fill
 1. See Page 10
 2. Select the dataset (B2:D4)
 3. Ctrl- 1, or right-click Format Cells
 4. Turn to the Fill Page
 - Fill Patterns
 - Fill Effects
- Close, Don't save



Excel 2016: Basics 2

Math and Functions



Excel 2016: Basics 2 - Math and Functions

2.0 hours

In this workshop we will work with patterns of text, numbers and dates; build simple equations; use basic mathematical functions such as SUM() and AVERAGE(); learn about absolute and relative references, naming cells, and working with named cell ranges. This basic workshop assumes some experience with Microsoft Excel.

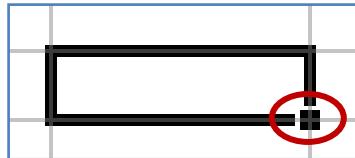
| | |
|---|----|
| Fill Handle..... | 1 |
| Fill Handle Options..... | 2 |
| Mathematical Operations | 2 |
| Building an Equation | 3 |
| Type in the exact cell address..... | 3 |
| Use the keyboard to point to the cell address | 3 |
| Use the mouse to point to the cell address..... | 3 |
| Order of Operations..... | 4 |
| Formatting Dates | 4 |
| Formula View | 5 |
| Absolute/Relative | 6 |
| Functions..... | 7 |
| Naming Cells | 9 |
| Class Exercise | 10 |



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Fill Handle



The **Fill Handle** is in the bottom right corner of the selected cell. When you place your mouse over this *handle*, it changes from a thick white cross, to a thin black cross. Once you see the thin cross (no arrows) you can click and drag the cell to fill its contents in a single direction (up, down, left or right). If you want to go in two directions, you must first complete one way, let go of the mouse and then drag the handle in the second direction.

When you use the **Fill Handle** to pull down a single number or plain text, it will copy the data.

| |
|------|
| Text |
| Text |
| Text |

| |
|-----|
| 123 |
| 123 |
| 123 |

When you use the **Fill Handle** to pull down a text with numbers, a date, a month or a weekday it will fill in a series.

| |
|--------|
| Exam 1 |
| Exam 2 |
| Exam 3 |

| |
|--------|
| 2/1/02 |
| 2/2/02 |
| 2/3/02 |

| |
|----------|
| February |
| March |
| April |

| |
|----------|
| Friday |
| Saturday |
| Sunday |

When you select two or more numbers (including dates) and then use the **Fill Handle**, Excel will fill in the series, following the original pattern of the selected cells. It can only follow simple addition and subtraction patterns.

| |
|-----|
| 123 |
| 124 |
| 125 |
| 126 |

| |
|---|
| 5 |
| 4 |
| 3 |
| 2 |

| |
|-----|
| 100 |
| 110 |
| 120 |
| 130 |

| |
|---------|
| 2/01/02 |
| 2/08/02 |
| 2/15/02 |
| 2/22/02 |

The **Fill Handle** will follow the format of the original cells. This includes number formats as well as capitalization,

| |
|----------|
| Friday |
| Saturday |
| Sunday |

| |
|----------|
| FRIDAY |
| SATURDAY |
| SUNDAY |

| |
|-----|
| fri |
| sat |
| sun |

| |
|----------|
| \$123.00 |
| \$123.00 |
| \$123.00 |

If you double-click on the Fill Handle it will 'fill' as many cells as the previous column has in use.

Fill Handle Options

When you use the **Fill Handle**, you will notice a symbol appear in the right hand bottom corner of your newly filled cells. This icon () represents your AutoFill Options. If you put your mouse over the icon you will see a drop down arrow that will give you a list of your fill options.

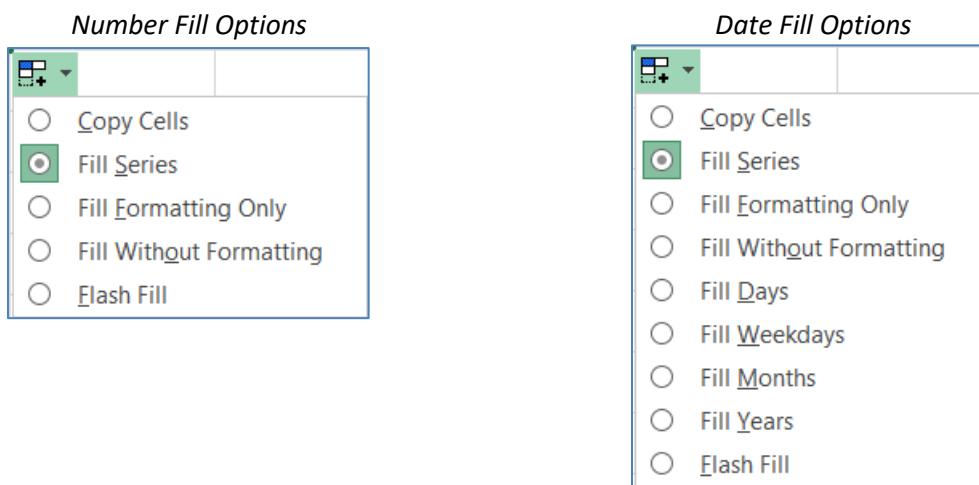
| | |
|---|--------|
| A | |
| 1 | Text 1 |
| 2 | Text 2 |
| 3 | Text 3 |
| 4 | |

The four basic Fill Options are:

- Copy Cells – Repeat the cells along the selection
- Fill Series – Follow pattern along the selection
- Fill Format Only – Repeat the format of the cells along the selection
- Fill without Formatting – Follow the pattern along the selection, but not the format
- Flash Fill – Fills based on a pattern you establish in the same column

If you use the **Fill Handle** on cells with dates you will notice even more options:

- Fill Days
- Fill Weekdays
- Fill Months
- Fill Years



Mathematical Operations

To let Excel know you expect it to "do math" you need start your cell with an equal sign (=).

- | | | | |
|--------------------------------|-------|--------|-----|
| - Addition, plus sign (+) | = 5+2 | result | 7 |
| - Subtraction, hyphen (-) | = 5-2 | result | 3 |
| - (also used for negative) | = -5 | result | -5 |
| - Multiplication, asterisk (*) | = 5*2 | result | 10 |
| - Division, slash (/) | = 5/2 | result | 2.5 |
| - Exponent/Power, caret (^) | = 5^2 | result | 25 |

There are several operands to use for logic comparisons.

- | | | | |
|---|-------|--------|-------|
| - Greater than, greater than sign (>) | =5>2 | result | TRUE |
| - Less than, less than sign (<) | =5<2 | result | FALSE |
| - Equal to, equal sign (=) | =5=2 | result | FALSE |
| - Not equal to, both greater and less than signs (<>) | =5<>2 | result | TRUE |

Building an Equation

You can directly type in values, but that data stays constant. If you want to have the answers to your equations update as you change your data, you should use the cell addresses. You will see the cell addresses change colors so you can tell which ones are used in your equation.

Type in the exact cell address

Cells are labeled by their row and column headings. Rows are numbered and go horizontally across (rows of chairs) and columns are lettered and go vertically top to bottom (columns of a building). When we refer to the address of a cell, we use the column letter then the row number such as A1.

- Click in the cell where the answer will appear
- Press the Equal sign (=)
- Type in the cell address you want to use in your equation
- Accept the answer or press the next math operator (+, -, *, /, ^)

| | A | B | C |
|---|---|---|--------|
| 1 | 1 | 2 | =a1+b1 |
| 2 | | | |

Use the keyboard to point to the cell address

When you first enter a character into a cell, you will be in "ENTER" mode. This includes when you type an equal sign. But if you press an arrow key on the keyboard after the equal sign, Excel does not move out of the cell. Instead you will be put into a "POINT" mode, and Excel will color coordinate the cell you are selecting.

- Click in the cell where the answer will appear
- Press the Equal sign (=)
- Press the arrow keys until you are on the cell you want to use in your equation
- Accept the answer or press the next math operator (+, -, *, /, ^)

| | A | B | C |
|---|---|---|-----|
| 1 | 1 | 2 | =A1 |
| 2 | | | |

Use the mouse to point to the cell address

The mouse and arrow keys are both "pointers". If you press the equal sign and then use the mouse to click on another cell, Excel will put you into a "POINT" mode, and place the address of the cell you clicked on in your equation.

- Click in the cell where the answer will appear
- Press the Equal sign (=)
- Use the mouse to click on the cell you want to use in your equation
- Accept the answer or press the next math operator (+, -, *, /, ^)

Order of Operations

Microsoft Excel respects the Order of Operations.

- (1) Parenthesis
- (2) Exponents (raised to a power)
- (3) Multiplication and Division
- (4) Addition and Subtraction

| | | | | | |
|--------------------|------------------|-----------------|---------------|-------------|-----------------|
| <i>Parentheses</i> | <i>Exponents</i> | <i>Multiply</i> | <i>Divide</i> | <i>Add</i> | <i>Subtract</i> |
| <i>Please</i> | <i>Excuse</i> | <i>My</i> | <i>Dear</i> | <i>Aunt</i> | <i>Sally</i> |

This means with an equation such as

$$= 5 + 3 * 2$$

Excel will do the multiplication before it does the addition. The result would be 11.

If you wanted the addition to happen first, you have to use parentheses:

$$= (5 + 3) * 2$$

giving us a result of 16.

In math, we use the brackets, such as

$$\{[(5+3)*(4-2)] / 2\}$$

In Excel we ONLY use parentheses

$$=((5+3)*(4-2))/2$$

result 8.

Remember to let Excel know you want it to calculate something; you have to start with an equal sign (=).

If you get stuck inside an equation, or confused by a mistake, press Esc to cancel and try again.

Formatting Dates

Dates and Times are technically numbers because they can be used in equations. Excel is able to do this because it has a "serial" number equivalent. Both columns of this table at the right of this page show the same value, but the dates in the second column have lost the date format. For a date, 0 = 1/1/1900. The numeric values in the second column represent how many days there are between 1/1/1900 and the date listed.

If your date loses its format you can modify it through the Number group or through the Format Cells Window. If you don't like the choices offered, you can custom build your date from the Custom section of the Number page in the Format Cells Window. Use M for months, D for days and Y for years. Excel is not case sensitive, upper or lowercase letters will work for these formats.

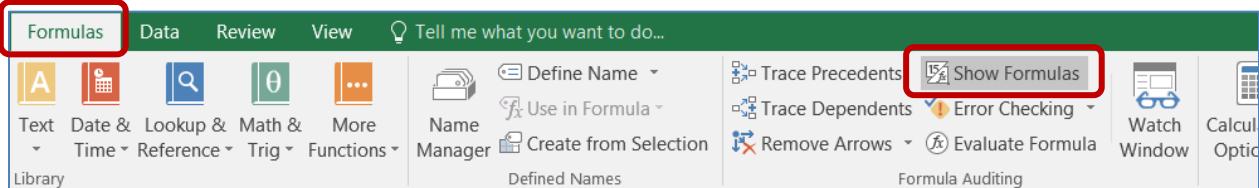
| | |
|------------|-----------|
| 11/16/1978 | 28,810.00 |
| 5/2/1982 | 30,073.00 |
| 11/4/1986 | 31,720.00 |
| 2/23/1993 | 34,023.00 |
| 11/13/1995 | 35,016.00 |
| 2/2/2002 | 37,289.00 |
| 7/24/2008 | 39,653.00 |
| 12/25/2010 | 40,537.00 |
| 6/8/2013 | 41,433.00 |
| 11/20/2018 | 43,424.00 |

| Friday, February 1, 2002 | | | | | |
|--------------------------|--------|-------|----------|------|------|
| dddd, mmmm d, yyyy | | | | | |
| Day | | Month | | Year | |
| d | 1 | m | 2 | y | 02 |
| dd | 01 | mm | 02 | yy | 02 |
| ddd | Fri | mmm | Feb | yyy | 2002 |
| dddd | Friday | mmmm | February | yyyy | 2002 |

You can also custom build times using H for hours, M for minutes and S for seconds.

Formula View

Our cells display the formula results. If we want to see the equation, we have to look at the formula bar or edit the cell. Sometimes it helps to see all the equations on a worksheet. The button for this option is on the Formula tab, in the Format Auditing group. The keyboard shortcut is Control-Tilde, **ctrl ~** (the wavy line above Tab, below Esc on your keyboard).



You can also turn this on through the Excel Options. From the File Menu, choose **Options**. On the **Advanced** tab, under the **Display Options for this Worksheet** group, check the box next to **Show formulas in cell instead of their calculated results**.

Calculated Results (normal view)

| | A | B | C | D | E | F | G | H | I |
|---|----------------|-----------|-------|---------------|---|---|---|---|---|
| 1 | Big City Store | | Date: | 10/8/2016 | | | | | |
| 2 | Sales Report | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | Items | Price | Qty | SubTotal | | | | | |
| 5 | AAA | \$ 123.00 | 987 | \$ 121,401.00 | | | | | |
| 6 | BB | \$ 456.00 | 654 | \$ 298,224.00 | | | | | |
| 7 | C | \$ 789.00 | 321 | \$ 253,269.00 | | | | | |
| 8 | | | | \$ 672,894.00 | | | | | |

Formula View

| | A | B | C | D |
|---|----------------|-------|-----|-------------|
| 1 | Big City Store | | | Date: 42651 |
| 2 | Sales Report | | | |
| 3 | | | | |
| 4 | Items | Price | Qty | SubTotal |
| 5 | AAA | 123 | 987 | =B5*C5 |
| 6 | BB | 456 | 654 | =B6*C6 |
| 7 | C | 789 | 321 | =B7*C7 |
| 8 | | | | =SUM(D5:D7) |

The formula view will stretch out the columns and all the numbers appear to have lost their format, including the dates and some alignments. Be careful adjusting the column widths, if you shrink them in the formula view, it will proportionally shrink in the calculated results view.

You can continue working in this view and print out the sheet with all the formulas showing. If you're going to print this view, I recommend turning on the print headings from the Page Layout tab.

Absolute/Relative

When you create an equation in Excel using cell addresses, Excel sets up the equation to have a **relative** reference. When you are using the Fill Handle or the Copy and Paste features the equation result is relative to the location of the data. For example:

| | A | B | C | D |
|---|----|---|--------|---|
| 1 | 5 | 6 | =A1+B1 | |
| 2 | 12 | 4 | | |
| 3 | | | | |

If this equation is copied into cell C2, or the Fill Handle is used to drag the equation down to C2, Excel will give you this result:

| | A | B | C | D |
|---|----|---|--------|---|
| 1 | 5 | 6 | =A1+B1 | |
| 2 | 12 | 4 | =A2+B2 | |
| 3 | | | | |

Since the equation was moved down, between rows, only the row number changes. If instead we moved the equation across, the row numbers will remain the same, but the column numbers will change:

| | A | B | C | D |
|---|----|---|--------|--------|
| 1 | 5 | 6 | =A1+B1 | =B1+C1 |
| 2 | 12 | 4 | | |
| 3 | | | | |

The addresses in the equation are **relative** to where the answer is positioned. The equation in cell C1 of the table above states 'take the value of the cell that is two to the left from this cell and add it to the value of the cell that is one to the left from this cell'. When we fill or copy the cell over or down, the basic equation stays the same.

If you do not want a number to move relatively you can make it **absolute** by using dollar signs (\$) in the equation. The **F4** button on the keyboard will place the dollar sign characters in for you while you are in Enter, Edit, or Point mode. (Think F4 -> FORCE)

=**\$A\$1** - Locks the reference into Cell A1

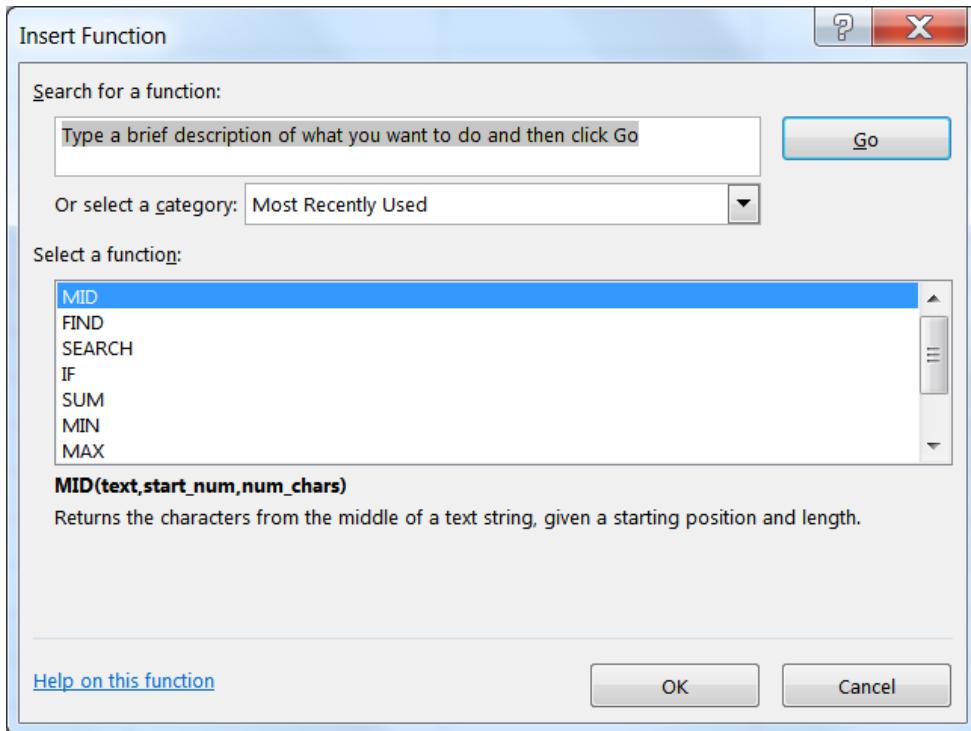
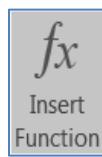
=**\$A1** - Locks the reference into Column A, but will allow the row number to change

=**A\$1** - Locks the reference into Row 1, but will allow the row number to change

| | A | B | C | D | E | F | G | H | I |
|---|----|---|--------------------|---|------------|------------|------------|------------|---|
| 1 | 5 | 6 | = \$A\$1+B1 | | SubTotals: | 123 | 456 | 789 | |
| 2 | 12 | 4 | = \$A\$1+B2 | | TaxRate: | 6.5% | | | |
| 3 | | | | | Taxes: | =F1*\$F\$2 | =G1*\$F\$2 | =H1*\$F\$2 | |

Functions

Microsoft Excel has several built in functions. To insert a function, click the **Insert Function** button  on the Formula Bar, or the **Insert Function** option from the **Formulas Tab**.



From here you can request a function to perform a particular task and Excel will make suggestions for you. If you **Search for a function**: Excel will return a **Recommended** category, offering all the functions it thinks might help in your search.

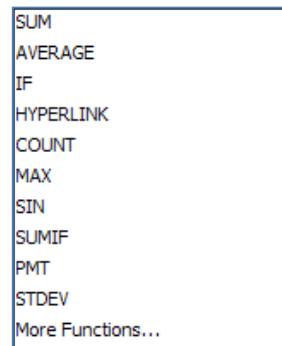
By default, the first category is a list of **Most Recently Used** functions. To see all the functions built into Excel, you can choose **All** from the **Select a category**: list.

The bottom of this window displays a description of the selected function. Each choice will show an example arrangement of the function, the arguments, and a description of what that function should do. If you need more information, click on the Help on this function option in the bottom left corner. If you have found the function you would like to use, select it and click **OK**.

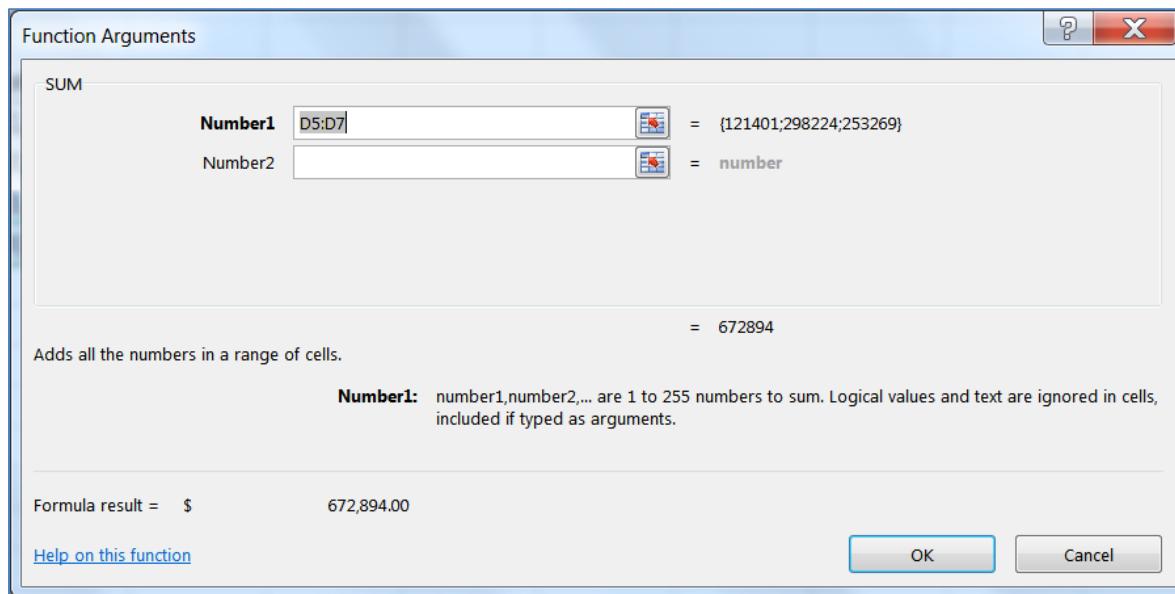
An easier way to access the list of **Most Recently Used** functions is to press the equal sign on the keyboard, as if you were going to type an equation. The name box, that displays which cell you are in, changes to the last function that was used. When you click on the arrow next to the listed function (in this case SUM), you will see a list of list of **Most Recently Used** functions.



If the function you desire is not on the **Most Recently Used** list, chose the **More Functions...** option at the bottom of the list and you will get the above **Insert Function** dialog box.



Either selection method will open the Function Arguments window.



The function name is listed in the top left corner and the description is across the bottom. There are blanks in the middle of the screen for the arguments of the statement. You can type in the cell addresses, move the window out of the way to try to select the addresses or let Excel help you move the window by using the **Collapse** or "go out and get it button" (). This button will *collapse* your Function Arguments window so you can select the data you wish to use as an argument in this function. Once you have chosen your desired data either press **Enter** or click on the **Expand** button () to return to the full window.



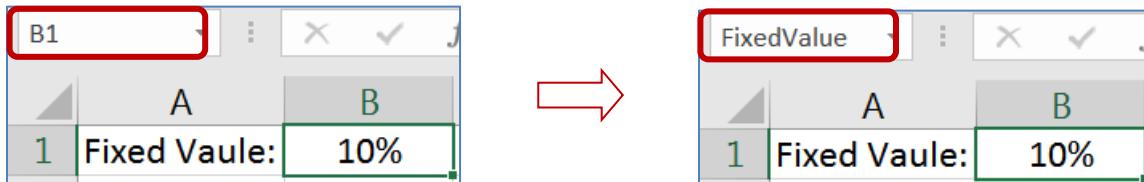
In the sample above, you can see we can **Sum** more than one number/set of numbers. As soon as you click into **Number 2** a **Number 3** will appear. The description tells us this will allow up to 255 arguments (number ranges) to sum.

Across the bottom of this window we can see a **Formula Result =**. This will show us the running total as we add in each part of the equation. Notice there is also an **=number** at the end of each argument line. This will give you a piece-by-piece result for each argument. This is especially helpful when using the logic functions, such as **If**.

When you click the **OK** button, the answer to the equation should be displayed in the original cell. Double-clicking on the cell or pressing the **F2** key on the keyboard will put this formula into *edit mode*. Excel color-codes which cells it is using in this formula. To bring back the gray edit box, click on the function button () on the formula bar.

Naming Cells

Another way to ensure an **absolute reference** to a cell is to **Name** the cell, and use that name in your equation. The simplest way to define a cell name is to select the cell, erase the cell address within the name box, type the **Name** of the cell in the name box and press Enter.



Once a name is defined, you can use it in your equations.

=B12*\$B\$1 means the same as =B12*FixedValue

When you use the fill handle or the Copy/Paste feature, the B12 will change to be relative to the new location, but FixedValue will remain throughout, always pointing to cell B1.

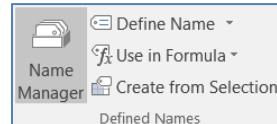
This same method can be used for a range of cells. Select the desired range, click within the name box, erase the current cell address, type the name of the range, press Enter.

NOTE There are some limitations in naming. You cannot use many special characters such as the hyphen (-), and the name must be all one word, no spaces. In the example above, we used capitalization to show multiple words, you can also use the underscore character (_).

| | | | |
|--------------------|-------------|-------------|-------------|
| <i>Good Names:</i> | fixedvalue | FixedValue | Fixed_Value |
| <i>Bad Names:</i> | fixed value | Fixed Value | Fixed-Value |

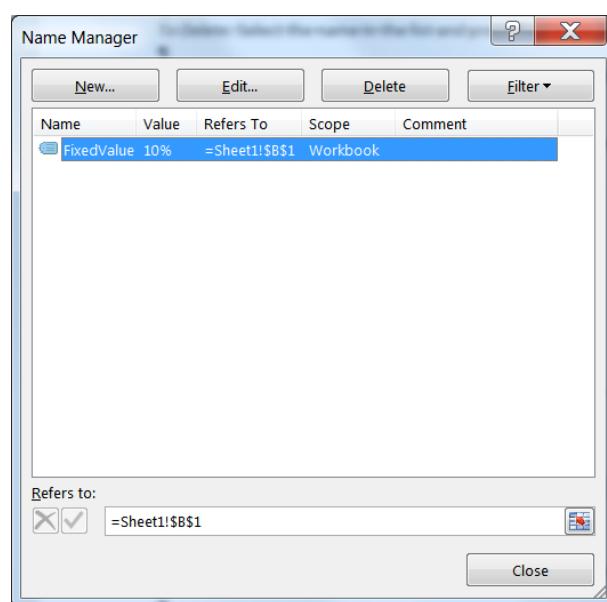
Defined Names group on the **Formula** Tab:

- **Define a Name** – create a new name
- **Use in Formula** – choose from a list of existing names, this can be used to begin a new formula or to add a name to a formula you are building.
- **Create from Selection** – make a new name based on a group of selected cells



Use the **Name Manager** to modify a Defined Name.

- **New:** Create a new Name
- **Edit...:** Rename, add a comment, change cell reference
- **Delete:** Select the name in the list and click **Delete** to remove it
- **Filter:** Filter the list of names to help you find the one you need.



| Name | Value | Refers To | Scope | Comment |
|------------|-------|----------------|----------|---------|
| FixedValue | 10% | =Sheet1!\$B\$1 | Workbook | |

To Redefine: Select the name in the list, erase the Refers to blank and choose your new range of cells. Click the Check to accept.

F3 is the keyboard shortcut to let you pick a name to use in your equation.

Class Exercise

Review

- Open Excel
- Click on Blank Workbook
- Zoom to 150%
- Remember Text on left, Numbers on the right
- Remember to "accept data"
 - o In Cell A1 type: 1
 - Press Ctrl Enter to accept (stays on cell)
 - o Clear A1
 - o In Cell A1 type: 1
 - Click on Check next to formula bar to accept
 - (The X is the same as cancel)

Fill Handle (pg 1)

- In Cell A1 type: 1 ("accept data" for each of these)
 - o Use the Fill Handle in the bottom right corner to drag down to row 8
 - 1,1,1,1...
- In Cell B1 type: text
 - o Fill to row 8
 - text, text, text, text...
- In Cell C1 type: text1
 - o Fill to row 8
 - text1, text2, text3, text4...
- In Cell D1 type: 1, In Cell D2 type: 2
 - o Select **both** and Fill to row 8
 - 1, 2, 3, 4...
- In Cell E1 type: 2, In Cell E2 type: 4
 - o Select **both** and Fill to row 8
 - 2, 4, 6, 8...
- In Cell F1 type: 5, In Cell F2 type: 4
 - o Select **both** and Fill to row 8
 - 5, 4, 3, 2...
- In Cell G1 type: text 1
 - o Double-click on fill handle
 - text1, text2, text3, text4...

| | A | B | C | D | E | F | G |
|---|---|--------|-------|---|---|----|-----------|
| 1 | | 1 text | text1 | | 1 | 2 | 5 Text 1 |
| 2 | | 2 text | text2 | | 2 | 4 | 4 Text 2 |
| 3 | | 3 text | text3 | | 3 | 6 | 3 Text 3 |
| 4 | | 4 text | text4 | | 4 | 8 | 2 Text 4 |
| 5 | | 5 text | text5 | | 5 | 10 | 1 Text 5 |
| 6 | | 6 text | text6 | | 6 | 12 | 0 Text 6 |
| 7 | | 7 text | text7 | | 7 | 14 | -1 Text 7 |
| 8 | | 8 text | text8 | | 8 | 16 | -2 Text 8 |

Excel 2016 Basics 2 Math and Functions – Class Exercise

Special Reserved Words

Type the following into the cells listed and Fill using the double-click, or drag, down to row 8.

- In Cell H1 type: Quarter 1
- In Cell I1 type: 1st Qtr
- In Cell J1 type: 1st
- In Cell K1 type: 1 st
- In Cell L1 type: January
- In Cell M1 type: FEB
- In Cell N1 type: Monday
- In Cell O1 type: sat

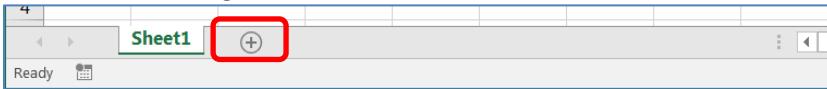
Working with Dates (pg 2)

Type the following into the cells listed and Fill using the double-click, or drag, down to row 8.

- In Cell P1 type: 10/20
- In Cell Q1 type: 12/28/2016
 - o Click on the Fill handle options, the box that pops up near the fill handle when you let go of the mouse. Try these settings:
 - Weekdays, Months, Years
- In Cell R1 type: Enter the two paydays (example: 10/14, 10/28)
 - o *remember to select BOTH cells before you fill*

Sheet 2

- Click on the Plus sign next to Sheet 1 to create Sheet 2



- Zoom 150%
- Create data set
 - o A1: 1; B1: 2
 - o A2: 2, B2: 4
 - o Select all four cells and fill to Row 10

| | A | B |
|---|---|---|
| 1 | 1 | 2 |
| 2 | 2 | 4 |

Creating Equations with constant values (pg 3)

- In Cell C1 type: 1+2
 - o Accept. Notice the "1+2" is on the left side of the cell meaning Excel sees "text"
- Clear the contents of cell C1 (Delete)
- In Cell C1 type: =1+2
 - o Using the = sign as the first character tells Excel we are building an equation, we're doing math. We see a 3 in the cell, but the formula bar displays =1+2
 - o 1+2 **always** equal 3, but if we change data we want our answer to change

Excel 2016 Basics 2 Math and Functions – Class Exercise

Creating Equations with Cell addresses (pg 3)

- Clear cell C1, type =a1+b1
 - o Not case sensitive
 - o Notice the color coding
 - o Accept data, should get a 3
 - o Change A1 to 5, accept to see answer in C1 change

- **USING KEYBOARD**
 - o Go to C2
 - o press = sign
 - o press ← arrow two times
 - o press + sign
 - o press ← arrow once
 - o enter to accept

- **USING MOUSE**
 - o Go to C3
 - o press = sign
 - o click on cell A3
 - o press the + sign
 - o click on cell B3
 - o click on check to accept

Basic math symbols (pg 3)

- Add +, Subtract -, Multiply *, Divide /
 - o All found on the NumPad

- Build these equations
 - o In Cell C4 add A4 and B4: =A4+B4
 - o In Cell C5 subtract A5 and B5: =A5-B5
 - o In Cell C6 multiply A6 and B6: =A6*B6
 - o In Cell C7 divide A7 and B7: =A7/B7

Remember the Order of Operations (pg 4)

- Parenthesis
- Exponents/Powers
- Multiplication/Division
- Addition/Subtractions

- Build these equations
 - o In Cell C8 type =2+3*5
 - o In Cell C9 type =(2+3)*5

| | A | B | C |
|----|----|----|-----|
| 1 | 1 | 2 | 3 |
| 2 | 2 | 4 | 6 |
| 3 | 3 | 6 | 9 |
| 4 | 4 | 8 | 12 |
| 5 | 5 | 10 | -5 |
| 6 | 6 | 12 | 72 |
| 7 | 7 | 14 | 0.5 |
| 8 | 8 | 16 | 17 |
| 9 | 9 | 18 | 25 |
| 10 | 10 | 20 | |

Excel 2016 Basics 2 Math and Functions – Class Exercise

Date not Math?

- Put today's date in cell C10
 - o i.e. 10/5
 - o Note Excel sees it as a date not as an equation (10 divided by 5), Why? Because there is no Equal sign! 10/5 is October 5th, =10/5 is an equation with a result of 2

Totals Preview

- Select Column A
- Look in the status bar in the bottom right side of the window. When you select more than one cell, Excel will automatically calculate the Average, Count, and Sum of your selection.



Formatting

- Format column A with dollar signs
 - o Select Column A, from the right-click or Home tab, choose the \$ format
- Format column B to be centered
 - o Select Column B, from the right-click or Home tab, choose Align Center
- Edit Cell C1 (double-click in cell)
 - o When you accept, Excel recalculates answer and the format changes
- Format Column C with dollar signs
 - o Note format in cell C10, no longer a date

Reformat Date

- Click on Cell C10 (we don't want the whole column)
- Choose **Short date** from the list of number formats, in the Number group on the Home Tab
- Choose "More Numbers" to view different date formats
- Choose the 14-Mar format to return to the original date formatting
 - o To custom build a data format see pg 4

Formula View (pg 5)

- Toggle cell data with ctrl-` (Ctrl-~ ... Wavy line above tab, below Esc)
- We can see all the formulas but NO formatting
- Toggle back to answer view

| | A | B | C |
|----|----|----|----------|
| 1 | 1 | 2 | =A1+B1 |
| 2 | 2 | 4 | =A2+B2 |
| 3 | 3 | 6 | =A3+B3 |
| 4 | 4 | 8 | =A4+B4 |
| 5 | 5 | 10 | =A5-B5 |
| 6 | 6 | 12 | =A6*B6 |
| 7 | 7 | 14 | =A7/B7 |
| 8 | 8 | 16 | =2+3*5 |
| 9 | 9 | 18 | =(2+3)*5 |
| 10 | 10 | 20 | 42651 |

Excel 2016 Basics 2 Math and Functions – Class Exercise

Create Data Table

- Click on the Plus sign next to Sheet 2 to create Sheet 3
- Zoom to 150%
- Type in the table shown here

| | A | B | C |
|---|----------------|-------|-----|
| 1 | Big City Store | | |
| 2 | Sales Report | | |
| 3 | | | |
| 4 | Items | Price | Qty |
| 5 | A | 123 | 987 |
| 6 | BB | 456 | 654 |
| 7 | CCC | 789 | 321 |

Format Data Table

- Bold Row 4
- Center Column C
- AutoFit Column C
- Dollar Format the Prices, B5 through B7
- In Cell D4 type: SubTotal
 - o Should be bold already

| | A | B | C | D |
|---|----------------|-----------|-----|-----------------|
| 1 | Big City Store | | | |
| 2 | Sales Report | | | |
| 3 | | | | |
| 4 | Items | Price | Qty | SubTotal |
| 5 | A | \$ 123.00 | 987 | |
| 6 | BB | \$ 456.00 | 654 | |
| 7 | CCC | \$ 789.00 | 321 | |

Calculate SubTotals

- Enter First SubTotal
 - o In Cell D5 Type: = B5*C5
 - \$121,401.00
- Each total is going to be the price of the item, times the Qty sold of the item. If we had 3,000 records, we would not want to type the equation 3,000 times
 - o Our equation is a pattern, "the cell two away, times the cell next to me"
 - o Anywhere you copy or fill the equation, the pattern will follow
- Use Fill handle to pull down this "pattern"
- Switch to Formula view (Ctrl ~) to see results and switch back to normal view

| | A | B | C | D |
|---|----------------|-------|-----|-----------------|
| 1 | Big City Store | | | |
| 2 | Sales Report | | | |
| 3 | | | | |
| 4 | Items | Price | Qty | SubTotal |
| 5 | A | 123 | 987 | =B5*C5 |
| 6 | BB | 456 | 654 | =B6*C6 |
| 7 | CCC | 789 | 321 | =B7*C7 |

Excel 2016 Basics 2 Math and Functions – Class Exercise

Calculate Taxes

- In Cell D2 type: Tax Rate
- In Cell E2 type: 10%
- In Cell E4 type: Taxes
- In Cell E5 type: =D5*E2
 - o Our pattern is Subtotal times Tax Rate
- Use fill handle to pull down equation
 - o **Don't Panic**, these answers are supposed to look weird

Absolute vs Relative (pg 6)

- What Happened?
 - o Pattern "Cell next to me * Cell three above me"
 - o As we move DOWN the pattern continues but it's wrong for this equation
- Erase the answers
- In Cell E5 type the same equation: =D5*E2
 - o Before you accept, press the **F4** button on the keyboard to lock cell address E2
 - o =D5*\$E\$2
 - you can type in the \$ signs, but **F4** is often faster
 - Think **FORCE** for the F4 button
 - o D5 is relative (always cell next to me)
 - o \$E\$2 is absolute (always cell E2)
- Use fill handle to pull down the equation

| | A | B | C | D | E |
|---|----------------|----------|-----------|--------------|------------|
| 1 | Big City Store | | | | |
| 2 | Grand Total | | Tax Rate: | | 10% |
| 3 | | | | | |
| 4 | Items | Price | Qty | SubTotal | Taxes |
| 5 | AAA | \$123.00 | 987 | \$121,401.00 | =D5*\$E\$2 |
| 6 | BB | \$456.00 | 654 | \$298,224.00 | |
| 7 | C | \$789.00 | 321 | \$253,269.00 | |

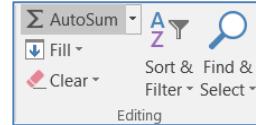
Calculate Totals

- In Cell F4 type: Total
- In Cell F5 type: = D5+E5
- Use fill handle to pull down the equation

Excel 2016 Basics 2 Math and Functions – Class Exercise

Calculate Grand Total

- In Cell E8 Type: Big City Store Grand Total
 - o From the Home tab, Align Right
 - If it won't let you, make sure you have accepted your entry (enter or ✓)
- Click in Cell F8
- Use AutoSum button Sigma - Σ in the **Editing** group on far right of the **Home** tab
 - o $=SUM(F5:F7)$
 - o In English, this reads "Calculate the Sum of F5 through F7"



| | A | B | C | D | E | F |
|---|----------------|-----------|-----------|----------------------------|--------------|---------------|
| 1 | Big City Store | | | | | |
| 2 | Grand Total | | Tax Rate: | | 10% | |
| 3 | | | | | | |
| 4 | Items | Price | Qty | SubTotal | Taxes | Total |
| 5 | AAA | \$ 123.00 | 987 | \$ 121,401.00 | \$ 12,140.10 | \$ 133,541.10 |
| 6 | BB | \$ 456.00 | 654 | \$ 298,224.00 | \$ 29,822.40 | \$ 328,046.40 |
| 7 | C | \$ 789.00 | 321 | \$ 253,269.00 | \$ 25,326.90 | \$ 278,595.90 |
| 8 | | | | Big City Store Grand Total | | =SUM(F5:F7) |

Note: When you click the AutoSum button Excel looks for numbers above the current cell. If it can't find a number, it will look to the left. The AutoSum button has a drop down menu to do quick calculations for Sum, Average, Max, Min, and Count.

Confirm your answer

- Select cells F5:F8
- Look at the status bar in the bottom right of the window to see the Average, Count, and Sum
 - o Sum should be \$740,183.40
- Change the fill color for cells F5:F8 to yellow
 - o These are now our "Yellow Numbers"

Set up for Functions

- In Cell C9 type: Grand Total
- In Cell C10 type: Total Avg
- In Cell C11 type: # of Items
- In Cell C12 type: Largest Sale
- In Cell C13 type: Smallest Sale
- Right align all titles in cells C9:C13

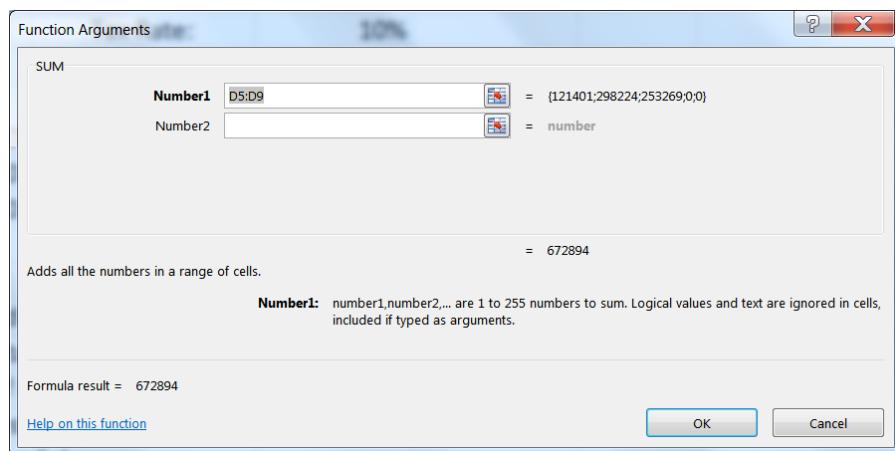
Excel 2016 Basics 2 Math and Functions – Class Exercise

Set up Functions (pg 7)

- Click in cell D10
 - o We can tell we are in cell D10 because of the Name Box
- Press the Equal Sign =
 - o The Name Box has changed to a list of Most Recently Used Functions
 - o Since the last function used on this computer is SUM, it's listed first

The screenshot shows a Microsoft Excel spreadsheet. The formula bar at the top has 'D10' selected. A dropdown menu is open next to the formula bar, showing various functions like SUM, MID, FIND, etc., with 'SUM' highlighted. The main worksheet area contains a table with columns for Items, Price, Qty, SubTotal, and Taxes. Row 10 is currently selected, and the formula bar shows '=Grand Total'. The cell D10 is also highlighted.

- Choose SUM
 - o This will open the **Function Arguments** window

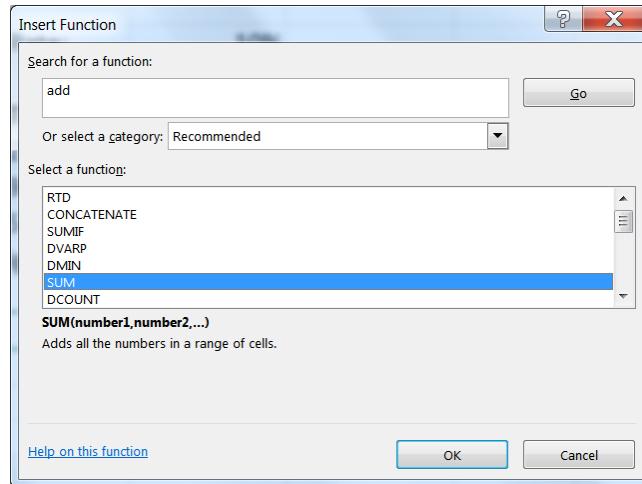


- o Clear the contents in the Number1 box
- o Move window so you can see the yellow numbers
 - To move: click in the title bar or any grey blank space and drag
- o Once you can see the yellow numbers, click in the first one, cell F5
- o Drag to the last yellow number, F7
- o Selection should be F5:F7
- o Click OK
- Sum should be \$740,183.40
- Clear Cell D10

Excel 2016 Basics 2 Math and Functions – Class Exercise

Search for Functions (pg 7)

- In Cell D10 Type: =
- Open the List of Recent Functions from the Name Box
- Click on the last option, More Functions...
 - o If you click on a function name, Excel gives a brief description.
 - o Click on the Help on this function link for a Help article about this function, usually with examples.
- Erase the "Type a brief description of what you want to do and then click Go" from the Search box. Type in ADD and click the GO button.
- Select Sum from the list and click OK
- This opens the same **Function Arguments** window
 - o Choose your Yellow Numbers and Click OK
- Sum should be \$740,183.40
- Clear Cell D10



Editing a function (pg 8)

- Press the Equal Sign
- Choose SUM from function list
- Click OK
 - o Answer should be WRONG
 - o Why? Because we don't have the yellow numbers
- Click on the Edit Function box in front of the formula bar
- This opens the **Function Arguments** window
 - o Choose the Yellow Numbers and Click OK

Other Basic Functions

- Click in Cell D11
- Press Equal Sign =
- Click on List of Functions
- Choose Average (aka Arithmetic Mean)
- Choose Yellow Numbers and Click OK
- Using Yellow numbers for each
 - o In cell D12 calculate the Count
 - o In cell D13 calculate the Max
 - o In cell D14 calculate the Min

Excel 2016 Basics 2 Math and Functions – Class Exercise

Final Result

| A | B | C | D | E | F |
|------------------|-----------|---------------|----------------------------|--------------|---------------|
| 1 Big City Store | | | | | |
| 2 Grand Total | | Tax Rate: | | 10% | |
| 3 | | | | | |
| 4 Items | Price | Qty | SubTotal | Taxes | Total |
| 5 AAA | \$ 123.00 | 987 | \$ 121,401.00 | \$ 12,140.10 | \$ 133,541.10 |
| 6 BB | \$ 456.00 | 654 | \$ 298,224.00 | \$ 29,822.40 | \$ 328,046.40 |
| 7 C | \$ 789.00 | 321 | \$ 253,269.00 | \$ 25,326.90 | \$ 278,595.90 |
| 8 | | | Big City Store Grand Total | | \$ 740,183.40 |
| 9 | | | | | |
| 10 | | Grand Total | \$ 740,183.40 | | |
| 11 | | Total Avg | \$ 246,727.80 | | |
| 12 | | # of Items | 3 | | |
| 13 | | Largest Sale | \$ 328,046.40 | | |
| 14 | | Smallest Sale | \$ 133,541.10 | | |

| A | B | C | D | E | F |
|-----------|-------|-----|---------------|-----------------|-------------|
| 1 Big Cit | | | | | |
| 2 Grand | | | Tax Rate: | 0.1 | |
| 3 | | | | | |
| 4 Items | Price | Qty | SubTotal | Taxes | Total |
| 5 AAA | 123 | 987 | =B5*C5 | =D5*\$E\$2 | =D5+E5 |
| 6 BB | 456 | 654 | =B6*C6 | =D6*\$E\$2 | =D6+E6 |
| 7 C | 789 | 321 | =B7*C7 | =D7*\$E\$2 | =D7+E7 |
| 8 | | | | = Grand Total | =SUM(F5:F7) |
| 9 | | | | | |
| 10 | | | Grand Total | =SUM(F5:F7) | |
| 11 | | | Total Avg | =AVERAGE(F5:F7) | |
| 12 | | | # of Items | =COUNT(F5:F7) | |
| 13 | | | Largest Sale | =MAX(F5:F7) | |
| 14 | | | Smallest Sale | =MIN(F5:F7) | |

Reset for next lesson

- Clear the calculated taxes, Cells E5:E7
 - o Notice how it carries through to all the answers
- Clear the Grand Total in Cell F8
- Clear the five functions you created in Cells D10:D14
- Press Ctrl-Home to return to the top of the worksheet

Naming a Cell (pg 9)

- Click in cell E2 (10%)
- Click in Name box
 - o Erase E2 in Name box
 - o Type **TaxRate**
 - No Spaces, No Hyphens, capitalization doesn't matter
 - o Press Enter and TaxRate should still be in the box
- Click anywhere else, see cell address in name box
- Click on E2 (10%), see "TaxRate" in Name Box
- Click anywhere else
- Click arrow next to Name box and choose TaxRate
 - o Should jump to cell E2
- Go to Sheet 1, Click on Name box menu, Choose TaxRate
 - o Should jump to Worksheet 3, Cell E2
 - o We have made a "bookmark" in our workbook

Using named cell in equations

- In Cell E5 type =D5*
- Click on cell E2
 - o Instead of E2 we see **TaxRate**
 - o TaxRate is always TaxRate, no (\$) locks needed
- Accept and fill down for E6 and E7

| D | E |
|---------------|-------------|
| Tax Rate: | 10% |
| SubTotal | Taxes |
| \$ 121,401.00 | =D5*TaxRate |

Excel 2016 Basics 2 Math and Functions – Class Exercise

Naming Ranges

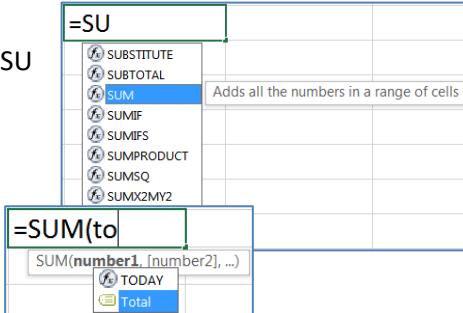
- Select Yellow numbers
- Type **Total** in the Name box and press Enter

Using named cell in functions

- Click in cell F8
- Use AutoSum button Sigma - Σ
 - o $=\text{Sum}(\text{Total})$
- In Cell D10 type: =
- Choose Sum from the List of Recently Used Functions
- Select your Yellow numbers, you should get Total
- Click OK

Typing in Functions

- Clear cell D10
 - o In Cell D10 Type: =SU
 - See list of functions that start with an SU
 - o Once you see the word **SUM** Select it
 - Double-click or press Tab (to GRAB!)
 - o Continue to type: TO
 - See list of all functions and Names that start with TO
 - o Double-click **Total** or tab
 - o Press Enter to accept



- Try the same for the other four functions. Type an equal sign, start typing the name of the function. Once you see it, double-click, or tab to grab the selection. Then type the first few letters of total. Double-click or tab to grab. Enter to accept.

- o Cell D11 the Average

- o Cell D12 the Count

- o Cell D13 the Max

- o Cell D14 the Min

- Answers will be the same as the ones on the top of Page 19 of this handout.

| A | B | C | D | E | F | |
|----|----------|-------|-----------|----------|----------------|---------------------------|
| 1 | Big City | | | | | |
| 2 | Grand | | Tax Rate: | 0.1 | | |
| 3 | | | | | | |
| 4 | Items | Price | Qty | SubTotal | Taxes | Total |
| 5 | AAA | 123 | 987 | =B5*C5 | =D5*TaxRate | =D5+E5 |
| 6 | BB | 456 | 654 | =B6*C6 | =D6*TaxRate | =D6+E6 |
| 7 | C | 789 | 321 | =B7*C7 | =D7*TaxRate | =D7+E7 |
| 8 | | | | | re Grand Total | =SUM(Total) |
| 9 | | | | | | |
| 10 | | | | | | and Total =SUM(Total) |
| 11 | | | | | | Total Avg =AVERAGE(Total) |
| 12 | | | | | | # of Items =COUNT(Total) |
| 13 | | | | | | Greatest Sale =MAX(Total) |
| 14 | | | | | | Smallest Sale =MIN(Total) |

Excel 2016 Basics 2 Math and Functions – Class Exercise

Working with Ranges of Data

If we insert new data it must go inside the range

| | A | B | C | D | E | F |
|----|----------------|---------------|-----------|----------------------------|-------------|--------------|
| 1 | Big City Store | | | | | |
| 2 | Grand Total | | Tax Rate: | | 10% | |
| 3 | | | | | | |
| 4 | Items | Price | Qty | SubTotal | Taxes | Total |
| 5 | AAA | \$123.00 | 987 | \$121,401.00 | \$12,140.10 | \$133,541.10 |
| 6 | BB | \$456.00 | 654 | \$298,224.00 | \$29,822.40 | \$328,046.40 |
| 7 | C | \$789.00 | 321 | \$253,269.00 | \$25,326.90 | \$278,595.90 |
| 8 | | | | Big City Store Grand Total | | \$740,183.40 |
| 9 | | | | | | |
| 10 | | Grand Total | | \$740,183.40 | | |
| 11 | | Total Avg | | \$246,727.80 | | |
| 12 | | # of Items | | 3 | | |
| 13 | | Largest Sale | | \$328,046.40 | | |
| 14 | | Smallest Sale | | \$133,541.10 | | |

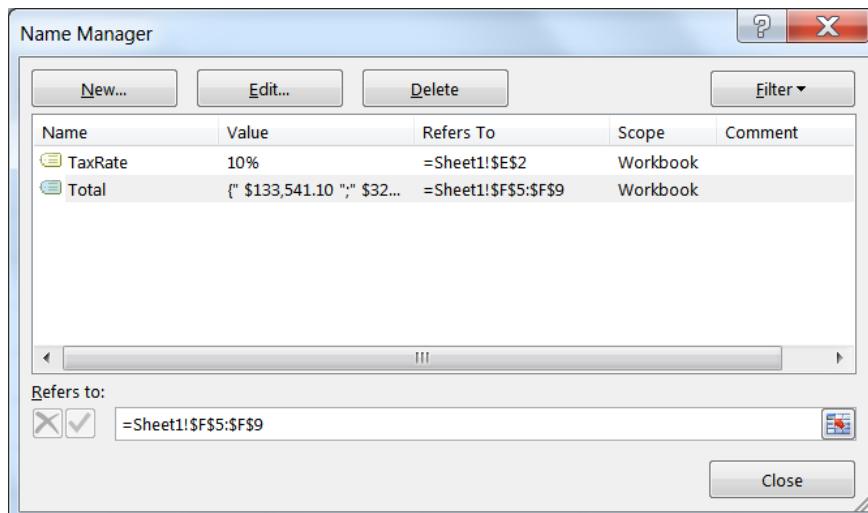
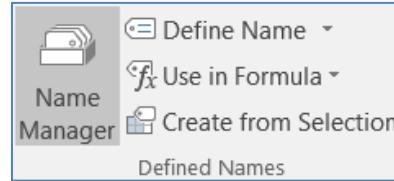
- Insert two rows, one above item "C", one Below item "C"
 - o Right-click on Row Number 7, INSERT
 - o Right-click on Row Number 9, INSERT
- Enter in data
 - o In Cell A7 Type: D
 - o In Cell B7 Type: 159
 - o In Cell C7 Type: 951
 - o In Cell A9 Type: E
 - o In Cell B9 Type: 357
 - o In Cell C9 Type: 753
- Select Cells D5:F5
 - o The first SubTotal through the First Total
 - o The numbers should not change, just be selected
- Use fill handle to pull down through all the yellow numbers

| 4 | Items | Price | Qty | SubTotal | Taxes | Total |
|----|-------|-------------|-----|----------------------------|-------------|--------------|
| 5 | AAA | \$123.00 | 987 | \$121,401.00 | \$12,140.10 | \$133,541.10 |
| 6 | BB | \$456.00 | 654 | \$298,224.00 | \$29,822.40 | \$328,046.40 |
| 7 | D | \$159.00 | 951 | \$151,209.00 | \$15,120.90 | \$166,329.90 |
| 8 | C | \$789.00 | 321 | \$253,269.00 | \$25,326.90 | \$278,595.90 |
| 9 | D | \$357.00 | 753 | \$268,821.00 | \$26,882.10 | \$295,703.10 |
| 10 | | | | Big City Store Grand Total | | \$906,513.30 |
| 11 | | | | | | |
| 12 | | Grand Total | | \$906,513.30 | | |
| 13 | | Total Avg | | \$226,628.33 | | |
| 14 | | # of Items | | 4 | | |

- Note that the count in cell D12 says there are only 4 Items

Redefining Names

- From the Name box choose "Total"
 - o Notice it refers to F5:F8. It included Item C in row 8 because it was inside our previous range, but not item D in row 9.
- Click in an empty cell
- Turn to the **Formula** tab in the Ribbon
- Look in the **Defined Names** group for the **Name Manager**
- Choose Total from list
 - o At the bottom of the window erase contents of **Refers to:**
 - o Move window so you can see all the Yellow Numbers
 - o Select the Yellow Numbers (=Sheet1!\$F\$5:\$F\$9)
- Click the check box at the front of the line to accept
- Click the **Close** button
 - o Click **Yes** if it prompts you to save



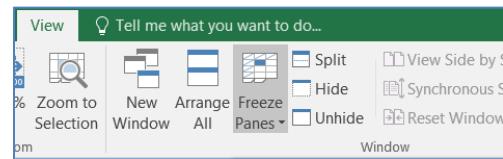
- The Sum of our Total is now over \$1,000,000 so our columns widths may be too small.
 - o Adjust Column width to read the ##### cells
- The Count (# of Items) of our Total is now 5

| | A | B | C | D | E | F |
|----|----------------|----------|-----------|----------------------------|--------------|-----------------|
| 1 | Big City Store | | | | | |
| 2 | Grand Total | | Tax Rate: | | 10% | |
| 3 | | | | | | |
| 4 | Items | Price | Qty | SubTotal | Taxes | Total |
| 5 | AAA | \$123.00 | 987 | \$ 121,401.00 | \$ 12,140.10 | \$ 133,541.10 |
| 6 | BB | \$456.00 | 654 | \$ 298,224.00 | \$ 29,822.40 | \$ 328,046.40 |
| 7 | D | \$159.00 | 951 | \$ 151,209.00 | \$ 15,120.90 | \$ 166,329.90 |
| 8 | C | \$789.00 | 321 | \$ 253,269.00 | \$ 25,326.90 | \$ 278,595.90 |
| 9 | D | \$357.00 | 753 | \$ 268,821.00 | \$ 26,882.10 | \$ 295,703.10 |
| 10 | | | | Big City Store Grand Total | | \$ 1,202,216.40 |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |
| 15 | | | | | | |
| 16 | | | | | | |

Excel 2016 Basics 2 Math and Functions – Class Exercise

Freeze Panes

- Click inside Cell B5
- From the View tab in the Window group, choose Freeze Panes
 - o This will lock the first four rows and the first column into place, so as you scroll through the worksheet you can always see the content in those cells.

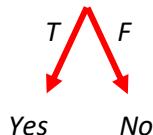


| | A | B | C | D | E | F |
|---|----------------|---------------|-----------|----------------------------|--------------|-----------------|
| 1 | Big City Store | | | | | |
| 2 | Grand Total | | Tax Rate: | | 10% | |
| 3 | | | | | | |
| 4 | Items | Price | Qty | SubTotal | Taxes | Total |
| 5 | AAA | \$123.00 | 987 | \$ 121,401.00 | \$ 12,140.10 | \$ 133,541.10 |
| Freeze panes above and to the left of THIS cell. (B5) | | | | | | |
| | | \$456.00 | 654 | \$ 298,224.00 | \$ 29,822.40 | \$ 328,046.40 |
| | | \$159.00 | 951 | \$ 151,209.00 | \$ 15,120.90 | \$ 166,329.90 |
| | | \$789.00 | 321 | \$ 253,269.00 | \$ 25,326.90 | \$ 278,595.90 |
| | | \$357.00 | 753 | \$ 268,821.00 | \$ 26,882.10 | \$ 295,703.10 |
| 9 | D | | | Big City Store Grand Total | | \$ 1,202,216.40 |
| 10 | | | | | | |
| 11 | | | | | | |
| 12 | | Grand Total | | \$ 1,202,216.40 | | |
| 13 | | Total Avg | | \$ 240,443.28 | | |
| 14 | | # of Items | | 5 | | |
| 15 | | Largest Sale | | \$ 328,046.40 | | |
| 16 | | Smallest Sale | | \$ 133,541.10 | | |

If Function (if there is time)

- In Cell G4 type: Continue
- Draw Logic Tree
 - o If our Total for this item is greater than \$250,000, then yes we want to continue
 - o If our Total for this item is less than \$250,000, then no we don't want to continue

IF Item Total > 250000



| | | |
|----------------|-----------|---------|
| Logical_test | F5>250000 | = FALSE |
| Value_if_true | "Yes" | = "Yes" |
| Value_if_false | "No" | = "No" |

- In Cell G5 type: =
 - o From the list of functions choose IF and fill in the parts from our logic tree
- Use fill handle to pull down the equation
- Edit the function in cell G4 to 280000
- DON'T FORGET TO: Use fill handle to fill down again

Excel 2016

Charts and Graphs



Excel 2016: Charts and Graphs

2.0 hours

This workshop assumes prior experience with Excel, Basics I recommended. Topics include data groupings; creating and modifying charts; chart types; source data; chart options; chart locations; formatting; adding trend lines and error bars.

| | |
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Charts

A chart helps you display your data into a graphical representation. There are many types of charts, but in this class we'll focus on simple column, line, and pie charts. There are examples of other charts near the end of this handouts.

The first thing to know is the data has to be organized so Excel can understand what you are trying to chart. Excel will chart your data selection or your connected data range. As long as there are no blank columns and no blank rows within your dataset, you can skip selecting the cells.



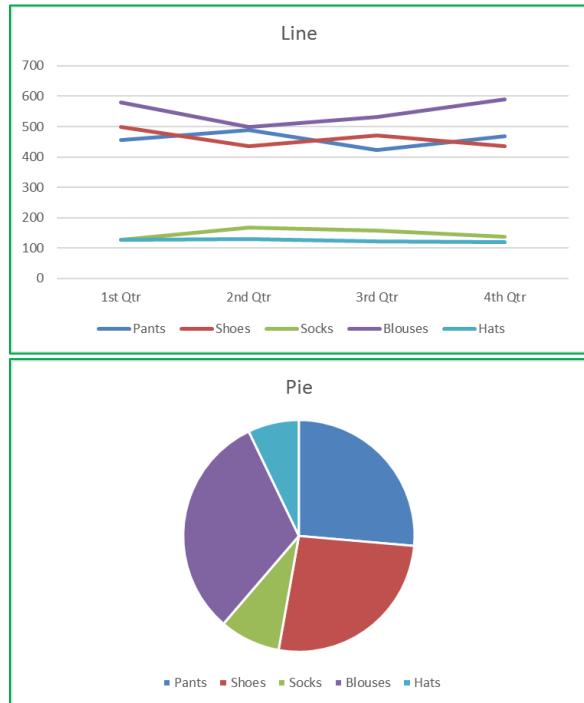
Here is a dataset we will use in class:

| Item | 1st Qtr | 2nd Qtr | 3rd Qtr | 4th Qtr |
|---------|---------|---------|---------|---------|
| Pants | 456 | 489 | 423 | 468 |
| Shoes | 498 | 435 | 472 | 436 |
| Socks | 128 | 168 | 157 | 138 |
| Blouses | 579 | 498 | 531 | 589 |
| Hats | 126 | 129 | 123 | 119 |

This is a structured collection of related data set in a table format. When plotted onto a clustered column chart, like the one shown above, the titles in the first column of the dataset appear along our category axis. The titles in the first row appear within the legend. The values are represented by the height of each column.

Line charts are usually set up to go across a period of time, think *Time Line*. For this chart I've used the **Switch Row Column** tool so we can see the trend of the sales through the year. In this case our first column titles appear in the legend, and the first row of titles appears in our category axis.

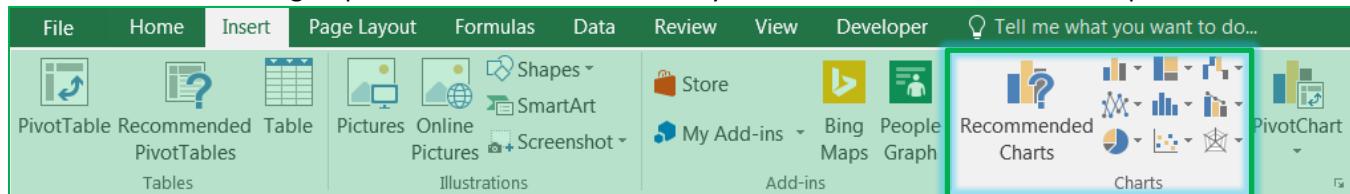
Pie charts are usually created to display the breakdown of the total values within the whole. Pie charts can only be based on one set of data. When you try to create one with the above dataset, you will only see the first value set appear within the chart. If you want to go to an extreme and have all four quarters show, try using a *Doughnut* chart.



Creating a Chart

To create a chart make sure your cursor is in the dataset you would like to plot. If you want a subset of the dataset, select that portion. You can use your Ctrl key to add to a current selection.

You will find the **Charts** group on the **Insert** tab. Click on any small chart button to see a list of possible charts.



If you are unsure of the best chart option for your data use the **Recommend Charts** button. It will open the Insert Chart window shown here.

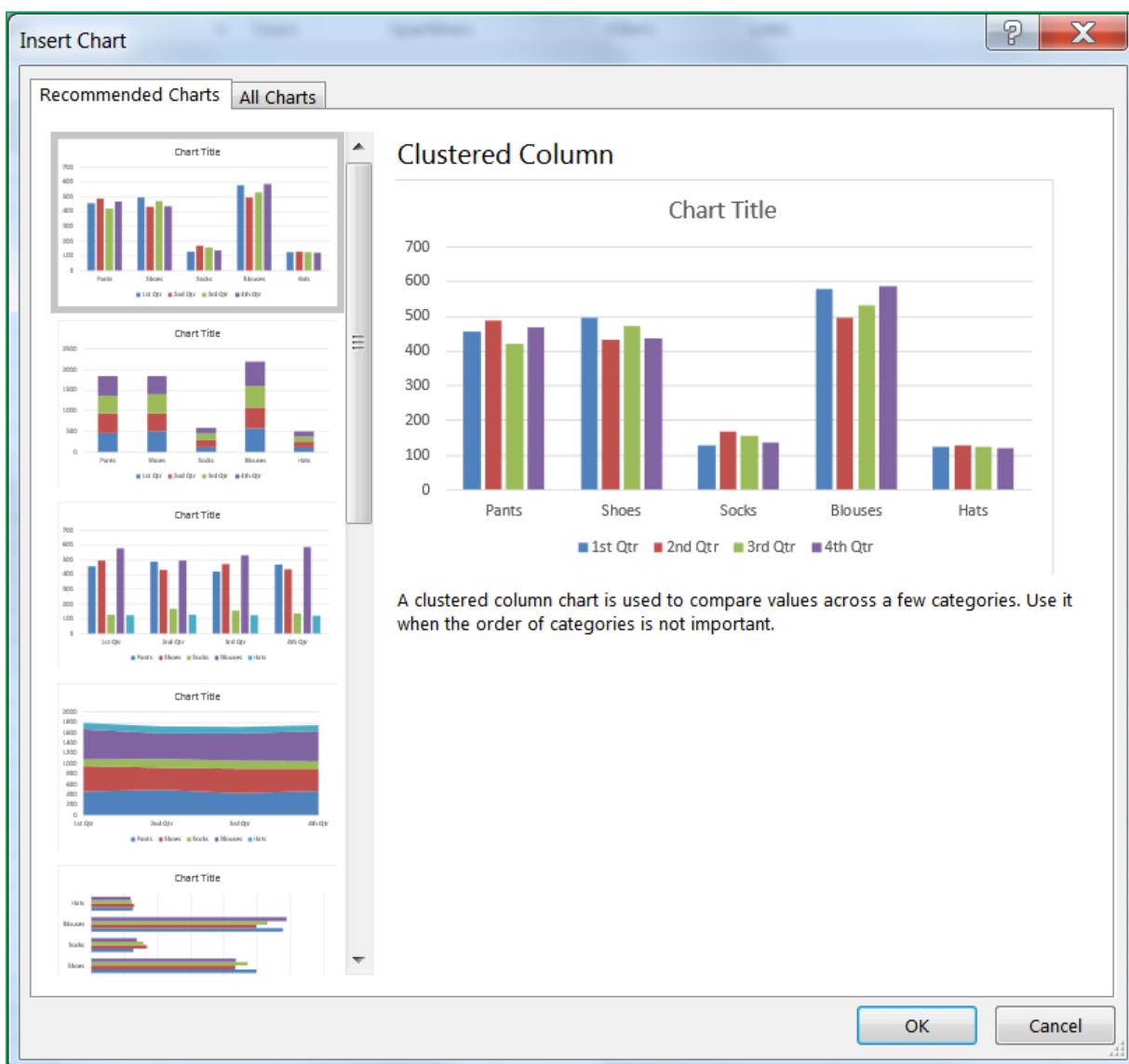
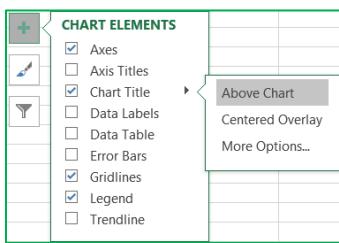
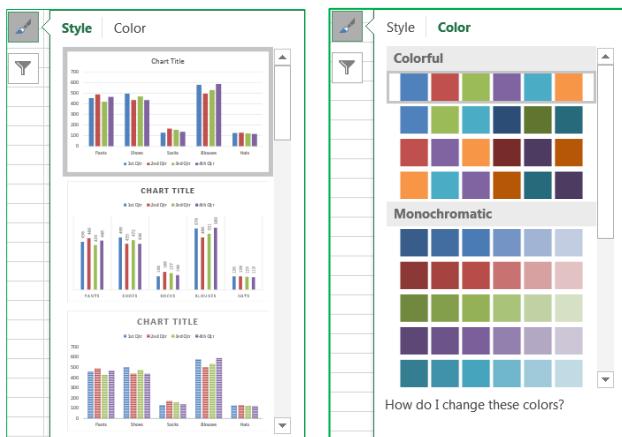


Chart Tools

When you select a chart, three buttons appear along the right side of the selection.



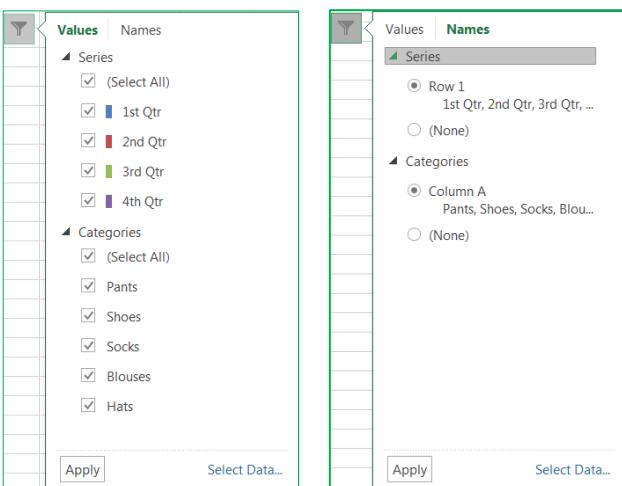
The plus sign is the **Add Chart Element** button. This option is used to add and remove different pieces of your chart. The list of options will vary depending on the type of chart. For example, a pie chart will not have a set of category axis titles. As you hover your mouse over each option, you will see a small arrow head pointing to the right. This will open another menu with more detailed choices. Each menu also has a "More Options..." button which will open a Format Pane on to customize each chart element.



There is a *Chart Style Gallery* and a *Colors* menu on the *Design* tab, but the **Chart Styles** button, the paint brush next to the chart, offers the same options.

If you are patient while you hover over each option, Excel will provide you with a Live Preview of the result.

The **Color** options are available at the top of the menu.



The third button is a funnel. This is a **Chart Filters** button.

The **Values** group allows you to add and remove data points from the chart.

The **Names** page allows you to change the labels that appear in the legend (series) and axis titles (category).

The **Select Data...** option at the bottom of the window opens the same window as the *Select Data* button on the *Design* tab. From there you can change or adjust the range of cells used to create this chart.

Chart Tool Tabs

When a chart is selected two chart tool tabs appear at the end of the ribbon, **Design** and **Format**.

Design Tab



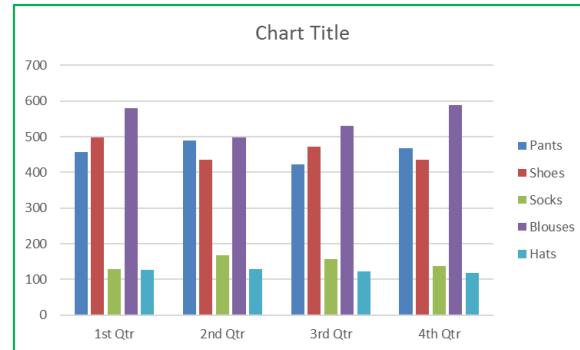
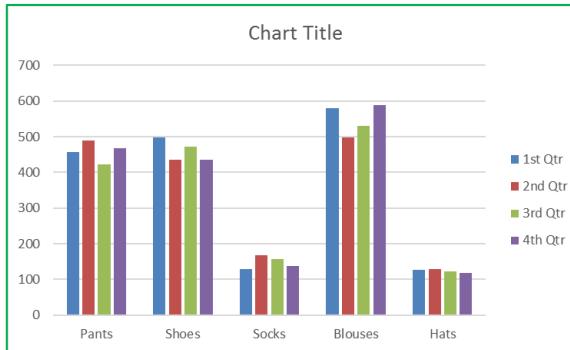
1 2 3

4

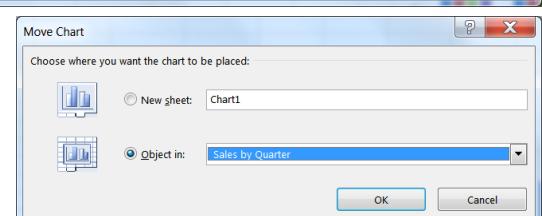
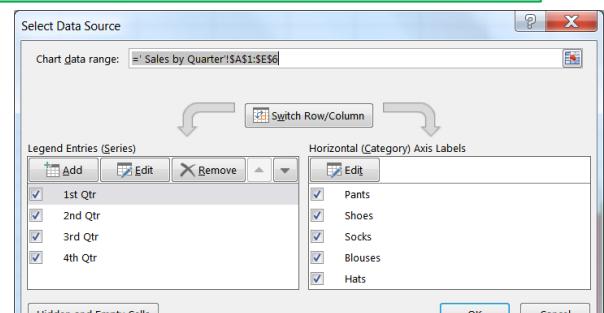
5 6 7 8

- Add Chart Element** – A menu of chart elements that can be added or removed to the chart. Each option will have a expand arrow at the end of the element name that will provide specifics and a **More Options** button to open the Format Pane. This is the same as the Add Chart Element button that appears next to the selected chart.
- Quick Layout** – A variety of layouts that offer suggested views and choices that adjust the chart elements such as adding a title, varying the space between columns, and moving the legend.
- Change Colors** – Different color that can be applied to your chart. Changing the Theme on the *Page Layout* tab will give you a different sets of colors.
- Chart Style Gallery** – Different chart styles that can be applied to your chart. Because Excel automatically adjusts the Ribbon to fit on your screen, your copy of Excel may show less options than the picture above. Use the scroll arrows and open menu buttons at the right side of the gallery for more.
- Switch Row/Column** – Changes the direction the chart looks at the data. In our column chart, each column is plotted on the chart, when we **Switch** each row is plotted. We are swapping the category labels with the legend labels.

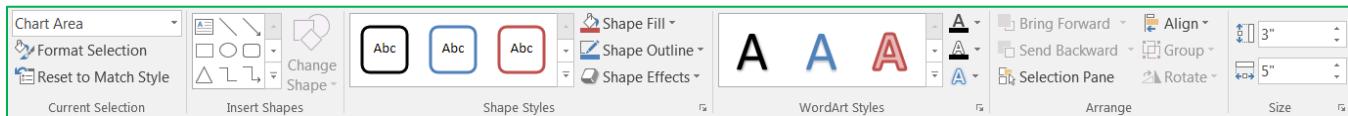
| Item | 1st Qtr | 2nd Qtr | 3rd Qtr | 4th Qtr |
|---------|---------|---------|---------|---------|
| Pants | 456 | 489 | 423 | 468 |
| Shoes | 498 | 435 | 472 | 436 |
| Socks | 128 | 168 | 157 | 138 |
| Blouses | 579 | 498 | 531 | 589 |
| Hats | 126 | 129 | 123 | 119 |



- Select Data** – Opens a Select Data Source window where you can customize the source of the chart data, even edit the labels. Use this window to reorder your legend and change how Line charts deal with blank cell values.
- Change Chart Type** – Opens Insert Chart window where you can change to other chart types. If you have multiple series you can change each to be different chart type by choosing the **Combo** chart type from the bottom of the left pane.
- Move Chart** – By default when you create a chart it is placed on the same worksheet as your data set. You can move the chart to its own worksheet or to any existing worksheet with the workbook.



Format Tab

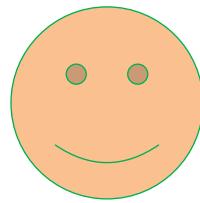


1. Current Selection

- Chart Elements – This box shows the currently selected Chart Element, and the menu provides a list of the major chart elements. Choose an item from this list to select that element.
- Format Selection – Opens the Format Pane based on the current selection shown in the Chart Elements box.
- Reset to Match Style – Changes the current selection to match the original style of the chart.

2. Insert Shape

- Shape Gallery – Use this gallery to find a shape such as a block arrow to add to your chart.
- Change Shape – Use this tool to change the current shape to a different one, perhaps a rectangle into a rounded rectangle.



3. Shape Styles

- Style Gallery – Different shape styles, options will vary based on the current selection.
- Shape Fill – Menu of the most common fill colors and options, such as pictures and textures. For more options, open the Format Pane.
- Shape Outline – Menu of the most common outline colors and options, such as dashes and arrows. For more options open the Format Pane.
- Shape Effects – Menu of the most common shape effects, such as shadows. For more options open the Format Pane.



4. WordArt Styles

- WordArt Gallery – Different WordArt styles
- Text Fill – Menu of the most common fill colors and options, such as pictures and textures.
- Text Outline – Menu of the most common outline colors and options, such as dashes and line weight.
- Text Effects – Menu of the most common Text effects, such as shadows. For more options open the Format Pane.



5. Arrange

– Change the alignment and arrangement of multiple charts. Use the **Shift** key to select more than one chart at a time.

6. Size

– Change the height and width of the chart.

Format Pane

There are multiple ways to open the Format Pane.

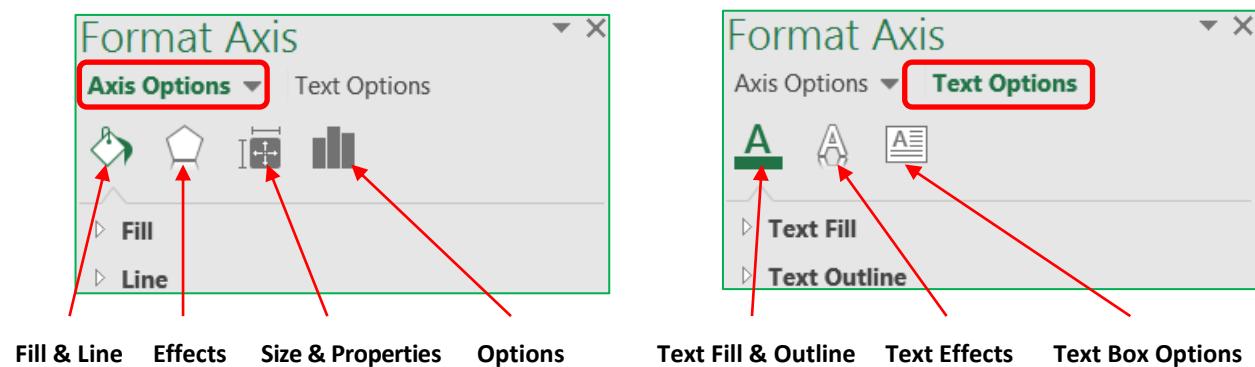
- Click on the **Format Selection** button in the *Format* tab
- Click on **More** option from any menu
- Right-click on a chart element and choose **Format...**
- Double-click on a chart element

The format pane can remain open for as long as you need it. The properties shown change depending on the current selection. The current selection is shown on the Format tab and in the title of the Format Pane.

The pane can be pulled free from the side by dragging the title toward the middle of the window. To return the pane to the side of the window drag it back into place or double-click the title of the Format Pane.

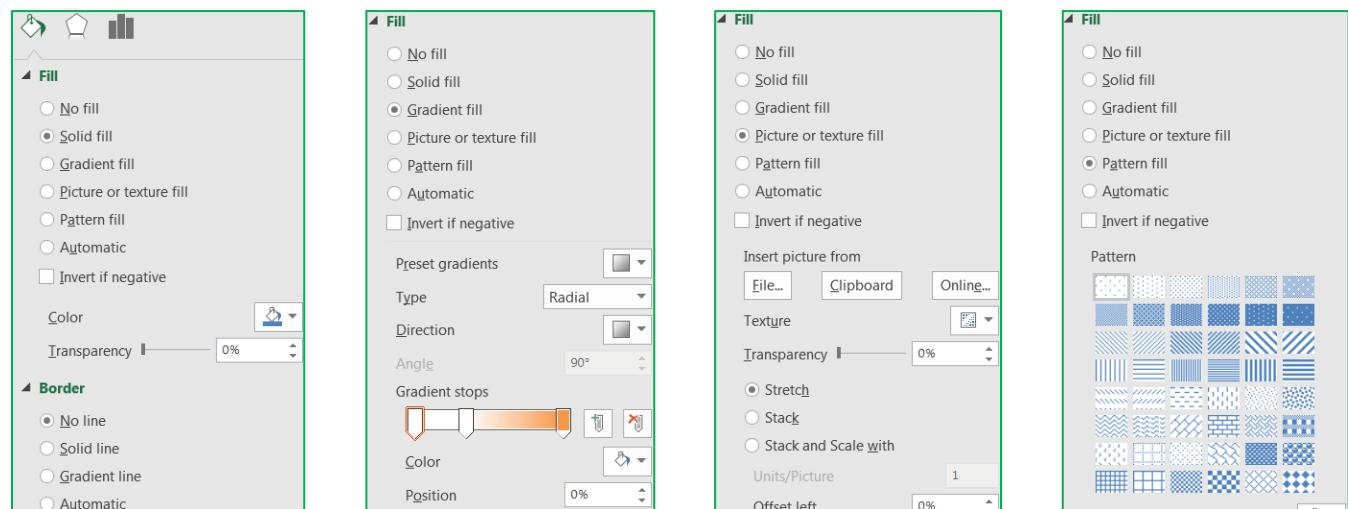
To close the pane, click on the X in the upper right hand corner. If you accidentally close the pane, use any method above to reopen it.

Within the Format Pane, click on each icon to see the subset of properties. Click on the expand arrow in front of the options to see the relevant properties.



The Fill & Line and Effects options are the same for all the of the chart elements. If an option cannot be applied to that chart element, Excel will disable (grey out) that option.

Below are the fill options for a Chart Element. Each **Fill** choice provides a new set of options.



How do I ...?

Change Axis Numbers

Select the Axis by clicking on a number in the area. Open the Format pane, be sure the title says **Format Axis**. Click on the Options button. 

From here you can:

- Change the **Minimum** and **Maximum** numbers shown. These can be greater than the minimum and less than the maximum if you want.
- Change the **Major** unit, this is how the displayed number is chosen. If the major unit is 100 the chart axis will read 100, 200, 300. If it's 25 the chart will show 25, 50, 75.
- Change the **Display Units** to Thousands, Millions, Billions. This will change the unit shown in the labels and data tables as well.
- Change the **Format** of the numbers; number of decimals, include a dollar sign, etc.

Change Distance Between Columns

Select any column. Open the Format pane, be sure the title says **Format Data Series**. Click on the Options button. 

From here you can:

- Change the selected series to be on a **secondary axis**
- Change the distance the series **overlap**
- Change the **width between** the each category grouping

Explode a Pie Chart

In the chart: Hover over a pie wedge. Click and drag the piece away from the center. To move one piece at a time, select the single pie wedge first, and then move it from the middle.

In the properties: Select a pie wedge. Open the Format pane, be sure the title says **Format Data Series**.

Click on the Options button. 

From here you can:

- Change the rotation without changing the order of the data
- Change the explosion, how close the wedges are to each other

Add Trendlines and Error Bars

Select the chart. Click on the Add Chart Element button in the Design tab, or on the  button next to the chart.

You can add your own custom error bars, if needed, from the error bar options. You do have to format one series of error bars at a time.

Make Charts the Same Size

Use the Height and Width properties found on the Format tab in the ribbon, or on the Format Pane for the Chart Area's Size & Options. You can use the alignment options on the format tab to make the charts line up.

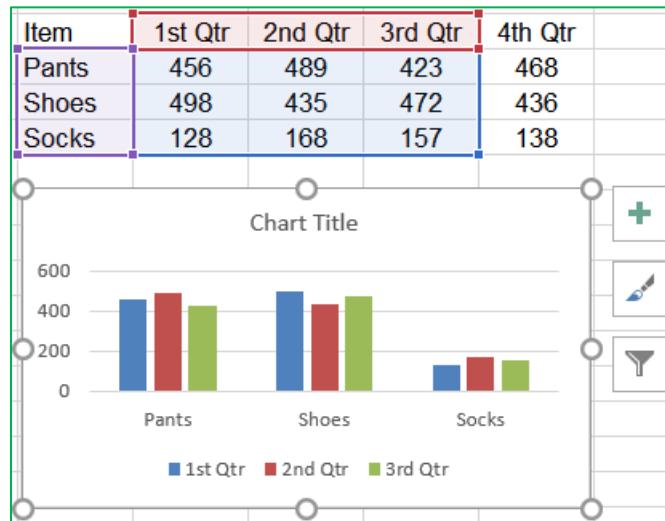
Changing the Data Source

From the Worksheet

When you select a chart, you will see the Chart Tool tabs in the ribbon, and the three options buttons along the right side of the chart. If you can see the cells in the worksheet used for the chart, you will also be able to see the data is selected and each section is shaded.

If you hover your mouse over the bottom right-hand corner of the data grouping you will get the two-way sizing arrow. If you click and drag the selection, you can manually change the chart data source.

If you know, you will have more categories and series you can grow the data area beyond what's showing and Excel will assign new colors and make room in the chart for the new values.

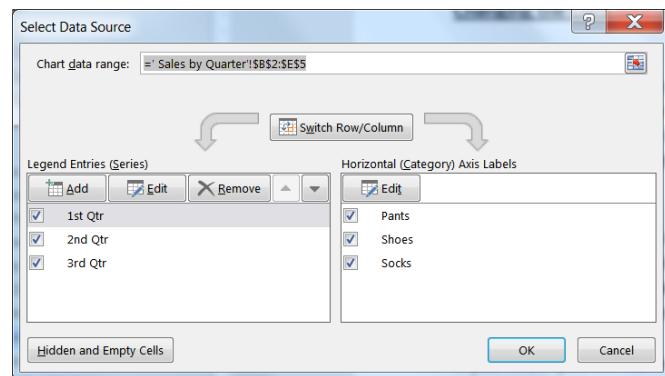


From the Select Data Source Window

From the Chart Tools *Design* tab, choose **Select Data**.

The **Chart data range** option can be a bit finicky so I recommend deleting the current range and selecting the new set from the worksheet.

The chart is initially arranged to follow the order of the data, but if you would like the legend in a different order, you can rearrange the Legend Entries using the up and down arrows.



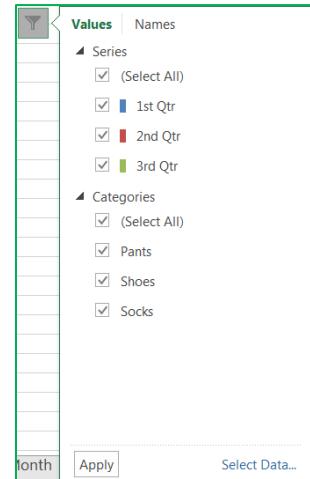
Removing data

Both of the above options will help you add and remove data. You can manually adjust the range in the worksheet or you can select a different range from the Select Data Source window. Both are great as long as you are using a consecutive range of data.

The Select Data Source window also had a **Remove** button to delete a series from the chart. Notice there is not one for the Category/Axis labels. To be able to remove one you will need to first **Switch Row/Column**. Once you have removed the categories, **Switch Row/Column** again.

From the chart itself, you can click on the series you want to remove and press **Delete** on the keyboard. You can only delete the series, so the same actions apply in order to remove a category you will need to switch the row/columns first.

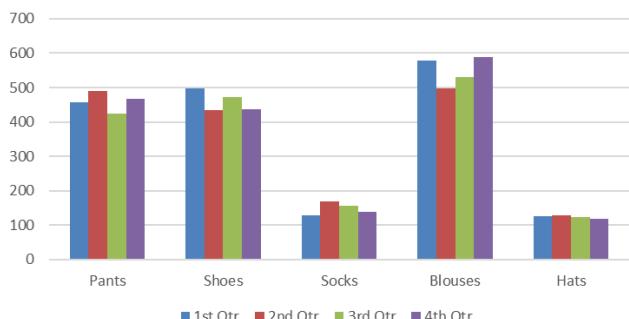
However, we now have a Filters button along the side of the selected chart. From here, we can uncheck any of the values we do not want on the chart; Series and Categories. You must click the **Apply** button at the bottom of the menu for the filter to take effect.



Types of Charts

Column and Bar Charts

Clustered Column

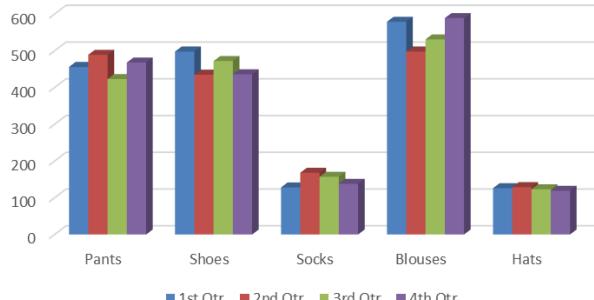


Insert Column or Bar Chart

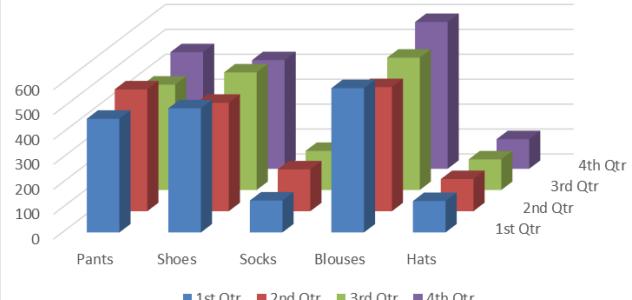
Use this chart type to visually compare values across a few categories.

Click the arrow to see the different types of column and bar charts available and pause the pointer on the icons to see a preview in your document.

3-D Clustered



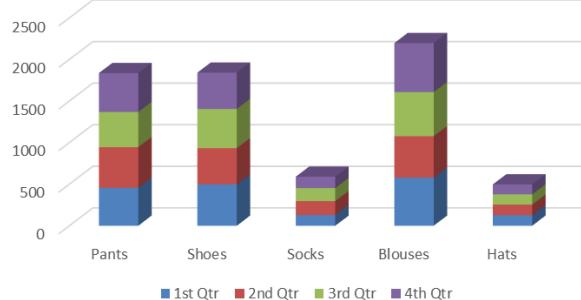
3-D Column



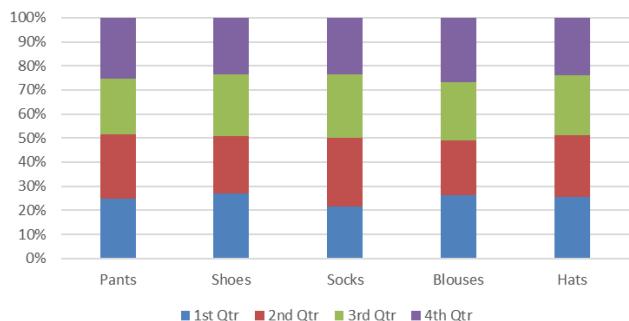
Stacked Column



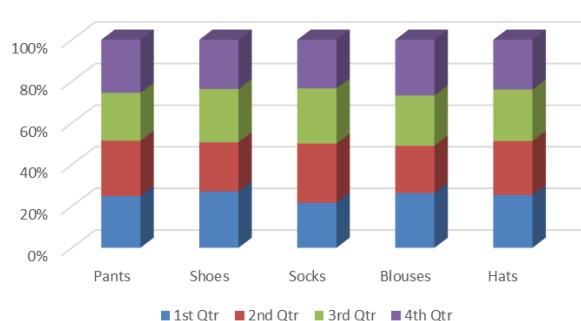
3-D Stacked Column

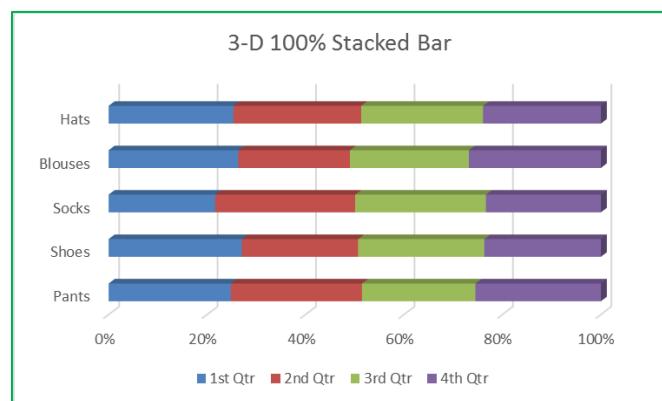
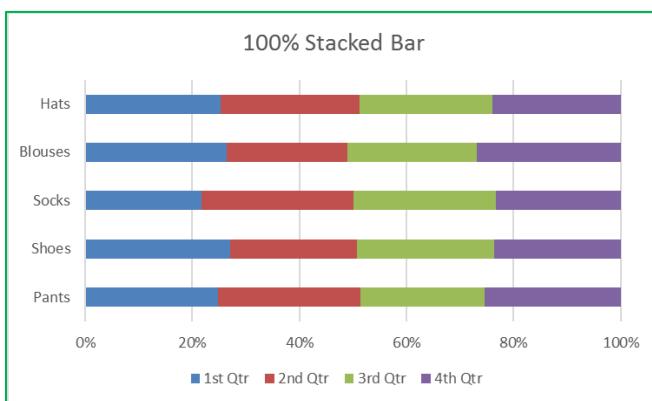
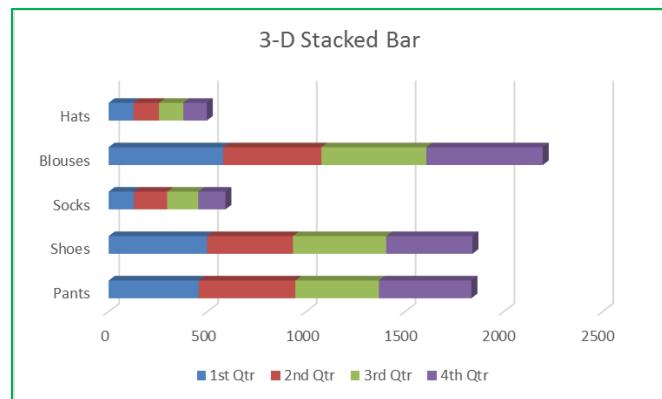
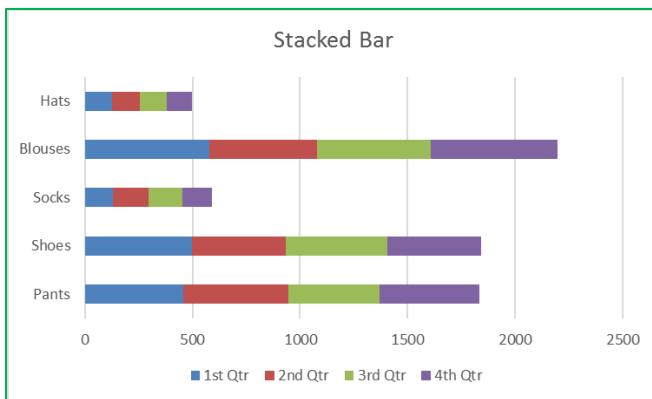
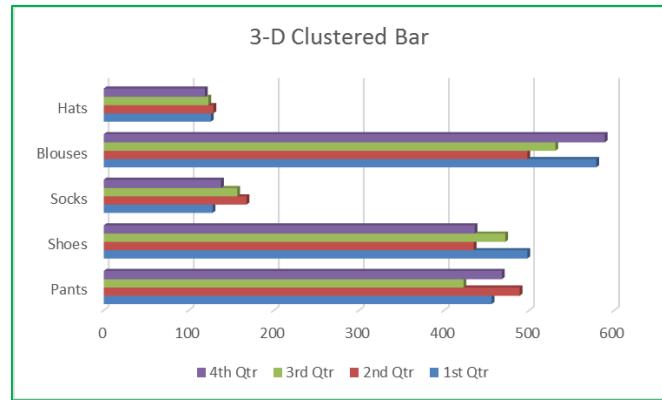


100% Stacked Chart

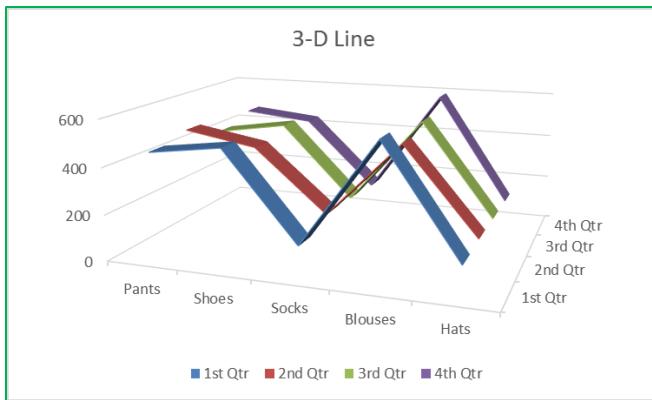


3-D 100% Stacked Column





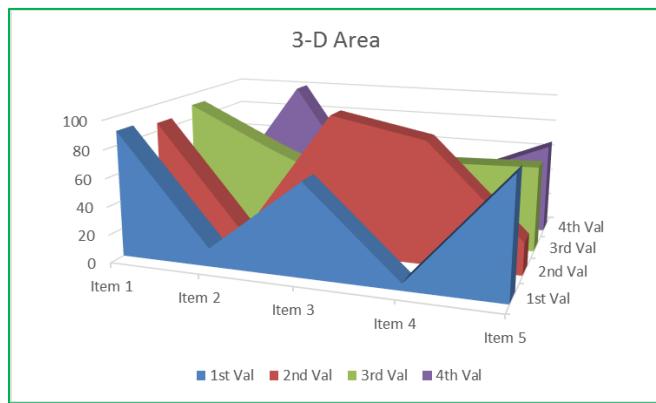
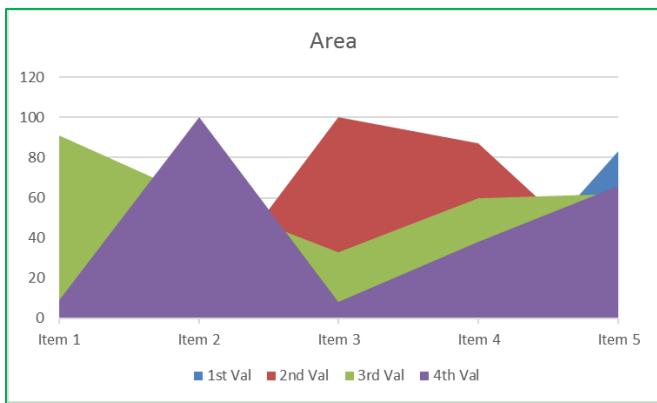
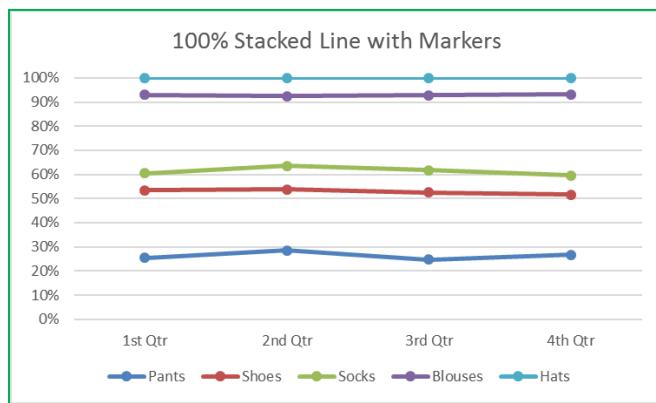
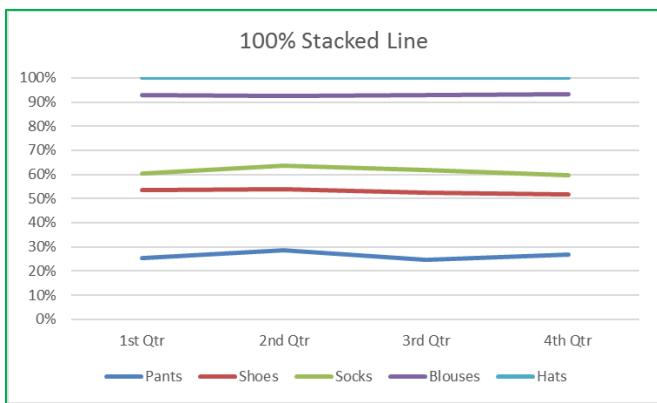
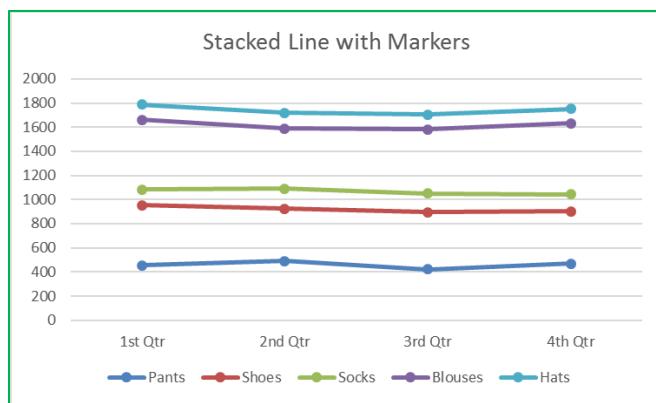
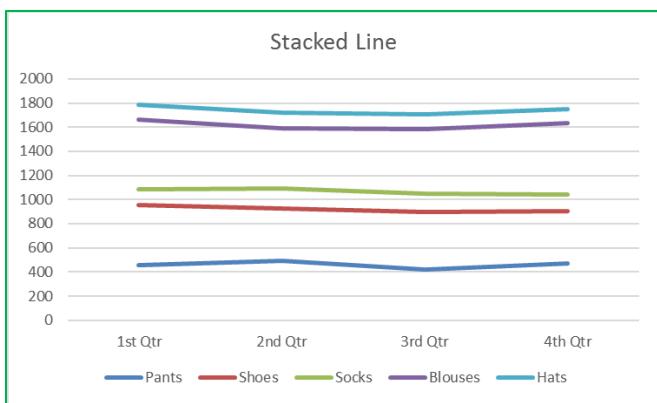
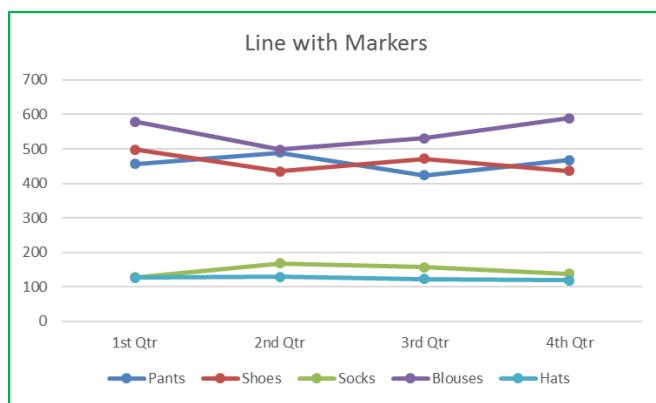
Line and Area Charts

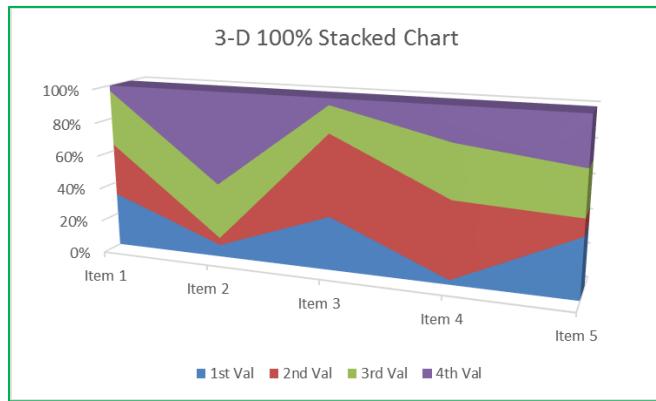
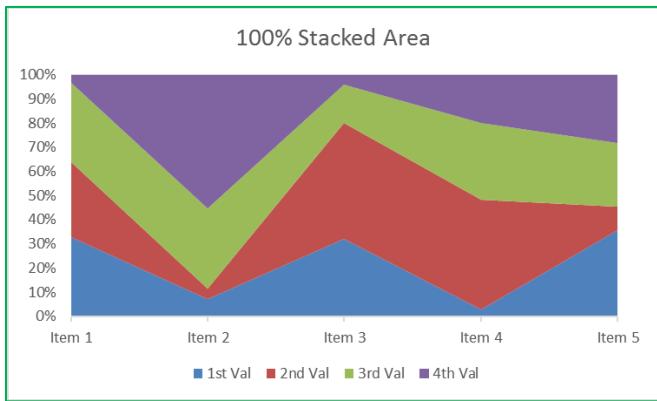
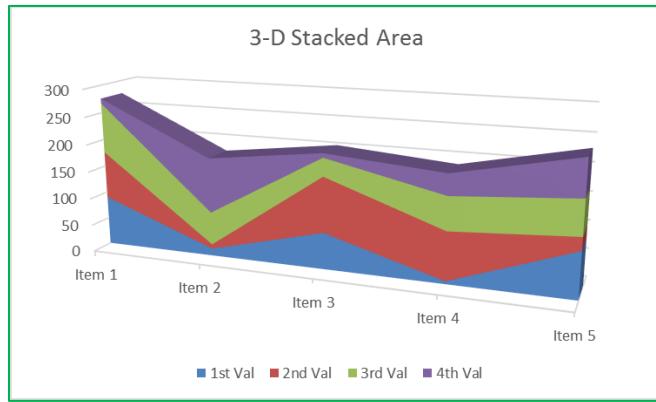
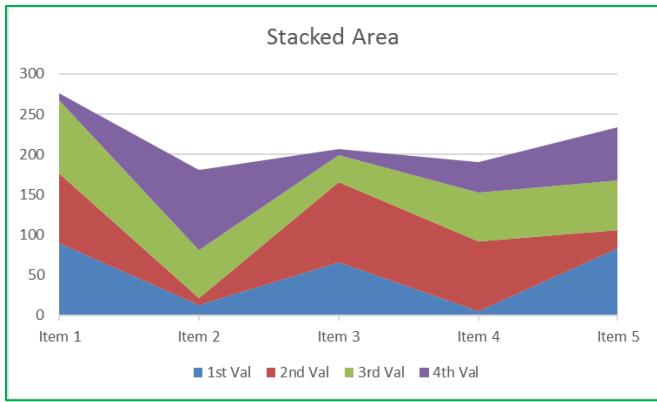


Insert Line or Area Chart

Use this chart type to show trends over time (years, months, and days) or categories.

Click the arrow to see the different types of line and area charts available and pause the pointer on the icons to see a preview in your document.





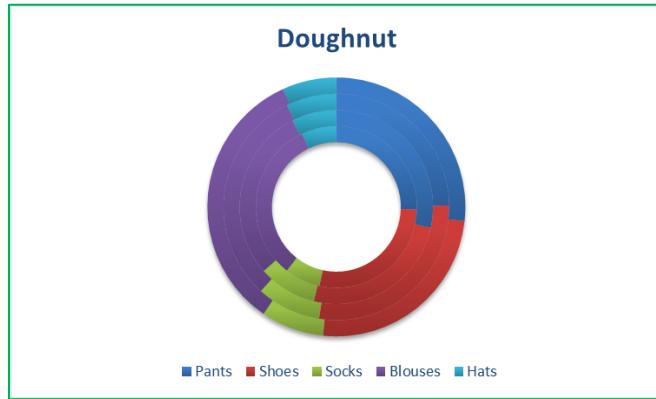
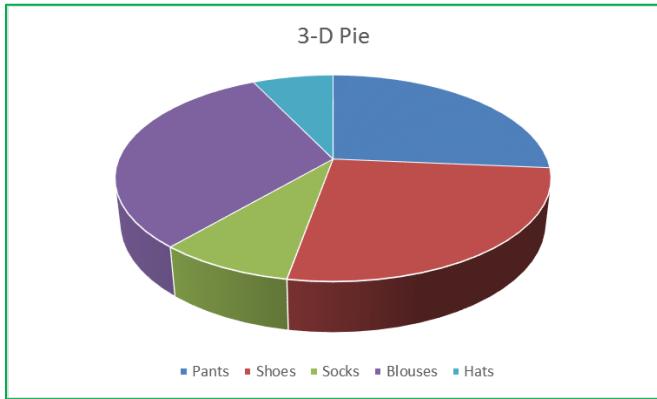
Pie and Donut Charts

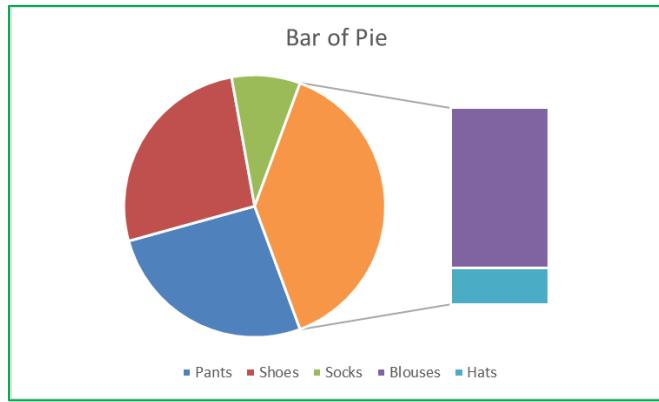
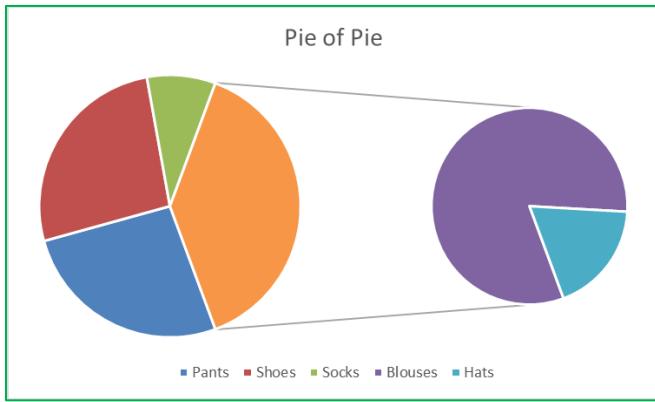


Insert Pie or Doughnut Chart

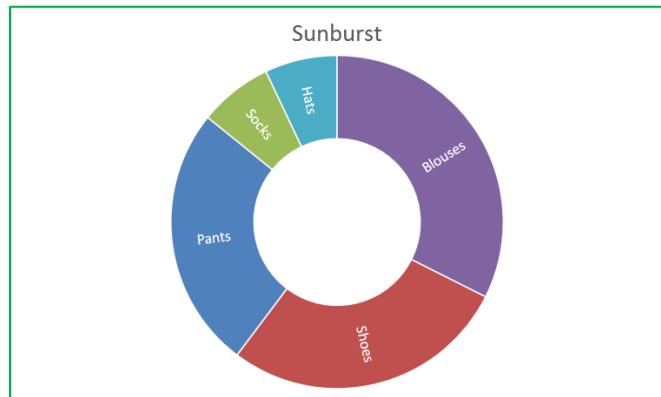
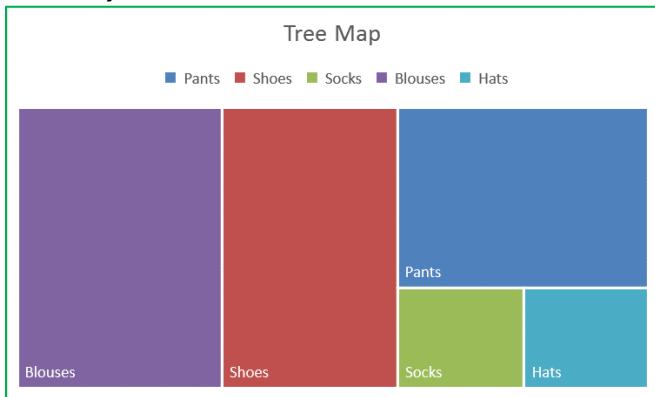
Use this chart type to show proportions of a whole. Use it when the total of your numbers is 100%.

Click the arrow to see the different types of pie and doughnut charts available and pause the pointer on the icons to see a preview in your document.





Hierarchy Chart



Insert Hierarchy Chart

Use this chart type to compare parts to a whole, or when several columns of categories form a hierarchy.

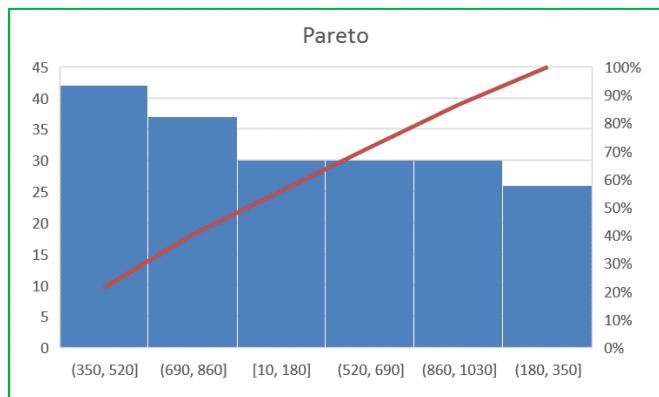
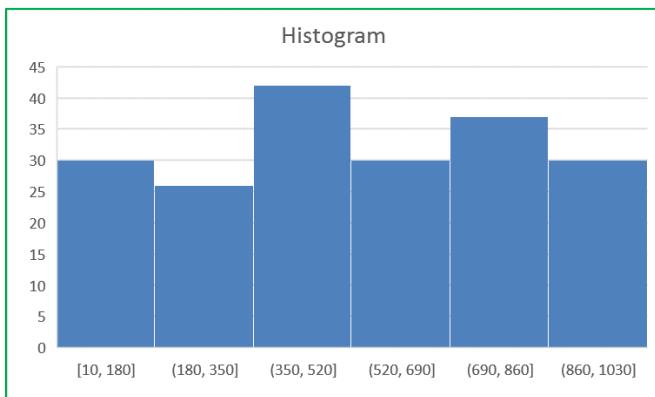
Click the arrow to see the different types of hierarchy charts available and point to the icons to see a preview in your document.

Insert Statistic Chart

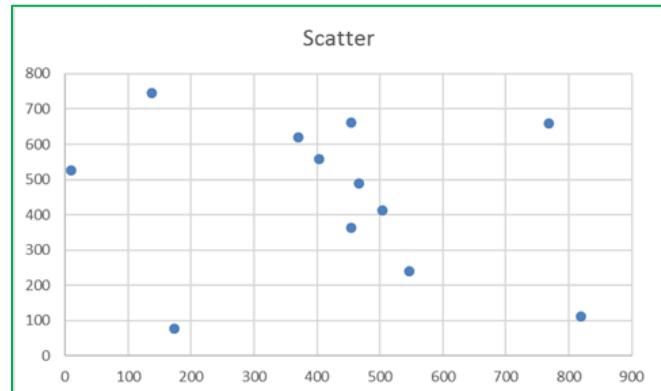
Use this chart type to show statistical analysis of your data.

Click the arrow to see the different types of statistic charts and pause the pointer on the icons to see a preview in your document.

Statistic Charts



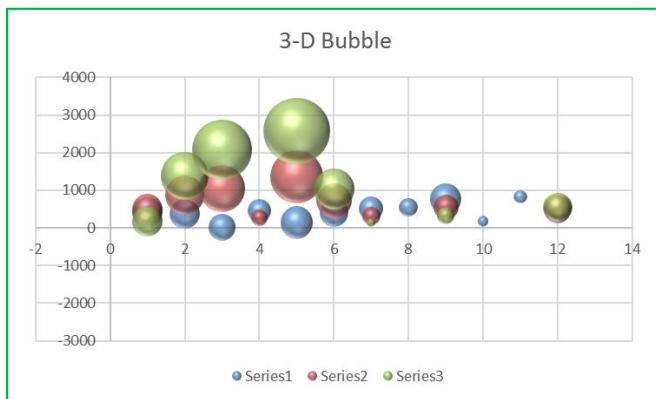
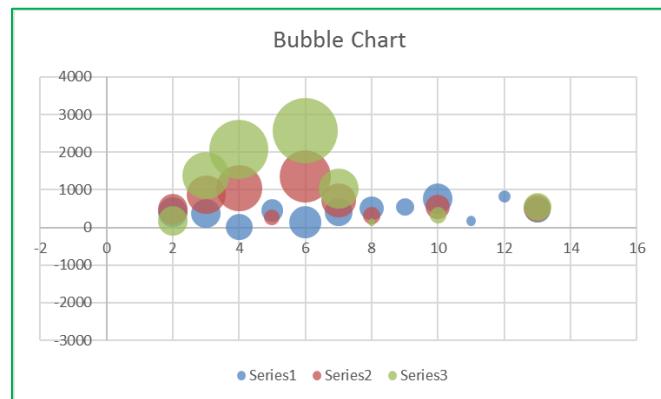
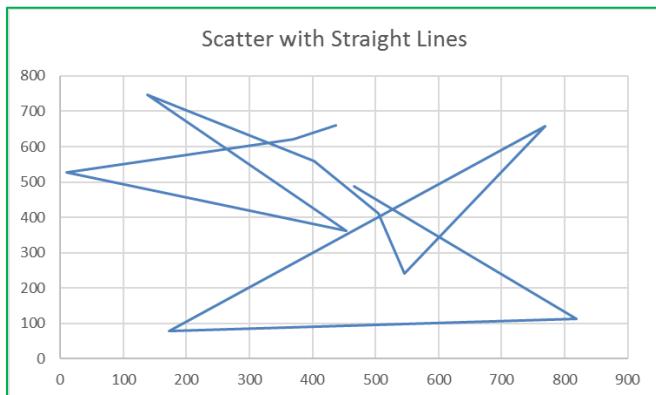
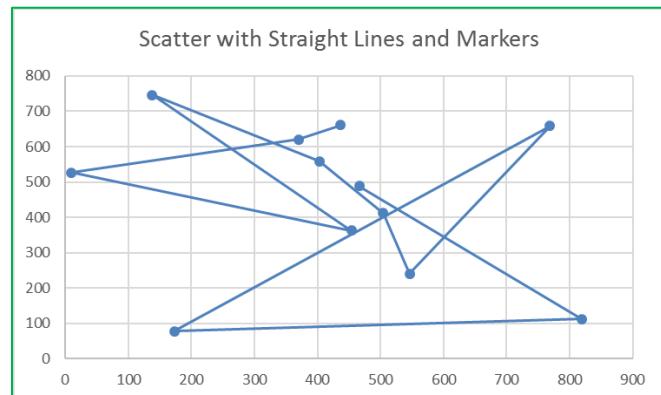
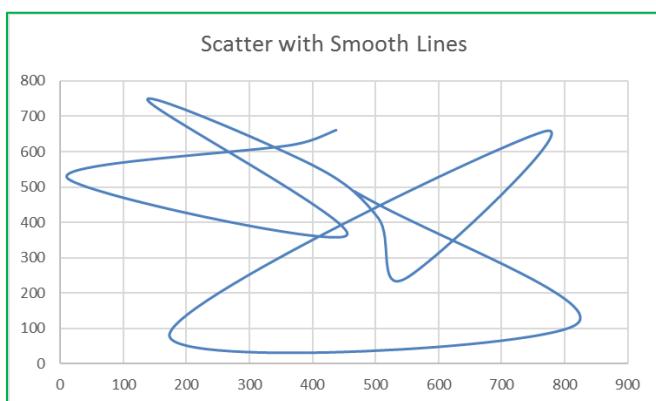
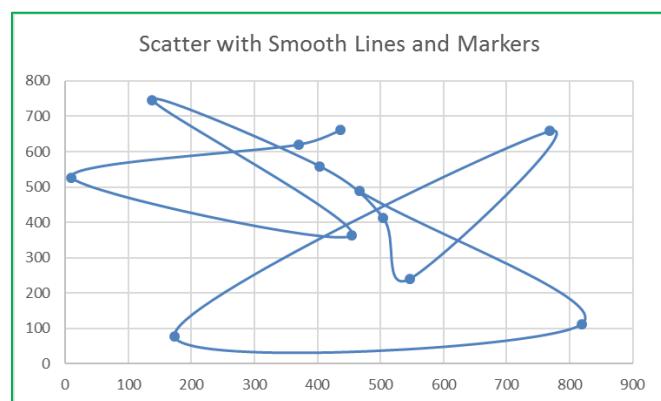
Scatter (X, Y) and Bubble Charts



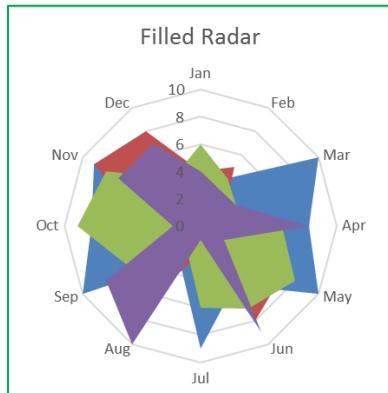
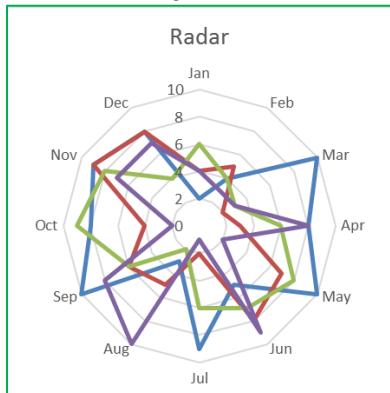
Insert Scatter (X, Y) or Bubble Chart

Use this chart type to show the relationship between sets of values.

Click the arrow to see the different types of scatter and bubble charts available and pause the pointer on the icons to see a preview in your document.

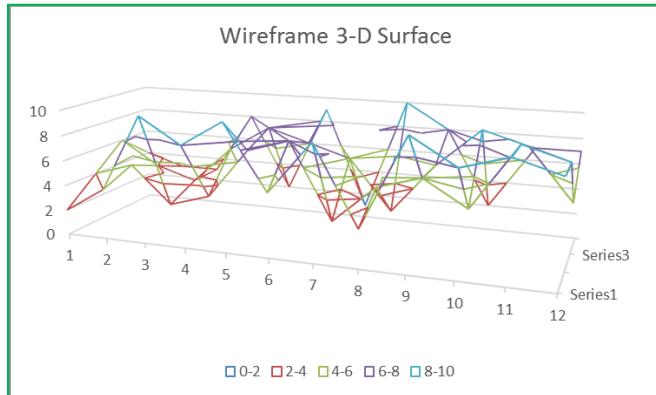
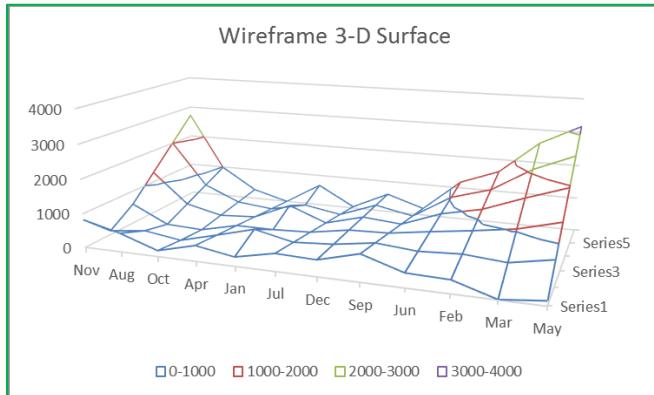
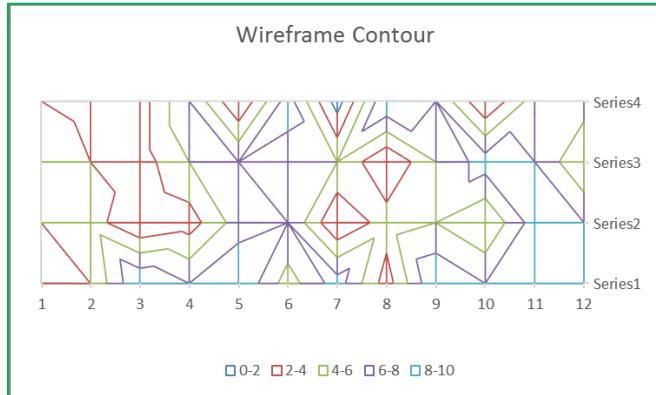
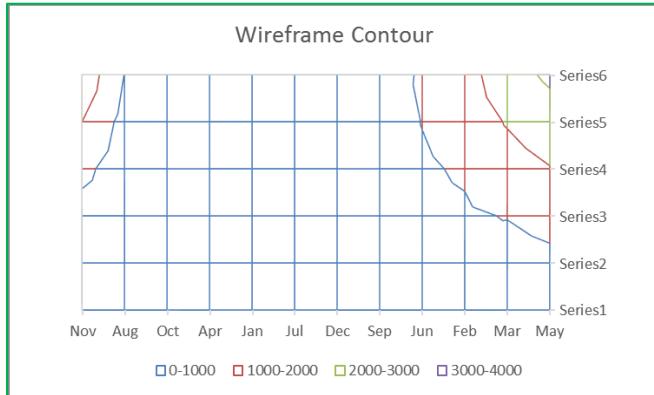
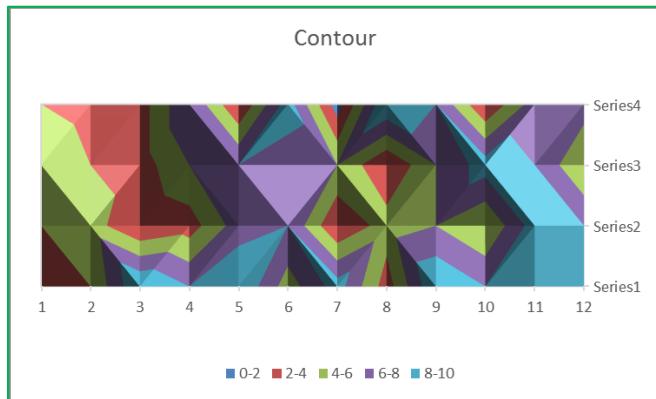
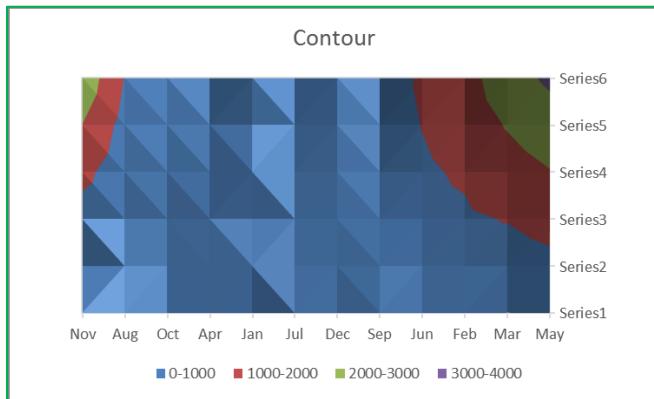


Radar and Surface Charts



Insert Surface or Radar Chart

Click the arrow to see the different types of surface and radar charts available and pause the pointer on the icons to see a preview in your document.



Class Exercise

Explore workbook

- Open ChartData.xlsx
- View each worksheet
- Discuss 'consistent' range of data

| | COLUMN TITLE | COLUMN TITLE |
|-----------|--------------|--------------|
| ROW TITLE | DATA | DATA |
| ROW TITLE | DATA | DATA |

Create Chart

- Turn to Sheet 'Sales by Quarter'
- Turn to the **Insert** Tab
- Click on Recommended Charts
 - o Click on each suggestion to see a preview of our dataset
 - o Click on the ALL CHARTS page at the top of the window and explore the options
 - o Choose first **Column Chart**
- Chart Tool tabs – **Design** and **Format**
- Click outside of chart to deselect
 - o Tabs disappear

Design Tab

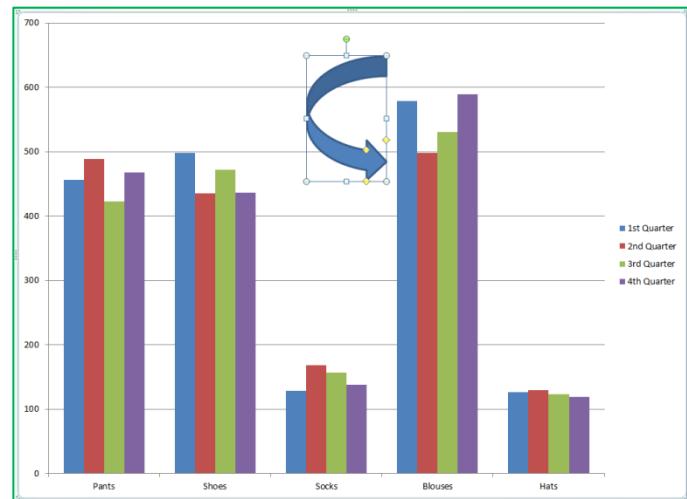
- Add Chart Element
 - o **Add:** Data Labels on the Outside End
 - o **Remove:** Chart Title
 - o **Move:** Legend to the top
- Explore different Quick Layouts
 - o Choose first layout (title above, legend on right)
- Explore different Chart Colors
- Explore different Chart Styles
 - o Notice it changes the Chart Layout
 - o Return to the Quick Layout menu and choose the first one again
- Switch Row/Column
 - o Notice it's switching the legend with the category axis
 - o Leave the chart with quarter in the legend
- Select Data
 - o Rearrange legend 4th Qtr - 1st Qtr
 - o Cancel the window
- Change Chart Type to different options
 - o Reset it back to the original, first column chart
- Move chart to its own sheet

Format Tab – Current Selection

- Select Plot Area from Current Selection dropdown
- Click **Format Selection** button
 - o Fill
 - Solid Fill
 - Gradient Fill
 - Preset Colors
 - Picture or Texture Fill
 - Textures
 - Insert a file
 - o Border
 - Solid line
 - Increase width
 - Gradient
- Select Legend
 - o Legend Options
 - Move legend to different positions
 - Try it with overlapping the chart
 - o Effects
 - Add a Shadow
 - Add a Glow
- In the **Format** tab in the ribbon, click **Reset to Match Style**

Layout Tab – Insert

- Insert Shapes
 - o Insert Block Arrow
 - o Uses yellow diamond to modify arrow
 - o Use green circle to rotate
 - o Delete
- Insert Text Box
 - o Type inside
 - o Move around
 - o Delete



Delete Chart

- Right-click on Chart 1 Sheet name
- Select Delete
- Confirm deletion

Create Chart

- Turn to Sheet 'Sales by Year'
- Insert Tab, Chart Group, Column
 - o Choose first Column Chart
- Move to a new worksheet
- Change Font
 - o Right-click on Category Axis (pants, shoes...)
 - o Choose Font, sent size to 14
 - o Undo
 - o Right-click in Chart Area (blank space)
 - o Choose Font, sent size to 14
- Change Title to read "Yearly Sales"

Format Tab - Styles

- Select Major Gridlines
- Change Shape Styles
 - o Use Preset options
 - o Use Shape Outline
 - o Use Shape Effects
- Select a column
- Change Shape Styles
 - o Use Preset options
 - o Use Shape Fill
 - o Use Shape Outline
 - o Use Shape Effects
- Format
 - o Fill, Outline, and Effects for each column, independently
 - o Fill for Plot Area
 - o Fill for Chart Area
- Format Chart Title
 - o Change font size to 40
 - o See Shape Styles, don't change it
 - o See WordArt Styles
 - Text Fill
 - Text Outline
 - Text Effects

Default Chart

- In Sheet 'Sales by year' Press F11

Manually Changing Data Ranges

- Insert a column chart on Sheet 'Sales by Quarter'
- Notice color Coding around original data
- Use fill handle to change the selection
 - o If the colors go away, click inside the chart again.
 - o Adjust the chart to include only the data

Filter Data

- Insert a column chart
- Use the Filter to remove second and fourth quarter, and remove your shoes
- Use the Filter to add them back in

Remove Data

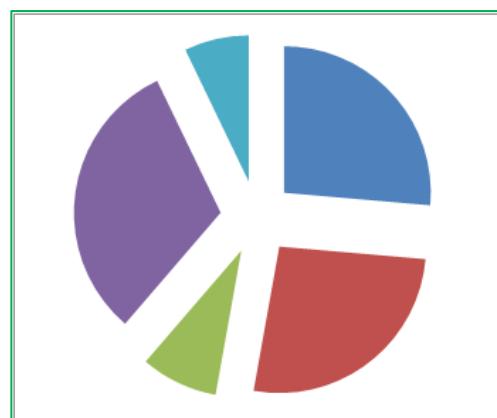
- Click on a column for 4th Quarter
 - o Press Delete on the keyboard
- Click on a column for 2th Quarter
 - o Press Delete on the keyboard
- Notice the color grouping around our dataset is gone
- Switch row/columns to remove shoes
- Switch row/columns back
- Open the filters button. There is only the first and third quarter, and no shoes
- Delete Chart

Chart Specific Data

- Select Items through 3rd Quarter, A1:D6
- Insert a column chart
- Delete 2th Quarter
- Delete Chart
- Select Items through 1st Quarter, A1:B6
- Use **Ctrl** key to select 3rd Quarter, D1:D6
- Insert a Column chart
- Delete Chart

Pie Chart

- Turn to Sheet 'Sales by Year'
- Insert Tab, Chart Group, Pie, First chart
- Remove Title & Legend
- Add labels for %, Delete labels
- Explode Pie
- Rotate Pie (in the options)
- Pull individual pieces
- Delete Chart



3-D Column Chart

- In Sheet 'Sales by Quarter'
- Insert Tab, Chart Group, Column, Last 3-D option
- Delete Legend
- Design tab - Switch Row/Columns
- Design tab – Select Data
 - o Rearrange Legend so smaller values are in the front
- Delete Chart

Line Chart

- In Sheet 'Sales by Quarter'
- Insert Tab, Chart Group, Line, First option
- Design tab - Switch Row/Columns
- Remove Smaller Values
- Move to new sheet
- Format Axis Options
 - o Minimum 400
 - o Maximum 600
 - o Major Unit 25



Layout Tab - Analysis

- Trend Line
- Error Bars
 - o More Error Bar Options
 - o Fixed Value 5
- Delete Chart

Excel 2016

Printing and Setup



Microsoft Excel 2016: Printing and Setup

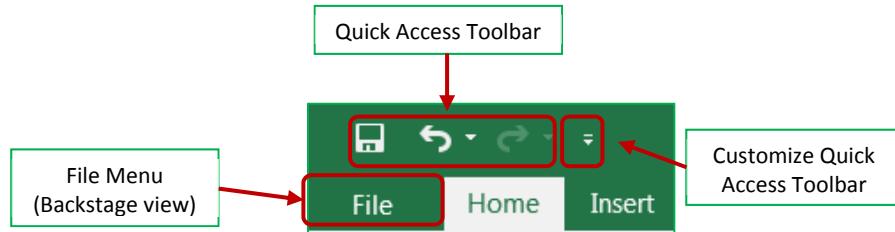
1.5 hour

Printing sounds like a simple concept, until that Excel data set just will NOT fit on that printed page! In this workshop, we will work with the print preview; set paper size, page orientation, margins, headers and footers; learn how to print titles, gridlines, and column headings; work with the views Page Layout and Page Break Preview; change the document scaling to force the printout into a certain number of pages; and use print areas and page breaks to adjust what goes on each page. This basic workshop assumes some experience with Microsoft Excel.

| | |
|---|---|
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| Page Setup | 1 |
| Page Tab..... | 2 |
| Orientation..... | 2 |
| Scaling | 2 |
| Paper size | 3 |
| Print quality..... | 3 |
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| Margins Tab | 3 |
| Center on page..... | 3 |
| Header/Footer Tab..... | 4 |
| Custom Header/Footer | 4 |
| Header/Footer Elements (Custom Toolbar) | 5 |
| Sheet Tab | 6 |
| Print area | 6 |
| Print Titles..... | 6 |
| Gridlines | 7 |
| Black and white..... | 7 |
| Draft quality..... | 7 |
| Row and column headings..... | 7 |
| Comments..... | 7 |
| Cell errors as | 7 |
| Page Order | 7 |
| Page Breaks | 8 |
| Page Break Preview | 8 |
| Class Exercise..... | 9 |



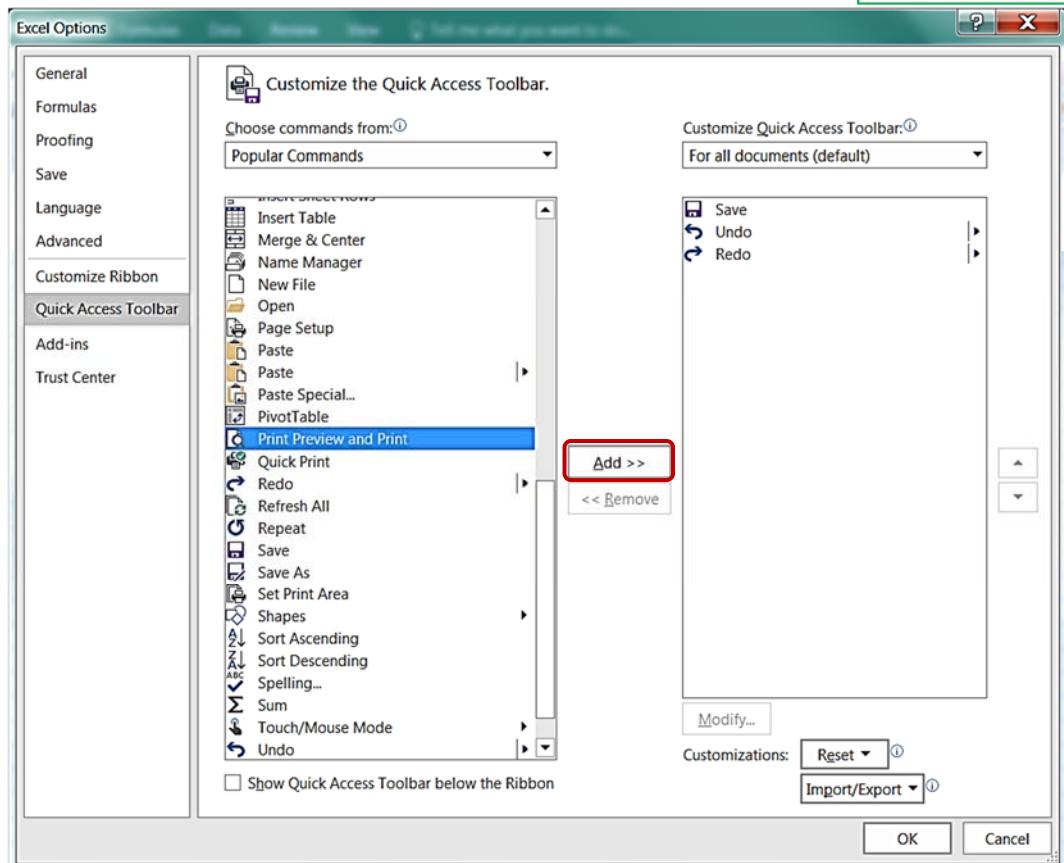
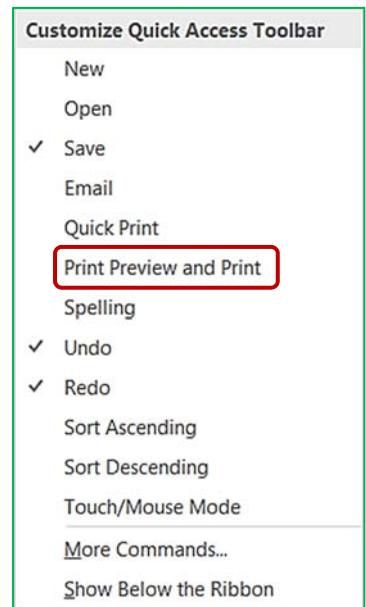
Customizing the Quick Access Toolbar



The upper left hand corner of the Excel Window has a **Quick Access Toolbar**. This is a very convenient location to place commonly used buttons. By default, this toolbar has **Save**, **Undo**, and **Redo**. For this *Printing and Setup* workshop we would like to add the **Print Preview** button to the toolbar.

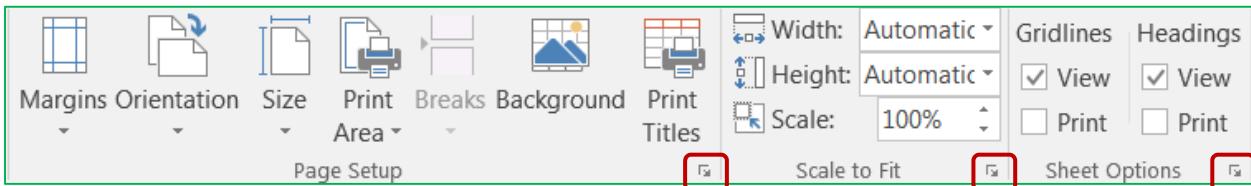
There is a drop down button (⊖) at the end of the Quick Access Toolbar that will help you decide which buttons to display. This drop down list displays several common choices, including our **Print Preview and Print**. When you choose a list item, Excel will place the button on the toolbar.

If you don't see the option you would like, you can choose **More Commands**. This will open the Excel Options window. From the Customize Section, choose the command you would like to see and choose the **Add >>** button.



Page Setup

There are several of ways to customize your printouts in Microsoft Excel. Many of these options can be found on the **Page Layout** tab in the ribbon.



All of the page setup options can be found through the **Page Setup** window. You can view this window by clicking any of the launch dialog box ("More") buttons in the bottom right of any of the sections shown here. You can also open the window by clicking on the **Page Setup** button in the Print Preview.

Page Tab

The first tab in the Page Setup window allows you to change some general page options.

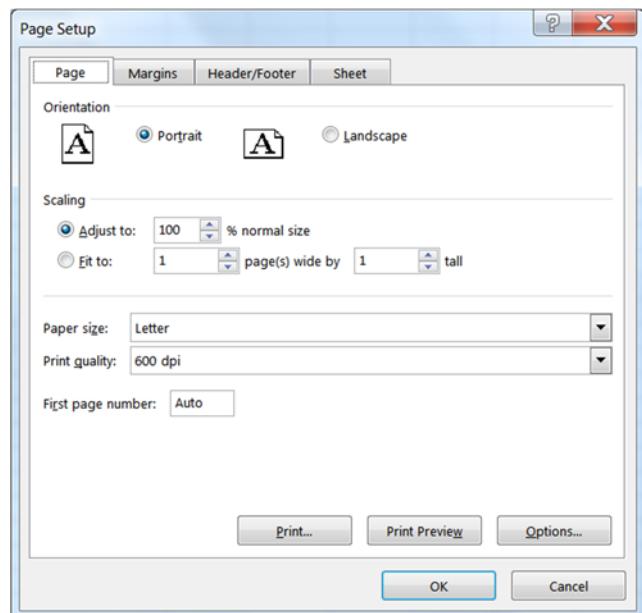


Orientation

This option lets you set your print out to Portrait or Landscape. The image portrays the actual direction of the paper.



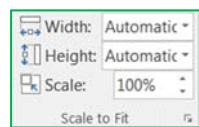
This is also a button on the **Page Layout Tab** and in the **Print Settings** in the print preview.



Scaling

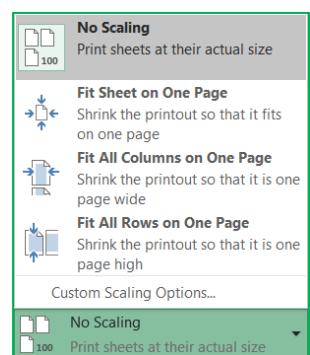
This option can be used to change the "zoom" of the printout with the **Adjust to:** option or force the number of pages the printout must fit within using the **Fit to:** option. Like the zoom in the worksheet, you can adjust this option from 10% to 400%.

Scaling is also available on the **Page Layout** tab in the **Scale to Fit** section. The **Width** and **Height** options are the same as the **Fit to:** option allows you to specify how many pages wide or tall you want your printout to be. The **Scale** option is the same as to the **Adjust to:** option, it allows you to change the zoom percentage of the printout.



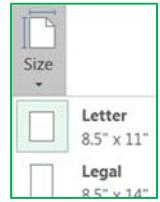
The **Scaling** option in the print preview offers four options.

- No Scaling – Scale to 100%
- Fit Sheet on One Page – Scale Width of only One Page
- Fit All Columns on One Page – Scale Height of only One Page
- Fit all rows on One Page – Scale whole printout to fit everything on one page.



Paper size

This option allows you to choose paper sizes such as Letter, and Legal. This option can also be changed by using the **Size** button on the **Page Setup** section of the **Print Layout** tab, and in the **Print Settings** in the print preview.



Print quality

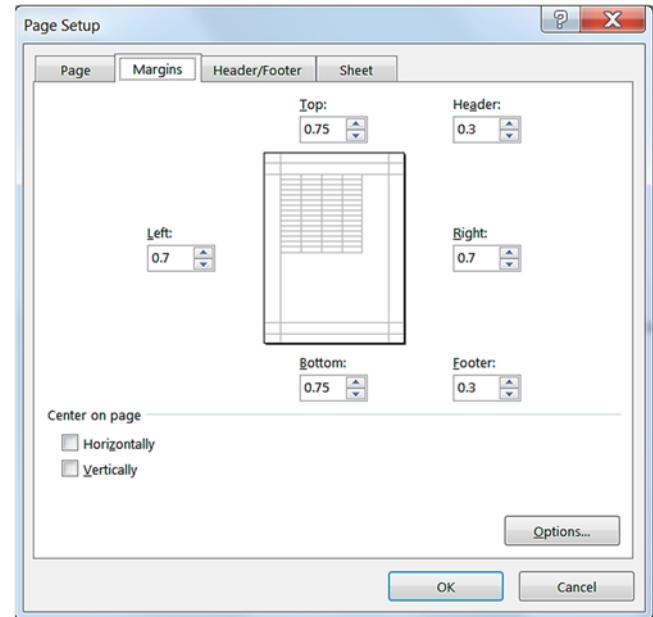
This option allows you to specify the print quality of your worksheet. The higher the resolution (dots per inch – dpi), the better the quality of your printout. This option can only be changed in the **Page Setup** window.

First page number

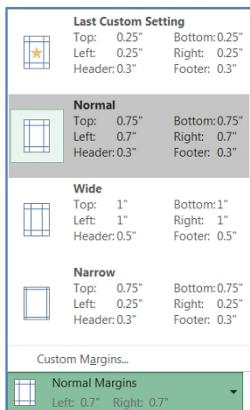
By default, a printout starts on page one, but this option allows you to start on a different number. You might do this if you have a cover page, or if you're adding it to another report. This option can only be changed in the **Page Setup** window.

Margins Tab

Margins are the distance between your data and the edge of the page. Here on the second tab of the **Page Setup** window you can adjust the **Top**, **Bottom**, **Left**, and **Right** margins to an accuracy of a hundredth of an inch.



A preset list of **Margins** can also be found on the **Page Setup** section of the **Page Layout** tab and in the print preview menu. If you choose *Custom Margins...*, Excel will open the **Margins** page of the **Page Setup** window.



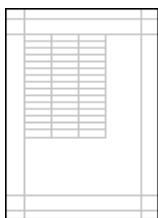
Header is the text that appears at the top of each printed page, and **Footer** is the text that appears at the bottom of every page. These do not show in the Normal view of the worksheet, but can be seen in the Print Preview and the Page Layout View.

Keep the distance of the **Header:** and **Footer:** margins smaller than the **Top:** and **Bottom:** margins to prevent overlapping the data.

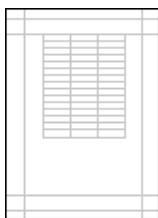
Center on page

This option allows you to adjust how the data will be placed within the set margins.

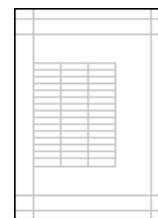
No Centering



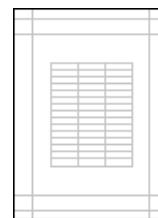
Centered Horizontally



Centered Vertically



Horizontally & Vertically

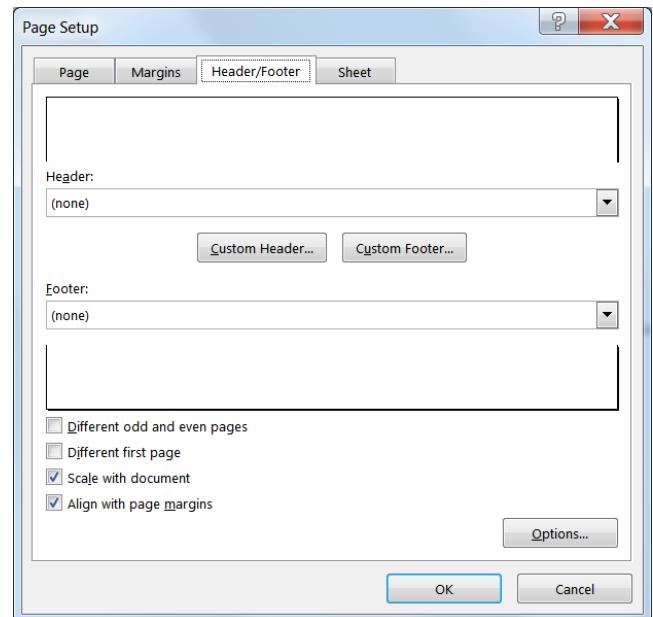


Header/Footer Tab

The third tab of the **Page Setup** window is **Header/Footer**. Remember, **Headers** appear at the top, and **Footers** appear at the bottom of every page.

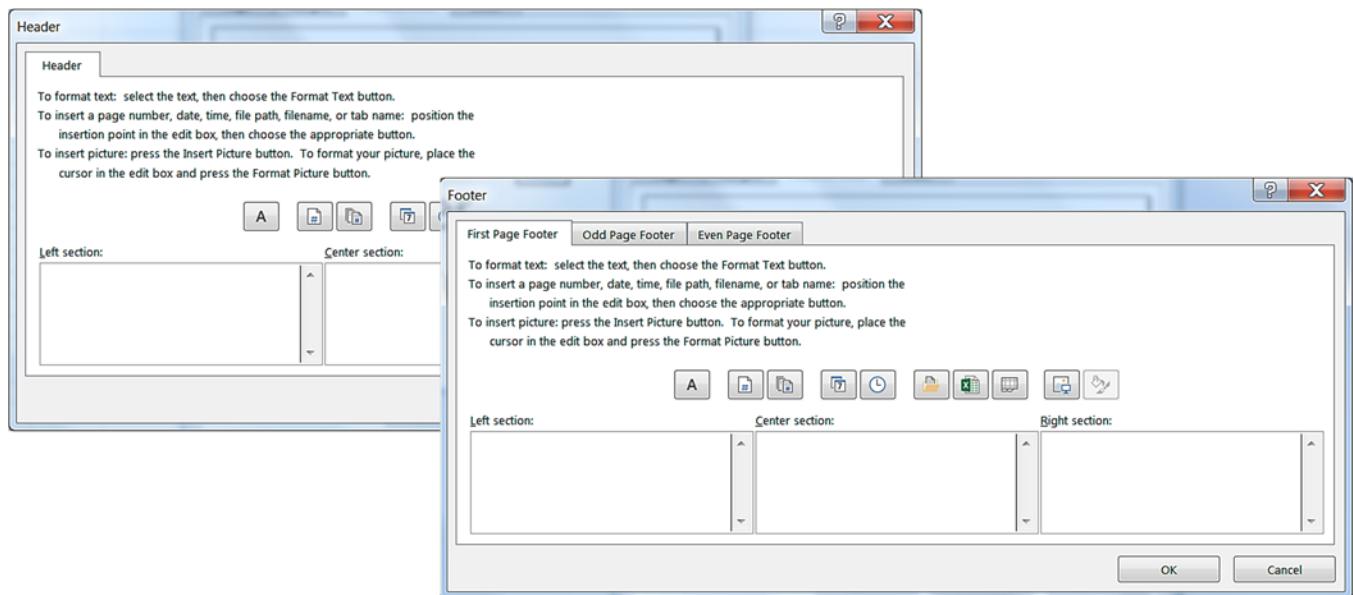
The **Header** and **Footer** drop down lists offer predefined options. The items listed pull the information such as Author from the **Document Properties**. These can be modified through the **File** tab, *Info, Properties*. Other information is derived from the **Worksheet** names, **Workbook** names, computer date and time settings, and calculated page numbers. Remember you can set the beginning page number on the **Page** tab.

There are several Header and Footer options at the bottom of the window.



- **Different Odd and Even Pages** – Custom Headers and Footers can be created for odd vs. even pages.
- **Different First Page** – Custom Headers and Footers can be created for the first page to be different from the rest of the pages.
- **Scale with Document** – Keeps the same *scaling* as the worksheet. If we set the scale on the Page tab to print at 200%, this check box will ensure the header and footer also scale to 200%.
- **Align with Page Margins** – Aligns the Header and Footer with the left and right margins of the worksheet instead of the page itself.

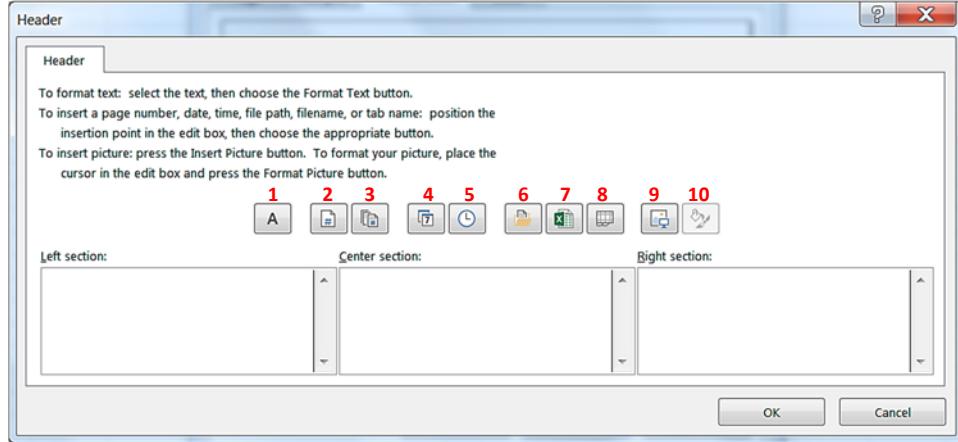
Custom Header/Footer



If you choose the options for *Odd, Even* and *First Page*, Excel will show new tabs here so you can set each section to have its own custom header and footer.

Header/Footer Elements (Custom Toolbar)

There are three sections you can enter text. The **Left Section** aligns its contents on the left side of the margin, the **Center Section** aligns its contents in the middle of the margin, and the **Right Section** aligns its contents to the right side of the margin. If you would like the Header/ Footer to align with the page instead of the margin, turn off the **Align with Page Margins** option on the **Page Setup**.

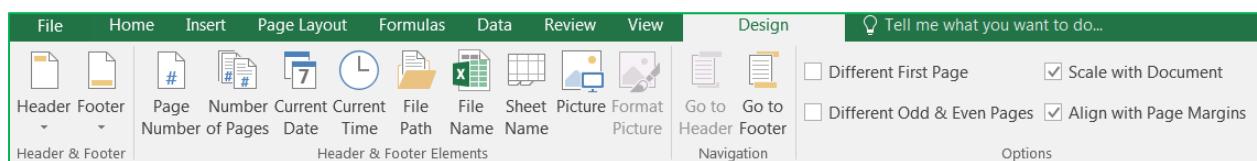
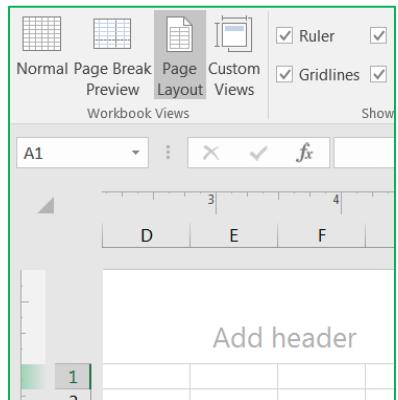


1. **Font** – You can have several different fonts in the same section. You can set the format before or after you type your text. If you format after, you will need to select the text before you go into the Font window.
2. **Page number** – Inserts the text "&[Page]" which represents the current page number.
3. **Total number of pages** – Inserts the text "&[Pages]" which represents the total number of printed pages. If we wanted to see the phrase Page 1 of 6, we would need to type in the "Page" and " of " (don't forget the spaces!) So our code would look like - **Page &[Page] of &[Pages]**
4. **Current date** – Inserts the text "&[Date]". This is the code to display the day the worksheet is printed. This button is automatically updated. If you want it to display the day the worksheet was created, you will need to type the actual date.
5. **Current time** – Inserts the text "&[Time]". Like the Date button, this will automatically update each time the file is printed.
6. **File path** – Inserts the text "&[Path]&[File]". This is the code to show the full file path. Like the Date and Time buttons, this will automatically update. If you move the file, or Save As into another location or with another name, this option will automatically change.
7. **Filename** – Inserts the text "&[File]". This is the code to display the current name of the file.
8. **Worksheet name** – Inserts the text "&[Tab]". This is the code to display the printed worksheet name.
9. **Insert Picture** – Inserts a graphic in the header/footer. This is most often used for logos and watermarks. The image will show in actual size behind the data. Very light images, such as a large graphic of the word DRAFT or CONFIDENTIAL can be inserted into a header and will appear on every page in the printout.
10. **Format Picture** – This button allows you to format the picture you have inserted. If there is no picture, this button will be disabled (grayed out).

The **Page Layout View** (found on the **View** tab), allows you to view and edit your Header/Footer and still see the data in your worksheet. From this view you will see the edges of the page and the page numbers in the status bar.

When you click in the Header/Footer area you will get a **Header & Footer Tools – Design** tab. From here you will see many of the options we have available when setting up our Header/Footer in the Page Setup window.

You may find it useful to create or edit your Header/Footer in this view, where you can see the changes as you make them. To switch views or work within the sheet, double-click back in the cells to leave the Header/Footer design tab.



Sheet Tab

The final tab in the Page Setup window allows us to take things from the worksheet to add to our printout.

Print area

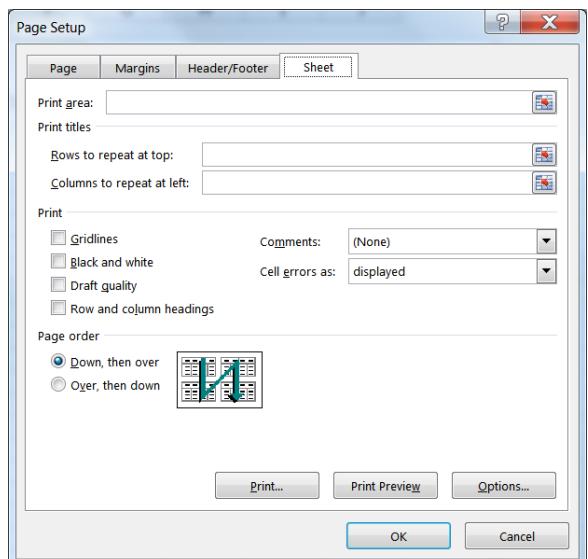
This option allows you to choose the range of cells to print.

This option is not available if you enter **Page Setup** from the print preview, because you cannot "choose" cells.



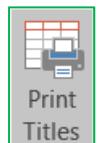
The **Print area** can also be set from the **Page Setup** group of the **Page Layout** tab. Select the desired range of cells and choose, **Set Print Area**.

To set the print area from the **Page Setup** window, click inside **Print area** box and use the mouse to point to the cells you want. You can move the dialog box by clicking and dragging the blue title bar.



Print Titles

This option allows you to set which **Rows to repeat at the top** of each page, and which **Columns to repeat on the left** of each page. These do not have to be the first row or column; any column can be chosen as your titles and will be repeated on each page of the printout. If you click on this button in the Page Layout tab, it will open the in the **Page Setup** window to the **Sheet** page.



As with the **Print Area**, to set the rows and columns to repeat, click inside the blank in the **Page Setup** window and use your mouse to select the rows/columns you would like repeated on every page.

Gridlines

This option will print the gridlines around all the cells within the print area. The alternative is to place "border" around your cells. Gridlines can be turned on and off from the Page Layout tab, in the Sheet options section.

| | |
|--|--|
| Gridlines | Headings |
| <input checked="" type="checkbox"/> View | <input checked="" type="checkbox"/> View |
| <input type="checkbox"/> Print | <input type="checkbox"/> Print |
| Sheet Options | |

| No Options Set | | Gridlines | |
|----------------|-----|-----------|-----|
| Jack | 123 | Jack | 123 |
| Jill | 456 | Jill | 456 |
| John | 789 | John | 789 |

Black and white

This option will print your data in simple black and white. This does not include shades of gray. Excel will remove all color formatting from the printout.

| No Options Set | | Black and white | |
|----------------|-----|-----------------|-----|
| Jack | 123 | Jack | 123 |
| Jill | 456 | Jill | 456 |
| John | 789 | John | 789 |

Draft quality

This option is the ideal quick printout. Depending on your printer it may reduce printing time. This option will not print gridlines or graphics.

Row and column headings

This option will print out the row headings (the row numbers) and the column headings (the column letters). Row and Column Headings can also be turned on and off from the Page Layout tab, in the Sheet options section.

| No Options Set | | Row and column headings | |
|----------------|-----|-------------------------|-----|
| Jack | 123 | A | B |
| Jill | 456 | 1 Jack | 123 |
| John | 789 | 2 Jill | 456 |

Comments

These can be inserted through the **Review** tab in the **Comments** section. By default, comments are not printed, but here on the **Sheet** tab of the **Page Setup** window we have three options that will print the comments: *At end of sheet*, *As displayed on sheet*, and the default - *(none)*.

Cell errors as

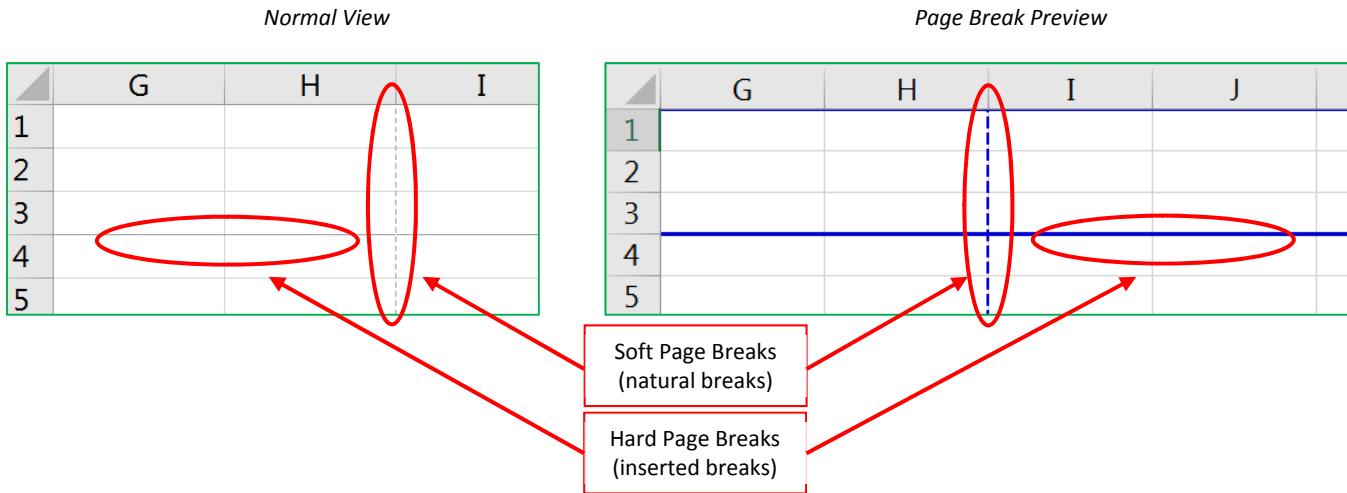
This option allows you to choose how you want the errors to print. The default is to print the errors as you see them on the screen. But you can change this option to leave those cells blank or fill them all in with N/A or dashes (---).

Page Order

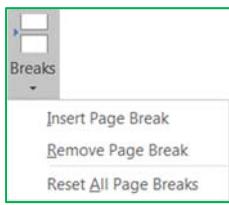
This option allows you to decide how multiple pages will print out. By default, Excel will print data from the upper left corner straight down to the end, and then over to the next page full of data and down. If you want to change the print order, such that Excel reads across and then down, change this option.

Page Breaks

You can tell Excel where to start a new page by choosing **Insert Page Break** from the Page Setup section of the **Print Layout** tab. The page break will be set above and to the left of the selected cell. In **Normal view** the page break will appear slightly thicker gridline. In **Page Break Preview** the page break will appear as a solid blue line.



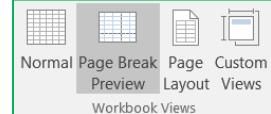
You can remove page breaks that have been inserted. Put yourself in the first cell of that page (below and to the right of the break) and choose **Remove Page Break** from the Page Setup section of the Print Layout tab.



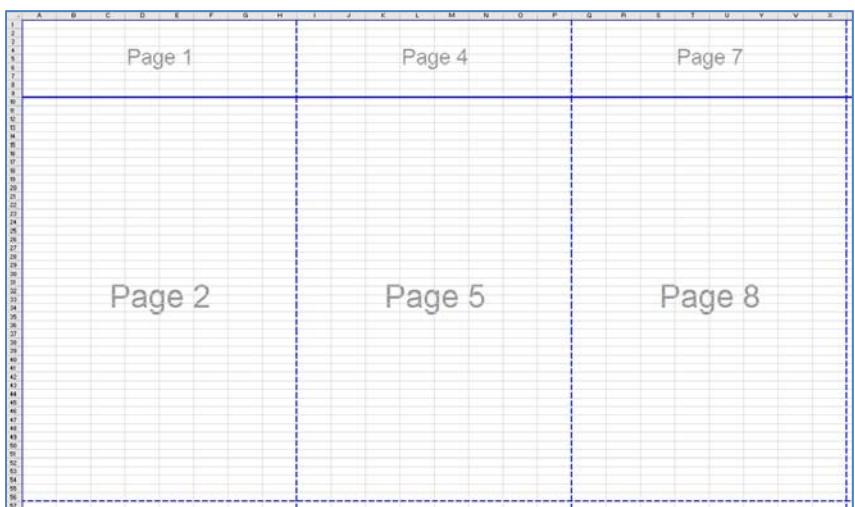
The **Reset All Page Breaks** option will remove all of the inserted page breaks and return the worksheet to the default soft page breaks (natural breaks).

Page Break Preview

The **Page Break Preview** can be accessed through the View tab, in the Workbook Views group. As with the normal view, you cannot see the headers and footers.

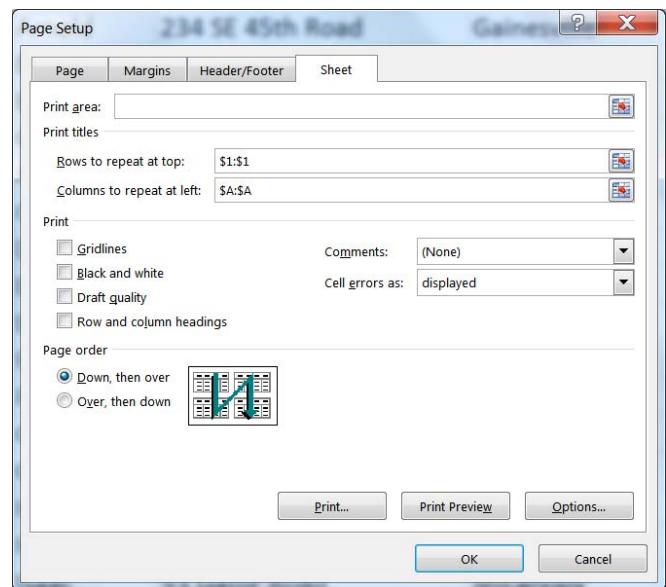
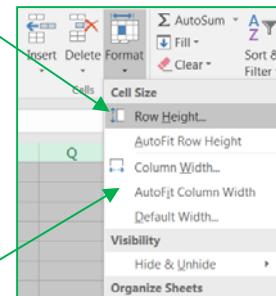


The **Page Break Preview** shows the order of the pages and allows you to manually move the page breaks. The dashed lines are soft (natural) page breaks. As you change the margins, scale, and orientation of the page, these page lines will automatically update. In this view only, you can drag a page break (a blue line) to another location. When you change where a page break is located, it changes for the entire worksheet. For the whole row and the whole column.

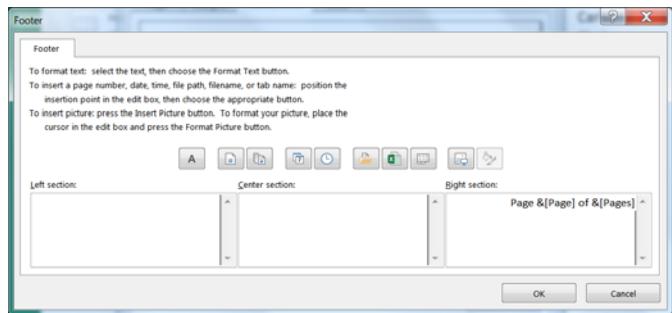


Class Exercise

- Open PrintSetup.xlsx
- Customize Quick Access Toolbar (*see page 1*)
 - Click on drop down arrow at the end of the toolbar
 - Choose **Print Preview and Print**
- View Print Preview (2 pages)
 - Use the new button, or press Ctrl-P, or choose Print from the File menu
 - Close Print Preview
- Double space
 - Select entire spreadsheet
 - Click and hold the mouse between two row numbers
 - Current row height is 14.4
 - Drag until you reach close to 28.8
 - choose Home->Cells->Format->Row Height set to 28.8
- Vertical Align the cells from Bottom to Middle
- Print Preview (4 pages)
 - Close Print Preview
- Increase font size
 - Select all (if needed)
 - Change Font Size to 22 pt
 - Double click between headings to AutoFit Columns
 - *or* format Autofit Column Width
- Print Preview (12 Pages)
 - Close Print Preview
- Repeat header Row & Column
 - Click on any cell to drop the selection
 - Page Layout Tab
 - Print Titles (*see page 6*)
 - Rows to repeat at top: Titles (1:1)
 - Click inside the box, and then click in Row 1
 - Columns to repeat at left: Last (A:A)
 - Click inside the box and then click in Column A

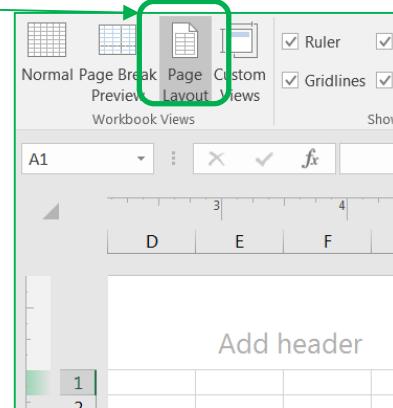


- Add Footer through Page Setup Window (*see page 5*)
 - Click on the Page Setup Button in Print Preview
 - Click on Header/Footer tab
 - Set a custom Footer
 - Click OK, and OK
 - Close Print Preview
 - You cannot see the footer here



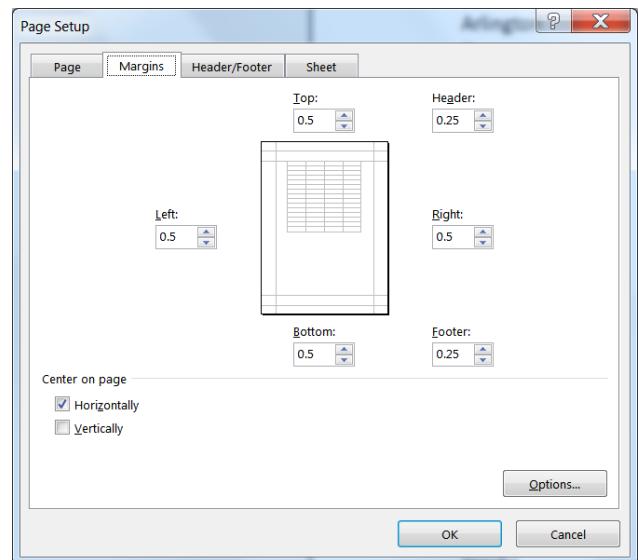
- Add a Header in the Page Layout view

- Go to the View tab (*see page 6*)
- Choose the **Page Layout** view
- Click inside the **Add header** at the top of the page
- Click the option **Sheet Name** on the Design tab
- Click in the data on the worksheet to leave the header
- Double-click on the worksheet name, **Sheet1**
 - type in **Customers**
 - Press Enter to accept
- Notice the header on the page changes
- Return to the Normal view



- Change the Margins (*see page 6*)

- Open Print Preview (12 pages)
- Click on the **Page Setup** button in Print Preview
- Click on the **Margins Tab**
- Set margins to 0.5 all around
 - top, bottom, right, left, header, footer
- Click OK
- Open the margins window again
- Set Header and Footer margins to .25
- Center on Page Horizontally & Vertically
- View All Pages, some pages are weird (pg 4, 8, 12)
- Page Setup -> Turn off Vertical Alignment



- Turn on Gridlines (*see page 6*)
 - In Print Preview, click Page Setup Button
 - On the Sheet tab, click Gridlines
 - Click OK

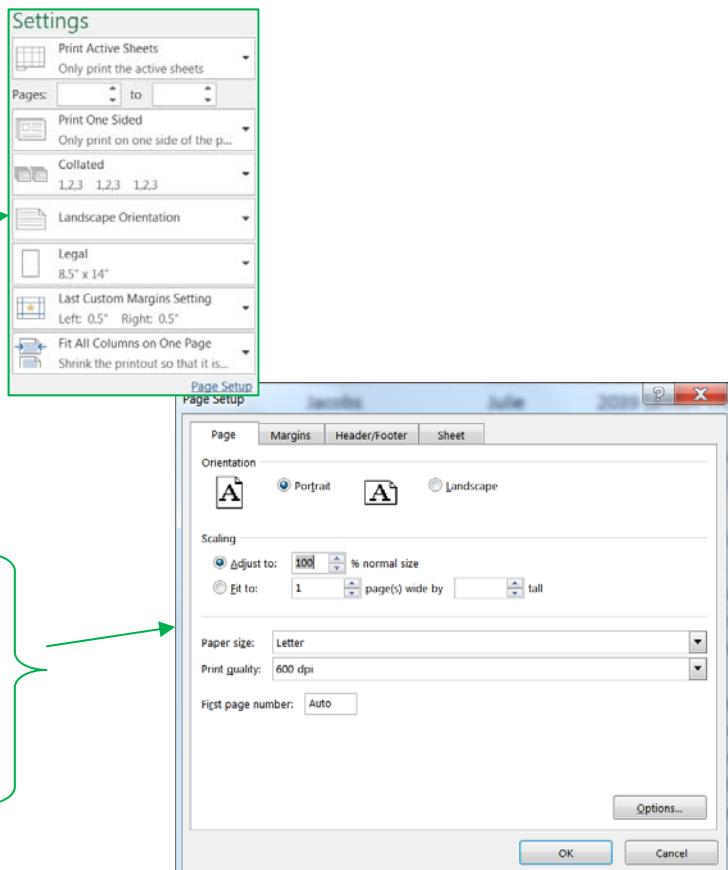
- Row Headings (*see page 6*)
 - In Print Preview, click Page Setup Button
 - On the Sheet tab, click Row Headings
 - Click OK

- Page - fit to 1x1 page (*see page 2*)
 - In Print Preview, click Page Setup Button
 - On the Page tab, click **Fit To: 1 by 1**
 - Click OK

- Landscape Page
- Paper size – Legal
- Instead of Fit sheet to one page, use Fit All Columns on one page (2 pages)

- Adjust to: 100%
 - In Print Preview, click Page Setup Button
 - On the Page tab, Click Portrait
 - Change Adjust to: 100
 - Paper Size: Letter
 - Click OK (should be 12 pages)

- Close Print Preview



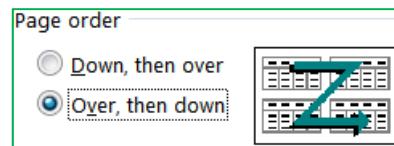
- In the Ribbon, on the Page Layout Tab

| Margins, Orientation, Size | Width, Height, Scale | Gridlines, Headings |
|--|---|---|
| Margins Orientation Size Print Area Breaks Background Print Titles | Width: Automatic Height: Automatic Scale: 100% Width Height Scale Scale to Fit | <input checked="" type="checkbox"/> Gridlines <input checked="" type="checkbox"/> Headings <input checked="" type="checkbox"/> View <input checked="" type="checkbox"/> View <input type="checkbox"/> Print <input type="checkbox"/> Print Sheet Options |

- Page Break Preview (*see page 8*)
 - On the View Tab
 - click Page Break Preview button
 - Notice the small page numbers in the background

- Change Page Order (*see page 6-7*)
 - Open the Page Setup by clicking on a "more" button
 - if needed go to the **Sheet** Tab
 - Choose Over Then Down (bottom of the window)
 - Click OK

- Notice new page numbering



- Insert Page Break (*see page 8*)
 - Click on cell A10 (Dawson)
 - Page Layout Tab
 - Breaks -> Insert Page Break

- Insert more page breaks

- Click on cell B15 (Gary)
 - Insert Page Break
 - Remove Page Break
- Click on cell A15 (Gentle)
 - Insert Page Break
- Click on Cell A20 (Jackman)
 - Insert Page Break
- Scroll down to the natural (dashed) page break in the K's
- Look at the current scale in the Page Layout tab
 - Should be 100%
- Place mouse over the blue line and drag down so the page will break between Livingston and Mack
- Look at the current scale in the Page Layout tab
 - Should be around 85%

- Insert Page Breaks
 - Cell A56 (Paulson), Cell A62 (Saunders), Cell A70 (Van Gogh), A76 Zimmerman

| 42 | Knight | Katrina | 9204 Avocado Ave | Gainesville | FL | 32687 | | | |
|----|-------------------|-------------|--------------------------|------------------|----|-------|--|--|--|
| 43 | Kreck | Kasper | PO Box 3672 | Gainesville | FL | 32689 | | | |
| 44 | Lamas | Larry | 9405 Date Terrace | Gainesville | FL | 32684 | | | |
| 45 | Lee | Leslie | 2930 Apricot Street | Micanopy | FL | 32608 | | | |
| 46 | Li | Lana | 23 Iceberg Drive | Gainesville | FL | 32597 | | | |
| 47 | Livingston | Lenord | 789 North University Ave | Waldo | FL | 32658 | | | |
| 48 | Mack | Mervin | 2934 Turnip Place | Newberry | FL | 32608 | | | |
| 49 | Martin | Mary | 230 Jalapeno Junction | Micanopy | FL | 32597 | | | |
| 50 | Mellott | Marge | 239 Hercules Road | Gainesville | FL | 32597 | | | |
| 51 | Miles | Mark | 645 NE 5th Street | Gainesville | FL | 32655 | | | |
| 52 | Newsome | Nellie | 239 Brynus Drive | Micanopy | FL | 32597 | | | |
| 53 | Norris | Ned | 4324 SW 3rd Lane | Gainesville | FL | 32608 | | | |
| 54 | O'Connell | Oscar | 239 Marigold Street | Gainesville | FL | 32597 | | | |
| 55 | Oglethorpe | Olivia | 9042 Lima Bean Street | Waldo | FL | 32658 | | | |
| 56 | Paulson | Paul | 726 South 45 Blvd | Gainesville | FL | 32655 | | | |
| 57 | Perez | Penelope | 2034 Banana Drive | Gainesville | FL | 32567 | | | |
| 58 | Quinn | Quentin | 9084 Beet Street | Gainesville | FL | 32658 | | | |
| 59 | Roberts | Roger | 123 West Main Street | Gainesville | FL | 32156 | | | |
| 60 | Rogers | Robert | 534 Lovers Lane | Gainesville | FL | 32653 | | | |
| 61 | Rumley-Richardson | Robin | 987 Tinkerbell Drive | Gainesville | FL | 32684 | | | |
| 62 | Saunders | Samuel | 9303 Neverland Way | Micanopy | FL | 32668 | | | |
| 63 | Sells | Stanley | 246 Little Rock Lane | Gainesville | FL | 32597 | | | |
| 64 | Smith | Sarah | 456 East Main Street | Gainesville | FL | 32608 | | | |
| 65 | Thomas | Tom | RR 5 Box 534 | Waldo | FL | 34567 | | | |
| 66 | Tinnez | Tim | 2707 Williston Road | Gainesville | FL | 32597 | | | |
| 67 | Traver | Tina Teresa | 456 NW 5th Place | Micanopy | FL | 32608 | | | |
| 68 | Tubero | Terry | PO Box 1238 | Gainesville | FL | 32684 | | | |
| 69 | Tweed | Thomas | PO Box 5678 | Gainesville | FL | 32689 | | | |
| 70 | Van Gogh | Vincent | PO Box 230 | Gainesville | FL | 32684 | | | |
| 71 | Vann | Vera | 9130 Watercress Road | Waldo | FL | 32658 | | | |
| 72 | Watson | Wally | 4863 NW 43rd Blvd | Archer | FL | 32608 | | | |
| 73 | West | Wilma | 9203 Sweet Potatoes Ave | Waldo | FL | 32658 | | | |
| 74 | Williamson | William | 28000 SW 583rd Avenue | Micanopy | FL | 32597 | | | |
| 75 | Xue | Xena | 2890 Poseidon Place | Gainesville | FL | 32597 | | | |
| 76 | Zimmerman | Zach | PO Box 6857 | Keystone Heights | FL | 32732 | | | |
| 77 | Zinn | Zelda | 745 Nectarine Ave | Gainesville | FL | 32655 | | | |

-
- Remove all page breaks
 - Choose Breaks -> Reset all page breaks
 - Ctrl-Home to return to the top of the worksheet

- Return to Normal View

- Insert Page Breaks in Normal View
 - Click on cell A10 (Dawson)
 - Page Layout Tab
 - Breaks -> Insert Page Break

- Close and DO NOT SAVE
-

- Open PrintSetup.xlsx

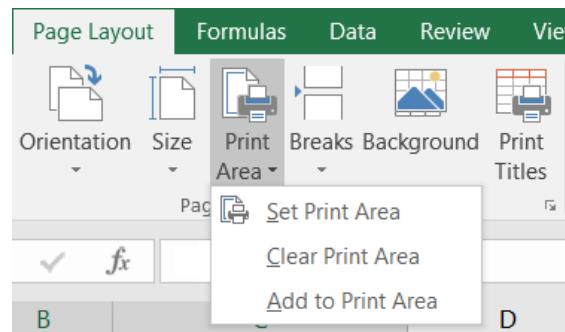
- Set A-people as print area (*see page 6*)
 - Select A1:F4
 - Page Layout Tab -> Print Area -> Set Print Area
 - Print Preview

- Clear Print Area
 - Page Layout Tab -> Print Area -> Clear Print Area

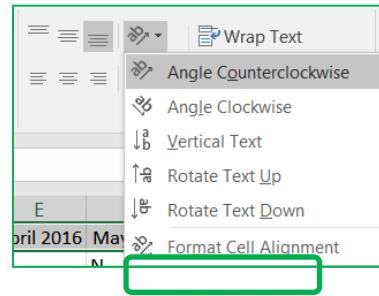
- Set C-people as Print Area
 - Select A7:F9
 - Page Layout Tab -> Print Area -> Set Print Area
 - Print Preview-no titles

- Set Titles to repeat at top
 - Page Layout Tab -> Print Titles
 - Rows to repeat at top: Titles (1:1)
 - Print Preview

- Add A-people to print area
 - Select A2:F4
 - Page Layout Tab -> Print Area -> Add to Print Area
 - Print Preview (2 Pages!)



- Turn to worksheet **Sheet2**
 - Open Print Preview (4 pages)
 - Close Print Preview
 - Select Row 1
 - From the Home tab, change the orientation to **Rotate Text Up**
 - Select All
 - Center align, AutoFit column width



- Page Setup Options
 - Landscape, Narrow Margins, Gridlines, Horizontally Centered
 - Print Preview (1 Page)

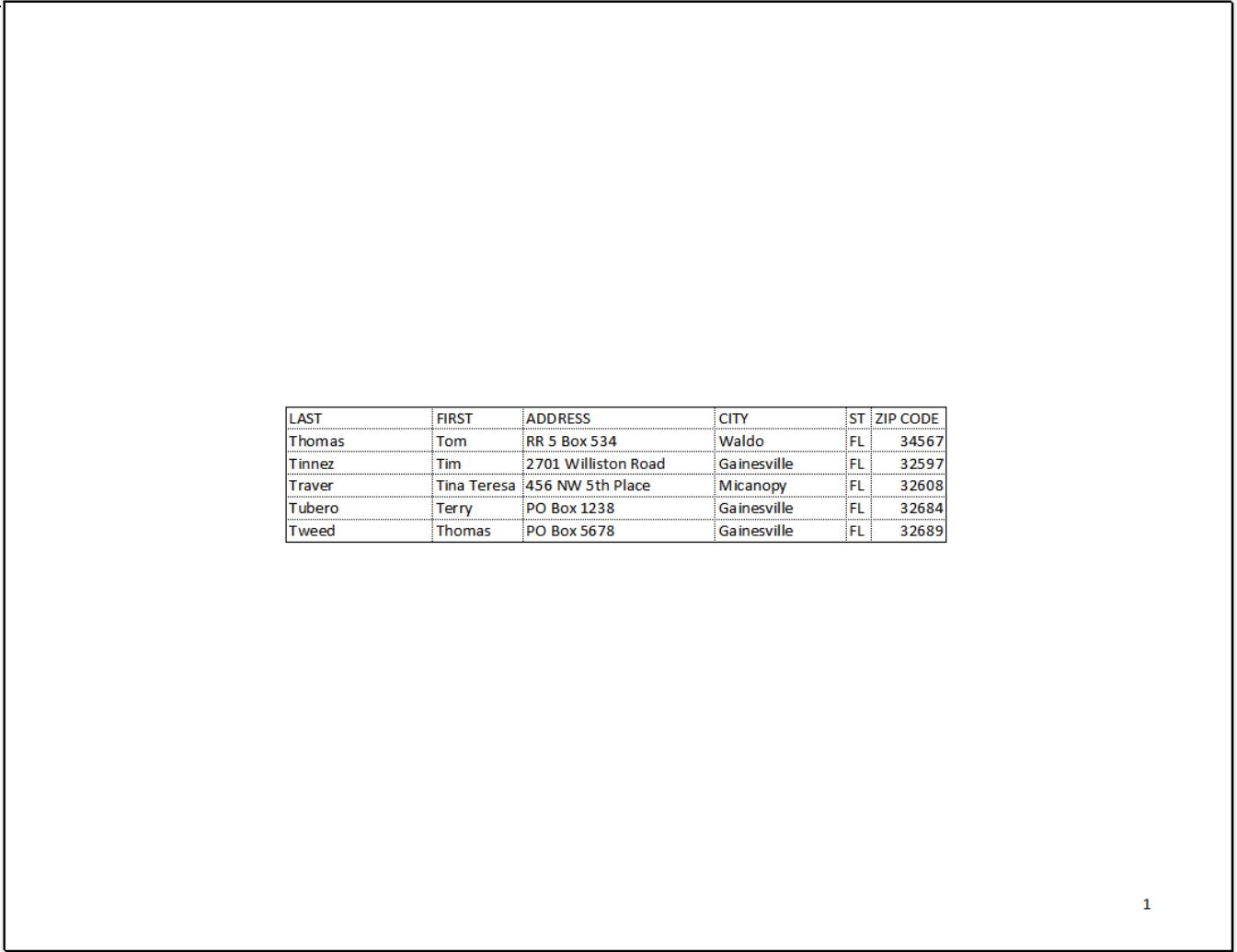
| Subject # | | Blue | Blue-violet | Brown | Cadet blue | Copper | Dandelion | Forest green | Fuchsia | Gold | Green | Green-blue | Green-yellow | Indigo | Lemon yellow | Magenta | Maroon | Melon | Mulberry | Navy blue | Orange | Orange-red | Orange-yellow | Periwinkle | Red | Red-orange | Red-violet | Seagreen | Sky blue | Spring green | Tan | Violet | Violet-blue | Yellow | Yellow-green |
|-----------|---|------|-------------|-------|------------|--------|-----------|--------------|---------|------|-------|------------|--------------|--------|--------------|---------|--------|-------|----------|-----------|--------|------------|---------------|------------|-----|------------|------------|----------|----------|--------------|-----|--------|-------------|--------|--------------|
| 7009 | Y | Y | Y | Y | | | | | N | Y | Y | Y | N | N | Y | | | | | | | | | | | | | | | | | | | | |
| 7758 | N | N | N | Y | | | | | Y | Y | | | | | | N | N | Y | | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | | | | |
| 7784 | N | Y | N | Y | N | Y | N | | | | N | Y | | | N | Y | N | Y | | | N | N | | | Y | N | N | N | N | Y | Y | | | | |
| 8308 | Y | | N | N | N | | | | | | N | N | N | N | N | N | N | Y | N | N | Y | Y | Y | Y | N | Y | N | N | Y | Y | | | | | |
| 7873 | Y | N | | | | Y | Y | Y | | | | N | N | Y | Y | | | | | Y | N | N | | Y | | N | Y | Y | N | | | | | | |
| 8887 | | Y | N | N | Y | Y | N | | | N | Y | Y | | | Y | N | Y | | Y | | N | | N | Y | N | Y | Y | N | N | | | | | | |
| 7034 | N | N | N | Y | N | N | N | | | N | Y | N | Y | Y | Y | N | | | Y | Y | N | Y | | N | N | N | N | N | N | Y | Y | N | | | |
| 8076 | N | N | N | | | | | | | Y | Y | Y | Y | Y | Y | | | | Y | Y | Y | N | N | N | N | N | N | N | N | N | N | | | | |
| 7515 | Y | Y | | | | | | | | Y | N | | N | N | N | N | N | Y | N | N | Y | Y | Y | Y | | Y | | N | N | Y | | | | | |
| 7311 | Y | N | N | Y | | | | | | Y | N | N | Y | Y | N | Y | N | Y | Y | Y | N | Y | Y | Y | Y | N | Y | N | N | | | | | | |
| 7580 | Y | Y | Y | Y | Y | | | | | N | Y | Y | Y | N | Y | N | Y | | N | N | N | N | Y | N | | Y | Y | N | Y | Y | N | | | | |
| 7492 | N | Y | Y | Y | | | | | N | N | Y | N | | N | Y | | | Y | | Y | Y | N | N | Y | | Y | Y | Y | Y | N | N | | | | |

- Turn to worksheet **Sheet3**
 - Open Print Preview (10 pages)
 - Set Column Widths – 25, 6, 100
 - Select All
 - Wrap Text, Align Top of cell
 - Page Setup Options
 - Fit to 1-page wide, Narrow Margins, Turn on Gridlines

| Title | Length | Description |
|--|--------|---|
| Adobe Acrobat X: Basics | 2.0hr | The full-featured Adobe Acrobat can create files in PDF from programs such as Word and from scanned documents. Topics include creating, viewing and optimizing pages, writing, editing text, adding hyperlinks, and setting security options. |
| Adobe Acrobat X: Forms | 2.0hr | This workshop uses the Adobe Acrobat professional tools. Topics include creating and editing form fields, managing basic calculations into a PDF file (Barcode Document Processor), emailing the form, and extracting information directly from the form. |
| Adobe Photoshop CS5: Basics | 3.0hr | The workshop will cover creating and manipulating basic graphics in Photoshop, and creating and tagging in Bridge. Topics include an overview of common toolbar features, creating images using layers, and adding text to images. This workshop provides hands-on experience with Photoshop or Bridge, so requires a working knowledge of the Microsoft Windows operating system. |
| Adobe Photoshop CS5: Layers and Masks | 2.0hr | The workshop will cover working with layers and masks. Topics include managing layer opacity, blending modes, quick layer cloning, and creating gradients. This workshop assumes some prior experience with Photoshop, especially the Photoshop interface. |
| Adobe Photoshop CS5: Photo Adjustment | 2.0hr | Topics include the adjustment layers, layer blending modes, and other tools to help you edit and correct images. Completion of the Photoshop Basics I workshop is required. |
| Adobe Photoshop CS5: Color Management | 2.0hr | This workshop will cover color management in Photoshop. It includes how to manage colors in your monitor and in print, and how to use the color management features in Photoshop to create consistent colors across the print workflow. |
| Basic Computing 2 - Microsoft Word | 1.0hr | This is a basic computer workshop. Microsoft Word is a word processing program. We will use it to document events such as letters and posts. In this workshop we will learn the parts of the window, create and format documents. |
| Basic Computing 3 - Microsoft Excel | 1.0hr | This is a basic computer workshop. Microsoft Excel is a basic math and calendar program. In this workshop we will learn the parts of the window, use formulas, and use functions to calculate numbers and keep track of events. |
| Basic Computing 4 - Microsoft Outlook | 1.0hr | This is a basic computer workshop. Microsoft Outlook is an email and calendar program. In this workshop we will learn the parts of the window, use the calendar feature, and responding to emails, and the basics of Outlook including creating appointments and managing emails. |
| Basic Computing 5 - Microsoft OneNote | 1.0hr | This is a basic computer workshop. Microsoft OneNote is a note taking program. We will learn how to use the OneNote interface, and how to use the OneNote features to take notes, recording audio, drawing in ink, cut and paste via copy and paste features, learning and defining acronyms and terms, for creating lists, arguments, numbers, bulleted and numbered lists, and tables. |
| Begin 2008: Basic 1 - Naughting and Formating | 1.0hr | In this workshop we will work with patterns of text, numbers and data, building calculations, use basic mathematical functions such as SUM, and IF (TRUE) and (FALSE). We will also explore absolute and relative referencing, formulas, and using range names. |
| Begin 2008: Basic 2 - Math and Functions | 2.0hr | In this workshop we will learn to use conditional formatting to have Excel automatically format our data sets based on the data contents. Next we will learn about which provide filters and automatically format new data, apply them to change the color of cells, and use the filter feature to sort data. We will also learn how to use the filter feature, understand the filter and explore. This intermediate workshop assumes prior experience in Microsoft Excel. |
| Begin 2008: Large Data 1 - Filtering and Sorting | 1.0hr | In this workshop we will learn how to quickly and efficiently sort, name and save data. Filters automatically share only the relevant data in a large data set. We will learn how to use filters to automatically sort data by date, and how to use filters to search for specific data in a large data set. This workshop assumes prior experience in Microsoft Excel. |
| Begin 2008: Large Data 2 - Pivot Tables | 1.0hr | Pivot Tables are powerful data summarizing feature from an organization's data set. In this workshop we will learn to plan and create pivot tables, work with grouping, filters, and summary features, create a pivot chart, and explore formulaic options. This advanced workshop assumes prior experience with Microsoft Excel. |
| Begin 2008: Large Data 3 - Advanced | 1.0hr | In this advanced workshop we will use multiple functions such as IF (TRUE) and (FALSE), VLOOKUP, COUNTIF, and IF (TRUE) and (FALSE) functions. We will learn how to use the COUNTIF function to count the number of times a value appears in a list that is TRUE; and how to use the COUNTIF function to count the number of times a value appears in a large data set, and return different values for each time. For example, if one data set of employee names has 100 entries, and another data set of employee names has 50 entries, we can use COUNTIF to find and have return the Employee's name and Title. We will use the COUNTIF function to drop down lists that help us enter data. We will use the results of the list in our formulas. This advanced workshop assumes prior experience with Microsoft Excel. |
| Excel 2008: Large Data At-A-Parse Report | 1.5hr | In this advanced workshop, we will create nested If statements and discover how logic functions can simplify your equations. Use the Remove duplicates and簇 (cluster) function to structure worksheets that are used in your pivot tables. Create summary profit tables for net values, and more tables and charts in a summary page (dashboard). This advanced workshop assumes prior experience with Microsoft Excel, experience with building a dashboard in Excel, and experience with pivot tables. |
| Excel 2008: Linking Worksheets | 1.0hr | This workshop will teach you how to link and rename worksheets, change formulas, and use the same formulas across multiple worksheets. We will learn how to use the same formulas across multiple worksheets as the same formulas are used in the linked worksheets. This workshop assumes prior experience with Microsoft Excel. |

EXERCISE

- Open PrintCustomers.xlsx
- Create a Print Preview that shows
 - Titles (Last, First, Address, City, ST, Zip Code)
 - T-People (last name begins with a T)
 - Gridlines
 - Landscape
 - Horizontally Centered
 - Vertically Centered
 - Page # in Right Footer
- Print Preview (1 Page)



| LAST | FIRST | ADDRESS | CITY | ST | ZIP CODE |
|--------|-------------|---------------------|-------------|----|----------|
| Thomas | Tom | RR 5 Box 534 | Waldo | FL | 34567 |
| Tinnez | Tim | 2701 Williston Road | Gainesville | FL | 32597 |
| Traver | Tina Teresa | 456 NW 5th Place | Micanopy | FL | 32608 |
| Tubero | Terry | PO Box 1238 | Gainesville | FL | 32684 |
| Tweed | Thomas | PO Box 5678 | Gainesville | FL | 32689 |

Excel 2016

Formatting Beyond the Basics



Excel 2016: Formatting Beyond the Basics

1.5 hours

In this workshop we will learn to use conditional formatting to have Excel automatically format our data sets based on the cell contents; how to use tables which provide filters and automatic alternating row colors; apply themes to change the color schemes associated within our workbook; create comments to make notes within the cells; and protect the worksheets and workbooks. This intermediate workshop assumes prior experience with Microsoft Excel.

| | |
|---|----|
| Conditional Formatting | 1 |
| <i>Finding Duplicates</i> | 1 |
| <i>Top and Bottom Values</i> | 2 |
| <i>Data Bars</i> | 2 |
| <i>Color Scales</i> | 2 |
| <i>Icon Sets</i> | 3 |
| <i>Custom Rule – Dates past due</i> | 3 |
| Tables..... | 4 |
| <i>Create a Table structure</i> | 4 |
| <i>Removing the Table structure (Convert to range)</i> | 5 |
| <i>Adding/Deleting Rows in Tables</i> | 5 |
| <i>Doing Math in Tables</i> | 6 |
| Protecting Worksheets/Workbooks..... | 6 |
| <i>Protect Sheet</i> | 7 |
| Comments | 7 |
| Themes | 8 |
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| <i>Customize Color Scales</i> | 8 |
| <i>Find Min, Max, and Average with Conditional Formatting</i> | 9 |
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| Sparklines | 10 |
| <i>Quick Totals</i> | 10 |
| More about Custom Conditional Formatting | 11 |
| More about Excel Tables | 12 |
| More about Sparklines | 13 |



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Conditional Formatting

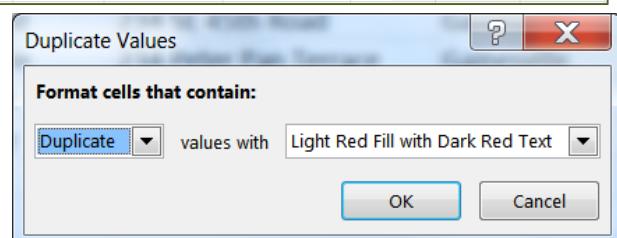
Using criteria, a set of rules, we can have Excel format the cells that match. The following exercises will walk us through some of these powerful formatting aides. This tool works best if you select the cells you want to format before you set any rules.

Finding Duplicates

1. Open Customers
2. Select Column A (Last)
3. On the Home Tab, in the Styles group, choose **Conditional Formatting**
4. Select **Highlight Cell Rules**, and then **Duplicate Values...**

| A | B | C | D | E | F | G |
|-------------|--------|-----------------------|-------------|----|-------|-----------|
| 1 LAST | FIRST | ADDRESS | CITY | ST | ZIP | BALANCE |
| 2 Adams | Annie | 6831 NW 4th Ave | Gainesville | FL | 32655 | \$ 236 |
| 3 Appleton | April | PO Box 456 | Starke | FL | 32689 | \$ 467 |
| 4 Arlington | Arnold | 234 SE 45th Road | Gainesville | FL | 32597 | \$ 128 |
| 5 Brown | Bobbie | 234 Peter Pan Terrace | Gainesville | FL | 32597 | \$ 176 |
| 6 Bruce | Butch | 3243 SE 4th Terrace | Gainesville | FL | 32608 | \$ 106 |
| 7 Cappers | Cathy | RR 2 Box 659 | Waldo | FL | 34567 | \$ 392 |
| 8 Carlson | Carly | 1943 NW Main Street | Gainesville | FL | 32567 | \$ 432 |
| 9 Clark | Carl | 9213 Kiwi Road | Gainesville | FL | 32667 | \$ 64 |
| 10 Dawson | Debbie | 832 Hook Place | Gainesville | FL | 32658 | \$ 265.00 |
| 11 Edwards | Edgar | 5233 NW 232nd Drive | Gainesville | FL | 32653 | \$ 617.00 |

5. In the Duplicate Values Window, leave the light red fill setting and, click OK
6. Scroll down to see the M's
7. Joe and John Jinks are different records, but Marge and Marjorie look to be the same.



| A | B | C | D | E | F | G | H |
|---------------|----------|--------------------------|--------------|----|-------|-----------|------------|
| 25 Jennings | Jasmine | 465 SE 465th Place | Gainesville | FL | 32653 | \$ 522.00 | 5/5/2017 |
| 26 Jinks | Joe | 12 South University Ave | Gainesville | FL | 32156 | \$ 626.00 | 5/25/2017 |
| 27 Jinks | John | 9324 Zeus Street | Gainesville | FL | 32684 | \$ 419.00 | 5/15/2018 |
| 28 Johnson | Jack | 2903 Endive Ave | Gainesville | FL | 32608 | \$ 17.00 | 4/25/2016 |
| 29 Joiner | Jake | 9240 Grapefruit Place | Jacksonville | FL | 32268 | \$ 794.00 | 8/25/2018 |
| 30 Jones | Jill | 209 Cantaloupe Way | Gainesville | FL | 32597 | \$ 380.00 | 4/5/2017 |
| 31 Katz | Kerry | PO Box 3346 | Starke | FL | 32689 | \$ 409.00 | 3/20/2016 |
| 32 Kent | Kevin | 2903 New Potato Drive | Gainesville | FL | 32608 | \$ 415.00 | 12/5/2016 |
| 33 King | Kala | RR 2 box 323 | Waldo | FL | 34567 | \$ 52.00 | 11/10/2018 |
| 34 Knight | Katrina | 9204 Avocado Ave | Gainesville | FL | 32667 | \$ 105.00 | 9/5/2018 |
| 35 Kreck | Kasper | PO Box 3672 | Gainesville | FL | 32689 | \$ 467.00 | 11/25/2016 |
| 36 Lamas | Larry | 9405 Date Terrace | Gainesville | FL | 32684 | \$ 64.00 | 10/15/2017 |
| 37 Lee | Leslie | 2930 Apricot Street | Jacksonville | FL | 32608 | \$ 52.00 | 8/20/2017 |
| 38 Li | Lana | 23 Iceberg Drive | Gainesville | FL | 32597 | \$ 157.00 | 2/15/2016 |
| 39 Livingston | Leonord | 789 North University Ave | Waldo | FL | 32658 | \$ 232.00 | 4/20/2017 |
| 40 Lowe | Lillian | 942 Yam Way | Gainesville | FL | 32684 | \$ 132.00 | 10/10/2017 |
| 41 Mack | Mervin | 2934 Turnip Place | Gainesville | FL | 32608 | \$ 236.00 | 5/25/2017 |
| 42 Martin | Mary | 230 Jalapeno Junction | Jacksonville | FL | 32297 | \$ 671.00 | 3/10/2016 |
| 43 McDade | Madeline | 8290 Apollo Ave | Waldo | FL | 32658 | \$ 219.00 | 6/10/2016 |
| 44 Mellott | Marge | 2309 Hercules Road | Gainesville | FL | 32597 | \$ 242.00 | 9/20/2018 |
| 45 Mellott | Marjorie | 2309 Hercules Road | Gainesville | FL | 32597 | \$ 242.00 | 9/20/2018 |

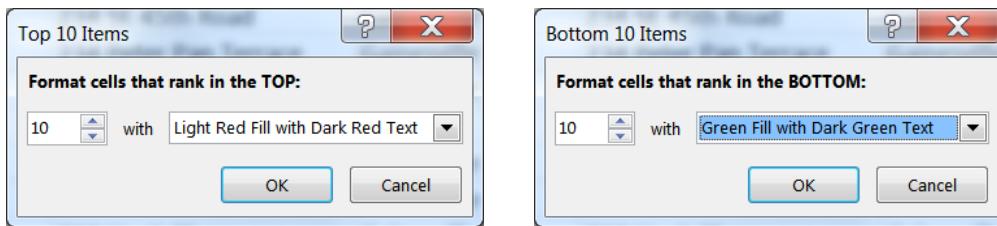
8. Clear the formatting rules.
 - Open the Conditional Formatting menu again.
 - Choose Clear Rules, and choose **Clear Rules from Entire Sheet**.



Top and Bottom Values

We can sort the Balance column to find the top and bottom values listed, or we can have Excel format the cells to help them pop out.

1. Select Column G (balance)
2. From Conditional Formatting choose Top/Bottom Rules
3. Choose **Top 10 Items**
 - Notice you can change the number of items to be the top 3 or any number between 1 and 1000.
4. Leave the default settings of 10 items, with a Light Red Fill. Click OK.
5. Go back to the Conditional Formatting, choose Top/Bottom Rules
6. Choose **Bottom 10 Items**
7. Change the color setting to Green Fill and click OK.



8. Clear the formatting rules from the Conditional Formatting menu

| G |
|-----------|
| BALANCE |
| \$ 236.00 |
| \$ 467.00 |
| \$ 128.00 |
| \$ 17.00 |
| \$ 106.00 |
| \$ 392.00 |
| \$ 432.00 |
| \$ 64.00 |
| \$ 265.00 |
| \$ 617.00 |
| \$ 364.00 |
| \$ 311.00 |
| \$ 157.00 |
| \$ 368.00 |
| \$ 415.00 |
| \$ 68.00 |
| \$ 501.00 |
| \$ 319.00 |
| \$ 486.00 |
| \$ 409.00 |
| \$ 109.00 |

Data Bars

1. Select Column G (Balance)
2. From Conditional Formatting choose **Data Bars**
3. Hover over the different options to see a live preview of the embedded bar chart in the cells. The larger the number, the longer the bar.
 - You can widen the column as much as you want, and the bars will stretch with your column width.
4. Choose one that you like
 - Set the number format to general to see them without the \$ and decimals.

| G |
|---------|
| BALANCE |
| 236 |
| 467 |
| 128 |
| 17 |
| 106 |
| 392 |
| 432 |
| 64 |

Color Scales

1. Select Column G (Balance)
2. From Conditional Formatting choose **Color Scales**
3. Hover over the different options to see a live preview of the shading. Notice the data bars are still showing.
4. Clear all Conditional Formatting
5. Try the color scales again.
6. Sort the column to see the shading in action
7. Undo the sort and Conditional Formatting

| G | G |
|---------|---------|
| BALANCE | BALANCE |
| 236 | 794 |
| 467 | 671 |
| 128 | 626 |
| 17 | 617 |
| 106 | 574 |
| 392 | 532 |
| 432 | 522 |
| 64 | 501 |

Icon Sets

1. Select Column G (Balance)
2. From Conditional Formatting choose **Icon Sets**
3. Hover over the different options to see a live preview of the icons
 - As with the data bars and color scales these icons are relative to the data in the entire column. Up arrows are above average, sideways arrows are near average and down arrows are below average.
4. Clear the formatting rules from the Conditional Formatting menu

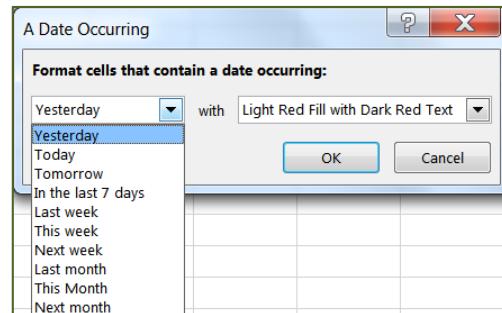
| G | G |
|---------|---------|
| BALANCE | BALANCE |
| 432 | 432 |
| 64 | 64 |
| 265 | 265 |
| 617 | 617 |
| 364 | 364 |
| 311 | 311 |
| 157 | 157 |
| 368 | 368 |

Custom Rule – Dates past due

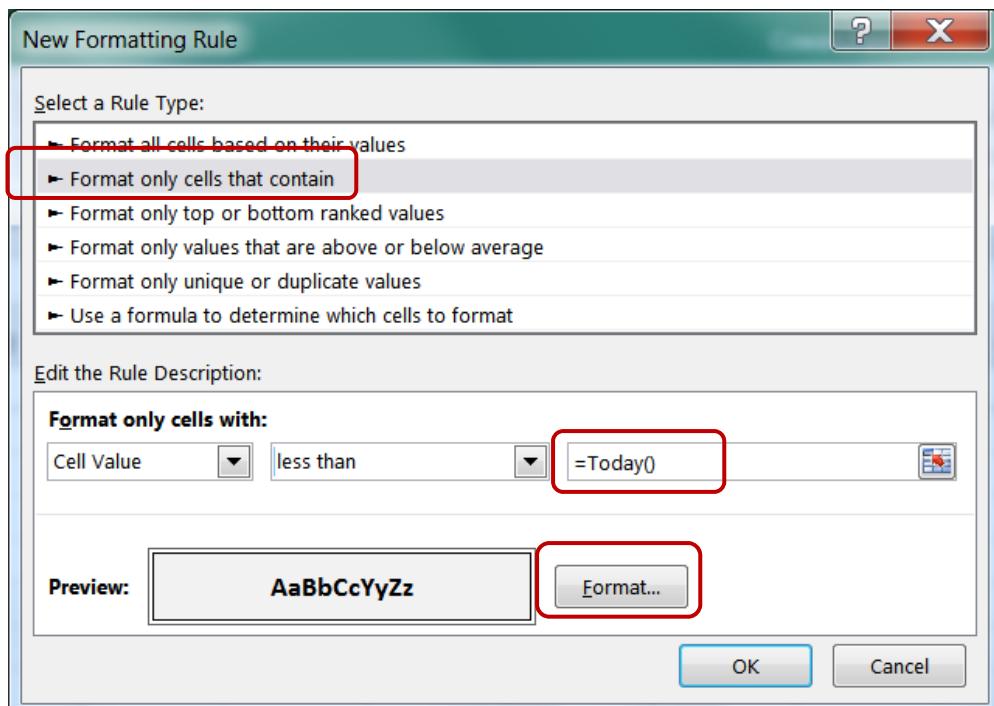
There are date rules available in the Conditional Formatting, Highlight Cell Rules, you can choose **A Date Occurring...**

However, the rules here are limited. What I would like us to find is all the records (rows) where the date is past due.

1. Select Column H (Due Date)
2. From Conditional Formatting choose **New Rule...**
3. From the top of the New Formatting Rule window, choose **Format only cells that contain**
 - Change the second drop down list to **less than**
 - In the third box type:
=Today()
 - Don't forget the equal sign and the parentheses
4. Click the **Format** button
 - Set the format to be Bold, with an Outline border, and a light grey fill
 - Click OK to accept the format, and click OK to accept the rule.
5. Leave this format



| H |
|-----------|
| DUE DATE |
| 2/10/2017 |
| 9/25/2018 |
| 12/5/2017 |
| 3/25/2017 |
| 5/5/2016 |
| 9/15/2016 |
| 5/25/2018 |
| 6/10/2016 |



Tables

We can format ourselves using the tools found in the Font group. There are font styles, fill colors, and borders. When we set up the format ourselves, we sometimes have to be careful about moving cells around. It's very easy to lose a border format, or shade in the wrong color. If you need a formatted structure with consistent colors, you may fall in love with Tables.

Create a Table structure

1. Return to Cell A1 (Ctrl Home)
2. From the Home tab, next to the Conditional Formatting button, choose **Format as Table**
3. Choose an option that has alternating colors for each row.

| | LAST | FIRST | ADDRESS | CITY | ST | ZIP | BALANCE | DUE DATE |
|----|-----------|--------|-----------------------|-------------|----|-------|---------|-----------|
| 1 | Adams | Annie | 6831 NW 4th Ave | Gainesville | FL | 32655 | 236 | 2/10/2018 |
| 2 | Appleton | April | PO Box 456 | Starke | FL | 32689 | 467 | 9/25/2018 |
| 3 | Arlington | Arnold | 234 SE 45th Road | Gainesville | FL | 32597 | 128 | 12/5/2017 |
| 4 | Brown | Bobbie | 234 Peter Pan Terrace | Gainesville | FL | 32597 | 17 | 3/25/2017 |
| 5 | Bruce | Butch | 3243 SE 4th Terrace | Gainesville | FL | 32608 | 106 | 5/5/2016 |
| 6 | Cappers | Cathy | RR 2 Box 659 | Waldo | FL | 34567 | 392 | 9/15/2016 |
| 7 | Carlson | Carly | 1943 NW Main Street | Gainesville | FL | 32567 | 432 | 5/25/2018 |
| 8 | Clark | Carl | 9213 Kiwi Road | Gainesville | FL | 32667 | 64 | 6/10/2016 |
| 9 | Dawson | Debbie | 832 Hook Place | Gainesville | FL | 32658 | 265 | 11/1/2017 |
| 10 | | | | | | | | |

4. Excel should pick up the entire dataset. We have titles, headers, so we'll leave that option checked. Click OK to see the result.
5. Our conditional formatting remains on the Due Dates.
6. We now have a new tab in the ribbon to help us modify the Design of the table.



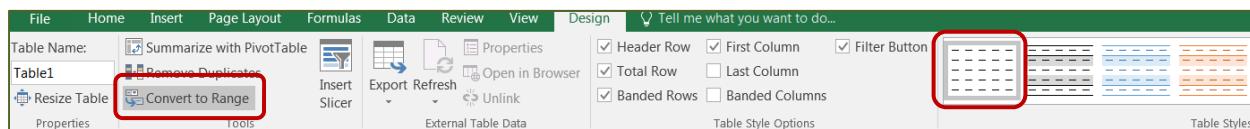
| | LAST | FIRST | ADDRESS | CITY | ST | ZIP | BALANCE | DUE DATE |
|---|-----------|--------|-----------------------|-------------|----|-------|---------|-----------|
| 1 | Adams | Annie | 6831 NW 4th Ave | Gainesville | FL | 32655 | 236 | 2/10/2018 |
| 2 | Appleton | April | PO Box 456 | Starke | FL | 32689 | 467 | 9/25/2018 |
| 3 | Arlington | Arnold | 234 SE 45th Road | Gainesville | FL | 32597 | 128 | 12/5/2017 |
| 4 | Brown | Bobbie | 234 Peter Pan Terrace | Gainesville | FL | 32597 | 17 | 3/25/2017 |
| 5 | Bruce | Butch | 3243 SE 4th Terrace | Gainesville | FL | 32608 | 106 | 5/5/2016 |
| 6 | Cappers | Cathy | RR 2 Box 659 | Waldo | FL | 34567 | 392 | 9/15/2016 |
| 7 | Carlson | Carly | 1943 NW Main Street | Gainesville | FL | 32567 | 432 | 5/25/2018 |
| 8 | Clark | Carl | 9213 Kiwi Road | Gainesville | FL | 32667 | 64 | 6/10/2016 |
| 9 | | | | | | | | |

7. Try the different table style options and table styles to see how it changes the format of our table. One of the best features is the Total Row.
 - With the **total row** turned on, scroll to the bottom of the dataset. The 77 represents how many records we have. Click inside the Total for the Balance column and change it to **Sum**.

Removing the Table structure (Convert to range)

While the table structure is an awesome formatting tool, if you prefer to do your own customizations, you will want to remove the automatic formatting.

1. From anywhere inside the table click the **Convert to Range** button on the Design tab.
 - Converting this back to a range will break the data from the table structure, but will not remove the formatting.
2. Undo!
3. On the Design tab, expand the Table Styles menu.
4. Choose the first option, "None"
5. Click on Convert to Range again



6. From the Conditional Formatting menu on the Home tab, choose **Clear Rules from Entire Sheet**

Turn to the Summary worksheet

Adding/Deleting Rows in Tables

1. On the summary worksheet, set each grouping into a table that matches its heading.
 - Click in cell A3 (Items)
 - Choose Format as Table from the Home tab (Ctrl-T)
 - Choose a table style that matches the year
 - Click OK to the range
 - Repeat for cell F3 (Items) and K3 (Items)
2. Click in cell C7, Type: D
3. Press Enter to move to cell C8, Type: E and press enter
4. Right-click in Cell F6, Choose Insert a row below
5. Do it again
6. Type in D and E into the appropriate spots
7. Look for the small blue box (backwards L) in the bottom right corner of N6
8. Drag the box down two rows
9. Type in D and E into the appropriate spots
10. Right-click on the heading for Row 7, notice you cannot Insert or Delete
 - These have to be done from inside each table.
11. Select Cells C7 & C8
12. Right-click - Delete the table rows
13. Repeat for each table
 - F7 & F8
 - K7& K8
14. Or UNDO all the added rows

Doing Math in Tables

1. In Cell D4 press the equal sign (=)
2. Click in cell B4 (123)
 - Excel doesn't say B4, it says: =[@Price]
3. Type the multiply sign, the asterisk (*)
4. Click in Cell C4 (812)
 - =[@Price]*[@Qty]
5. Press Enter to accept. All the equations are filled in
6. Turn on the totals row
7. Repeat for the other two tables

| A | B | C | D | E | F | G | H | I | J | K | L | M | N |
|---|-------|-------|-----|----------|-------|-------|-----|----------|-------|-------|-----|----------|---|
| 1 | | 2016 | | | | 2017 | | | | | | 2018 | |
| 2 | | | | | | | | | | | | | |
| 3 | Items | Price | Qty | SubTotal | Items | Price | Qty | SubTotal | Items | Price | Qty | SubTotal | |
| 4 | A | 123 | 812 | 99,876 | A | 123 | 552 | 67,896 | A | 123 | 79 | 9,717 | |
| 5 | B | 456 | 646 | 294,576 | B | 456 | 663 | 302,328 | B | 456 | 58 | 26,448 | |
| 6 | C | 789 | 694 | 547,566 | C | 789 | 728 | 574,392 | C | 789 | 32 | 25,248 | |
| 7 | Total | | | 942,018 | Total | | | 944,616 | Total | | | 61,413 | |

8. Since these are such small tables, you may consider turning off the Filter Buttons as well.

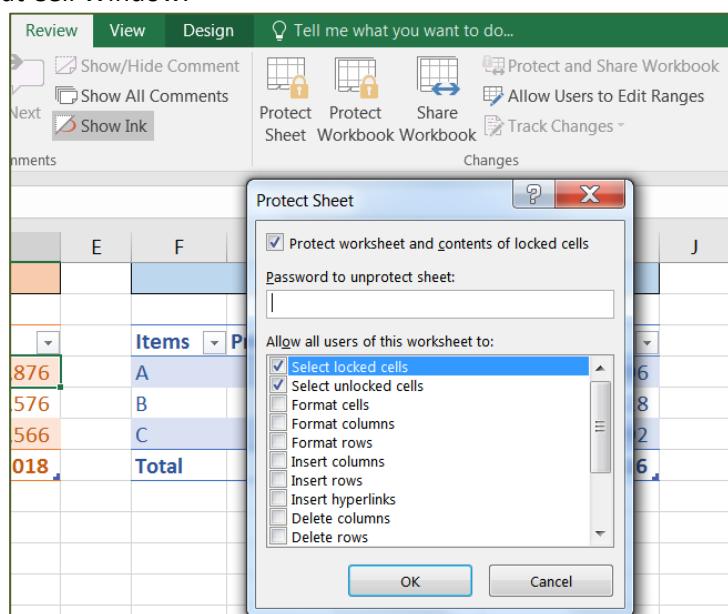
Protecting Worksheets/Workbooks

If you would like to restrict people from making changes, including yourself, you may consider protecting it. You'll find the option on the **Review** tab in the **Changes** group. From here you can decide what users, including yourself, are allowed to do within this sheet. You do not have to set a password unless you want one.

Once you have protected the sheet, the button will change to say **Unprotect Sheet**, use this option to release the control.

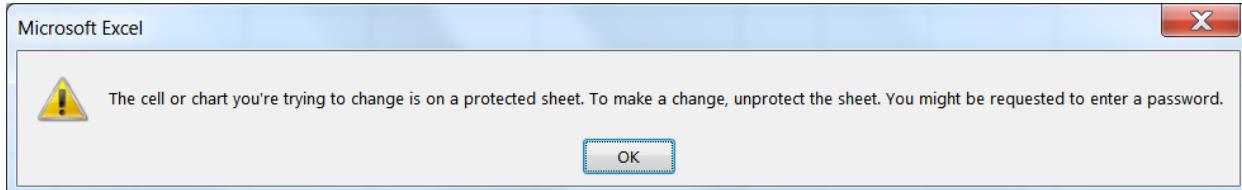
If you would like to allow edits to specific cells, choose those cells and change their protection "lock cell" option from the Format Cell menu, or Format Cell Window.

- ❖ Locking a **worksheet** helps prevent edits, and formatting, inserting/deleting columns and rows and cells.
- ❖ Locking a **workbook** helps prevent changes to the workbook structure, like inserting/deleting worksheets.
- ❖ If you forget the password, there is no recovery. Either don't use a password, or **DON'T FORGET IT!**

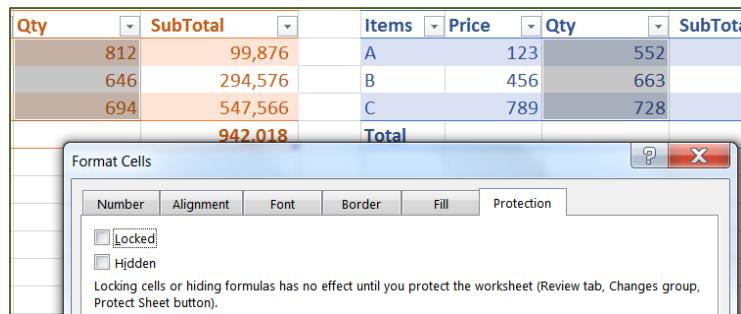


Protect Sheet

1. From the **Review** tab, choose **Protect Sheet**
2. Leave the defaults and click OK
3. Click in cell C4 to and try to change the Qty



4. From the Review tab, choose **Unprotect Sheet**
5. Select all the Qty cells C4:C6; H4:H6, M4:M6
 - Use your control key, or do each section one at a time
6. Open the format cells window
 - Right-click in the selection, or press Ctrl 1
7. Turn to the **Protection** tab
8. Uncheck the **Locked** option and click OK
9. From the Review tab, choose **Protect Sheet**
10. Leave the defaults and click OK
11. Click in cell C4 to and try to change the Qty
 - No Problem!



| Qty | SubTotal | Items | Price | Qty | SubTotal |
|-----|----------|-------|-------|-----|----------|
| 812 | 99,876 | A | 123 | 552 | |
| 646 | 294,576 | B | | 456 | 663 |
| 694 | 547,566 | C | 789 | | 728 |
| | 942,018 | Total | | | |

Comments

A comment is a way to leave a subtle note within the worksheet. In this case let's put a note with the 2018 Price title reminding people if they need to change the price, they will have to unprotect the sheet. Comments can be printed by choosing the option in the Page Setup on the sheet tab.



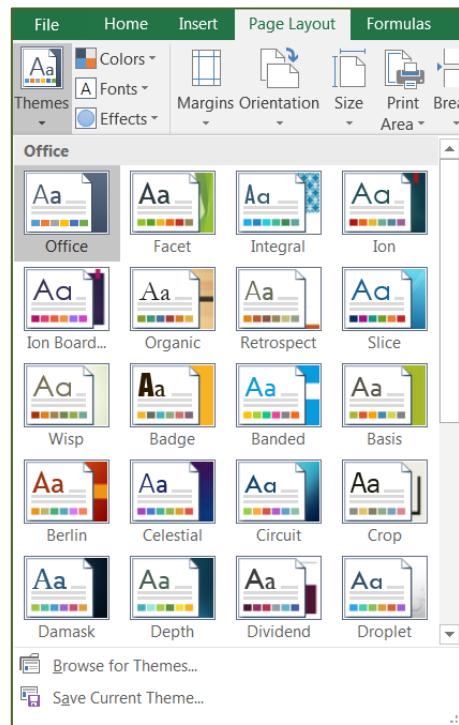
1. Unprotect sheet
2. Click in Cell L3 (Price)
3. From the Review tab choose New Comment
4. Type your comment into the comment box
5. Click outside of the box and it will disappear
6. Notice the small red triangle in the upper right corner of the box. That's our visual cue there is a comment in that cell.
7. Hover over your mouse over cell L3 to see the comment appear. If you can't see all the text, you can click on the Edit Comment button that has taken the place of the New Comment button.
 - Click inside the cell, Click Edit Comment, Resize the box, click outside the comment

| 2018 | | | | | |
|-------|-------|--|--|--|--------|
| Items | Price | | | | |
| A | 123 | | | | 9,717 |
| B | 456 | | | | 26,448 |
| C | 789 | | | | 25,248 |
| Total | | | | | 61,413 |

Themes

A theme is a preset list of default formatting for the workbook. This includes the Fonts, Colors, and Effects. We typically stay with the Office theme and choose custom colors when we want them, but this is a way to change everything at once.

1. From the Page Layout tab, choose **Themes**
2. Hover over each theme to see it change the fonts and colors of your tables
 - Notice there is a scroll bar! More than you can see. Either scroll down, or grab the corner (·) to stretch the window.
3. Return to the Office Theme at the top of the list
4. Click on the **Colors** option
 - This setting will change the colors and not the fonts and effects
5. Return to the Office color choices
 - Remember your choices here will change the sheets in the workbook.



Turn to the Numbers worksheet

Numbers Exercises

Customize Color Scales

1. Select Dataset from the Name Box
2. Choose a Color Scale from the Conditional Formatting menu
3. Choose Mange Rules from the Conditional Formatting menu

4. Click on the **Edit Rule** button

- If needed change to a 2 color scale

5. Pick two colors

- I recommend something light

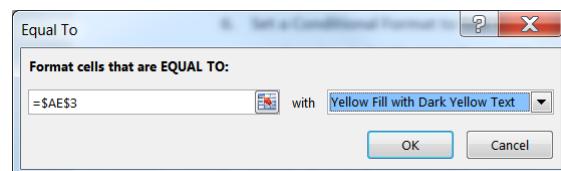
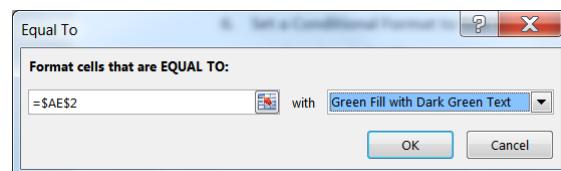
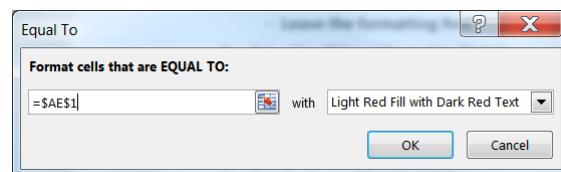
6. Click OK to accept your changes

7. Click OK to leave the Rules Manager

8. Clear all Conditional Formatting from sheet

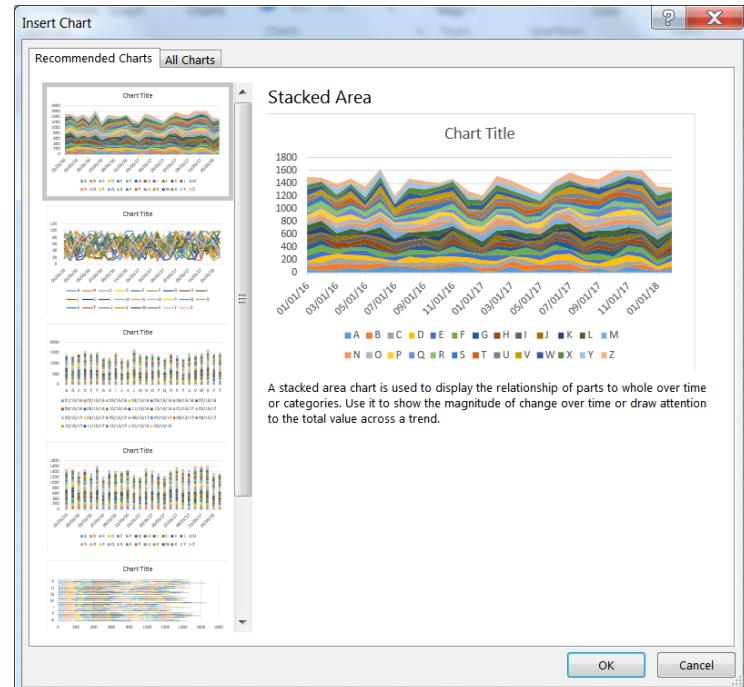
Find Min, Max, and Average with Conditional Formatting

1. Click in the Name Box to see a pre-named range of Dataset
2. Choose Dataset (B2:Z27)
3. Create the functions for the small grouping in column AE
 - In cell AE1 type: **=Min(Dataset)**
 - In cell AE2 type: **=Max(Dataset)**
 - In cell AE3 type: **=Average(Dataset)**
4. Select Dataset from the Name Box
5. Set a Conditional Format to find the min values
 - Turn to the Home Tab
 - Choose Conditional Formatting
 - Choose Highlight Cells Equal To
 - Click in Cell AE1
 - Leave the formatting Light Red Fill...
6. Set a Conditional Format to find the max values
 - Equal to Cell AE2, Green Fill ...
7. Set a Conditional Format to find the Avg values
 - Equal to Cell AE3, Yellow Fill
8. Clear all Conditional Formatting from sheet



Too Much Data to Chart

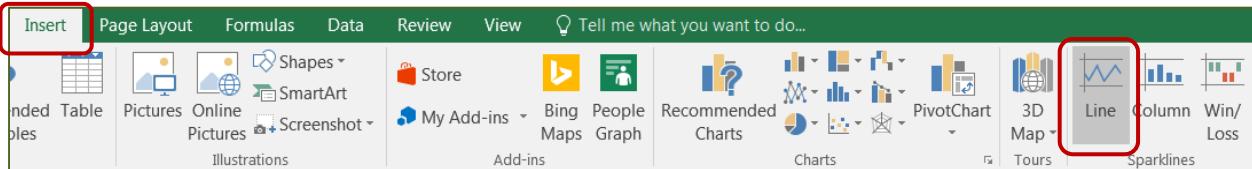
1. Return to the top of the sheet (Ctrl Home)
2. From the Insert tab choose **Recommended Charts**
3. Click on each **Recommended Chart** to see the messy outcome
 - Each item or date may need to be charted separately or by quarter
4. Change to the **All Charts** tab to see other possible previews.
5. Cancel the **Insert Chart** window.
6. Select **Dataset** from Name Box
7. Return to the Home tab and set a **Conditional Format** with **Data Bars** for an embedded bar chart
8. Set a **Conditional Format** with a **Ratings Icons** to see an embedded pie-like chart
9. Clear all Conditional Formatting



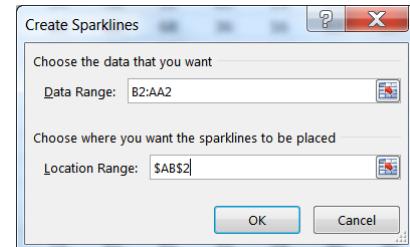
Sparklines

Instead of embedding the charts inside each cell, we can make individual mini charts for each row using the Sparkline option on the Insert tab.

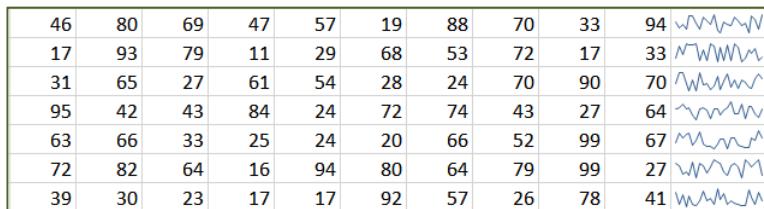
1. Select the data for 1/15/2016 (B2:AA2)
2. From the Insert tab, choose **Line** from the **Sparkline** group



3. Click in Cell AB2 to indicate where you want the embedded line chart to appear.
4. Click OK to accept and create the line chart.
5. Drag the Fill handle from the bottom corner of your new chart down to the last data row to create an embedded line chart for each line of data.
 - Notice the new Sparkline Tools Design tab with options to modify your Sparklines



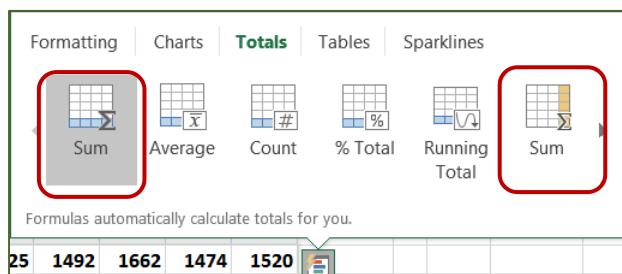
6. Make column AB wider to see the chart stretch out
7. Delete Column AB



Quick Totals

1. Return to the top of the worksheet (Ctrl-Home)
2. Choose Format as Table from the Home Tab
 - Any style you'd like, Click OK
3. Turn on your Totals Row (Very boring!)
4. Reset table -
 - Turn off the Totals Row, Set the table style to None, convert to a Range
 - *Or you can just UNDO!*
5. Select Dataset from your Name Box
6. Hover your mouse near the fill handle until the Quick Analysis box pops up ().

7. Turn to the Totals tab
 - Choose the first Sum to create totals below your selected data
 - Open the Quick Analysis box again and choose the last Sum to create totals near the end of your data



More about Custom Conditional Formatting

(Modified from the Office Help)

To more easily find specific cells within a range of cells, you can format those specific cells based on a comparison operator.

Quick formatting

1. Select one or more cells in a range, table, or PivotTable report.
2. On the **Home** tab, in the **Style** group, click the arrow next to **Conditional Formatting**, and then click **Highlight Cells Rules**.



3. Select the command that you want such as **Between**, **Equal To Text that Contains**, or **A Date Occurring**.
4. Enter the values that you want to use, and then select a format.

Advanced formatting

1. Select one or more cells in a range, table, or PivotTable report.
2. On the **Home** tab, in the **Styles** group, click the arrow next to **Conditional Formatting**, and then click **Manage Rules**.

The **Conditional Formatting Rules Manager** dialog box is displayed.

3. Do one of the following:
 - To add a conditional format, click **New Rule**.
 - To change a conditional format, do the following:
 - i. Select the rule, and then click **Edit rule**.
4. Under **Select a Rule Type**, click **Format only cells that contain**.
5. Under **Edit the Rule Description**, in the **Format only cells with** list box, do one of the following:
 - **Format by number, date, or time** - Select **Cell Value**, select a comparison operator, and then enter a number, date, or time. If you enter a formula, start it with an equal sign (=). Invalid formulas result in no formatting being applied. It's a good idea to test the formula to make sure that it doesn't return an error value.
 - **Format by text** - Select **Specific Text**, choose a comparison operator, and then enter text. Quotes are included in the search string, and you may use wildcard characters. The maximum length of a string is 255 characters.
 - **Format by date** - Select **Dates Occurring**, and then select a date comparison.
 - **Format cells with blanks or no blanks** - Select **Blanks or No Blanks**. A blank value is a cell that contains no data and is different from a cell that contains one or more spaces (spaces are considered as text).
 - **Format cells with error or no error values** - Select **Errors or No Errors**. Error values include: #####, #VALUE!, #DIV/0!, #NAME?, #N/A, #REF!, #NUM!, and #NULL!.
6. To specify a format, click **Format**. - The **Format Cells** dialog box is displayed.
7. Select the number, font, border, or fill format that you want to apply when the cell value meets the condition, and then click **OK**. The formats that you select are displayed in the **Preview** box.

More about Excel Tables

(Modified from the Office Help)

To make managing and analyzing a group of related data easier, you can turn a range of cells into a Microsoft Office Excel table (previously known as an Excel list). A table typically contains related data in a series of worksheet rows and columns that have been formatted as a table. By using the table features, you can then manage the data in the table rows and columns independently from the data in other rows and columns on the worksheet.

Elements of an Excel table

A table can include the following elements:

- **Header row** - By default, a table has a header row. Every table column has filtering enabled in the header row so that you can filter or sort your table data quickly.
- **Banded rows** - By default, alternate shading or banding has been applied to the rows in a table to better distinguish the data.
- **Calculated columns** - By entering a formula in one cell in a table column, you can create a calculated column in which that formula is instantly applied to all other cells in that table column.
- **Total row** - You can add a total row to your table that provides access to summary functions (such as the AVERAGE, COUNT, or SUM). A dropdown list appears in each total row cell so that you can quickly calculate the totals that you want.
- **Sizing handle** - A sizing handle in the lower-right corner of the table allows you to drag the table to the size that you want.

Managing data in an Excel table

- **Inserting and deleting table rows and columns** - You can use one of several ways to add rows and columns to a table. You can quickly add a blank row at the end of the table, include adjacent worksheet rows or worksheet columns in the table, or insert table rows and table columns anywhere that you want. You can delete rows and columns as needed. You can also quickly remove rows that contain duplicate data from a table.
- **Using a calculated column** - To use a single formula that adjusts for each row in a table, you can create a calculated column. A calculated column automatically expands to include additional rows so that the formula is immediately extended to those rows.
- **Displaying and calculating table data totals** - You can quickly total the data in a table by displaying a totals row at the end of the table and then using the functions that are provided in drop-down lists for each totals row cell.

| B | C | D | E |
|---------------------|--------------------|-------------------|---------------------|
| Product | Qtr 1 | Qtr 2 | Grand Total |
| Chocolade | \$ 744.60 | \$ 162.56 | \$ 907.16 |
| Gummibärchen | \$ 5,079.60 | \$ 1,249.20 | \$ 6,328.80 |
| Scottish Longbreads | \$ 1,267.50 | \$ 1,062.50 | \$ 2,330.00 |
| Sir Rodney's Scones | \$ 1,418.00 | \$ 756.00 | \$ 2,174.00 |
| Tarte au sucre | \$ 4,728.00 | \$ 4,547.92 | \$ 9,275.92 |
| Chocolate Biscuits | \$ 943.89 | \$ 349.60 | \$ 1,293.49 |
| Total | \$14,181.59 | \$8,127.78 | \$ 22,309.37 |

| Product | Qtr 1 | Qtr 2 | Grand Total |
|---------------------|---------------------------|---------------------|-------------|
| Chocolade | Sort Smallest to Largest | \$ 907.16 | |
| Gummibärchen | Sort Largest to Smallest | \$ 6,328.80 | |
| Scottish Longbreads | Sort by Color | \$ 2,330.00 | |
| Sir Rodney's Scones | Clear Filter From "Qtr 2" | \$ 2,174.00 | |
| Tarte au sucre | Filter by Color | \$ 9,275.92 | |
| Chocolate Biscuits | Number Filters | \$ 1,293.49 | |
| Total | | \$ 22,309.37 | |

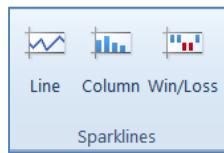
| B | C | D | E |
|---------------------|--------------------|-------------------|---------------------|
| Product | Qtr 1 | Qtr 2 | Grand Total |
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| Chocolate Biscuits | \$ 943.89 | \$ 349.60 | \$ 1,293.49 |
| Total | \$14,181.59 | \$8,127.78 | \$ 22,309.37 |

More about Sparklines

Sparklines are little charts embedded in your cells to show the trend of your data.

You'll find the tools on the Insert tab, in their own group next to Charts.

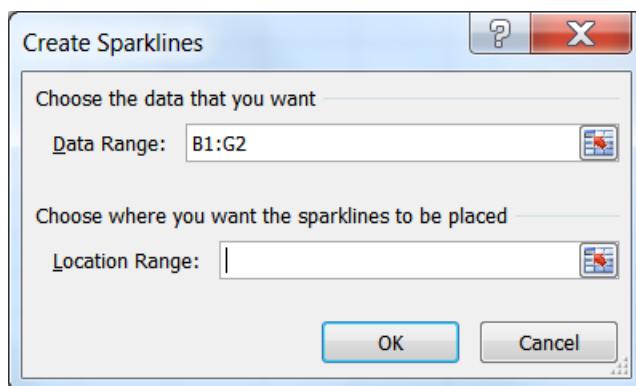


Line

| | A | B | C | D | E | F | G | H |
|---|-------|-----|-----|-----|-----|-----|-----|---|
| 1 | Items | JAN | FEB | MAR | APR | MAY | JUN | |
| 2 | Pants | 113 | 226 | 190 | 144 | 203 | 238 | |
| 3 | Shoes | 252 | 361 | 241 | 263 | 340 | 286 | |
| 4 | Socks | 424 | 208 | 279 | 271 | 168 | 281 | |

Column

| | A | B | C | D | E | F | G | H |
|---|-------|-----|-----|-----|-----|-----|-----|---|
| 1 | Items | JAN | FEB | MAR | APR | MAY | JUN | |
| 2 | Pants | 113 | 226 | 190 | 144 | 203 | 238 | |
| 3 | Shoes | 252 | 361 | 241 | 263 | 340 | 286 | |
| 4 | Socks | 424 | 208 | 279 | 271 | 168 | 281 | |



Create Sparklines

You can select the data range at any time, but if you do so before you choose the Sparkline option, your selection will autofill into the **Data Range**.

You can create the Sparkline for one cell and then fill down the pattern and Excel will create the Sparkline for each row's data. If you want to do all the rows at once, be sure to place the same number of cells in the Location Range.

Modify Sparklines

Click inside an existing Sparkline to see the Design tab.



Use the **Edit Data** drop down to change the range of your Sparkline data and location. You can do the full group or the individual series.

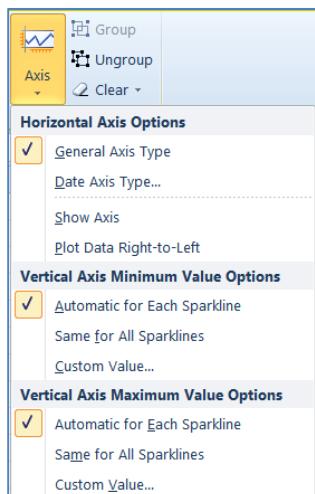
The **Show** options put markers or color variations within the charts to help points stand out.

The **Style** options are used to make the charts look better.

- Use the **Sparkline Color** option to change the color and weight (thickness) of the lines.
- The **Marker Color** option allows you to customize each of the markers.

By default, each Sparkline has its own axis range. Among many other things, the **Axis** option allows you to set **Same for All Sparklines** so the charts are easier to compare across multiple ranges. Notice there is a minimum and maximum.

As you change the format, all of the Sparklines change. If you want to modify them independently you can **Ungroup** the Sparklines. This allows you to format each one, but if you decide to **Group** later, all the Sparklines will have the same format.



Excel 2016

Linking Worksheets



Microsoft Excel 2016: Linking Worksheets

1.5 hour

In this workshop we will insert, delete and rename worksheets; change data and formatting on multiple sheets at the same time; link worksheets to create a Totals page; move sheets into different workbook (file); and change the view to see multiple books and sheets at the same time. This intermediate workshop assumes prior experience with Microsoft Excel.

| | |
|---|---|
| Number of Worksheets..... | 1 |
| Inserting Worksheets | 1 |
| Deleting Worksheets..... | 2 |
| Renaming Worksheets..... | 2 |
| Color Coding Worksheets | 2 |
| Moving and Copying Worksheets..... | 3 |
| Hiding Worksheets..... | 3 |
| Unhiding Worksheets | 3 |
| Selecting Multiple Worksheets..... | 4 |
| Range of Worksheets..... | 4 |
| Selecting Specific Worksheets | 4 |
| Selecting All the worksheets..... | 4 |
| Unselecting Worksheets | 4 |
| Linking Cells..... | 5 |
| Create a Link..... | 5 |
| Remove a Link | 5 |
| Absolute vs. Relative Links | 5 |
| Linking Workbooks..... | 6 |
| Opening Linked Files | 6 |
| Handling Broken Links..... | 7 |
| Removing all links | 7 |
| Edit Link Window | 7 |
| Working with Multiple Files/Windows | 8 |
| Ungrouping Taskbar Buttons | 8 |
| Moving Between Windows..... | 8 |
| View Different Sheets of the Same Book..... | 8 |
| Class Exercise | 9 |



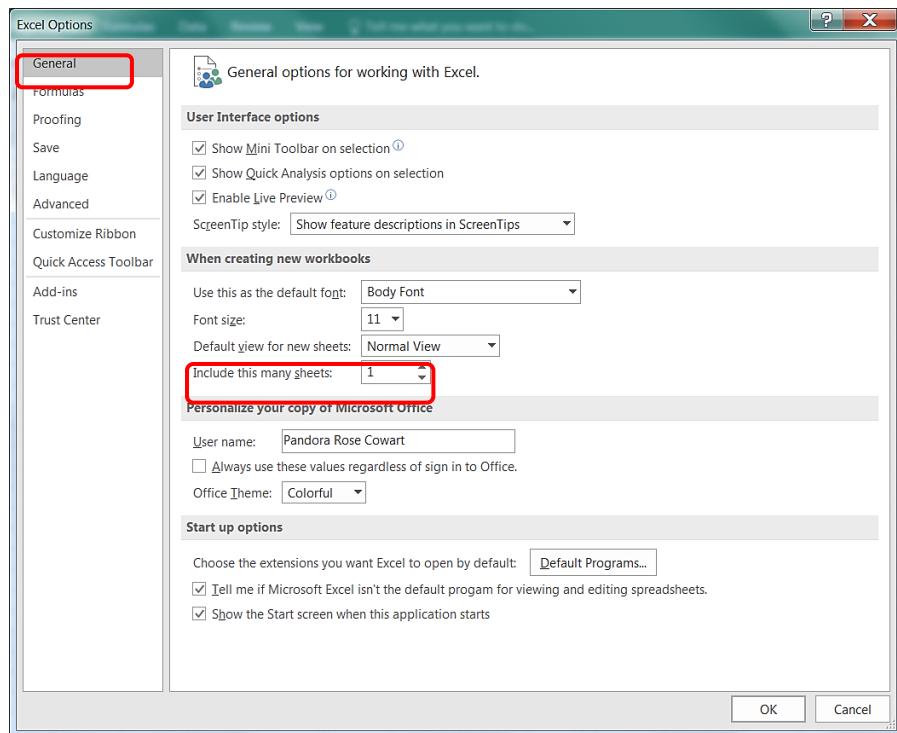
Pandora Rose Cowart
Education/Training Specialist
UF Health IT Training

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(352) 273-5051
prcowart@ufl.edu
<http://training.health.ufl.edu>

Number of Worksheets

An Excel workbook used to have a limit of 255 worksheets, but the 2016 version is limited only by the available memory. By default, new workbooks begin with one worksheet.

You can change the default setting from the **Excel Options**. The **Options** button is at the bottom of the **File** menu. In the **General** group of the **Excel Options**, you can set the number of sheets to be opened in a new workbook.

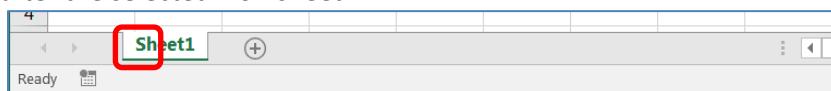


You can set new books to start between 1 and 255 sheets. Changing this setting will not modify the current workbook, only future new workbooks.

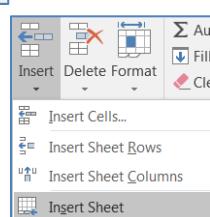
Inserting Worksheets

You can insert a worksheet by doing one of the following:

- ⇒ Click on the **Insert Sheet** button located at the bottom of the window. The new sheet will be inserted after the selected worksheet.



- ⇒ or Press Shift-F11 on the keyboard.
- ⇒ or from the **Home** tab, the **Cells** group, **Insert**, **Insert Sheet**.
- ⇒ or Right-click on the name of any sheet and choosing **Insert...** Excel will then ask what you want to insert. Choose **Worksheet** and click **OK**.

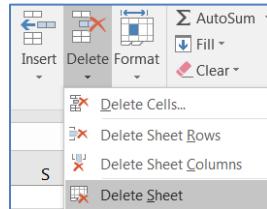


To insert multiple sheets at once, select the number of worksheets you would like to insert and follow the steps above. If three sheets are selected when you insert a worksheet, then three new sheets will be inserted. See *Selecting Multiple Worksheets* later in this handout.

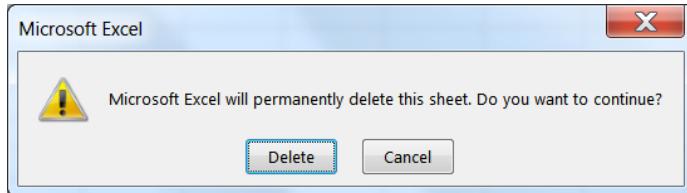
Deleting Worksheets

You can delete a worksheet by doing one of the following:

- ⇒ Right-click on the name of the worksheet and choose **Delete**.
- ⇒ or from the **Home** tab, **Cells** group, **Delete**, **Delete Sheet**



If the worksheet is empty it will be deleted, otherwise Excel will ask you to confirm the deletion.



Note that the message says, "**To permanently delete...**" Once you confirm this deletion there is No Undo. The sheet and all the data are gone.

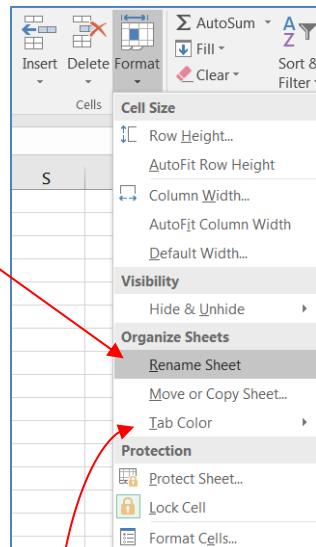
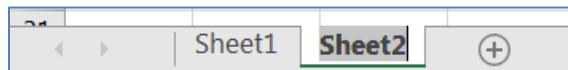
To delete multiple sheets at once, select the worksheets and follow the steps above. See *Selecting Multiple Worksheets* later in this handout.

Renaming Worksheets

You can rename a worksheet by doing one of the following:

- ⇒ Double-click on the name of the worksheet.
- ⇒ or Right-click on the name of the worksheet and choosing **Rename**
- ⇒ or from the **Home** tab, **Cells** group, **Format**, **Rename Sheet**.

However, you choose to rename, the worksheet name will be selected.



Type the new name and press **Enter** on the keyboard to accept it.
Press **Esc** on the keyboard to cancel renaming the sheet.

Your worksheet name can contain up to 31 characters. There are a few characters that Excel won't let use in the sheet name.

Examples: Asterisk (*), Backslash (\), Colon (:), and Brackets ([])

Color Coding Worksheets

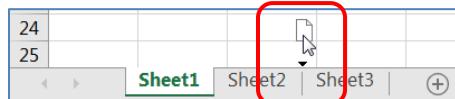
You can change the color a worksheet:

- ⇒ Right-click on the name of the worksheet and choosing **Tab Color**.
- ⇒ or from the **Home** tab, **Cells** group, **Format**, **Tab Color**.

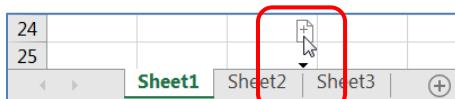


Moving and Copying Worksheets

A worksheet can be moved by dragging it to a new location. Click on the worksheet name, don't let go, and drag the worksheet left or right to the new location. When you are holding onto a worksheet, your mouse cursor will show a sheet of paper and a little black arrow will appear above the sheets, this black arrow will show you where the new worksheet will be when you let go of the mouse.



If you hold down the control (**Ctrl**) key while moving the worksheet, you can create a duplicate, a copy of the worksheet. This copies everything, all the contents and formatting. (Remember to let go of the mouse before letting go of the keyboard.)

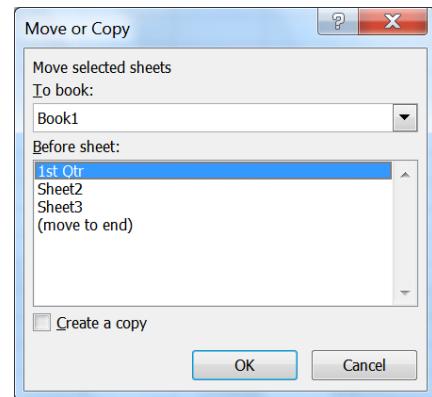


For more options do one of the following:

- ⇒ Right-click on the sheet name and choose **Move or Copy...**
- ⇒ or from the **Home** tab, in the **Cells** group, choose **Format**, and choose **Move or Copy Sheet**

The window that comes up allows you to choose a where you would like to place the sheet in the current workbook, or any open book (under the **To Book:** menu). This includes an option to create a new Excel workbook (**new book**).

By default, this window will move the worksheet; click the check box at the bottom of this window if you would prefer to create a copy.



Hiding Worksheets

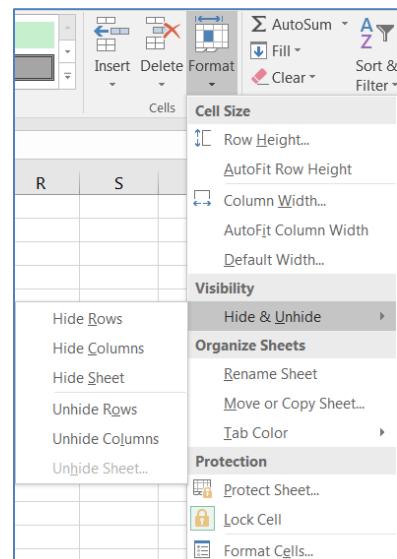
For some templates and lookup files you may wish to hide a worksheet.

- ⇒ Right-click on the name of the worksheet and choosing **Hide**.
- ⇒ or from the **Home** tab, in the **Cells** group, choose **Format**, choose **Hide & Unhide**, and choose **Hide Sheet**.

Unhiding Worksheets

Unhide a worksheet:

- ⇒ Right-click on the name of any worksheet and choosing **Unhide....**
- ⇒ or from the **Home** tab, in the **Cells** group, choose **Format**, choose **Hide & Unhide**, and choose **Unhide Sheet...**



Selecting Multiple Worksheets

The **Shift** and **Ctrl** keys on the keyboard allow you to work with multiple selections. You can use them to select multiple shapes, multiple cells, and multiple worksheets.

With multiple worksheets selected you can:

- Enter data on the current sheet and it will be entered on the selected worksheets
- Enter formulas on the current sheet and it will be entered on the selected worksheets
- Change formats on the current sheet and it will change on the selected worksheets
- Insert multiple worksheets
- Delete selected worksheets
- Color selected worksheets tabs
- Move selected worksheets
- Change the Page Setup for selected worksheets
- Print selected worksheets

Range of Worksheets

To select a range of worksheets, use the **Shift** key.

1. Click on the first worksheet
2. Hold down the **Shift** key on the keyboard and click on the last worksheet

If we click on 1st Qtr and **Shift**-click on 3rd Qtr, we will have all three sheets selected.

| | | | | | | |
|----|---|---|---------------|---------------|---------------|--------|
| 24 | | | | | | |
| 25 | | | | | | |
| | ← | → | Sheet1 | Sheet2 | Sheet3 | Sheet4 |
| | | | | | | Sheet5 |

Selecting Specific Worksheets

To select specific worksheets, use the control key.

1. Click on the first worksheet
2. Hold down the **Ctrl** key on the keyboard, and click on the second worksheet
3. Keeping the **Ctrl** key pressed, click on each worksheet you would like to select

If we click on 1st Qtr and **Ctrl**-click on 3rd Qtr, we will have only those two sheets selected.

| | | | | | | |
|----|---|---|---------------|--------|---------------|--------|
| 24 | | | | | | |
| 25 | | | | | | |
| | ← | → | Sheet1 | Sheet2 | Sheet3 | Sheet4 |
| | | | | | | Sheet5 |

Selecting All the worksheets

- ⇒ To select all the worksheets, click on the first sheet and shift-click on the last sheet.
- ⇒ Or right-click on any worksheet name and choose **Select All Sheets**.

Unselecting Worksheets

To drop the selection, click on a worksheet that is not part of the current selection. Or right-click on any worksheet name and choose **Ungroup Sheets**.

Linking Cells

Linking cells is one of the operations in Excel that is so simple, it's hard to believe. When you create the Link, Excel will enter the path and keep track of the moments of the original cell.

Create a Link

Click inside the cell where we want the answer, press the **Equal (=)** key on the keyboard, as if we were going to build an equation, and then click on the cell we want to link to, putting Excel into a "Point" mode. Click on any cell on the worksheet, on another worksheet, and even in another workbook.

Link to cell A1

Press the equal button on the keyboard. Click in cell A1. Press Enter on the keyboard.

=A1

Link to Cell A1 in Sheet2

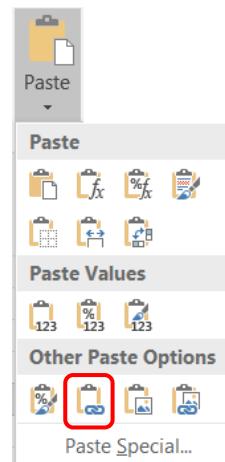
Press the equal button on the keyboard. Click on Sheet 2, click in cell A1. Press Enter on the keyboard.

=Sheet2!A1

Link to Cell A1 in Sheet1 of Book2

Press the equal button on the keyboard. Click on Book2, Sheet1, cell A1. Press Enter on the keyboard.

=[Book2]Sheet1!\$A\$1



Using the Clipboard

Another way to create a link is to copy the original data, move to where you would like the linked value to appear and choose "Paste Link". **Paste Link** can be found on the **Paste** drop-down list, the right-click menu, and as an option in the **Paste Special** window. The icon looks like a small chain link.

Remove a Link

To break the link, delete the contents of the cell. To keep the values, copy and Paste values. To remove all the links and keep the values, see the **Edit Link Window** section of this handout.

Absolute vs. Relative Links

When you link to a cell in the same workbook Excel creates a "relative" link. When the link is to another workbook it creates an "absolute" link. You can see this by the dollar signs (\$) around the cell address.

You can type in or remove the dollar signs to change between the two options. F4 is the keyboard shortcut to toggle between the absolute/relative options.

Excel will follow the address of the original data whether we are set to Relative or Absolute. However, if we are using different workbooks, Excel can only follow the data while the other book is still open. If data moves in another book, and the linked file is not open, the cell links will not follow.

The Absolute and Relative settings will matter when you try to copy or fill the link. With the Absolute (\$), the copy/fill will contain the same cell addresses (i.e. \$A\$1-\$A\$1-\$A\$1...); with the Relative (no \$), the copy/fill will contain the series (i.e. A1-A2-A3...)

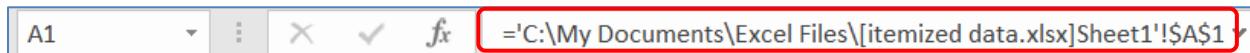
Linking Workbooks

As stated on the previous page linking workbooks is as simple as linking worksheets, with the added step of choosing the file first. Click in the cell where you want the result to be, press the equal sign (=) on the keyboard and then use your mouse to *select the workbook*, click on the worksheet, click on the cell you want to link to and press **Enter** to accept.

The formula bar will show the full path of the linked cell. If the file is open you will see just the file name, worksheet name and cell address.



If the linked file is not open, you will see the location of the file as well:



Opening Linked Files

The safest way to work with linked files is to have the original data and the linked files open when you move things around. However, that's not always feasible.

Case 1: Open the original file and then Linked file

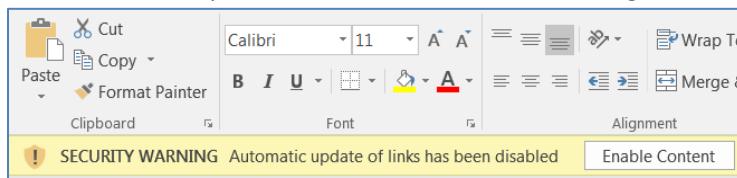
Result – Excel sees the links and updates all changes and will continue to update you go.

Case 2: Open Linked file by itself (or before the original)

Result – Excel prompts for permission to update links. Depending on your security settings you may see the subtle yellow security message between the ribbon and the formula bar, or the warning message box forcing you to choose.

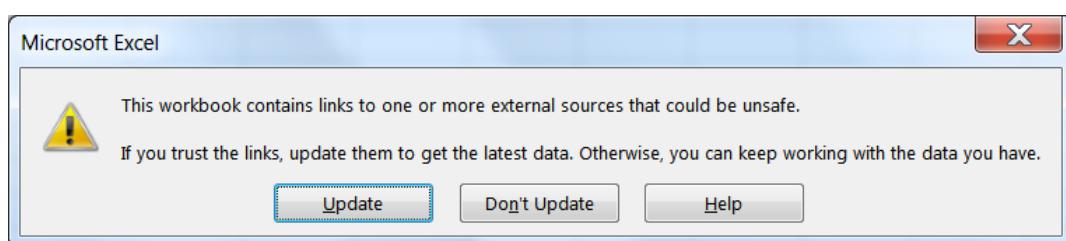
If you ignore the message you can continue to work in Excel with the 'old' data.

If you click **Enable Content** Excel will update the links, if it can find the original file.



If you click **Don't Update** you can continue to work in Excel with the 'old' data.

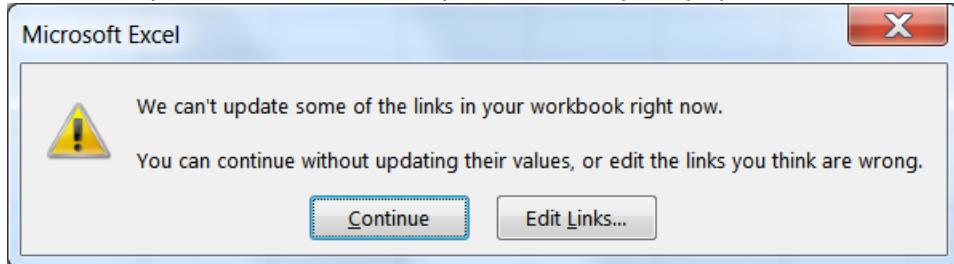
If you click **Update** Excel will update the links, if it can find the original file.



Handling Broken Links

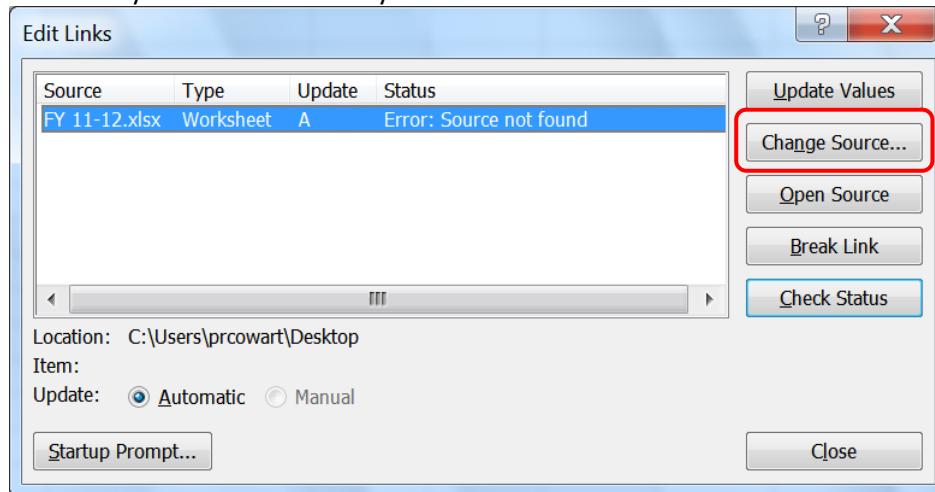
Excel does a wonderful job updating the links, **IF** it can find the cell you are referring to in your dataset. If the filename or sheet name has changed while the linked file is open, the links will be able to follow along, however, if they are changed while the linked file is closed Excel will lose its way.

When you ask Excel to update the link, if it has a problem it will prompt you:



If you **Continue**, you can work with the "old" data.

If you click **Edit Links...** you be able to modify where the source file is located.



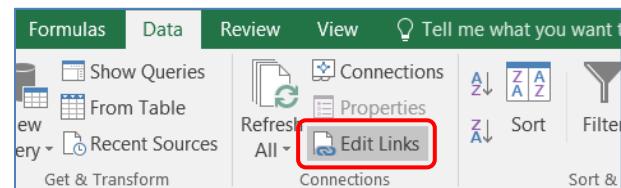
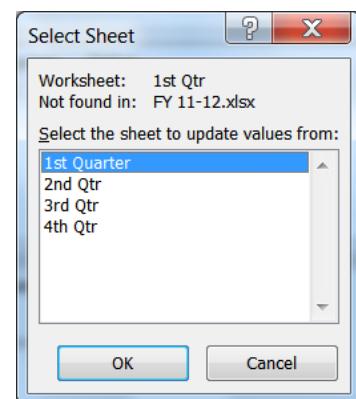
Click on the **Change Source...** button to find the original file. If the worksheet names have changed, the Status error will read "**Error: Worksheet not found**". For missing worksheets, it will prompt to find the sheet name.

Removing all links

If the original files or sheets have been deleted, you may need to use the **Break Link** option. This will convert all the linked cells to values. This option cannot be undone.

Edit Link Window

You can open the above **Edit Link** window at any time from the **Data** tab, in the **Connections** group.



Working with Multiple Files/Windows

Ungrouping Taskbar Buttons

Your copy of Windows may try to lump all of the files into the same icon across the task bar at the bottom of the window.



But you may prefer to see them split out into individual buttons.

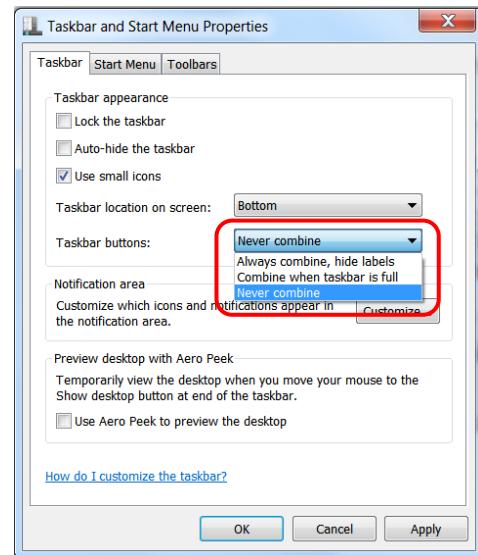


To do this, right-click in an empty space on the Windows Taskbar and choose Properties.

Change the option **Task Bar Buttons** from "Always combine" to either of the other options.

Combine when taskbar is full will lump the buttons together when the taskbar is crowded, the other will keep them separate even if there's almost no room for them.

Keep in mind this is not an Excel feature, this is a Windows setting.



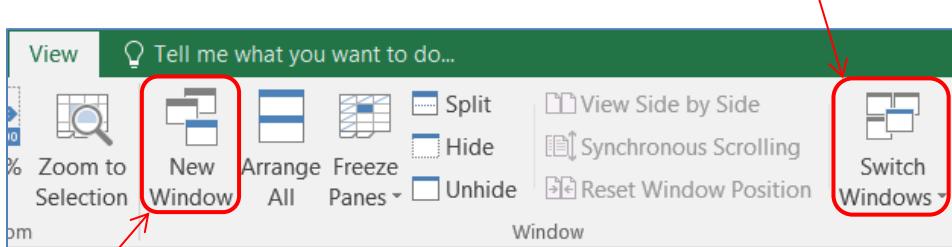
Moving Between Windows

We can use the Task Bar to move between our files, or we can use the keyboard shortcuts.

Alt - Tab **Moves between Applications**

Ctrl - Tab **Moves between Open Files in Excel (This works for Internet Browser Tabs as well)**

These can be tedious if there are a lot of files open. To see a list of all the open Excel files, turn to the **View** tab. In the **Windows** group you will find a list of the open files under **Switch Windows**.



View Different Sheets of the Same Book

The **New Window** option on the View tab will open another window of the same Excel file. This allows you to look at two different worksheets of the same Excel file!

Excel 2016 no longer allows you to open multiple files in the same instance of Excel, each Excel window will open with its own ribbon. Excel's Arrange All button should work with all the open Excel windows, but you can right-click in the Windows Taskbar to find window arranging options.

Class Exercise

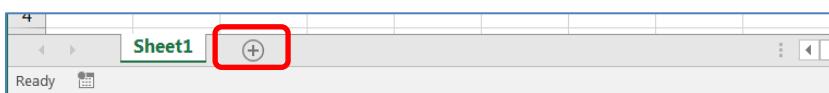
Review

- Open Excel
- File->Options
 - o Default # of sheets

Rename Sheets

- Double-click on Sheet1
 - o Rename to 1st Qtr
 - o Press enter to accept
- Insert three more sheets and Rename

Keyboard Shortcut:
Shift-F11 = New Sheet



- o Sheet2 -> 2nd Qtr
- o Sheet3 -> 3rd Qtr
- o Sheet4 -> 4th Qtr

Label the sheets

- For each sheet, In Cell D1 Type name of worksheet
 - o Click on 1st Qtr sheet, click in Cell D1, type 1st Qtr
 - o Repeat for each sheet, 2nd Qtr, 3rd Qtr, 4th Qtr

Modify multiple sheets

- Click on 1st Qtr sheet, Shift-Click on 4th Qtr sheet
- Zoom 150%
- View each worksheet

Modify specific sheets

- Click on the 1st Qtr sheet
- Ctrl-Click on the 3rd Qtr sheet
 - o Click in Cell D1
 - o Use the Fill bucket to change the color
- Click on the 2nd Qtr sheet
- Ctrl-Click on the 4th Qtr sheet
 - o Click in Cell D1
 - o Use the Fill bucket to change the color
- View each sheet

Keyboard shortcut:
Use Ctrl-Page Up and
Ctrl-Page Down to move
between the worksheets.

Enter data on multiple sheets

- Click on 1st Qtr sheet
- Right-click on the sheet name and choose Select All Sheets
 - o Check title bar for **[Group]**
- Type:
 - o A1: Big City Store
 - o A2: Quarterly Sales Report
- View each sheet
- **Select All Sheets again**
- Create the table show here:

| | A | B | C | D |
|---|------------------------|-------|-----|-------|
| 1 | Big City Store | | | |
| 2 | Quarterly Sales Report | | | |
| 3 | | | | |
| 4 | Item | Price | Qty | Total |
| 5 | A | | 123 | |
| 6 | B | | 456 | |
| 7 | C | | 789 | |

Format multiple sheets

- Bold Titles and place a bottom border
- Accounting (\$) format Price & blank Total cells
- Center Qty
- Create formula for Total for Item A
 - o =B5*C5
- Use Fill handle to create equations for Items B & C
- In cell C8: "Quarterly Total:"
 - o Right Align
- In Cell D8: Use AutoSum button to total
- View Other sheets
 - o Make sure all the sheets are now unselected (no [Group] in title bar)

Shortcut: Click on Column B (Price) and use the Ctrl key to select Column D (Total). Format them at the same time.

| | A | B | C | D |
|---|------------------------|-----------|------------------|---------|
| 1 | Big City Store | | | 1st Qtr |
| 2 | Quarterly Sales Report | | | |
| 3 | | | | |
| 4 | Item | Price | Qty | Total |
| 5 | A | \$ 123.00 | | \$ - |
| 6 | B | \$ 456.00 | | \$ - |
| 7 | C | \$ 789.00 | | \$ - |
| 8 | | | Quarterly Total: | \$ - |

Adjusting formatting

- On the 1st Qtr sheet:
 - o Type in Cell C5: 987
 - o Notice the Column is too Narrow #####
- Select all sheets
- Expand Column D
- Type in Cell C6: 654
- Turn to 2nd Qtr sheet

Fix multiple sheets

- Click on 2nd Qtr Sheet, shift-click on 4th Qtr Sheet
- Click in cell C6 (the 654), press delete to remove unwanted data
- Click on 1st Qtr Sheet, Confirm lack of [Group] in title bar
- Type in Cell C7: 321

Create a Total's Page

- Insert a worksheet
- Move it to Beginning
 - o Drag Sheet5 to the beginning of the worksheets
- Name it **Totals**
- Increase the Zoom to 150%
- Type data in cells –
 - o In Cell D1 type: Totals
 - o In Cell B2 type: 1st Qtr
 - Drag fill handle to B5
 - This creates 2nd, 3rd & 4th Qtr

| | A | B | C | D |
|---|---|-------------|---|---------------|
| 1 | | | | Grand |
| 2 | | 1st Qtr | | ='1st Qtr'!D8 |
| 3 | | 2nd Qtr | | |
| 4 | | 3rd Qtr | | |
| 5 | | 4th Qtr | | |
| 6 | | Grand Total | | |

Link to another cell

- Link cell B6 to D1
 - o In Cell B6, press equal (=)
 - o click on Cell D1
 - o press **Enter**
- Change D1: Grand Total
 - o See B6 change

| | A | B | C | D |
|---|---|---------|-----|--------|
| 1 | | | | Totals |
| 2 | | 1st Qtr | | |
| 3 | | 2nd Qtr | | |
| 4 | | 3rd Qtr | | |
| 5 | | 4th Qtr | | |
| 6 | | | =D1 | |

Link to another sheet

- Link cell C2 to total on 1st Qtr sheet
 - o In Cell C2, press equal (=)
 - o Click on 1st Qtr sheet
 - o Click in D8
 - o Press **Enter**
- View Link in formula bar
- Link Cells C3 to 2nd QTR, C4 to 3rd QTR, C5 to 4th QTR
- Calculate Grand Total in C6 using the AutoSum
- Right Align Column B

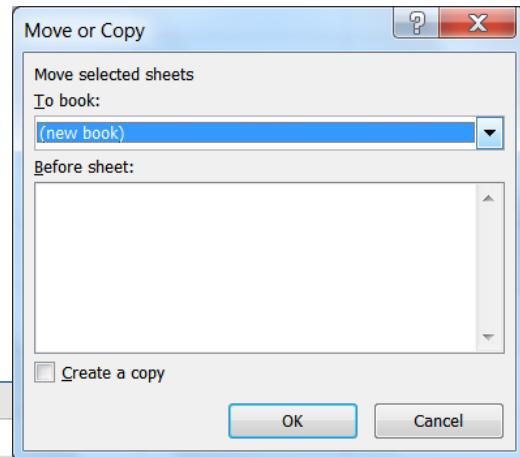
Test Links

- Turn to 2nd Qtr sheet
 - o In Cell C5 type: 951
 - o In Cell C6 type: 624
 - o In Cell C7 type: 357
- View Totals sheet

Move Totals Sheet to another book

- Right-click Totals sheet
- Choose **Move or Copy Sheet...**
- From Book menu choose (new book)
- View Links in the Totals sheet
 - o View formulas (Ctrl-~)
 - o View Answers (Ctrl-~)

| | A | B | C |
|---|-----|------------------------------|-------------|
| 1 | | | |
| 2 | | 1st Qtr ='[Book1]1st Qtr'!D8 | |
| 3 | | 2nd Qtr ='[Book1]2nd Qtr'!D8 | |
| 4 | | 3rd Qtr ='[Book1]3rd Qtr'!D8 | |
| 5 | | 4th Qtr ='[Book1]4th Qtr'!D8 | |
| 6 | =D1 | | =SUM(C2:C5) |



Save Files

- Save file with the quarter sheets as **Quarters** (on the desktop)
- Save file with the total sheet as **Totals** (on the desktop)
- View Links in Totals
 - o ='[Quarters.xlsx]1st Qtr'!D8

Keyboard Shortcut:
F12 = Save As

Viewing multiple files

- Switching Windows
 - o Click on file names in the Windows Taskbar (bottom of window)
 - o From the **View** tab, use **Switch Windows**
 - o Press Ctrl-Tab
- From the **View** tab, choose **Arrange All**
- Maximize Quarters

Test Links

- In Quarters, turn to 3rd Qtr sheet
 - o In Cell C5 type: 967
 - o In Cell C6 type: 688
 - o In Cell C7 type: 384
- View Totals for result

Close files

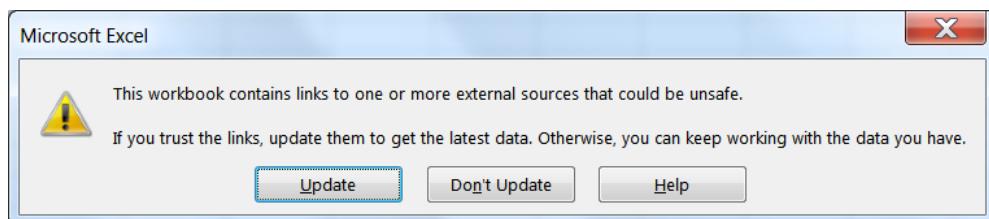
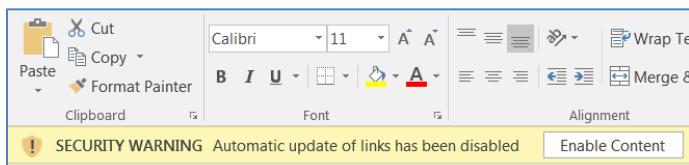
- Close and Save Quarters
 - View Links in Totals (*your path will be different for your computer*)
 - o ='C:\Users\prcowart\Desktop\[Quarters.xlsx]1st Qtr'!D8
 - o Drive, folder, folder,..., file, sheet, cell
 - Save and Exit Microsoft Excel
-

Modify Quarters file

- From the Desktop, Open Quarters (only, don't open Totals)
 - In Quarters file turn to 4th Qtr sheet
 - o In Cell C5 type: 900
 - o In Cell C6 type: 600
 - o In Cell C7 type: 300
 - Close and Save
-

View Totals file

- Open Totals File
- See Security Warning
- Choose Enable Content (or "Update")



Set up File View

- Open Quarters File
 - o If needed, move to 4th Qtr sheet
 - From the View Tab, choose Arrange All
 - o Tile the windows
 - In Totals Delete the link for 4th Qtr Total (Cell C5)
-

Link Between books

- Recreate the link
 - o Press Equals (=)
 - o Click in the Quarters window
 - o Click in the Quarterly Total cell (D8)
 - o Press Enter

The image shows two Excel windows side-by-side. The left window, titled 'quarters.xlsx - Excel', contains a table of sales data for 'Big City Store'. The right window, titled 'Totals.xlsx - Excel', contains a summary table with quarterly totals. A formula bar at the top of each window shows the reference to the other file: '=[Quarters.xlsx]4th Qtr!\$D\$8' in the quarters window and '=[Quarters.xlsx]4th Qtr!\$D\$8' in the totals window.

quarters.xlsx - Excel

| Big City Store | | 4th Qtr | |
|----------------------------|----------|---------|---------------|
| Quarterly Sales Report | | | |
| Items | Price | Qty | Total |
| A | \$123.00 | 900 | \$ 110,700.00 |
| B | \$456.00 | 600 | \$ 273,600.00 |
| C | \$789.00 | 300 | \$ 236,700.00 |
| Qtrly Total: \$ 621,000.00 | | | |

Totals.xlsx - Excel

| Grand Total | |
|-------------|--------------------------------|
| 1st Qtr | \$ 672,894.00 |
| 2nd Qtr | \$ 683,190.00 |
| 3rd Qtr | \$ 735,645.00 |
| 4th Qtr | =[Quarters.xlsx]4th Qtr!\$D\$8 |
| Grand Total | \$ 2,091,729.00 |

Pasting Link

- Delete link again from C5
- Recreate again using paste link
 - o Leave Cell C5 in Totals empty
 - o Click on cell D8 in Quarters (4th Qtr)
 - o Copy the cell
 - o Click in Cell C5 in Totals
 - o Right-click in Cell C5
 - o Choose Paste Link
- Exit and save Totals and Quarters



Rename Quarters file

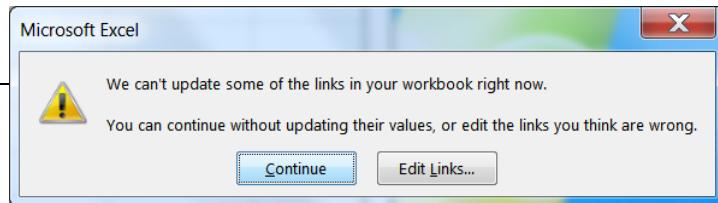
- On the desktop right-click on the Quarters file
- Choose Rename, Name the file "FY 17-18"

Modify FY 17-18 file

- Open FY 17-18
- If needed, turn to 4th Qtr sheet
 - o In Cell C5 type: 975
 - o In Cell C6 type: 684
 - o In Cell C7 type: 359
- Save and Exit

View Totals file with old data

- Open Totals File
- Choose **Enable Content**
- Click **Continue** to open the file with "Old" data
- Exit Microsoft Excel



View Totals file edit links

- Open Totals File
- Choose **Enable Content**
- Click **Edit Links...** to find the original file
- Click **Change Source** button
 - o Find FY17-18 file and click **Open**
- View new data
- Exit Microsoft Excel

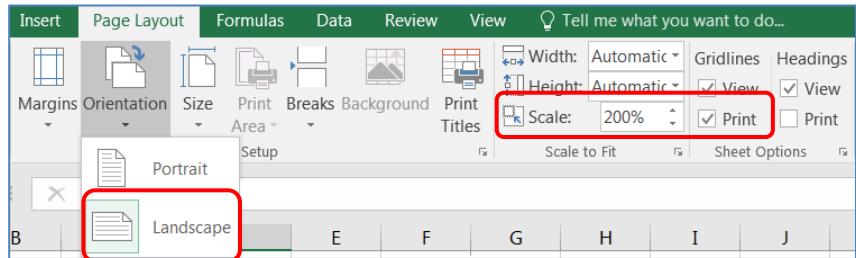
View Multiple Sheets of same Book

- Open FY17-18 File
- Select All Sheets
- Change zoom to 100%
- Drop Group of sheets and turn to 1st Qtr sheet
- From the View tab, choose New Window
- Arrange All, Tiled
- Type in one side of the window to see it happening live in the other window
- Choose New Window two more times
- Arrange All, Tiled
- Change each sheet to a different Qtr so you can see all four quarters at once
- Close three windows
- Maximize the last one

Keyboard shortcut:
Use the windows flag (⌘) button on the keyboard with the arrow keys to move the active window around the screen.

Printing Multiple Sheets

- Open Print Preview (ctrl-P or File->Print)
- From the Print Preview menu, change the Setting **Print Active Sheets**, to **Print Entire Workbook**
- You should have four pages
- Go back to Print Active Sheets
- Select Sheets 1st Qtr and 3rd Qtr
- Print Preview should have 2 pages
- Select all the sheets
- Turn to the Page Layout Tab
 - o Orientation: Landscape
 - o Scale: 200%
 - o Gridlines: Print
- Print Preview should have 4 pages
- Close Print Preview
- Ungroup sheets



Helpful Worksheet Tips

Moving

- Ctrl-Page up and Ctrl Page Down move between the worksheets.
- Ctrl-Tab moves between the workbooks.
- The scroll arrows for the sheets move one sheet at a time. Hold down the Ctrl key when you click to move to the beginning or end of all the sheets.
- Right-click on the scroll arrows to see a list of all the sheets, chose the one you want to "activate" and click OK.

Multiple sheets

- To see two worksheets from the same book at the same time, choose "New Window" from the View tab. Arrange the windows.
- Right-click on a worksheet name to SELECT ALL SHEETS and to UNGROUP SHEETS.
- Shift-Click to select a range of sheets.
- Ctrl-Click to select a group of individual sheets.

Printing

- You can print the worksheet name by building a custom header and footer in the Page Setup.
- The Print Preview menu has an option to Print Active Sheets and Print Entire Workbook.
- You can make a selection of sheets with your Shift and Ctrl keys, and then print them at the same time with the Print Active Sheets.

Cautions

- When you are working with multiple sheets, watch for the word GROUP in the title bar.
- If other files are linked to the one you are working with, be careful in rearranging and renaming the contents. If you keep both files open, Excel will follow your movements.
- You can always separate the linked files by breaking all the link, see Page 7.

Excel 2016: Large Data 1 - Sorting and Filtering



Excel 2016: Large Data 1 - Sorting and Filtering

1.5 hours

In this workshop, we will work with single and multilevel sorting; learn to use data filters to automatically show only the specified data set; and do math on our filtered data sets. This workshop also contains a very brief introduction to other summary tools such as Subtotal and Pivot Tables. This intermediate workshop assumes prior experience with Microsoft Excel.

| | |
|---|----|
| Sorting Data | 1 |
| Ascending Sorts | 1 |
| Descending Sorts | 1 |
| Custom Sorts | 1 |
| Custom Lists..... | 2 |
| Sort Options..... | 2 |
| Filtering Data | 3 |
| Custom Filters..... | 4 |
| SUBTOTAL Worksheet Function..... | 5 |
| Other Summary Tools | 6 |
| Subtotal Outlines..... | 6 |
| Pivot Tables | 6 |
| Class Exercise | 7 |
| SubTotal Worksheet Function Exercise..... | 17 |



Pandora Rose Cowart
Education/Training Specialist
UF Health IT Training

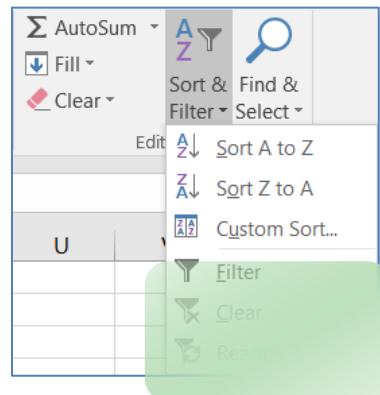
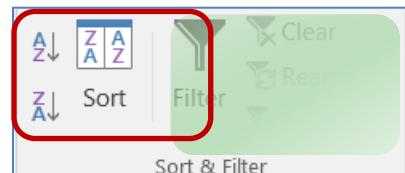
C3-013 Communicore
PO Box 100152
Gainesville, FL 32610-0152

(352) 273-5051
prcowart@ufl.edu
<http://training.health.ufl.edu>

Sorting Data

On the far right side of the **Home** tab, you will find a large Sort & Filter button. The menu you see when you Click on the button is reflected in the Sort & Filter group of the **Data** tab.

If you make a selection of cells, Excel will think you only want to sort or filter by that selection. But if your dataset has no blank rows and no blank columns Excel will see the whole range as one data set.



You can have blank cells, but not completely blank columns/rows; if you are not sure that your dataset is consistent, Click inside one cell, and press Ctrl-A. This will select all the cells within the dataset. A second "Ctrl-A", or pressing the shortcut in an empty cell, will select the entire sheet.

When you have completed a sort, you can Click the Undo button (or Ctrl-Z). Excel will undo the sort and it will select the dataset it used in the sort. This is another way to see your dataset.

Ascending Sorts

- **Text:** Sort alphabetically from A to Z
- **Numbers:** Sorts from smallest number to largest number
- **Dates:** Sorts from the newest date to the oldest date

| | A | B | C |
|---|----------|-----|----------|
| 1 | Apples | 123 | 1/1/1971 |
| 2 | Bananas | 456 | 2/2/1982 |
| 3 | Cherries | 789 | 3/3/1993 |

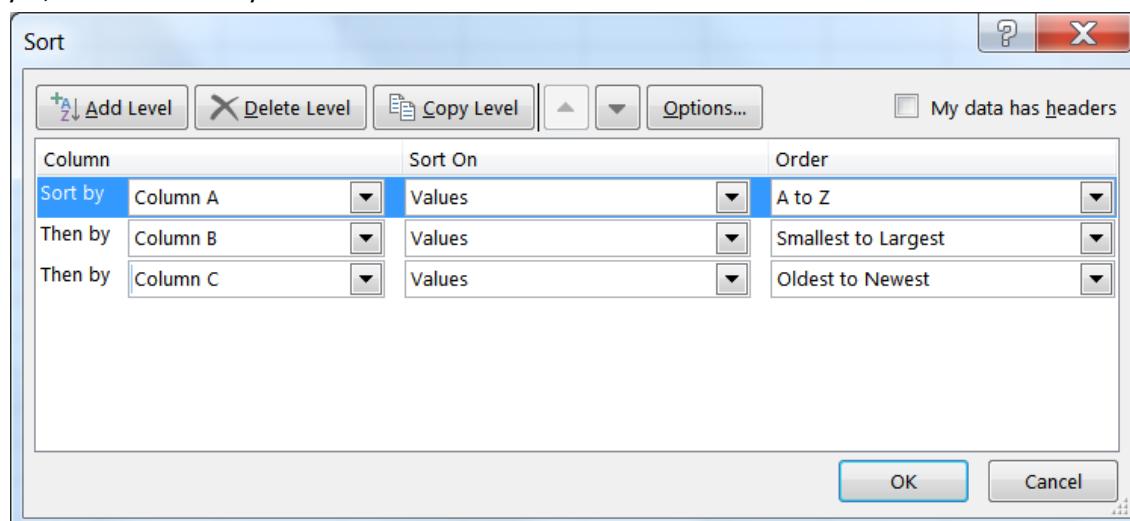
Descending Sorts

- **Text:** Sort alphabetically from Z to A
- **Numbers:** Sorts from largest number to smallest number
- **Dates:** Sorts from the oldest date to the newest date

| | A | B | C |
|---|----------|-----|----------|
| 1 | Cherries | 789 | 3/3/1993 |
| 2 | Bananas | 456 | 2/2/1982 |
| 3 | Apples | 123 | 1/1/1971 |

Custom Sorts

When you first open this window, Excel will show the most recent sort options. If you haven't created a sort yet, this window may be blank.

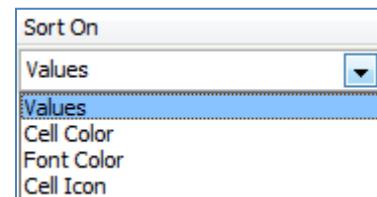


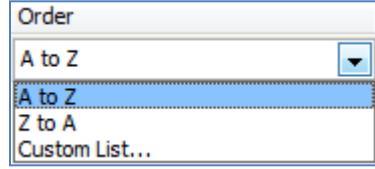
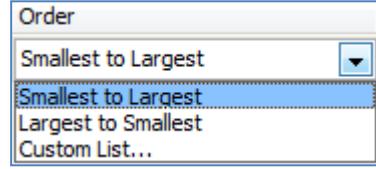
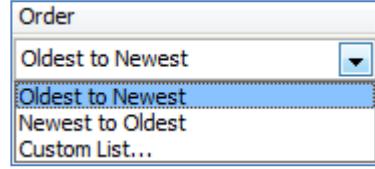
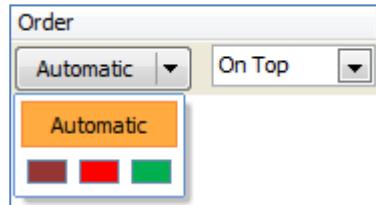
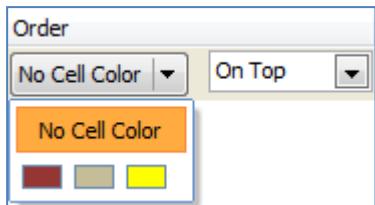
In Excel 2016, we can sort by 64 levels. From this sort window we can add levels, delete levels, copy levels, and even change the order of our sort using the up and down arrows in the toolbar.

Column: The column drop-down menu will show the names of your columns, your 'fields'. If your data does not have titles, Excel lists the column heading letters instead. If you were expecting titles, but is only showing the column letters, you can Click on the check box in the upper right hand corner of the Sort window to let Excel know your data has headers.

Sort On: You can Sort on the values of the cells, the cell colors, the font colors, or the cell icons.

Order: The order options change depending on the values in the cells.



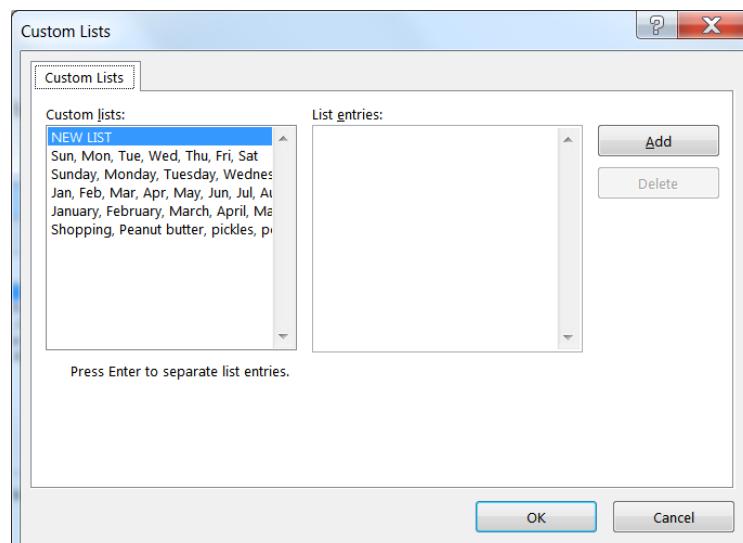
| Text | Number | Date |
|---|--|---|
|  |  |  |
| | | |
| Font Color | Cell Color | |
|  |  | |

Custom Lists

Custom lists can be built through the Excel Options under the **File** menu in the **Advanced** section under **General**. Or by choosing **Custom List...** option at the bottom of each order box above.

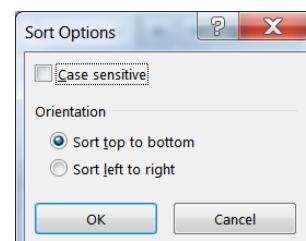
If you choose this option, you will be able to select from one of these lists. Alphabetically, April comes before January. With the Custom List order, we can ensure January comes first.

These custom lists will work as patterns with the fill handle. Notice the "Shopping" list? Once I set this up, I can type any of the words in a cell and use the fill handle to follow this pattern.



Sort Options

- **Case sensitive**: Sort lowercase letters before uppercase letters
- **Orientation**: Sort vertically (top to bottom, sort rows) or horizontally (left to right, sort columns)

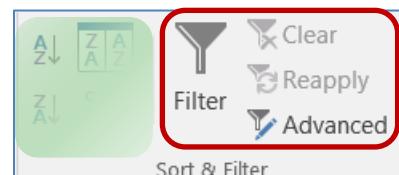
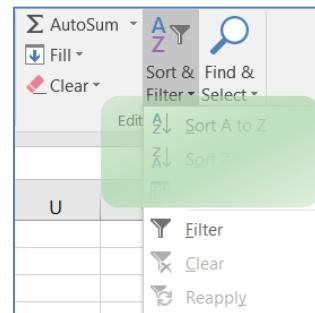


Filtering Data

Filters hide rows (records) based on criteria you set. You can turn the filter on and off by choosing **Filter** from the **Sort & Filter** button on the Home tab, or choosing the **Filter** button on the Data tab.

Excel will place a drop-down arrow at the end of each cell in the title row (the first row of the dataset). When you Click on this arrow, we see several options including our sort orders:

- Sort Ascending, Descending, and by color
- Clear the Filter
- Filter by Color
- Set a custom filter (text, number, date)
- Search for a matching value in the column
- List of values in the column (field). **Select All** will toggle between everything and nothing.



Once a filter has been set Excel will hide all the rows that do not match the criteria. The status bar will show how many records (rows) were found that matched. The row numbers of the original data will remain the same, but will appear blue. The dropdown arrows of the columns that are being filtered will show the filter icon (funnel). The double line between the row numbers indicate hidden rows.

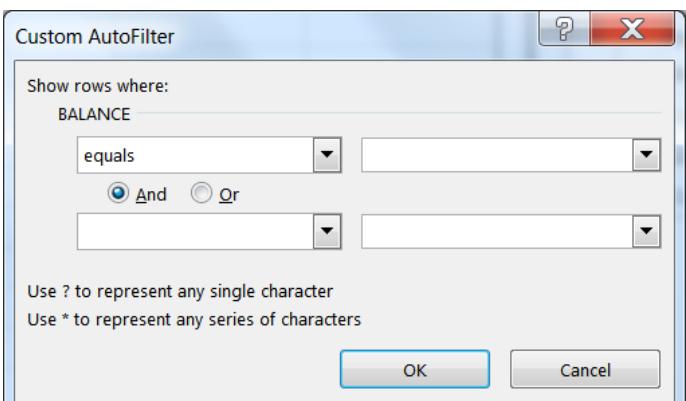
| | LAST | FIRST | ADDRESS | CITY | ST | ZIP |
|----|----------|-------|-------------|------|-------|-----|
| 1 | Appleton | April | PO Box 456 | FL | 32689 | |
| 3 | Katz | Kerry | PO Box 3346 | FL | 32689 | |
| 31 | Shores | Susan | PO Box 5592 | FL | 32689 | |
| 62 | | | | | | |
| 78 | | | | | | |
| 79 | | | | | | |
| 80 | | | | | | |
| 81 | | | | | | |
| 82 | | | | | | |
| 83 | | | | | | |
| 84 | | | | | | |
| 85 | | | | | | |
| 86 | | | | | | |
| 87 | | | | | | |
| 88 | | | | | | |

Custom Filters

Depending on the data in the column, you will have the option to set a custom filter based on text, numbers, and dates.

| Text Filters | Number Filters | Date Filters |
|---------------------|-----------------------------|---------------------------|
| Equals... | Equals... | Equals... |
| Does Not Equal... | Does Not Equal... | Before... |
| Begins With... | Greater Than... | After... |
| Ends With... | Greater Than Or Equal To... | Between... |
| Contains... | Less Than... | Tomorrow |
| Does Not Contain... | Less Than Or Equal To... | Today |
| Custom Filter... | Between... | Yesterday |
| | Top 10... | Next Week |
| | Above Average | This Week |
| | Below Average | Last Week |
| | Custom Filter... | Next Month |
| | | This Month |
| | | Last Month |
| | | Next Quarter |
| | | This Quarter |
| | | Last Quarter |
| | | Next Year |
| | | This Year |
| | | Last Year |
| | | Year to Date |
| | | All Dates in the Period ▾ |
| | | Custom Filter... |

If you choose one of the options on the Filter List with the ellipsis (...), you will see a Custom Auto Filter window such as this. From here, we can set up to two filters.



Be careful with the AND/OR relationships. If you ask Excel to show the rows where the City equals Jacksonville **AND** the City equals Gainesville, you will get no results, because one cell cannot equal both values. However, if you ask for the same using the OR, Excel will show all the records for both cities. Or's tend to work for exact matches (Equals This **OR** Equals That), whereas AND's tend to work for ranges (Greater than This **AND** Less than That).

You can use the "Wildcards" ? and * to help you with your filter. ? is used for one character, * for multiple.

Equals Jacks* -> Jacksonville, Jacksonville Beach, Jackson Heights

Some of the filter choices may work just as well. I could say Contains 'Jacks' or Begins with 'Jacks'.

SUBTOTAL Worksheet Function

We can do common mathematical functions with our filtered lists using the SUBTOTAL worksheet function. The syntax is for this function is "SUBTOTAL(function_num,ref1,ref2,...)". Function_num is the number 1 to 11 that specifies which 'function' to use in calculating subtotals within a list (see below).

The ref1, ref2... are the ranges of data that should be used in the equation, there can be up to 29 different ranges used in this function.

| Function_Num | Function | Function_Num | Function |
|--------------|----------|--------------|----------|
| 1 | AVERAGE | 7 | STDEV |
| 2 | COUNT | 8 | STDEVP |
| 3 | COUNTA | 9 | SUM |
| 4 | MAX | 10 | VAR |
| 5 | MIN | 11 | VARP |
| 6 | PRODUCT | | |

Function numbers 1 through 11 will include manually hidden rows, ones you have hidden yourself. Function numbers 101-111 will exclude your hidden rows from the function. Filtered-out rows are always excluded.

| | A | B | C | D | E | F |
|----|-------------|------------|--------|----------|------------|---|
| 1 | Sum | 1411 | | SubSum | 1411 | |
| 2 | Average | 8.70987654 | | SubAvg | 8.70987654 | |
| 3 | Count | 162 | | SubCount | 162 | |
| 4 | | | | | | |
| 5 | Quarter ▾ | Item ▾ | Size ▾ | Color ▾ | # Sold ▾ | |
| 6 | 1st Quarter | blouses | Large | Blue | 14 | |
| 7 | 1st Quarter | blouses | Large | Red | 6 | |
| 8 | 1st Quarter | blouses | Large | White | 10 | |
| 9 | 1st Quarter | blouses | Medium | Blue | 2 | |
| 10 | 1st Quarter | blouses | Medium | Red | 4 | |

| | A | B | C | D | E | F |
|-----|-------------|------------|--------|----------|----------|---|
| 1 | Sum | 1411 | | SubSum | 24 | |
| 2 | Average | 8.70987654 | | SubAvg | 8 | |
| 3 | Count | 162 | | SubCount | 3 | |
| 4 | | | | | | |
| 5 | Quarter ▾ | Item ▾ | Size ▾ | Color ▾ | # Sold ▾ | |
| 43 | 2nd Quarter | pants | Large | Red | 8 | |
| 46 | 2nd Quarter | pants | Medium | Red | 6 | |
| 49 | 2nd Quarter | pants | Small | Red | 10 | |
| 168 | | | | | | |
| 169 | | | | | | |

| | A | B | C | D | E |
|-----|-------------|-------------------|--------|----------|----------------------|
| 1 | Sum | =SUM(E5:E168) | | SubSum | =SUBTOTAL(9,E5:E168) |
| 2 | Average | =AVERAGE(E5:E168) | | SubAvg | =SUBTOTAL(1,E5:E168) |
| 3 | Count | =COUNT(E5:E168) | | SubCount | =SUBTOTAL(2,E5:E168) |
| 4 | | | | | |
| 5 | Quarter ▾ | Item ▾ | Size ▾ | Color ▾ | # Sold ▾ |
| 43 | 2nd Quarter | pants | Large | Red | 8 |
| 46 | 2nd Quarter | pants | Medium | Red | 6 |
| 49 | 2nd Quarter | pants | Small | Red | 10 |
| 168 | | | | | |
| 169 | | | | | |

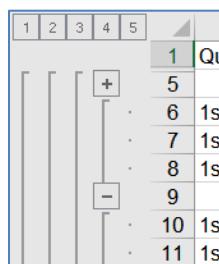
Other Summary Tools

Subtotal Outlines

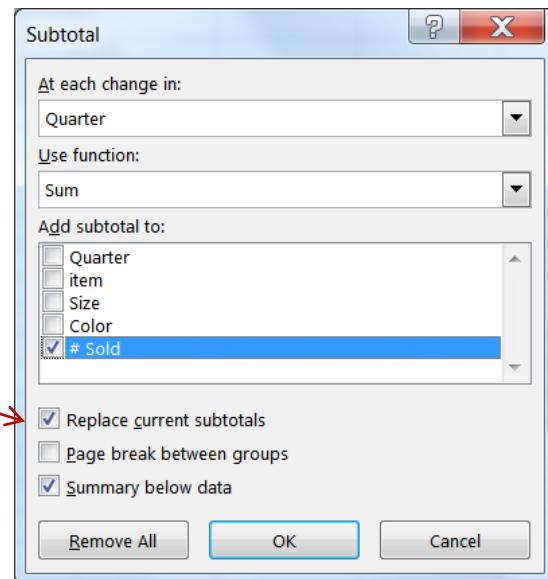
One way to sum up a large set of data is to use the **Subtotal** tool in the **Outline** group of the **Data** tab. This tool will total sets of related data and insert a subtotal row into the sheet at each change in the column of your choosing. It will also create a grand total at the bottom of the dataset.

This tool is very particular about your sort order. If you are going to group a column, make sure it is sorted first.

Also, pay attention to the **Replace Current Subtotals** option, as it does erase the previous totals.



Excel adds outline symbols to the left side of the worksheet. The numbers represent the outline level, the plus is used to expand a group, and the minus is to collapse a group.

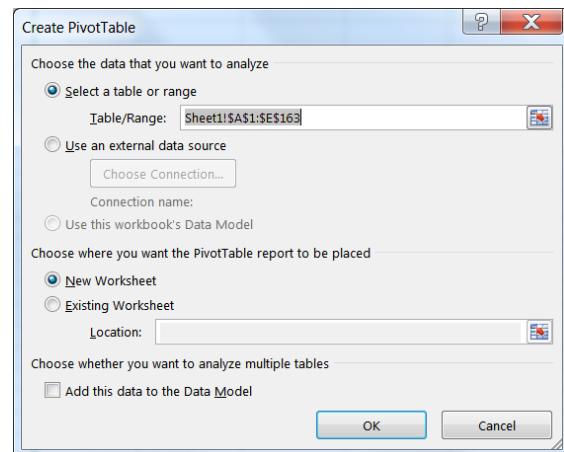


Pivot Tables

Another amazing summary tool built into Microsoft Excel is the Pivot Table. You will find this button at the beginning of the **Insert** tab.

By default, this tool will create a new sheet with a blank table on it. You can use the Pivot Table field list to decide where your field names (titles) should be placed as labels and summarizing the values as needed.

Every field of the pivot table can be filtered, and once you have multiple levels as seen below, you will see the collapse/expand buttons as with the Subtotal Outline.



| | A | B | C | D | E | F | G | H | I | J | K | L | M | N |
|----|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 1 | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | |
| 3 | Sum of # Sold | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |
| 6 | 1st Quarter | 26 | 30 | 26 | 82 | 15 | 21 | 18 | 54 | 36 | 24 | 30 | 90 | 226 |
| 7 | Blouses | 14 | 6 | 10 | 30 | 2 | 4 | 3 | 9 | 18 | 14 | 16 | 48 | 87 |
| 8 | Pants | 2 | 6 | 2 | 10 | 5 | 7 | 6 | 18 | 12 | 8 | 10 | 30 | 58 |
| 9 | Socks | 10 | 18 | 14 | 42 | 8 | 10 | 9 | 27 | 6 | 2 | 4 | 12 | 81 |
| 10 | 2nd Quarter | 18 | 31 | 21 | 70 | 30 | 19 | 24 | 73 | 26 | 32 | 30 | 88 | 231 |
| 11 | Blouses | 3 | 5 | 4 | 12 | 16 | 12 | 14 | 42 | 10 | 2 | 6 | 18 | 72 |
| 12 | Pants | 6 | 8 | 7 | 21 | 10 | 6 | 8 | 24 | 2 | 10 | 6 | 18 | 63 |
| 13 | Socks | 9 | 18 | 10 | 37 | 4 | 1 | 2 | 7 | 14 | 20 | 18 | 52 | 96 |
| 14 | 3rd Quarter | 42 | 62 | 48 | 152 | 39 | 49 | 39 | 127 | 66 | 54 | 58 | 178 | 457 |
| 15 | Blouses | 8 | 21 | 13 | 42 | 15 | 26 | 18 | 59 | 14 | 12 | 12 | 38 | 139 |
| 16 | Pants | 14 | 20 | 19 | 53 | 17 | 13 | 12 | 42 | 22 | 18 | 20 | 60 | 155 |
| 17 | Socks | 20 | 21 | 16 | 57 | 7 | 10 | 9 | 26 | 30 | 24 | 26 | 80 | 163 |
| 18 | 4th Quarter | 62 | 73 | 58 | 193 | 42 | 62 | 48 | 152 | 44 | 61 | 47 | 152 | 497 |
| 19 | Blouses | 6 | 31 | 12 | 49 | 8 | 21 | 13 | 42 | 17 | 11 | 14 | 42 | 133 |
| 20 | Pants | 20 | 26 | 29 | 75 | 14 | 20 | 19 | 53 | 8 | 14 | 9 | 31 | 159 |
| 21 | Socks | 36 | 16 | 17 | 69 | 20 | 21 | 16 | 57 | 19 | 36 | 24 | 79 | 205 |
| 22 | Grand Total | 148 | 196 | 153 | 497 | 126 | 151 | 129 | 406 | 172 | 171 | 165 | 508 | 1411 |
| 23 | | | | | | | | | | | | | | |

Sheet2 | Sheet1 | +

Ready

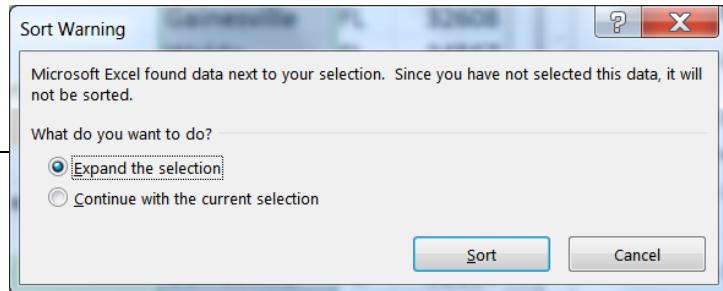
Class Exercise

- Open file SortCustomers.xlsx
-

Simple Sorts

- Click in the title CITY in cell D1
- Home Tab -> Sort and Filter -> Sort A to Z (ascending)
- Undo
 - Sort is "undone" and data set that was sorted is selected
- Select Column D (city)
- Home Tab -> Sort and Filter -> Sort A to Z (ascending)
- Say OK to the message

- Undo



Default Sort Order

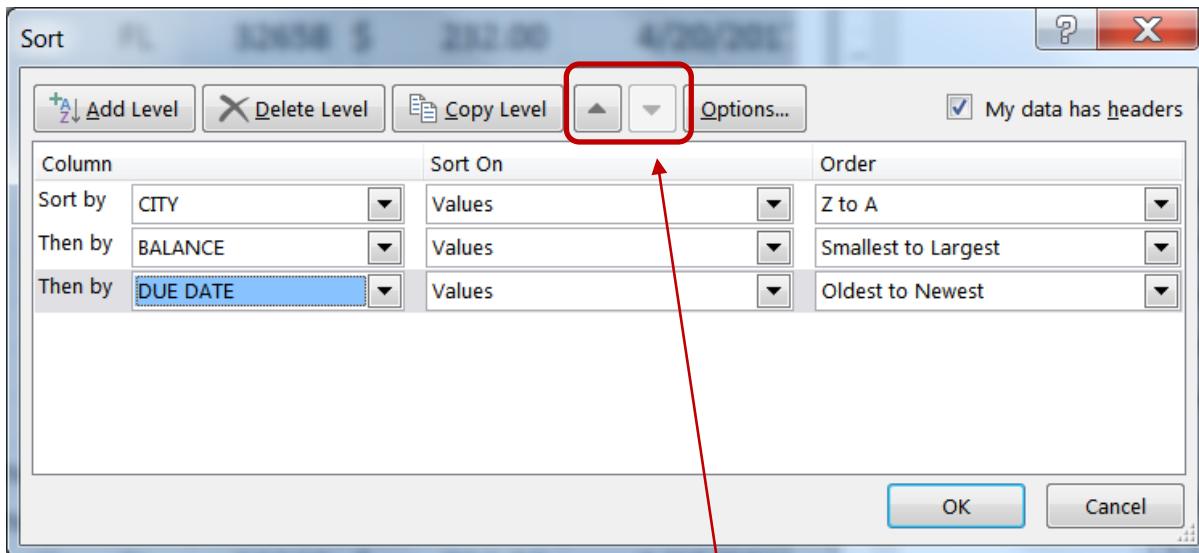
- Right-Click Column A (LAST)
- Insert a Column
- Title the new column SORT (A1)
- In A2 type: 1
- In A3 type: 2
- Select both numbers
- Double-Click the fill handle to copy the pattern to the end of the data set
- Sort by column CITY
- Sort by column SORT
- Delete Column A

Blank Columns (every column should have a heading)

- Select Column B (FIRST)
- Insert a Column
- Sort by CITY Z to A (descending) - Notice the first and last names no longer match up
- **Undo** - Notice the last name column is left out of the selection
- In B1 type: SUFFIX
- Sort by City Z to A
- Undo until the new column (SUFFIX) is gone

Custom Sort - Multiple levels

- Click on the large sort button on the Data tab
- Set the sort order for CITY, BALANCE, and DUE DATE
 - Use the Add Level buttons to create new lines
- View the Results



Custom Sort - Rearranging

- Open the Custom Sort again
- Select the DUE DATE row and use the arrows to move it ▲ ▼
- Set the sort order for CITY, DUE DATE, and BALANCE

- View the Results

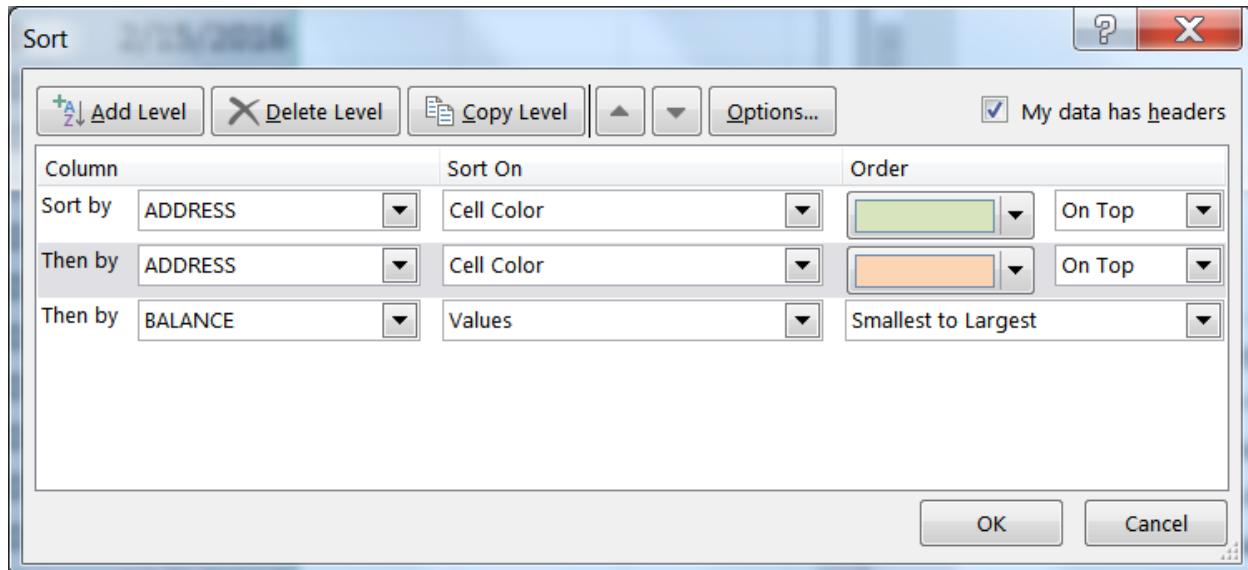
| | E | F | G | H | I |
|---|-------------|----|-------|-----------|-----------|
| 1 | CITY | ST | ZIP | BALANCE | DUE DATE |
| 2 | Gainesville | FL | 32608 | \$ 501.00 | 1/15/2016 |
| 3 | Gainesville | FL | 32684 | \$ 51.00 | 2/15/2016 |
| 4 | Gainesville | FL | 32597 | \$ 80.00 | 2/15/2016 |
| 5 | Gainesville | FL | 32597 | \$ 157.00 | 2/15/2016 |
| 6 | Gainesville | FL | 32684 | \$ 131.00 | 3/15/2016 |
| 7 | Gainesville | FL | 32655 | \$ 270.00 | 3/15/2016 |
| 8 | Gainesville | FL | 32732 | \$ 532.00 | 3/20/2016 |

Custom Sort - Resetting

- Click in the Column A (LAST)
- Click the Ascending button
- Open the Custom Sort window
 - Sort order has been reset

Custom Sort - by Color

- Open the Custom Sort window
- Sort by Address, Sort on Cell Color, Order Green "On Top"
- **Copy Level** and set the Order to Peach "On Top"
- **Add Level** -> Balance, smallest to largest



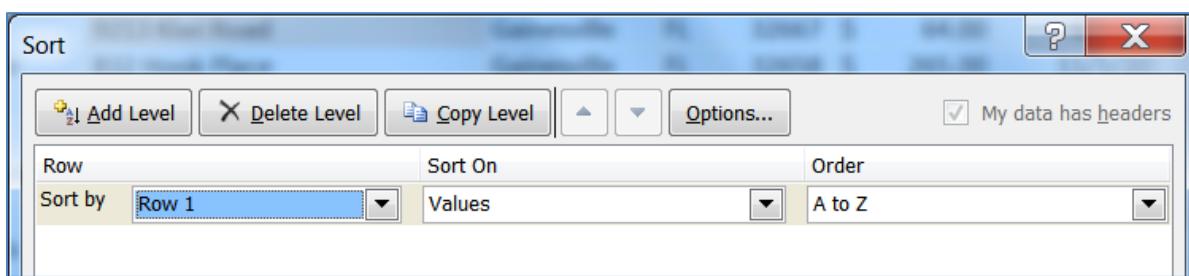
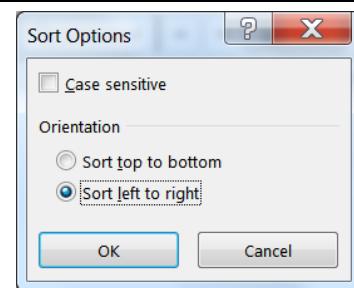
- View the Results

Reset to our default sort order

- Click in the column A (LAST)
- Click the Ascending button

Custom Sort - Left to Right

- Open Custom Sort Window
- Click on the **Options...** button
- Change orientation to **Sort left to right**
- Click OK
- Sort by Row 1, A to Z



- Columns have rearranged to Address through Zip

Custom Sort - Left to Right

- Select Row 2, and Insert a row
- Number the cells: 3, 8, 4, 7, 1, 2, 5, 6

| A | B | C | D | E | F | G | H |
|---|-----------------|-----------|-------------|-----------|--------|-----------|----------|
| 1 | ADDRESS | BALANCE | CITY | DU DATE | FIRST | LAST | ST ZIP |
| 2 | 3 | 8 | 4 | 7 | 1 | 2 | 5 6 |
| 3 | 6831 NW 4th A | \$ 236.00 | Gainesville | 2/10/2017 | Annie | Adams | FL 32655 |
| 4 | PO Box 456 | \$ 467.00 | Starke | 9/25/2018 | April | Appleton | FL 32689 |
| 5 | 234 SE 45th Ro | \$ 128.00 | Gainesville | 12/5/2017 | Arnold | Arlington | FL 32597 |
| 6 | 234 Peter Pan T | \$ 17.00 | Gainesville | 3/25/2017 | Bobbie | Brown | FL 32597 |
| 7 | 3243 SE 4th Ter | \$ 106.00 | Gainesville | 5/5/2016 | Butch | Bruce | FL 32608 |

- Open Custom Sort Window
- Sort by Row 2
- View the result

Custom Sort - Left to Right - Selection

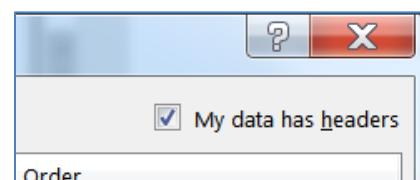
- Select Columns A and B (FIRST and LAST)
- Open Custom Sort window
- Sort by Row 2, Largest to Smallest
- Repeat for Columns G and H (DU DATE and BALANCE)
- Delete Row 2

Reset to our default sort order

- Click in the Column A (LAST)
- Click the Ascending button 
- Title row disappears
 - LAST has shuffled down to the L's
- Undo the sort

My data has headers

- Open the custom sort window
- Sort by only lists the column letters for the 8 columns in our dataset
 - (if it is still offering rows, change the options)
- In the upper right of the window Click the **My data has headers** checkbox
- Sort by LAST, A to Z



Start over

- Exit Microsoft Excel
 - **DO NOT SAVE**
- ~~~~~

Instant Filter

- Open SortCustomers.xlsx
- Right-Click on a city of Waldo
- Choose Filter -> Filter by Selected Cell's Value

| | A | B | C | D | E | F | G | H |
|----|------------|----------|--------------------------|-------|----|-------|-----------|------------|
| 1 | LAST | FIRST | ADDRESS | CITY | ST | ZIP | BALANCE | DUUE DATE |
| 7 | Cappers | Cathy | RR 2 Box 659 | Waldo | FL | 34567 | \$ 392.00 | 9/15/2016 |
| 19 | Huey | Harley | 9023 Hera Terrace | Waldo | FL | 32658 | \$ 319.00 | 7/5/2016 |
| 33 | King | Kala | RR 2 box 323 | Waldo | FL | 34567 | \$ 52.00 | 11/10/2018 |
| 39 | Livingston | Lenord | 789 North University Ave | Waldo | FL | 32658 | \$ 232.00 | 4/20/2017 |
| 43 | McDade | Madeline | 8290 Apollo Ave | Waldo | FL | 32658 | \$ 219.00 | 6/10/2016 |
| 50 | Dglethorpe | Oprah | 9042 Lima Bean Street | Waldo | FL | 32658 | \$ 426.00 | 8/20/2018 |
| 64 | Thomas | Tom | RR 5 Box 534 | Waldo | FL | 34567 | \$ 242.00 | 7/20/2018 |
| 71 | Vann | Vera | 9130 Watercress Road | Waldo | FL | 32658 | \$ 236.00 | 5/20/2016 |
| 73 | West | Wilma | 9203 Sweet Potatoes Ave | Waldo | FL | 32658 | \$ 207.00 | 1/20/2016 |

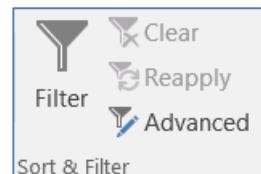
*** Filter arrows appear on all columns of the data set
*** All rows not matching the criteria have disappeared
*** Row numbers turn blue, but maintain original cell numbers
*** Bottom of the window shows how many records (rows) match

Turn the Filter Off

- From the **Sort & Filter** button on the **Home** tab, choose **Filter**
- *** All filter signs will disappear

Filter by Unchecking

- Click the large **Filter** button on the **Data** tab
- From the City drop down, uncheck Jacksonville, Click OK (67 records)
- From the City drop down, uncheck Gainesville, Click OK (12 records)
- From the City drop down, check Select All, Click OK

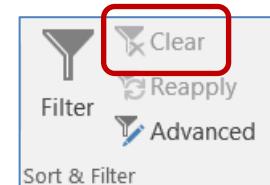


Filter by (Un)Select all

- from the Zip drop down
 - uncheck *Select All*
 - check **32608**
 - Click OK (12 records)

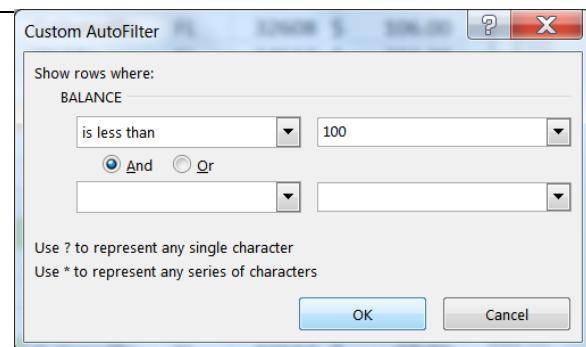
Adding another filter

- Keep the **32608** filter
- from the City drop down, uncheck *Jacksonville*
- Click OK (9 records)
- from the **Data** tab, choose the filter **Clear** button



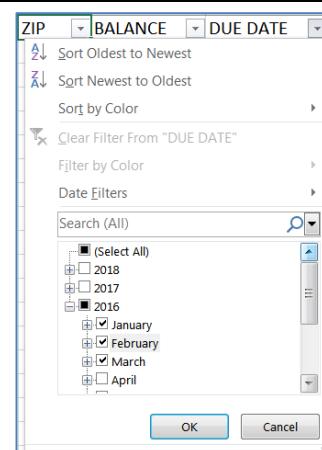
Custom number filter

- Balance drop down
- choose Number Filter
- choose Less than, type in 100
- Click OK (12 records)
- **Clear the filter**



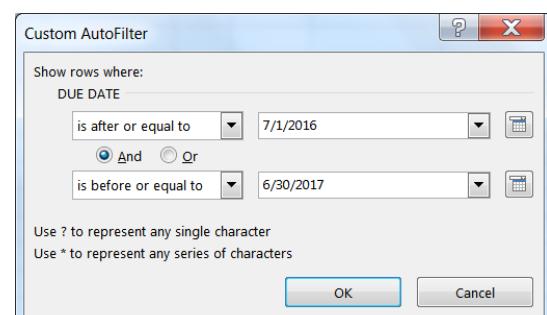
Date filter

- Due Date drop down
- uncheck *Select All*
- use the expand (+) buttons to open the dates
- check the first three months of 2016
- Click OK (11 records)



Custom date filter

- From the Due Date drop down, choose *Date Filters*
- Choose Between
- type in *7/1/2016*, type in *6/30/2017*
- Click ok (23 records)
- **Clear the filter**



Custom text filter

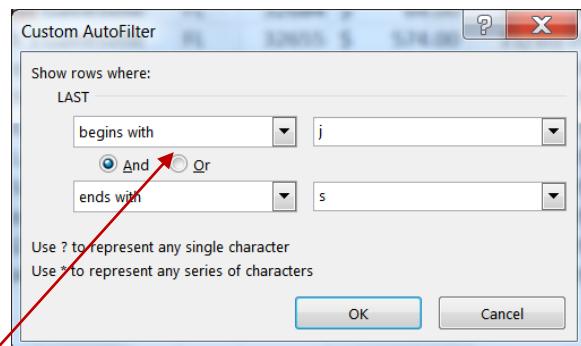
- From the Last drop down, choose *Text Filter*
- Choose *Begins with*, type J
- Click ok (10 records)

- From the Last drop down, choose *Text Filter*
- Choose *Ends with*, type S
- Click ok (21 records)

- From the Last drop down, choose *Text Filter*
- Choose *Begins with*, type J
- On the second line choose *Ends with*, type S
- Click ok (6 records)

- From the Last drop down, choose *Text Filter*
- Choose *Custom Filter*
- Change the bubble (radio button) to **OR**
- Click ok (25 records)

- **Clear the filter**

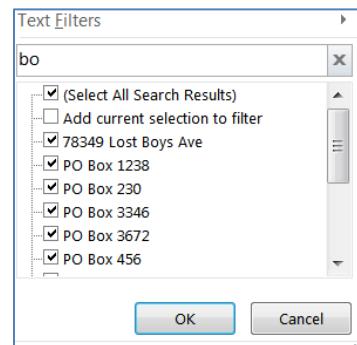


Custom text filter

- From the Address drop down, choose *Text Filter*
- Choose *Contains*, type Box
- Excel is not case sensitive. BOX = Box = box
- Click ok (12 records)
- **Clear the filter**

Search filter

- From the Address drop down, Click inside the **Search** box
- Type box
- **** Type it slowly, one letter at a time to see the list get smaller as you go
- Click ok (12 records)
- **Clear the filter**

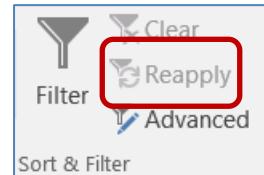


Filter by Color

- From the Address drop down, choose Filter by color
- Choose the green addresses (13 records)
- **Clear the filter**

Refreshing Filtered Data

- From the Balance drop down, choose Number Filter
- Choose **Greater Than**, type 600
- Click ok (4 records)
- Change Edgar's balance to 300
- From the **Data** tab, choose the filter Refresh button (3 records)
- **Clear the filter**



Copying filtered data

- | | |
|---|---|
| <ul style="list-style-type: none">- Use the filter tools to find these <u>7 records</u>:<ul style="list-style-type: none">- Balance under 300- Address color has no fill- Due Date in 2018- Select All, Copy- Create a new worksheet- Paste in Cell A1 | <ul style="list-style-type: none">- Use the filter tools to find these <u>9 records</u>:<ul style="list-style-type: none">- Balance under 350- Address color has no fill- Due Date in 2017- Select All, Copy- Turn to Sheet 2- paste in Cell A11 |
|---|---|
- Return to Sheet 1 and **Clear the filter**

| | A | B | C | D | E | F | G | H |
|----|------------|---------|---------------------|--------------|----|-------|-----------|------------|
| 1 | LAST | FIRST | ADDRESS | CITY | ST | ZIP | BALANCE | DUEDATE |
| 2 | Adams | Annie | 6831 NW 4th | Gainesville | FL | 32655 | \$ 236.00 | 2/10/2017 |
| 4 | Arlington | Arnold | 234 SE 45th R | Gainesville | FL | 32597 | \$ 128.00 | 12/5/2017 |
| 5 | Brown | Bobbie | 234 Peter Pan | Gainesville | FL | 32597 | \$ 17.00 | 3/25/2017 |
| 10 | Dawson | Debbie | 832 Hook Plac | Gainesville | FL | 32658 | \$ 265.00 | 11/15/2017 |
| 39 | Livingston | Lenord | 789 North Uni Waldo | | FL | 32658 | \$ 232.00 | 4/20/2017 |
| 51 | Owens | Orville | 723 SW 35th I | Gainesville | FL | 32655 | \$ 17.00 | 6/5/2017 |
| 60 | Saunders | Samuel | 9303 Neverlar | Jacksonville | FL | 32268 | \$ 331.00 | 7/15/2017 |
| 69 | Tweed | Thomas | PO Box 5678 | Gainesville | FL | 32689 | \$ 156.00 | 9/15/2017 |
| 70 | Van Gogh | Vincent | PO Box 230 | Gainesville | FL | 32684 | \$ 91.00 | 1/10/2017 |

Notice the copy lines do not go between contiguous rows.

- In Sheet 2, Select ALL of the sheet
- AutoFit the column widths
- Double-Click between column headings

Filter on one data set

- Move to Cell A1 (Ctrl Home)
- Turn on the filter
- From the City drop down, uncheck *Gainesville*
- Click ok (4 records)
****Gainesville only disappears from the first list because of the gap
- **Turn off the filter**

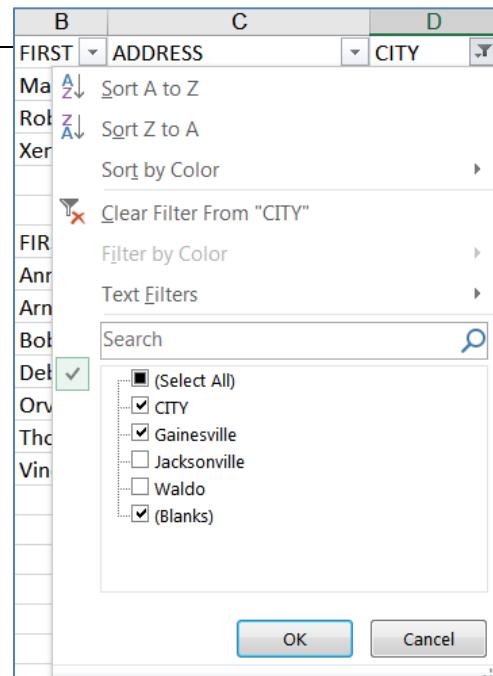
Filter on multiple data sets

- Select all the data columns (not just the data, all the columns A:H)
- Turn on the filter
- Autofit again
- From the City drop down, uncheck *Gainesville*
- Click ok (6 people)
****Gainesville disappears from both lists, but the record count is wrong
- **Clear the filter**

Filter including gap

- From the City drop down, uncheck *Select All*
- From the City drop down, check *Gainesville*
- From the City drop down, check *(Blanks)*
- From the City drop down, check *City*

- From the City drop down, uncheck *Gainesville*
- From the City drop down, check *Jacksonville*



Start over

- Exit Microsoft Excel
- **DO NOT SAVE**

Set up Grand Total

- Open file SortCustomers.xlsx
- Turn on the Filter
- Go to Cell H79, Type SubTotal
- Go to Cell H80, Type Total
- Go to Cell G80, press the AutoSum button Σ (on the Home or Formulas tab)
- Modify equation to stop at row 78
***** =SUM(G2:G78)
- Result: \$23,192.00

Set up SubTotal

- Return to the top of the worksheet (Ctrl-Home)
- Set City filter to show only Waldo
- Go to Cell G79, press the AutoSum button Σ
***** See Page 5 for details on the SubTotal Worksheet Function
- Result: \$2,325.00

| | | | |
|---|----|--------|------|
| 8 | \$ | 236.00 | 5/20 |
| 8 | \$ | 207.00 | 1/20 |

=SUBTOTAL(9,G2:G78)

Viewing the different Subtotals

- From the City drop down, set it so you can only see Starke
 - Result: \$1,290.00
- From the City drop down, set it so you can only see Jacksonville
 - Result: \$3,506.00
- From the City drop down, set it so you can only see Gainesville
 - Result: \$16,071.00

- Clear the filter

Start over

- Exit Microsoft Excel
- **DO NOT SAVE**

SubTotal Worksheet Function Exercise

- Open file SortSales.xlsx

- 1) Insert four rows at the top of the worksheet
 - a. Select the first four rows
 - b. Right-Click inside the select and choose INSERT

- 2) Create this table:

| | A | B | C | D | E |
|---|-------------|---------|-------|----------|--------|
| 1 | Sum | | | SubSum | |
| 2 | Average | | | SubAvg | |
| 3 | Count | | | SubCount | |
| 4 | | | | | |
| 5 | Quarter | item | Size | Color | # Sold |
| 6 | 1st Quarter | blouses | Large | Blue | 14 |

- 3) Click inside the dataset, turn on the Filter

- 4) Use the filter tools to find these 3 records:

- Quarter: 2nd Quarter
- Item: Pants
- Color: Red

- 5) Build the following equations

| | A | B | C | D | E |
|-----|-------------|-------------------|--------|----------|----------------------|
| 1 | Sum | =SUM(E5:E168) | | SubSum | =SUBTOTAL(9,E5:E168) |
| 2 | Average | =AVERAGE(E5:E168) | | SubAvg | =SUBTOTAL(1,E5:E168) |
| 3 | Count | =COUNT(E5:E168) | | SubCount | =SUBTOTAL(2,E5:E168) |
| 4 | | | | | |
| 5 | Quarter | Item | Size | Color | # Sold |
| 43 | 2nd Quarter | pants | Large | Red | 8 |
| 46 | 2nd Quarter | pants | Medium | Red | 6 |
| 49 | 2nd Quarter | pants | Small | Red | 10 |
| 168 | | | | | |
| 169 | | | | | |

You have to go above and below the showing numbers so that you include all the hidden cells!
If you only use E43:E49 you will lose all the data currently hidden.

- 6) View Page 5 for the "answers"

- 7) Clear the filter, the numbers in Column E should match the numbers in Column B

Excel 2016: Large Data 2

PivotTables



Excel 2016: Large Data 2 - PivotTables

1.5 hours

PivotTables are very powerful summary reports created from an organized data set. In this workshop we will learn to plan and create PivotTables; work with grouping, filters, and summary options; create a PivotChart; and explore formatting options. This advanced workshop assumes prior experience with Microsoft Excel.

| | |
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| Planning..... | 1 |
| Building | 2 |
| Arranging Fields | 3 |
| Formatting | 4 |
| Pivot Tables - Excel 2016 Help File..... | 5 |
| Create a PivotTable..... | 5 |
| Working with the PivotTable Fields list..... | 6 |
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Pandora Rose Cowart
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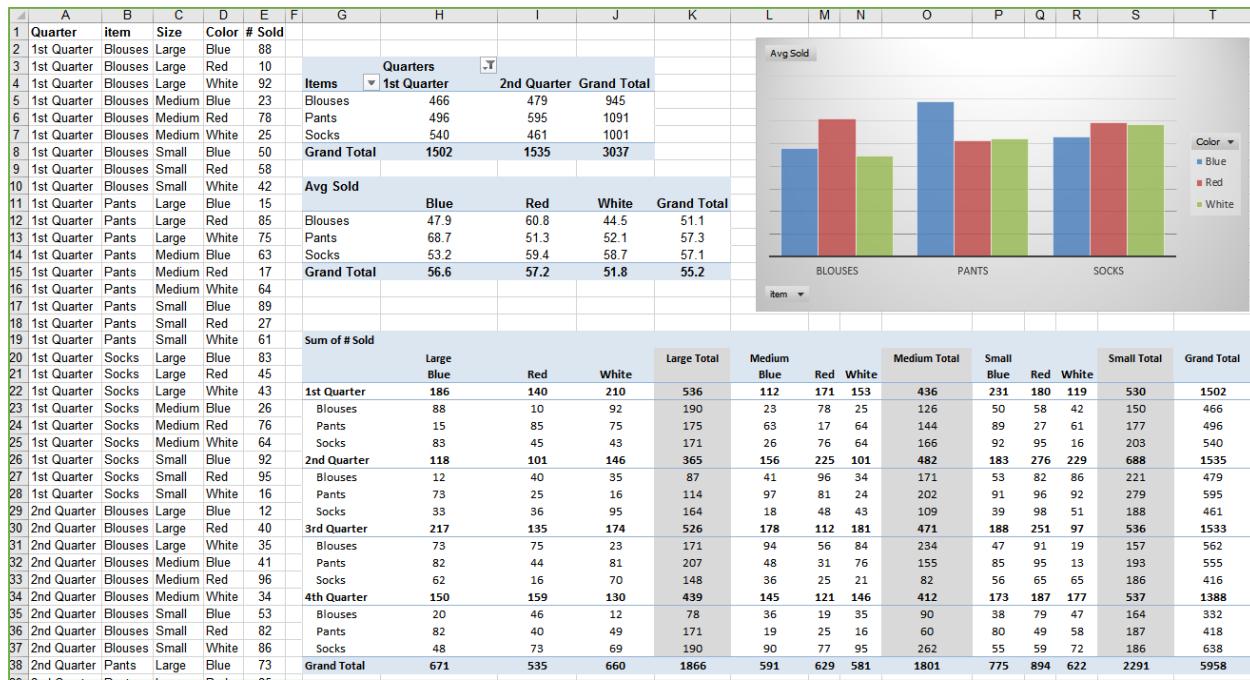
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PivotTables

PivotTables are summary reports. They give you the ability to take a large boring set of repetitive data and summarize it into a neat table that you can very easily rearrange, filter, format, and even chart.

Here's an example of a repetitive raw data set, three PivotTables, and a PivotChart.



Planning

The most important part of building a PivotTable is planning. You have to remove yourself from the raw data and think about the final result. There's a learning curve, have patience with yourself and with Excel and you'll get there.

The Data

The data has to be repetitive. It looks wrong at first, but the more boring and repetitive your data, the more you can do with it. In the Large Data 1 class we learn about sorting and filtering in Excel. We don't need to keep each quarter, each department, each person on a different sheet. If we keep all of the data in the same place, we can look at each category, one at a time, using the filter, and beautifully because it is all in the same place, we can look across categories and quickly summarize with a PivotTable.

The data has to be consistent. We don't want to see entries like: 4th Qtr, 4th Quarter, Qtr 4. In the Large Data 3 (vLookups) class we'll learn about validation rules, and in Large Data 4 (report) we'll see how to use vLookups to help us cleanup inconsistent data entry.

The definition of a database is a structured collection of related data. Rows of a data table are **records**. When we filter in Excel, the Status Bar tells us how many Records were found.

Columns of a data table are **fields**. The column titles of your original dataset will appear in the PivotTable Field List. You'll use these titles to control the structure of the PivotTable. If possible, **use clear, concise, and unique column titles**. If you use the same column title more than once, Excel will add a number after the subsequent titles. Example: *Home Address, City, State, Zip, Work Address, City, State, Zip* becomes *Home Address, City, State, Zip, Work Address, City(2), State(2), Zip(2)*.

The Result

By all means, jump in and play with the tools, get comfortable with how to make a PivotTable. But when it comes down to needing a specific report, you have to "show your work". Think about what it is you actually want to see.

"I want to know how many items we ordered." Okay. Do you care what the items were? Do you care about the data across the year, or do you only want the total? What about the other details? Each versus boxes? Would you like to compare your orders to another departments?

"I want to know how many patients were admitted last month." Okay. Do you want to see the break down by time, perhaps by morning and afternoon? By shift? By Department? Or would you like to have the flexibility to change (filter) the shifts and departments?

The more you think about what you want out of the glorious summary report known as a PivotTable, the better it will come together for you.

Building

The PivotTable field list shows the column titles of our original dataset, these are our **Fields**. If you rename, add, or delete columns in the dataset you will not see the change here until you refresh the data. The **Refresh** button is on the Analyze tab of the PivotTable Tools, and can be found on the shortcut menu if you right-click inside the table.

- Fields in the **Filters** will appear above the table.
- Fields in the **Columns** will appear at the top of each column of the PivotTable.
- Fields in the **Rows** will appear at the left of each row of the PivotTable.
- Fields in the **Values** will be summarized. By default, text and date fields will be counted, number fields will be summed.

Quarter 1st Quarter ▾

| | | Sum of # Sold | | | |
|-------------|--|---------------|-----|-------|-------------|
| | | Blue | Red | White | Grand Total |
| Blouses | | 161 | 146 | 159 | 466 |
| Large | | 88 | 10 | 92 | 190 |
| Medium | | 23 | 78 | 25 | 126 |
| Small | | 50 | 58 | 42 | 150 |
| Pants | | 167 | 129 | 200 | 496 |
| Large | | 15 | 85 | 75 | 175 |
| Medium | | 63 | 17 | 64 | 144 |
| Small | | 89 | 27 | 61 | 177 |
| Socks | | 201 | 216 | 123 | 540 |
| Large | | 83 | 45 | 43 | 171 |
| Medium | | 26 | 76 | 64 | 166 |
| Small | | 92 | 95 | 16 | 203 |
| Grand Total | | 529 | 491 | 482 | 1502 |

PivotTable Fields

Choose fields to add to report:

Search

Quarter
 item
 Size
 Color
 # Sold

MORE TABLES...

Drag fields between areas below:

FILTERS: Quarter

COLUMNS: Color

ROWS: item

VALUES: Sum of # Sold

Defer Layout Update

Arranging Fields

Adding

- Click the check box in front of the field name
 - Text fields will go into the **Rows** showing each unique value from the dataset
 - Date fields will go into the **Rows** grouping the values across time
 - Number fields will go into the **Value** as a sum
- Drag fieldname from the field list to an area
 - You will *have* to drag to add a field to the value area multiple times
- Right-click on the fieldname in the field list and choose an area

Moving

- Drag fieldname from an area to a new area
- Right-click on the fieldname in the field list and choose a new area
- Left-click on a field in an area and choose a new area

Deleting

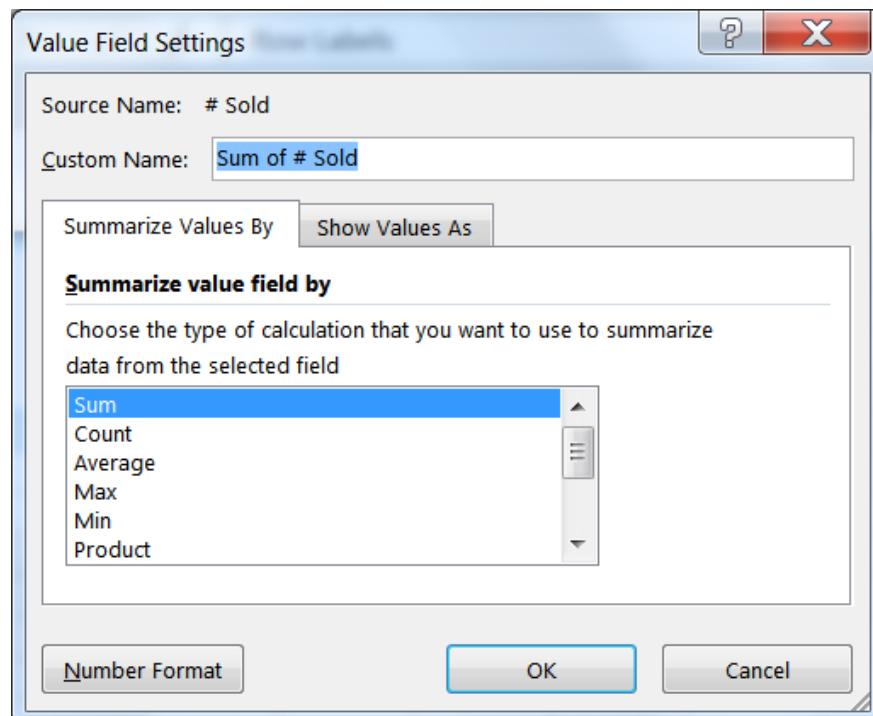
- Drag fieldname out of the area section
- Left-click on a field in the area and choose **Remove Field**

Value Field Settings

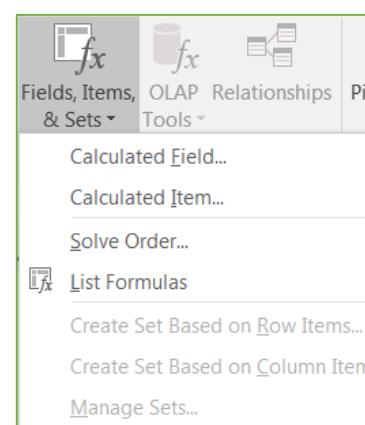
Fields added to the value section are summarized within the grouping of the row and column headings set in the PivotTable. Numbers will sum, other values will be counted. To change how the data is summarized, left-click on the fieldname in the Values area and choose **Value Field Settings**.

You can reformat your numbers with the Excel formatting tools, but if you reformat from the Value Field Settings window you'll format the Table, this means if you change the structure of your table by adding fields you won't have to reformat any new cells occupied by the table.

Page 7 of this handout discusses the **Show Values As** options.

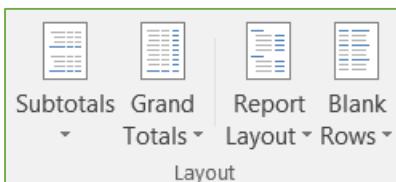
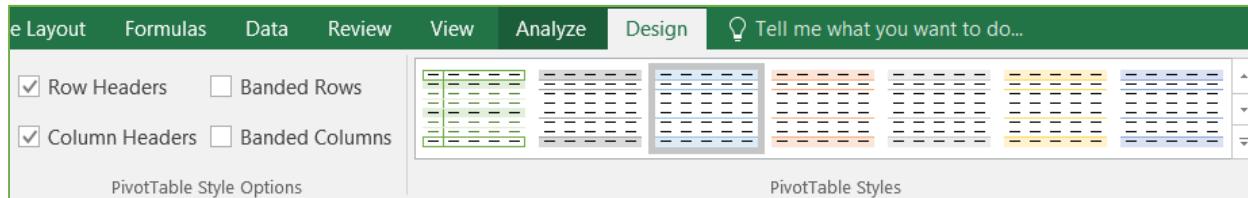


It is possible to create other summary options, but it's beyond the scope of this class. If you would like to explore, look at the **Fields, Items, & Sets** option on the Analyze tab.



Formatting

The PivotTable Design tab has lots of style options to make the PivotTable look good. Change the Options settings to see how they vary in the style you chose.



The style options help with the look of the data, but in my opinion the first set of buttons on the Design tab are way better, as they determine how the data is pulled together within the PivotTable.

Original

| | Sum of # Sold | | | |
|--------------------|---------------|------------|-------------|-------------|
| Row Labels | Large | Medium | Small | Grand Total |
| 1st Quarter | 536 | 436 | 530 | 1502 |
| Blouses | 190 | 126 | 150 | 466 |
| Pants | 175 | 144 | 177 | 496 |
| Socks | 171 | 166 | 203 | 540 |
| 2nd Quarter | 365 | 482 | 688 | 1535 |
| Blouses | 87 | 171 | 221 | 479 |
| Pants | 114 | 202 | 279 | 595 |
| Socks | 164 | 109 | 188 | 461 |
| Grand Total | 901 | 918 | 1218 | 3037 |

Subtotals at Bottom, Blank Rows inserted

| | Sum of # Sold | | | |
|--------------------------|---------------|------------|-------------|-------------|
| Row Labels | Large | Medium | Small | Grand Total |
| 1st Quarter | | | | |
| Blouses | | 190 | 126 | 466 |
| Pants | | 175 | 144 | 496 |
| Socks | | 171 | 166 | 540 |
| 1st Quarter Total | 536 | 436 | 530 | 1502 |
| 2nd Quarter | | | | |
| Blouses | | 87 | 171 | 479 |
| Pants | | 114 | 202 | 595 |
| Socks | | 164 | 109 | 461 |
| 2nd Quarter Total | 365 | 482 | 688 | 1535 |
| Grand Total | 901 | 918 | 1218 | 3037 |

No Subtotals, no Grand Totals

| | Sum of # Sold | | | |
|-------------|---------------|--------|-------|--|
| Row Labels | Large | Medium | Small | |
| 1st Quarter | | | | |
| Blouses | 190 | 126 | 150 | |
| Pants | 175 | 144 | 177 | |
| Socks | 171 | 166 | 203 | |
| 2nd Quarter | | | | |
| Blouses | 87 | 171 | 221 | |
| Pants | 114 | 202 | 279 | |
| Socks | 164 | 109 | 188 | |

Report Layout: Outline

| | Sum of # Sold | | | |
|--------------------|---------------|------------|------------|-------------|
| Quarter | item | Large | Medium | Small |
| 1st Quarter | | 536 | 436 | 530 |
| Blouses | | 190 | 126 | 150 |
| Pants | | 175 | 144 | 177 |
| Socks | | 171 | 166 | 203 |
| 2nd Quarter | | 365 | 482 | 688 |
| Blouses | | 87 | 171 | 221 |
| Pants | | 114 | 202 | 279 |
| Socks | | 164 | 109 | 188 |
| Grand Total | | 901 | 918 | 1218 |

| | Sum of # Sold | | | |
|--------------------|---------------|------------|------------|-------------|
| Quarter | item | Large | Medium | Small |
| 1st Quarter | Blouses | 190 | 126 | 150 |
| | Pants | 175 | 144 | 177 |
| | Socks | 171 | 166 | 203 |
| 2nd Quarter | Blouses | 87 | 171 | 221 |
| | Pants | 114 | 202 | 279 |
| | Socks | 164 | 109 | 188 |
| Grand Total | | 901 | 918 | 1218 |

Report Layout: Tabular, no Subtotals, Blank Rows inserted

Notice with the **Outline** and **Tabular** Report Layouts the **Row Labels** are no longer grouped, instead you see a heading for each column and row label.

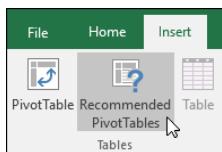
Pivot Tables - Excel 2016 Help File

Create a PivotTable

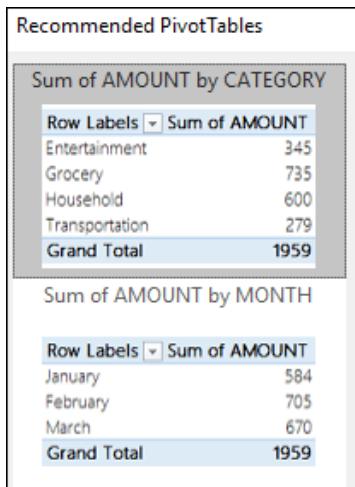
If you have limited experience with PivotTables, or are not sure how to get started, a **Recommended PivotTable** is a good choice. When you use this feature, Excel determines a meaningful layout by matching the data with the most suitable areas in the PivotTable. This helps give you a starting point for additional experimentation. After a recommended PivotTable is created, you can explore different orientations and rearrange fields to achieve your specific results.

Recommended PivotTable

1. Click a cell in the source data or table range.
2. Go to **Insert > Tables > Recommended PivotTable**.



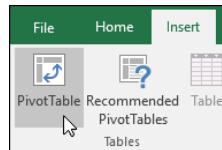
3. Excel analyzes your data and presents you with several options, like in this example using the household expense data.



4. Select the PivotTable that looks best to you and press **OK**. Excel will create a PivotTable on a new sheet, and display the **PivotTable Fields** list.

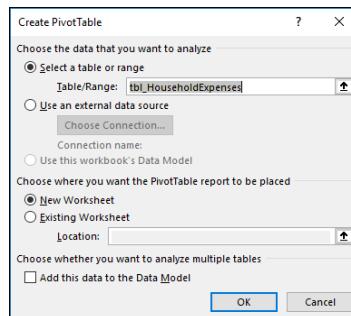
Manually create a PivotTable

1. Click a cell in the source data or table range.
2. Go to **Insert > Tables > PivotTable**.



If you're using Excel for Mac 2011 and earlier, the PivotTable button is on the **Data** tab in the **Analysis** group.

3. Excel will display the **Create PivotTable** dialog with your range or table name selected. In this case, we're using a table called "tbl_HouseholdExpenses".



4. In the **Choose where you want the PivotTable report to be placed** section, select **New Worksheet**, or **Existing Worksheet**. For **Existing Worksheet**, you'll need to select both the worksheet and the cell where you want the PivotTable placed.
5. If you want to include multiple tables or data sources in your PivotTable, click the **Add this data to the Data Model** check box.
6. Click **OK**, and Excel will create a blank PivotTable, and display the **PivotTable Fields** list.

Working with the PivotTable Fields list

In the **Field Name** area at the top, select the check box for any field you want to add to your PivotTable. By default, non-numeric fields are added to the **Row** area, date and time fields are added to the **Column** area, and numeric fields are added to the **Values** area. You can also manually drag-and-drop any available item into any of the PivotTable fields, or if you no longer want an item in your PivotTable, simply drag it out of the Fields list or uncheck it. Being able to rearrange Field items is one of the PivotTable features that makes it so easy to quickly change its appearance.

PivotTable Fields list

PivotTable Fields

Choose fields to add to report:

Search

MONTH

CATEGORY

AMOUNT

Drag fields between areas below:

Filters

MONTH

1 Columns

Rows

CATEGORY

2 Rows section

Σ Values

Sum of AMOUNT

3 Values

Defer Layout Update

Update

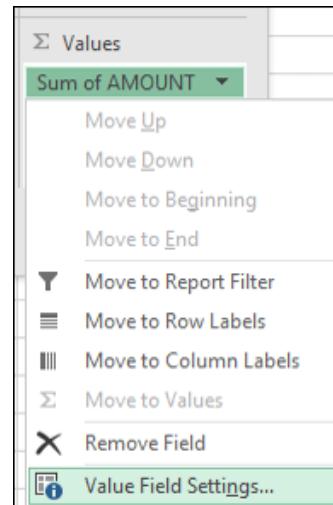
Corresponding fields in a PivotTable

| | January | February | March | Grand Total |
|----------------|---------|----------|-------|-------------|
| Entertainment | \$100 | \$125 | \$120 | \$345 |
| Household | \$235 | \$240 | \$200 | \$735 |
| Transportation | \$74 | \$115 | \$90 | \$279 |
| Grand Total | \$584 | \$705 | \$670 | \$1,959 |

PivotTable Values

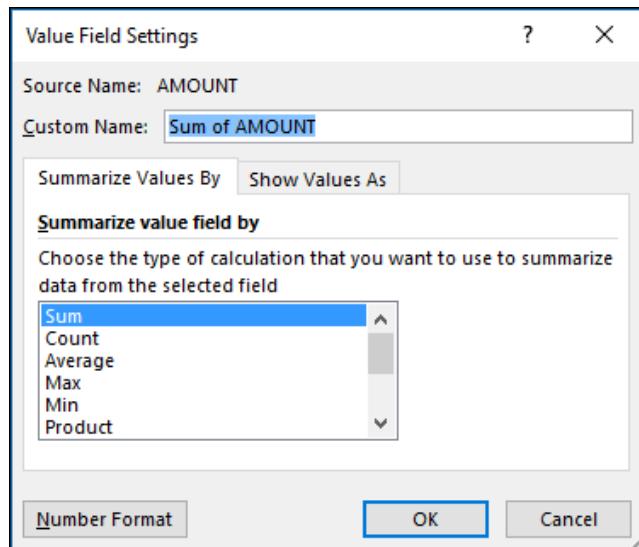
- **Summarize Values By**

By default, PivotTable fields that are placed in the **Values** area will be displayed as a **SUM**. If Excel interprets your data as text, it will be displayed as a **COUNT**. This is why it's so important to make sure you don't mix data types for value fields. You can change the default calculation by first clicking on the arrow to the right of the field name, then select the **Value Field Settings** option.



Next, change the calculation in the **Summarize Values By** section. Note that when you change the calculation method, Excel will automatically append it in the **Custom Name** section, like "Sum of FieldName", but you can change it. If you click the **Number Format** button, you can change the number format for the entire field.

Tip: Since the changing the calculation in the **Summarize Values By** section will change the PivotTable field name, it's best not to rename your PivotTable fields until you're done setting up your PivotTable. One trick is to use **Find & Replace (Ctrl+H) >Find what > "Sum of"**, then **Replace with > leave blank** to replace everything at once instead of manually retying.



- **Show Values As**

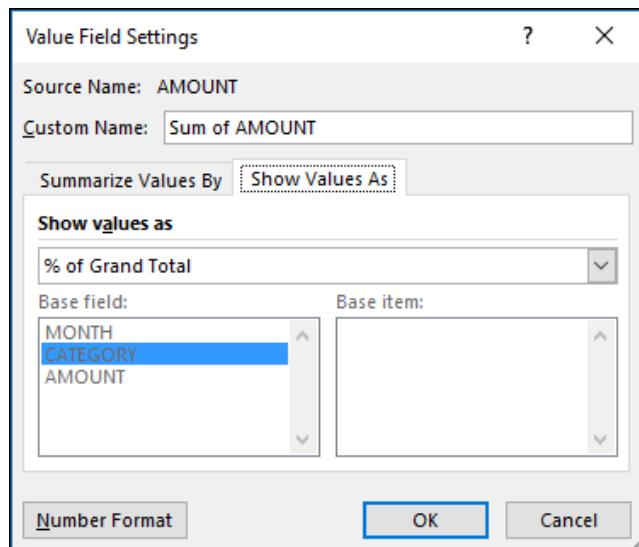
Instead of using a calculation to summarize the data, you can also display it as a percentage of a field. In the following example, we changed our household expense amounts to display as a **% of Grand Total** instead of the sum of the values.

| Row Labels | January | February | March | Grand Total |
|--------------------|---------------|---------------|---------------|----------------|
| Entertainment | 5.10% | 6.38% | 6.13% | 17.61% |
| Grocery | 12.00% | 12.25% | 13.27% | 37.52% |
| Household | 8.93% | 11.49% | 10.21% | 30.63% |
| Transportation | 3.78% | 5.87% | 4.59% | 14.24% |
| Grand Total | 29.81% | 35.99% | 34.20% | 100.00% |

Once you've opened the **Value Field Setting** dialog, you can make your selections from the **Show Values As** tab.

- **Display a value as both a calculation and percentage.**

Simply drag the item into the **Values** section twice, then set the **Summarize Values By** and **Show Values As** options for each one.

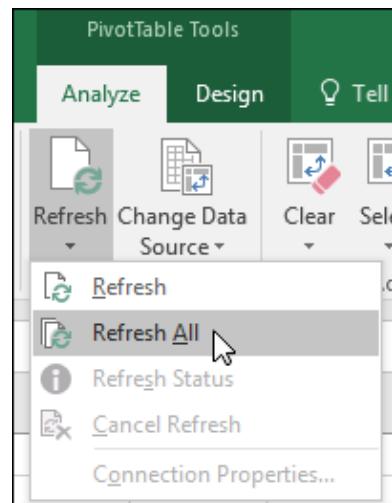


Refreshing PivotTables

If you add new data to your PivotTable data source, any PivotTables that were built on that data source need to be refreshed.

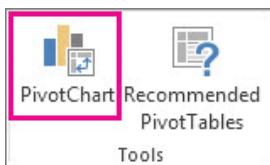
To refresh just one PivotTable, you can **right-click** anywhere in the PivotTable range, then select **Refresh**.

If you have multiple PivotTables, first select any cell in any PivotTable, then on the **Ribbon** go to **PivotTable Tools > Analyze > Data > Click** the arrow under the **Refresh** button and select **Refresh All**.



Create a PivotChart

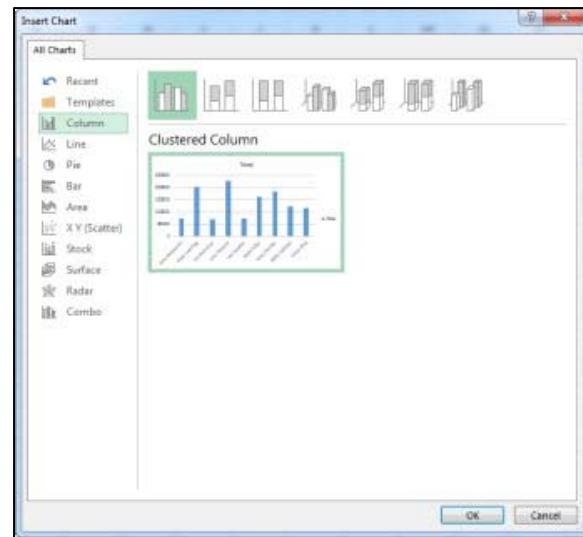
1. Click anywhere in the PivotTable to show the PivotTable Tools on the ribbon.
2. Click **Analyze > PivotChart**.



3. In the **Insert Chart** dialog box, click the chart type and chart subtype you want.

You can use any chart type except an XY (scatter), bubble, or stock chart.

4. Click **OK**.
5. In the **PivotChart** that appears, click any interactive control, and then pick the sort or filtering options.



After you create a PivotChart, you can customize it, much like you'd do with any standard charts.

When you select the PivotChart two buttons appear next to the chart so you can quickly add or change chart elements such as titles or data labels, or change the chart style and colors of your PivotChart the same way you would in a standard chart.

The **PivotChart Tools** are shown on the ribbon.

On the **Analyze**, **Design**, and **Format** tabs, you can pick options to work with or customize your PivotChart.



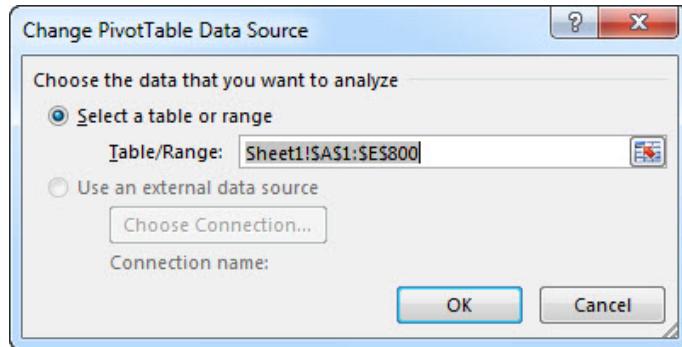
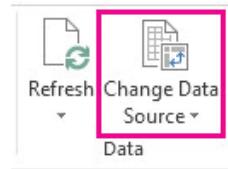
This page is from the Excel 2016
PivotTable Help file

Change the source data

After you create a PivotTable, you can change the range of its source data. For example, you can expand the source data to include more rows of data. However, if the source data has been changed substantially—such as having more or fewer columns, consider creating a new PivotTable.

To change the data source of a PivotTable if it's a range of cells or an Excel table, do the following:

1. Click anywhere in the PivotTable to show the **PivotTable Tools** on the ribbon.
2. Click **Analyze > Change Data Source**.
3. In the **Table/Range** box, enter the range you want to use.



Tip: Leave the dialog box open, and then select the table or range on your worksheet. If the data you want to include is on a different worksheet, click that worksheet, and then select the table or range.

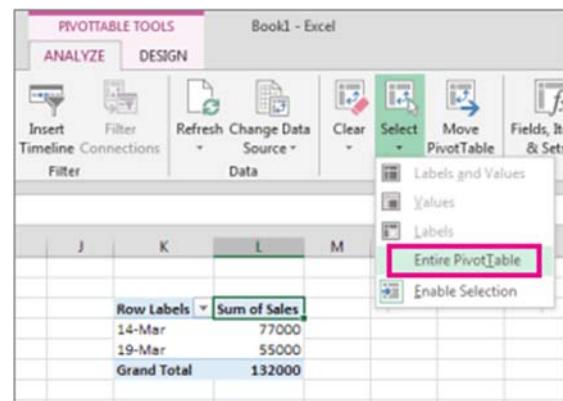
Delete a PivotTable

When you no longer need a PivotTable, select the entire PivotTable, and press the Delete key to remove it. If you get a "Cannot change this part of a PivotTable report" message, make sure the entire PivotTable is selected. Press Ctrl+A, and press Delete again.

If you're using a device that doesn't have a keyboard, try removing the PivotTable like this:

1. Pick a cell anywhere in the PivotTable to show the **PivotTable Tools** on the ribbon.
2. Click **Analyze > Select**, and then pick **Entire PivotTable**.
3. Press Delete.

Tip: If your PivotTable is on a separate sheet that has no other data you want to keep, deleting that sheet is a fast way to remove the PivotTable.



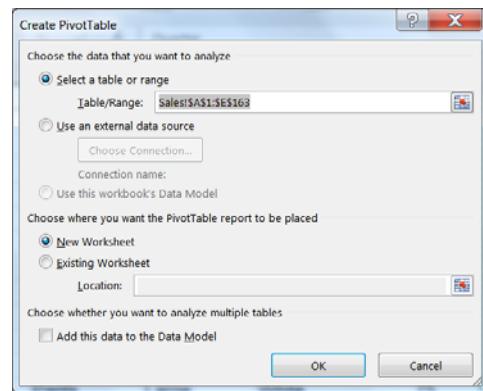
| Row Labels | Sum of Sales |
|-------------|--------------|
| 14-Mar | 77000 |
| 19-Mar | 55000 |
| Grand Total | 132000 |

Class Exercises

Filters

- 1) Open File: PivotSales.xlsx
 - If necessary, move to cell A1
- 2) From the Insert tab, choose **PivotTable**
 - Click OK to make a new PivotTable based on the current dataset on a new worksheet.
- 3) Set up the table to look like this:

| Quarter (All) | | Sum of # Sold | | | Column Labels | |
|---------------|-------------|---------------|------|------|---------------|-------------|
| | | Row Labels | Blue | Red | White | Grand Total |
| | Blouses | 976 | 969 | 919 | 2864 | |
| | Large | 307 | 194 | 317 | 818 | |
| | Medium | 347 | 412 | 250 | 1009 | |
| | Small | 322 | 363 | 352 | 1037 | |
| | Pants | 1369 | 1016 | 929 | 3314 | |
| | Large | 407 | 377 | 318 | 1102 | |
| | Medium | 423 | 357 | 287 | 1067 | |
| | Small | 539 | 282 | 324 | 1145 | |
| | Socks | 890 | 941 | 902 | 2733 | |
| | Large | 309 | 269 | 333 | 911 | |
| | Medium | 217 | 257 | 296 | 770 | |
| | Small | 364 | 415 | 273 | 1052 | |
| | Grand Total | 3235 | 2926 | 2750 | 8911 | |



- 4) Filter inside the PivotTable:
 - Use the Quarter filter to show only 1st Quarter
 - Use the title Row Labels to filter out the Socks
 - Use the title *Row Labels* to filter out the **Small**
 - Remember to either click on the category first, or change the selected field box to **Size**

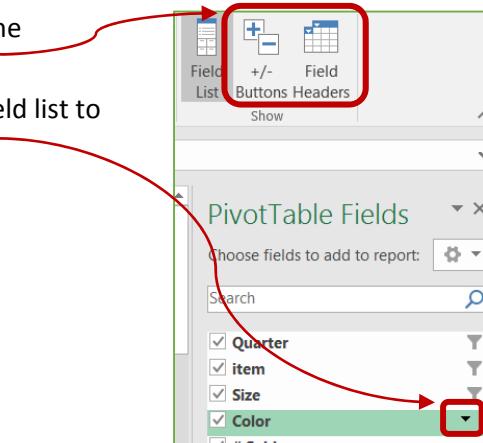


| Quarter (All) | | Sum of # Sold | | | Column Labels |
|---------------|---------------|---------------|-----|-------|---------------|
| | Sum of # Sold | Column Labels | Red | White | Grand Total |
| | Blouses | 111 | 88 | 117 | 316 |
| | Large | 88 | 10 | 92 | 190 |
| | Medium | 23 | 78 | 25 | 126 |
| | Pants | 78 | 102 | 139 | 319 |
| | Large | 15 | 85 | 75 | 175 |
| | Medium | 63 | 17 | 64 | 144 |
| | Grand Total | 189 | 190 | 256 | 635 |

- 5) Filter from the PivotTable field list:
 - Turn off the *+/- Buttons* and the *Field Headers* from the PivotTable Tools Analyze tab
 - Use the filter arrow next to Color in the PivotTable Field list to remove all the **Red** items

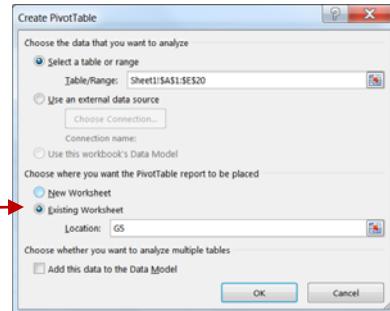
RESULT

| | A | B | C | D |
|----|----------------------|-------------|-------|-------------|
| 1 | Quarter | 1st Quarter | | |
| 2 | | | | |
| 3 | Sum of # Sold | | | |
| 4 | | Blue | White | Grand Total |
| 5 | Blouses | 111 | 117 | 228 |
| 6 | Large | 88 | 92 | 180 |
| 7 | Medium | 23 | 25 | 48 |
| 8 | Pants | 78 | 139 | 217 |
| 9 | Large | 15 | 75 | 90 |
| 10 | Medium | 63 | 64 | 127 |
| 11 | Grand Total | 189 | 256 | 445 |



Favorite Colors

- 1) Open File: PivotSurvey.xlsx
 - If necessary, move to cell A1
- 2) From the Insert tab, choose **PivotTable**
 - Choose Existing Worksheet
 - Type in G5 and click **OK**
- 3) Add Fav Color to the Rows
- 4) Add Fav Color to the Values
 - Since Fav Color is text, we get COUNT
- 5) Sort the values so the most popular color is first
 - Click on a number in the table, choose sort descending from the ribbon or right-click menu
 - From the PivotTable Tools Analyze Tab, Move PivotTable to a new sheet, or Clear All.

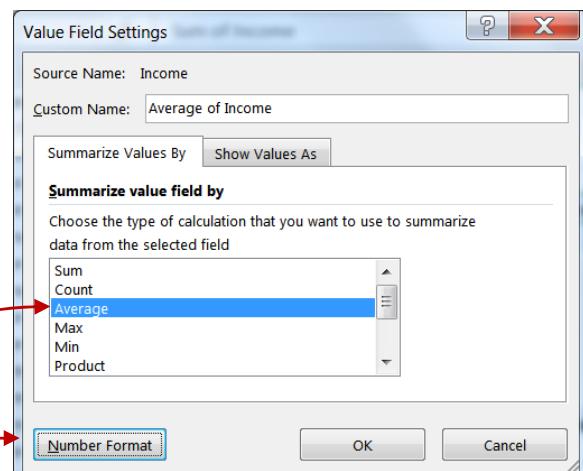


RESULT

| Row Labels | Count of Fav Color |
|--------------------|--------------------|
| Red | 5 |
| Blue | 4 |
| Yellow | 3 |
| Green | 3 |
| Orange | 3 |
| Purple | 1 |
| Grand Total | 19 |

Average Income

- 1) Recreate PivotTable structure, if necessary, otherwise skip to step 2
 - Open File: PivotSurvey.xlsx
 - move to cell A1
 - From the Insert tab, choose PivotTable
 - Choose Existing Worksheet
 - Type in G5 and click **OK**
- 2) Use fields Fav Color, Degree, Income
- 3) In the Values area of the field list, click on *Income*, choose **Value Field Settings**
- 4) Choose **Average**
- 5) Click **Number Format**
 - Set as a number with a comma and zero decimals



RESULT

| Average of Income | | | |
|--------------------|---------------|---------------|---------------|
| | No | Yes | Grand Total |
| Blue | 52,743 | 100,023 | 64,563 |
| Green | 60,224 | 92,049 | 70,832 |
| Orange | 65,733 | 74,685 | 68,717 |
| Purple | 35,792 | | 35,792 |
| Red | 52,977 | 41,935 | 48,560 |
| Yellow | | 86,766 | 86,766 |
| Grand Total | 54,988 | 76,366 | 63,989 |

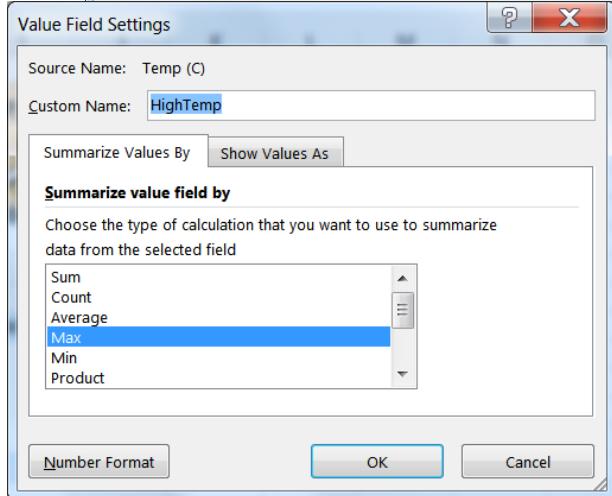
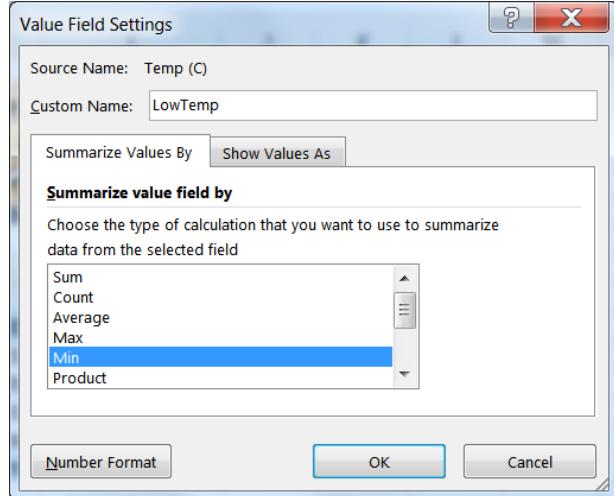
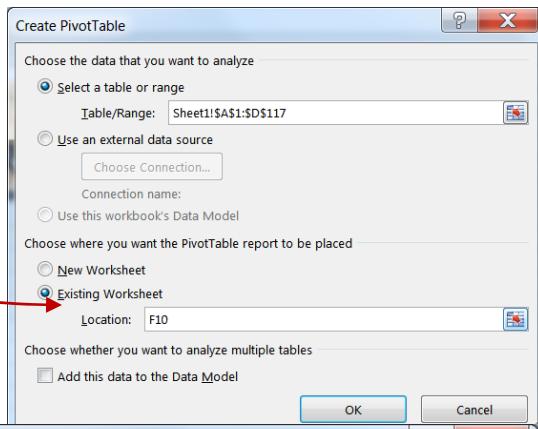
The blank values in the table mean there's no data that matches the grouping. If you would prefer to see something, such as a zero or N/A:

- Click the **Options** button, on the far left side of the **Analyze** tab.
- On the first page of the options window, *Layout & Formatting*, put what you would like to see in the **For Empty Cells Show:** option.

Range (High/Low)

- 1) Open File: PivotKangarooRats.xlsx
 - If necessary, move to cell A1
- 2) From the Insert tab, choose PivotTable
 - Choose Existing Worksheet
 - Type in F10 and click OK

We want the temperature range for each rat. So we need Rat as a row label, and temp in the values twice. The first temp should be the **Min**, second the **Max**.



- 3) Rats in Rows, Temp in Value
 - Drag a second Temp into Value
- 4) Click on the first **Sum of Temp** in the Values area, choose **Value Field Settings**
 - Summarize Values By **Min**
 - Number Format 1 decimal place
 - Custom Name: **Low Temp**
- 5) Click on the **Sum of Temp (2)** in the Values area, choose **Value Field Settings**
 - Summarize Values By **Max**
 - Number Format 1 decimal place
 - Custom Name: **High Temp**
- 6) From the PivotTable Tools Analyze Tab, Move PivotTable to a new sheet, or Clear All.

RESULT

The PivotTable result table is as follows:

| Row Labels | Low Temp | High Temp |
|--------------------|-----------------|-----------------|
| A01 | 32.9 | 39.0 |
| A02 | 33.0 | 35.9 |
| A03 | 32.9 | 39.0 |
| A04 | 32.8 | 39.0 |
| Grand Total | 32.8 | 39.0 |
| Row Labels | First Date | Last Date |
| A01 | 02/16/14 | 12/31/15 |
| A02 | 01/25/14 | 12/20/15 |
| A03 | 03/10/14 | 12/15/15 |
| A04 | 01/26/14 | 12/30/15 |
| Grand Total | 01/25/14 | 12/31/15 |

First/Last Date

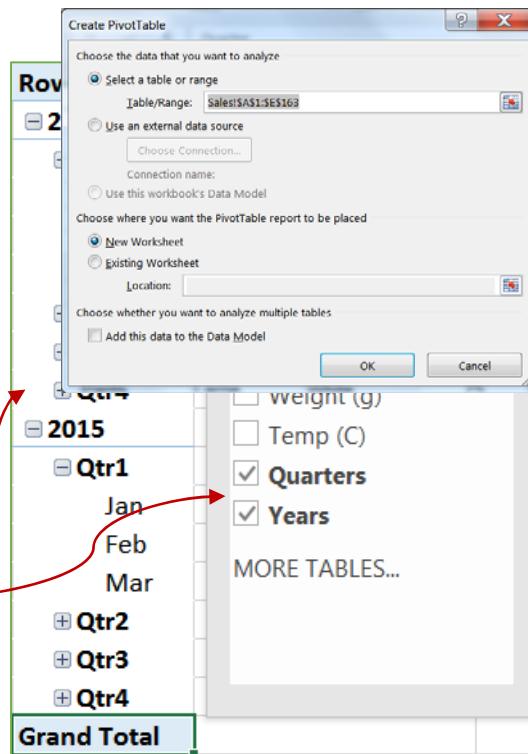
Repeat this exercise but use the Date as the value. Minimum dates are Earliest, Maximum are Latest. Don't forget to reformat the date as a Date!

- From the PivotTable Tools Analyze Tab, Move PivotTable to a new sheet, or Clear All.

Grouping Dates

We want the average weight, with zero decimals for all the rats by months and years.

- 1) Recreate PivotTable structure, if necessary, otherwise skip to step 2
 - Open File: PivotKangarooRats.xlsx
 - Move to cell A1
 - From the Insert tab, choose PivotTable
 - Choose Existing Worksheet
 - Type in G5 and click **OK**
- 2) In the field list, click the checkbox for the Date field to add it to the **Rows** area
 - Try the +/- (expand/collapse) buttons to see the different date groupings
 - Notice the new fields in the field list
 - This happens automatically, if all the values are dates. If even a single cell in the original data column is not a date, you will not be able to group. Use your sort tools on the original data to find the values that don't belong.
- 3) From the PivotTable Tools Analyze Tab, Move PivotTable to a new sheet, or Clear All.



RESULT

| Avg Wgt | | | | | | | | | | | | |
|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 2014 | 66 | 69 | 64 | 66 | 67 | 69 | 68 | 65 | 67 | 71 | 68 | 65 |
| 2015 | 63 | 68 | 67 | 69 | 68 | 74 | 68 | 73 | 64 | 68 | 72 | 65 |
| Grand Total | 64 | 69 | 66 | 68 | 67 | 70 | 68 | 66 | 67 | 70 | 69 | 65 |

Grouping Text with no Summary Values

- 1) Open PivotCustomers.xlsx
- 2) From the Insert tab, choose PivotTable
 - Click OK to make a new PivotTable based on the current dataset on a new worksheet.
- 3) Row Labels: County, City, Last
- 4) Format
 - Sort County Z-A; Sort City Z-A
 - Turn off the +/- buttons (Analyze Tab)
 - Autofit Columns
- 5) Design Tab
 - Subtotals – Do not show subtotals
 - Grand Totals – Off for rows and columns
 - Report Layout – Show in Tabular Form
 - Blank Rows – Insert blank line after each item

RESULT

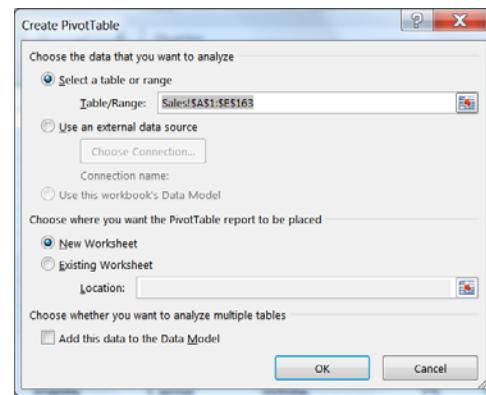
| COUNTY | CITY | LAST |
|-------------|--------------|--|
| Duval | Jacksonville | Finch Iccabob Joiner Lee Martin Newsome Saunders Traver Williamson |
| Bradford | Starke | Appleton Katz Shores |
| Alachua | Waldo | Cappers Huey King Livingston McDade Oglethorpe Thomas Vann West |
| Gainesville | | Adams Arlington Brown |

PivotChart

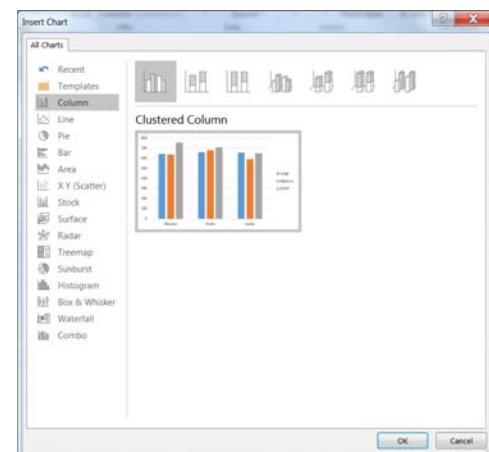
When you create a PivotChart, Excel will create a PivotTable to support the chart. I recommend building the PivotTable before creating the chart.

- 1) Open File: PivotSales.xlsx
 - If necessary, move to cell A1
- 2) From the Insert tab, choose PivotTable
 - Click OK to make a new PivotTable based on the current dataset on a new worksheet.
- 3) Create this table:

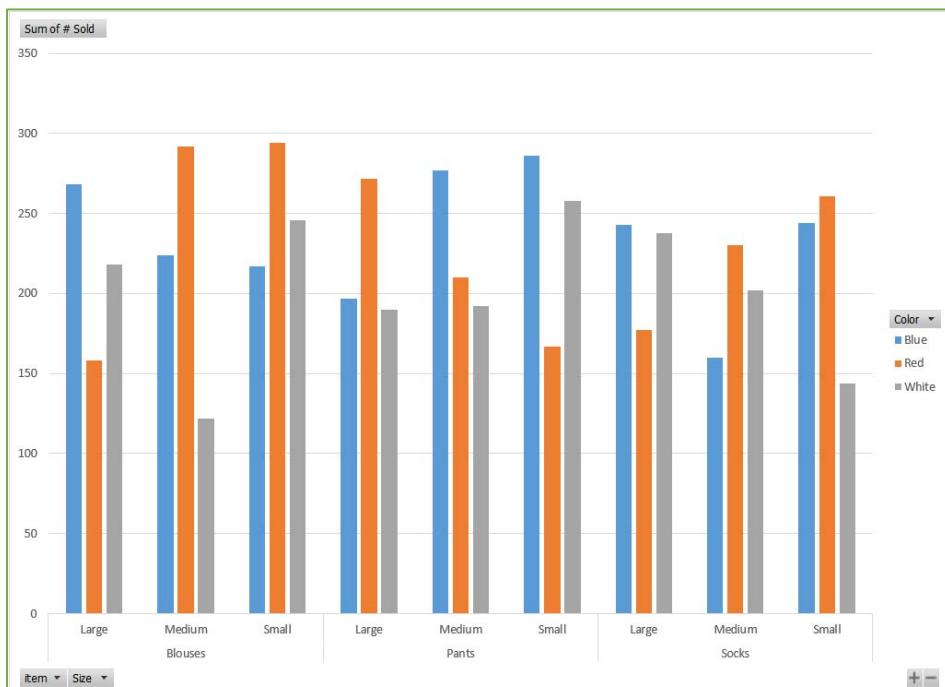
| | Column Labels | | | |
|--------------------|---------------|-------------|-------------|-------------|
| Row Labels | Large | Medium | Small | Grand Total |
| Blouses | 644 | 638 | 757 | 2039 |
| Pants | 659 | 679 | 711 | 2049 |
| Socks | 658 | 592 | 649 | 1899 |
| Grand Total | 1961 | 1909 | 2117 | 5987 |



- 4) On the PivotTable Analyze tab, choose **PivotChart**. Click OK to accept the **Clustered Column** chart
- 5) Turn to the Design tab in the Ribbon, click on the last button **Move Chart**. Move to a new sheet.
- 6) Add the field **Color** to the PivotChart's **Legend** area
- 7) Return to PivotTable, move **Size** from Columns into Rows. Table and Chart should both change.



RESULT



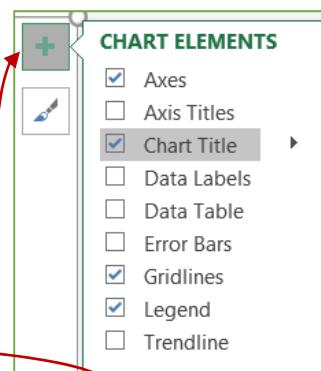
PivotChart Filtered Title

- 1) Add the field **Quarter** to the PivotChart's **Filters** area
- 2) Filter the chart to only show 1st Quarter
- 3) We can see the filtered value above the table but not on the chart.

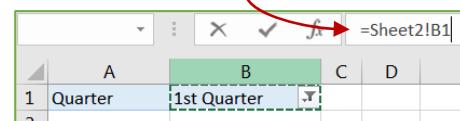


| Quarter | 1st Quarter | | | | |
|---------|-------------|---------------|---------------|------------|------|
| | | Sum of # Sold | Column Labels | Row Labels | |
| Blouses | | 161 | 146 | 159 | 466 |
| | Large | 88 | 10 | 92 | 190 |
| | Medium | 23 | 78 | 25 | 126 |
| | Small | 50 | 58 | 42 | 150 |
| Pants | | 167 | 129 | 200 | 496 |
| | Large | 15 | 85 | 75 | 175 |
| | Medium | 63 | 17 | 64 | 144 |
| | Small | 89 | 27 | 61 | 177 |
| Socks | | 201 | 216 | 123 | 540 |
| | Large | 83 | 45 | 43 | 171 |
| | Medium | 26 | 76 | 64 | 166 |
| | Small | 92 | 95 | 16 | 203 |
| Total | | 529 | 491 | 482 | 1502 |

- 4) Click anywhere in the chart. Look for the big plus sign in the upper right hand corner. Click on it and choose **Chart Title**.



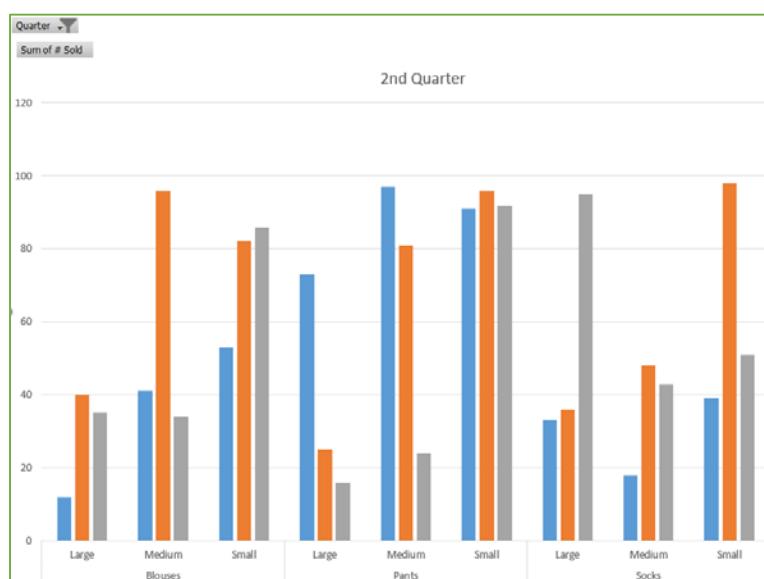
- 5) Click on the newly created Chart Title. Do not type inside the title, instead once it's selected click in the formula bar.



- 6) Press the equal sign on the keyboard, use your mouse to move back to the PivotTable, click in Cell B1 and press Enter

- 7) Change the Filter to **2nd Quarter**

RESULT



Things to Remember

- 1) Pivot Tables and the source data don't have to exist in the same workbook. If you forgot where the original data is located, go to the **Change Data Source** option on the **Analyze** tab.
- 2) Double-clicking on a cell within the PivotTable will create a copy of the breakdown of the data inside a table on a new sheet. This is a **COPY** and not linked to the original in any way. I recommend deleting it, or moving it to a different workbook.
- 3) To move a sheet to a different book, right-click on the sheet name and choose **Move or Copy...** change the dropdown **To Book**.
- 4) The +/- Buttons will expand and collapse the grouped data for that entry. You can do the entire group at once from the **Expand Field** and **Collapse Field** buttons in the PivotTable Analyze tab. The option to turn off the +/- buttons is on the far right side of the Analysis tab.
- 5) Changing the **Report Layout** on the PivotTable Tools Design tab to **Outline** or **Layout** will give each field name its own filter arrow and title.
- 6) Report filters are meant for one choice. If you want multiple choices include the field in the PivotTable, or try a **Slicer** instead.
- 7) Any Chart inserted while you're in a PivotTable will be a PivotChart.
- 8) Can't undo? Afraid you messed everything up? Close without saving. It's the **Ultimate Undo**, or use **F12** on the keyboard to **Save As** a new file.
- 9) My email address and phone number are on the second page of this packet!

Excel 2016: Large Data 3

vLookups



Excel 2016: Large Data 3 - vLookups

1.5 hours

In this advanced math workshop, we will work with multipart functions such as IF() and VLOOKUP() statements. We will also use Data Validation to create drop-down lists that help with data entry. We'll use the results of the list in our functions.

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Class Exercises

vLookup

| | A | B | C | D |
|---|--|---|---|--|
| 1 | Original Data | | | |
| 2 | Name | Employee ID | Title | Phone # |
| 3 | Scrooge McDuck | 2134-6113 | Captain | (352) 555-2060 |
| 4 | Donald Duck | 3291-5756 | First Mate | (352) 555-6108 |
| 5 | Daisy Duck | 9949-3960 | Quartermaster | (352) 555-6615 |
| 6 | Gus 1 use | 6670 2 7 | Gunner 3 | (352) 5 4 387 |
| 7 | Huey Duck | 5602-6973 | Cabin Boy | (352) 555-5025 |
| 8 | Louie Duck | 7362-1089 | Cabin Boy | (352) 555-8546 |
| 9 | Dewey Duck | 1910-3921 | Cabin Boy | (352) 555-6756 |

VLOOKUP(**lookup_value**, **table_array**, **col_index_num**, [range_lookup])

VLOOKUP(**Find this value**, **in this dataset**, **return data from column #**, **FALSE (exact match)**)

| | F | G |
|---|--------------|---------------------------------|
| 1 | Phone Lookup | |
| 2 | Name | Phone # |
| 3 | Daisy Duck | =VLOOKUP(F3, A3:D9, 4, FALSE) |
| 4 | Dewey Duck | |

Lock the Range

Cell addresses in an equation are relative to their location. When we use the fill handle or copy and paste feature the addresses move to the new location. When we fill the equation above to the next row, the formula will become:

$$=VLOOKUP(F4, A4:D10, 4, FALSE)$$

We want the first value to change, so we're now looking for "Dewey Duck", but we need the data range to stay the same. The two options we learn in the Basic 2: Math class are locking the cell addresses and naming the range.

To **Lock** a range you can type in the dollar signs (little handcuffs), or you can press function key **F4** as soon as you select the range and Excel will add the dollar signs for you. **F4**- Force!

$$=VLOOKUP(F3, \$A\$3:\$D\$9, 4, FALSE)$$

You need to **Name** a range before you start your equation. Select the data range, click in the name box and type the name you want for that dataset and press **Enter** on the keyboard. I used the name **Data**.

$$=VLOOKUP(F3, Data, 4, FALSE)$$

Title Lookup

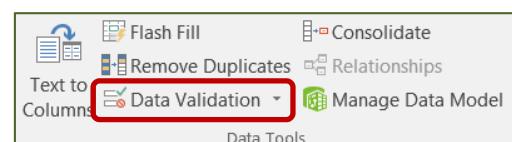
| | A | B |
|---|--------------|--------------------------------|
| 1 | Title Lookup | |
| 2 | Name | Title |
| 3 | Daisy Duck | =VLOOKUP(A3, Data, 3, FALSE) |
| 4 | Dewey Duck | Cabin Boy |
| 5 | Donald Duck | First Mate |
| 6 | Gus Goose | Gunner |

Use function key **F3** to open the name box while you're building an equation. **F3**- Find Me!

Choose Employee

| | A | B |
|---|------------------|--------------------------------|
| 1 | Choose Employee | |
| 2 | Employee: | Daisy Duck |
| 3 | Title: | =VLOOKUP(B2, Data, 3, FALSE) |
| 4 | | |
| 5 | Active Employee? | |

We can build a list within a cell using the **Data Validation** tool on the **Data** tab. Change the Allow option to List, and then type in the values, or the named range, or select a single column of the values you want to appear on the list.



The image displays two side-by-side screenshots of the 'Data Validation' dialog box from Microsoft Excel. Both dialogs have the 'Settings' tab selected. In the left dialog, the 'Source' field contains the formula '=Phone Lookup!\$A\$2:\$A\$9'. In the right dialog, the 'Source' field contains the formula '=NameList'. Other settings like 'Allow: List', 'Ignore blank', and 'In-cell dropdown' are also visible in both dialogs.

Fill in a Blank

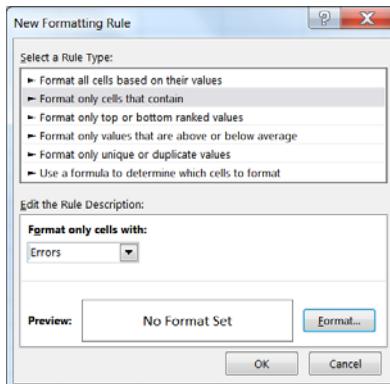
| | A | B | C |
|---|----------------|--------------------------------|---|
| 1 | | Fill in a Blank | |
| 2 | Employee Name | Employee Title | |
| 3 | #1: Daisy Duck | =VLOOKUP(A3, Data, 3, FALSE) | |
| 4 | #2: | #N/A | |
| 5 | #3: Louie Duck | Cabin Boy | |

Since there is no Employee 2 listed, we get the #N/A message saying the vLookup can't find that value.

There are three choices to deal with this.

1) Ignore it. I often do, I know what it means. I can use it to filter all the unmatched data.

2) Use a conditional formatting to make the text appear invisible by turning the font color white.



3) Use a nested formula with IF and ISNA.

IF(logical_test,value_if_true,value_if_false)
IF(Question, What to do if True, What to do if False)

ISNA(Value) = returns a TRUE if it's an #N/A and a FALSE if it's not an #N/A

Question: Does our vLookup return an N/A

If TRUE: If it's true, let's put a blank cell ""

If FALSE: show me what the vLookup returned

=IF(ISNA(VLOOKUP(A3, Data, 3, FALSE)), "", VLOOKUP(A3, Data, 3, FALSE))

A diagram illustrating the nested IF formula. The formula is =IF(ISNA(VLOOKUP(A3, Data, 3, FALSE)), "", VLOOKUP(A3, Data, 3, FALSE)). Brackets are placed around the innermost part, VLOOKUP(A3, Data, 3, FALSE), and labeled 'Question'. Brackets are then placed around the entire IF function and the value "", and labeled 'If TRUE'. Finally, brackets are placed around the entire IF function and the value VLOOKUP(A3, Data, 3, FALSE), and labeled 'If FALSE'.

Invoice

Step 1: Name the list of Names

- Sheet "Shipping Addresses"
- Select Column A
- In the Name box, type **NameList**, press enter

| NameList | | | |
|----------|------------------|--------------|---|
| | A | B | C |
| 1 | Annie Adams | 6831 NW 4th | |
| 2 | April Appleton | PO Box 456 | |
| 3 | Arnold Arlington | 234 SE 45th | |
| 4 | Bobbie Brown | 234 Peter Pa | |

Step 2: Name the Addresses Range

- Sheet "Shipping Addresses"
- Select Columns A:D
- In the Name box, type **Addresses**, press enter

| Addresses | | | | |
|-----------|------------------|-----------------------|-----------------------|-------|
| | A | B | C | D |
| 1 | Annie Adams | 6831 NW 4th Ave | Gainesville, FL 32655 | 40620 |
| 2 | April Appleton | PO Box 456 | Starke, FL 32689 | 41136 |
| 3 | Arnold Arlington | 234 SE 45th Road | Gainesville, FL 32597 | 39880 |
| 4 | Bobbie Brown | 234 Peter Pan Terrace | Gainesville, FL 32597 | 39998 |

Step 3: Name the List of Items

- Sheet "Sales Items"
- Select Column A
- In the Name box, type **ItemList**, press enter

| ItemList | | | |
|----------|----------------|-------|---|
| | A | B | C |
| 1 | Blouses, Blue | 15.95 | |
| 2 | Blouses, Red | 16.45 | |
| 3 | Blouses, White | 15.75 | |
| 4 | Pants, Blue | 12.82 | |

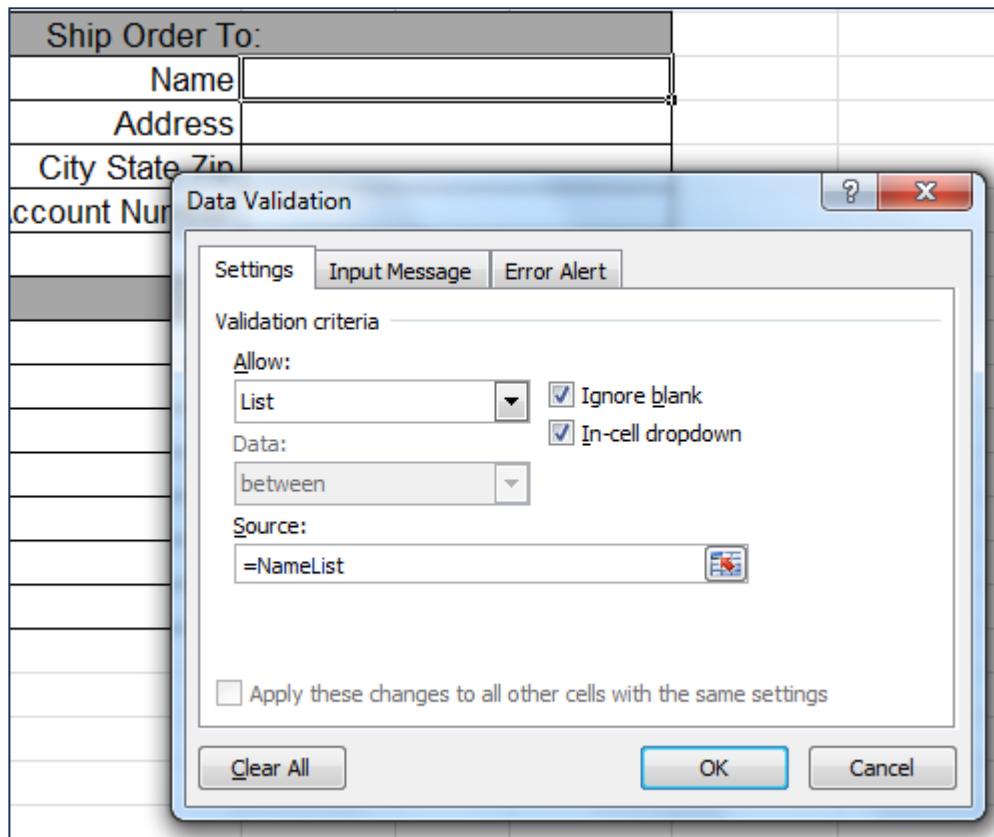
Step 4: Name the Items Range

- Sheet "Sales Items"
- Select Columns A:B
- In the Name box, type **Items**, press enter

| Items | | |
|-------|----------------|-------|
| | A | B |
| 1 | Blouses, Blue | 15.95 |
| 2 | Blouses, Red | 16.45 |
| 3 | Blouses, White | 15.75 |
| 4 | Pants, Blue | 12.82 |

Step 5: Set up Name List

- Sheet "Sales Invoice", Cell C5
- Data Tab, Data Validation
- Allow: List
- Source: =NameList (don't forget the = sign)



Step 6: Set up Address Lookups

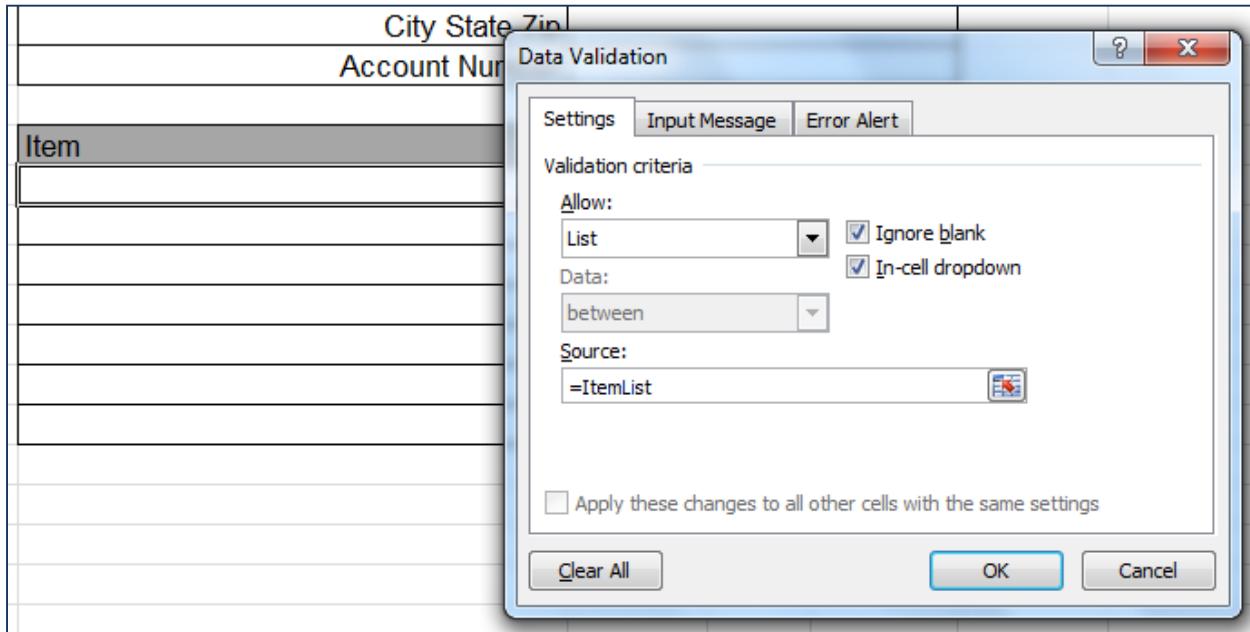
- Sheet "Sales Invoice"

| | VLOOKUP() | C6 | C7 | C8 |
|----------------|-------------------|-----------|-----------|-----------|
| Find | Name from cell C5 | C5 | C5 | C5 |
| Look in | Range "Addresses" | Addresses | Addresses | Addresses |
| Return | column 2, 3, 4 | 2 | 3 | 4 |
| Find closest # | No, find exact | False | False | False |

- C6: =VLOOKUP(C5, Addresses,2, FALSE)
- C7: =VLOOKUP(C5, Addresses,3, FALSE)
- C8: =VLOOKUP(C5, Addresses,4, FALSE)

Step 7: Set up Item List

- Sheet "Sales Invoice", Cell B11
- Data Tab, Data Validation
- Allow: List
- Source: =ItemList (don't forget the =)



- Copy/Fill formula down through Row 17
-

Step 8: Set up Price Lookups

- Sheet "Sales Invoice"

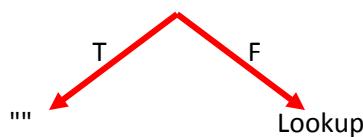
| | VLOOKUP() | C11 |
|----------------|--------------------|-------|
| Find | Item from cell B11 | B11 |
| Look in | Range "Items" | Items |
| Return | column 2 | 2 |
| Find closest # | No, find exact | False |

- C11: =VLOOKUP(B11, Items,2, FALSE)

| Item | Price | Qty | Subtotal |
|------|-------|-----|----------|
| | #N/A | | |
| | | | |
| | | | |
| | | | |

Step 9: Change equation to hide #N/A

IF Lookup =#N/A



| | | |
|---------------------|----------------------|----------------------------------|
| Logical Test | Is the vLookup #N/A? | ISNA(VLOOKUP(B11,Items,2,FALSE)) |
| If True | Leave blank | "" |
| If False | Do the vLookup | VLOOKUP(B11,Items,2,FALSE) |

- C11: =IF(ISNA(VLOOKUP(B11, Items,2, FALSE)), "", VLOOKUP(B11, Items,2, FALSE))

- Copy/Fill equation down to C17

Step 10: Set Subtotal equation

- Sheet "Sales Invoice"

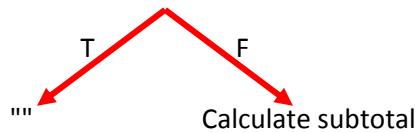
- E11: =C11*D11

| Item | Price | Qty | Subtotal |
|------|-------|-----|----------|
| | | | #VALUE! |
| | | | |
| | | | |
| | | | |

Step 11: Change equation to hide

- Change equation to account for blanks

IF Item = ""



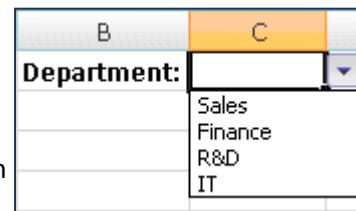
| | | |
|---------------------|--------------------|---------|
| Logical Test | Is the Item blank? | C11="" |
| If True | Leave blank | "" |
| If False | Calculate SubTotal | C11*D11 |

- E11: =IF(C11="", "", C11*D11)

Data Validation: Insert or delete a drop-down list

From Office Help

To make data entry easier in Excel, or to limit entries to certain items that you define, you can create a drop-down list of valid entries that is compiled from cells elsewhere in the workbook. When you create a drop-down list for a cell, it displays an arrow in that cell. To enter information in that cell, click the arrow, and then click the entry that you want.



To create a drop-down list from a range of cells, use the **Data Validation** command in the **Data Tools** group on the **Data** tab.

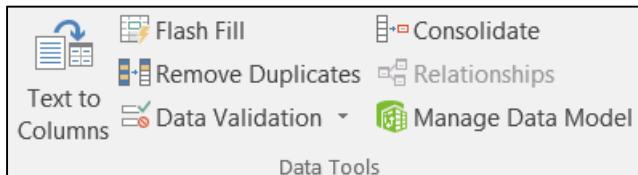
1. To create a list of valid entries for the drop-down list, type the entries in a single column or row without blank cells.

For example:

| | A |
|---|---------|
| 1 | Sales |
| 2 | Finance |
| 3 | R&D |

NOTE: You may want to sort the data in the order that you want it to appear in the drop-down list.

2. If you want to use another worksheet, type the list on that worksheet, and then define a name for the list.
3. Select the cell where you want the drop-down list.
4. On the **Data** tab, in the **Data Tools** group, click **Data Validation**.



5. In the **Data Validation** dialog box, click the **Settings** tab.
6. In the **Allow** box, click **List**.
7. To specify the location of the list of valid entries, do one of the following:
 - If the list is in the current worksheet, enter a reference to your list in the **Source** box.
 - If the list is on a different worksheet, enter the name that you defined for your list in the **Source** box.

In both cases, make sure that the reference or name is preceded with an equal sign (=). For example, enter =ValidDepts.

8. Make sure that the **In-cell dropdown** check box is selected.
9. To specify whether the cell can be left blank, select or clear the **Ignore blank** check box.

VLOOKUP Worksheet Function

From Office Help

Description

You can use the **VLOOKUP** function to search the first column of a range of cells, and then return a value from any cell on the same row of the range. For example, suppose that you have a list of employees contained in the range A2:C10. The employees' ID numbers are stored in the first column of the range, as shown in the following illustration.

| | A | B | C |
|----|-------------|------------|------------------|
| 1 | Employee ID | Department | Full Name |
| 2 | 35 | Sales | Yossi Banai |
| 3 | 36 | Production | Nicole Bousseau |
| 4 | 37 | Sales | Aik Chen |
| 5 | 38 | Operations | Axel Delgado |
| 6 | 39 | Sales | Suroor Fatima |
| 7 | 40 | Production | Gerhard Goeschl |
| 8 | 41 | Sales | Andreas Hauser |
| 9 | 42 | Operations | Nattorn Jayanama |
| 10 | 43 | Production | Jim Kim |

If you know the employee's ID number, you can use the **VLOOKUP** function to return either the department or the name of that employee. To obtain the name of employee number 38, you can use the formula **=VLOOKUP(38, A2:C10, 3, FALSE)**. This formula searches for the value 38 in the first column of the range A2:C10, and then returns the value that is contained in the third column of the range and on the same row as the lookup value ("Axel Delgado").

The V in **VLOOKUP** stands for vertical. Use **VLOOKUP** instead of **HLOOKUP** when your comparison values are located in a column to the left of the data that you want to find.

Remarks

- When searching text values in the first column of **table_array**, ensure that the data in the first column of **table_array** does not contain leading spaces, trailing spaces, inconsistent use of straight (' or ") and curly (' or ") quotation marks, or nonprinting characters. In these cases, **VLOOKUP** might return an incorrect or unexpected value. You may be able to use the **CLEAN** and/or **TRIM** function to reformat your data.
- When searching number or date values, ensure that the data in the first column of **table_array** is not stored as text values. In this case, **VLOOKUP** might return an incorrect or unexpected value.
- If **range_lookup** is FALSE and **lookup_value** is text, you can use the wildcard characters — the question mark (?) and asterisk (*) — in **lookup_value**. A question mark matches any single character; an asterisk matches any sequence of characters. If you want to find an actual question mark or asterisk, type a tilde (~) preceding the character.

Syntax: **VLOOKUP()**

VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])

The **VLOOKUP** function syntax has the following arguments:

- **lookup_value** Required. The value to search in the first column of the table or range. The **lookup_value** argument can be a value or a reference. If the value you supply for the **lookup_value** argument is smaller than the smallest value in the first column of the **table_array** argument, **VLOOKUP** returns the #N/A error value.
- **table_array** Required. The range of cells that contains the data. You can use a reference to a range (for example, A2:D8), or a range name. The values in the first column of **table_array** are the values searched by **lookup_value**. These values can be text, numbers, or logical values. Uppercase and lowercase texts are equivalent.
- **col_index_num** Required. The column number in the **table_array** argument from which the matching value must be returned. A **col_index_num** argument of 1 returns the value in the first column in **table_array**; a **col_index_num** of 2 returns the value in the second column in **table_array**, and so on.
 - If the **col_index_num** is less than 1, **VLOOKUP** returns the #VALUE! error value.
 - If the **col_index_num** is greater than the number of columns in **table_array**, **VLOOKUP** returns the #REF! error value.
- **range_lookup** Optional. A logical value that specifies whether you want **VLOOKUP** to find an exact match or an approximate match:
 - If **range_lookup** is either TRUE or is omitted, an exact or approximate match is returned. If an exact match is not found, the next largest value that is less than **lookup_value** is returned.
 - If **range_lookup** is either TRUE or is omitted, the values in the first column of **table_array** must be placed in ascending sort order; otherwise, **VLOOKUP** might not return the correct value.
 - If **range_lookup** is FALSE, the values in the first column of **table_array** do not need to be sorted.
 - If the **range_lookup** argument is FALSE, **VLOOKUP** will find only an exact match. If there are two or more values in the first column of **table_array** that match the **lookup_value**, the first value found is used. If an exact match is not found, the error value #N/A is returned.

| | | |
|------------------------|--------------------|-----------------------------|
| | VLOOKUP() | =VLOOKUP(B11,Items,2,FALSE) |
| Find | Item from cell B11 | B11 |
| Look in | Range "Items" | Items |
| Return | column 2 | 2 |
| Find closest #? | No, find exact | False |

IF Worksheet Function

From Office Help

Specifies a logical test to perform

Syntax: IF()

`IF(logical_test,value_if_true,value_if_false)`

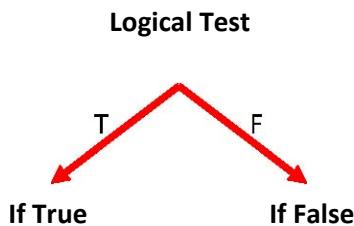
- *Logical_test* is any value or expression that can be evaluated to TRUE or FALSE. For example, $A10=100$ is a logical expression; if the value in cell A10 is equal to 100, the expression evaluates to TRUE. Otherwise, the expression evaluates to FALSE. This argument can use any comparison calculation operator.
- *Value_if_true* is the value that is returned if *logical_test* is TRUE. For example, if this argument is the text string "Within budget" and the *logical_test* argument evaluates to TRUE, then the IF function displays the text "Within budget". If *logical_test* is TRUE and *value_if_true* is blank, this argument returns 0 (zero). To display the word TRUE, use the logical value TRUE for this argument. *Value_if_true* can be another formula.
- *Value_if_false* is the value that is returned if *logical_test* is FALSE. For example, if this argument is the text string "Over budget" and the *logical_test* argument evaluates to FALSE, then the IF function displays the text "Over budget". If *logical_test* is FALSE and *value_if_false* is omitted, (that is, after *value_if_true*, there is no comma), then the logical value FALSE is returned. If *logical_test* is FALSE and *value_if_false* is blank (that is, after *value_if_true*, there is a comma followed by the closing parenthesis), then the value 0 (zero) is returned. *Value_if_false* can be another formula.

Remarks

- Up to seven IF functions can be nested as *value_if_true* and *value_if_false* arguments to construct more elaborate tests.
- When the *value_if_true* and *value_if_false* arguments are evaluated, IF returns the value returned by those statements.

| |
|---|
| =IF(A10<=100,"Within budget","Over budget") |
| =IF(A10=100,SUM(B5:B15),"") |
| =IF(B2>C2,"Over Budget","OK") |
| =IF(B3>C3,"Over Budget","OK") |

Logic Tree



Other Logic Functions

From Office Help

TRUE

Returns the logical value TRUE.

Syntax: `TRUE()`

Remark: You can enter the value TRUE directly into cells and formulas without using this function.

FALSE

Returns the logical value FALSE.

Syntax: `FALSE()`

Remark: You can also type the word FALSE directly onto the worksheet or into the formula, and Microsoft Excel interprets it as the logical value FALSE.

AND

Returns TRUE if all its arguments are TRUE

Syntax: `AND(logical1,logical2, ...)`

Logical1, logical2, ... are 1 to 30 conditions you want to test that can be either TRUE or FALSE.

The arguments must evaluate to logical values such as TRUE or FALSE. If the specified range contains no logical values, returns the #VALUE! error value.

| | |
|--------------------------------|-------|
| <code>=AND(TRUE, TRUE)</code> | TRUE |
| <code>=AND(TRUE, FALSE)</code> | FALSE |

| | |
|---------------------------------|-------|
| <code>=AND(FALSE,FALSE)</code> | FALSE |
| <code>=AND(2+2=4, 2+3=5)</code> | TRUE |

OR

Returns TRUE if any argument is TRUE

Syntax: `OR(logical1,logical2,...)`

Logical1, logical2, ... are 1 to 30 conditions you want to test that can be either TRUE or FALSE.

The arguments must evaluate to logical values such as TRUE or FALSE. If the specified range contains no logical values, returns the #VALUE! error value.

| | |
|-------------------------------|------|
| <code>=OR(TRUE, TRUE)</code> | TRUE |
| <code>=OR(TRUE, FALSE)</code> | TRUE |

| | |
|--------------------------------|-------|
| <code>=OR(FALSE, FALSE)</code> | FALSE |
| <code>=OR(1+1=1,2+2=5)</code> | FALSE |

NOT

Reverses the value of its argument. Syntax: `NOT(logical)` *Logical* is a value or expression that can be evaluated to TRUE or FALSE. If logical is FALSE, NOT returns TRUE; if logical is TRUE, NOT returns FALSE.

| | |
|--------------------------|------|
| <code>=NOT(FALSE)</code> | TRUE |
|--------------------------|------|

| | |
|--------------------------|-------|
| <code>=NOT(1+1=2)</code> | FALSE |
|--------------------------|-------|

IS functions

From Office Help

Description

Each of these functions, referred to collectively as the **IS** functions, checks the specified value and returns TRUE or FALSE depending on the outcome. For example, the **ISBLANK** function returns the logical value TRUE if the value argument is a reference to an empty cell; otherwise it returns FALSE.

You can use an **IS** function to get information about a value before performing a calculation or other action with it. For example, you can use the **ISERROR** function in conjunction with the **IF** function to perform a different action if an error occurs:

=IF(ISERROR(A1), "An error occurred.", A1 * 2)

This formula checks to see if an error condition exists in A1. If so, the **IF** function returns the message "An error occurred." If no error exists, the **IF** function performs the calculation A1*2.

Syntax: IS()

The **IS** function syntax has the following argument:

- **Value** -Required. The value that you want tested. The value argument can be a blank (empty cell), error, logical value, text, number, or reference value, or a name referring to any of these.

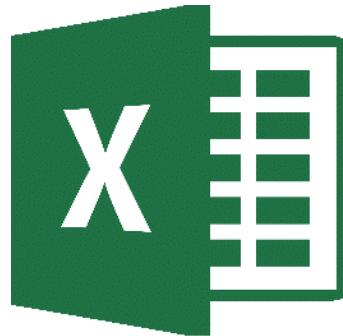
| FUNCTION | RETURNS TRUE IF |
|-----------|--|
| ISBLANK | Value refers to an empty cell. |
| ISERR | Value refers to any error value except #N/A. |
| ISERROR | Value refers to any error value (#N/A, #VALUE!, #REF!, #DIV/0!, #NUM!, #NAME?, or #NULL!). |
| ISLOGICAL | Value refers to a logical value. |
| ISNA | Value refers to the #N/A (value not available) error value. |
| ISNONTEXT | Value refers to any item that is not text. (Note that this function returns TRUE if the value refers to a blank cell.) |
| ISNUMBER | Value refers to a number. |
| ISREF | Value refers to a reference. |
| ISTEXT | Value refers to text. |

Remarks

- The value arguments of the **IS** functions are not converted. Any numeric values that are enclosed in double quotation marks are treated as text. For example, in most other functions where a number is required, the text value "19" is converted to the number 19. However, in the formula **ISNUMBER("19")**, "19" is not converted from a text value to a number value, and the **ISNUMBER** function returns FALSE.
- The **IS** functions are useful in formulas for testing the outcome of a calculation. When combined with the **IF** function, these functions provide a method for locating errors in formulas.

Excel 2016: Large Data 4

Final Report



Excel 2016: Large Data 4 – Final Report

2.0 hours

This is an advanced math workshop. Topics include: importing text files; data cleanup using Text to Columns and Flash Fill; Conditional Functions SumIf() and CountIf(); creating substitution lists to cleanup or categorize data to be summarized in PivotTables; using nested IF() statements to create flags to be used as saved filters; creating a summary worksheet using multiple PivotTables and PivotCharts; and using Slicers to filter multiple PivotTables at the same time.

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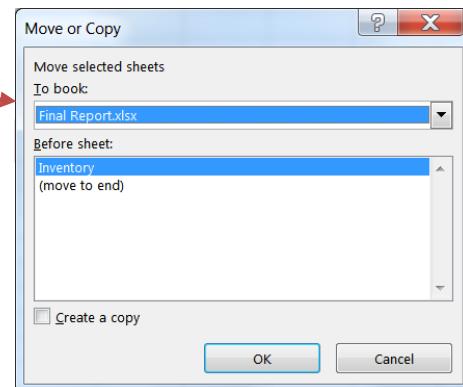
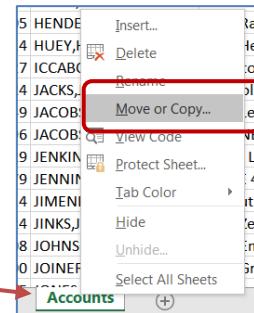
Merging Files



Create Final Report file

- Open Final-Inventory.xlsx
- Save as **Final-Report.xlsx** onto the desktop (F12=Save As)
- Open Accounts.xlsx
- Right-click on the worksheet name, **Accounts**
- Choose **Move or Copy...**
From the **To Book:** drop down, choose Final-Report
- Click **OK**

Note: The **Accounts** file will disappear. It still exists, but every workbook must have at least one worksheet. When we move this worksheet out of this workbook, the file will close without saving.

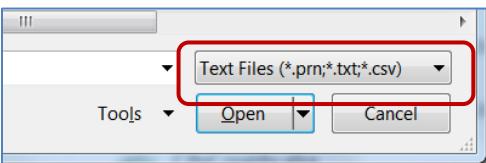


Open a Text File

- Open the **Data.txt** file
 - o If you can't see the file, you may need to change the file type to **All** or **Text** files

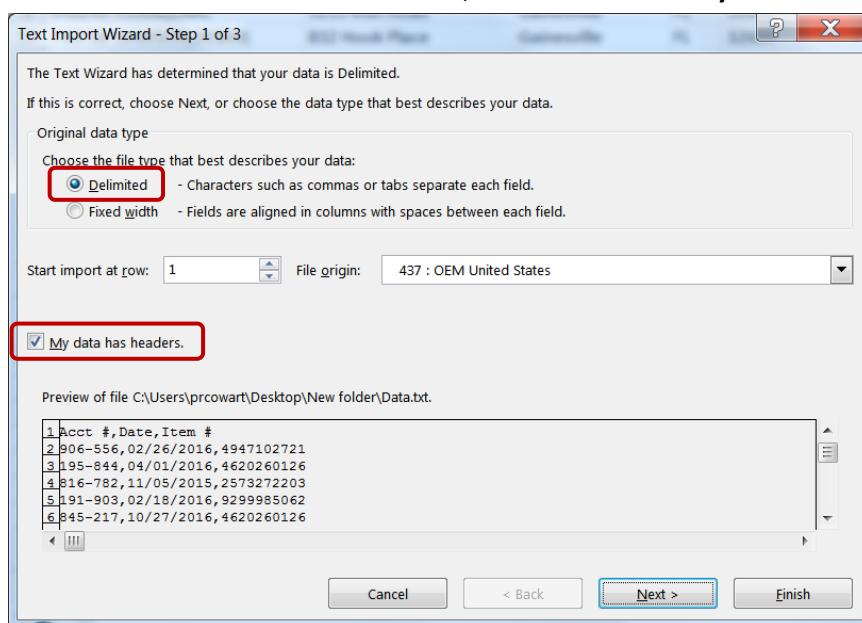


Text Import Wizard



CSV means Character Separated Values, typically "Comma" delimited. CSV files usually open in Excel with no issue. This file is a TXT file; typically "Tab" delimited. Even though our dataset is delimited, separated with commas the TXT files need to go through the **Text Import Wizard**.

- Step 1: Our data is separated by tabs, so choose the **Delimited** option.
 - o The text file has titles for each column; check the box for **My data has headers**.



- **Step 2:** The character used to separate columns is called a Delimiter. The delimiter in this dataset is a **Comma**, uncheck **Tab** and choose **Comma**. You'll see the preview update.

Sometimes a consecutive delimiter is to show a blank, sometimes it is a typo

EXAMPLE:

LName,FName,DOB -> Jones,,11/11/1961

LName,FName,DOB -> Jones,,Larry,11/11/1961

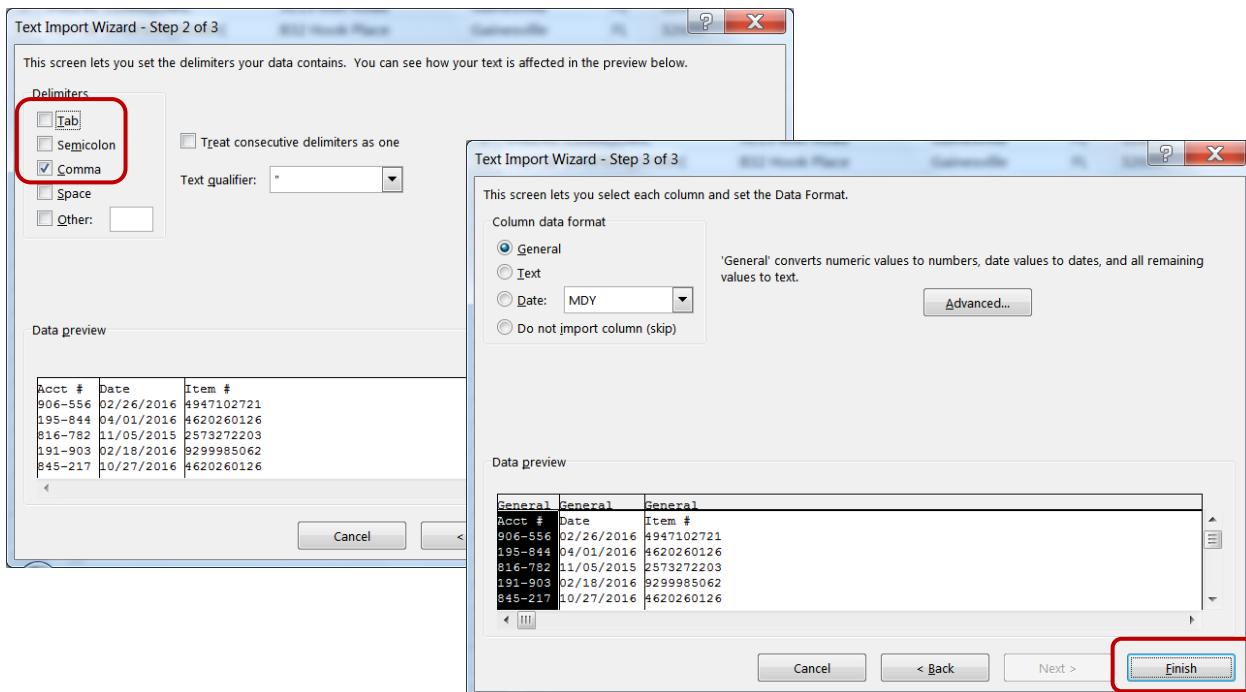
If there is data that needs to be kept together, the file should have a *Text qualifier*.

EXAMPLE:

LName,FName,DOB -> Jones,Larry,11/11/1961

Name,DOB -> "Jones,Larry",11/11/1961

- **Step 3:** The General option lets Excel decide if the values are text, numbers, or dates.



Merge into Final Report file

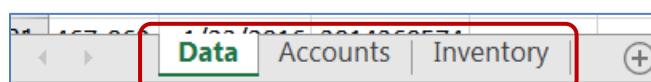
- Move the worksheet to the Final-Reports.xlsx file.

- Right-click on the worksheet name, **Data**
 - Choose **Move or Copy...**

From the **To Book:** drop down, choose **Final-Report**

- Click **OK**

Your Final-Report.xlsx file should now have three worksheets.

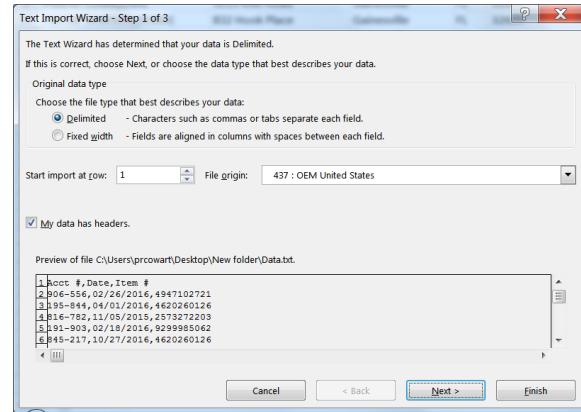


Import Data Using The Text Import Wizard

Step 1 of 3

Original data type If items in the text file are separated by tabs, colons, semicolons, spaces, or other characters, select **Delimited**. If all of the items in each column are the same length, select **Fixed width**.

Start import at row Type or select a row number to specify the first row of the data that you want to import.



File origin Select the character set that is used in the text file. In most cases, you can leave this setting at its default. If you know that the text file was created by using a different character set than the character set that you are using on your computer, you should change this setting to match that character set.

For example, if your computer is set to use character set 1251 (Cyrillic, Windows), but you know that the file was produced by using character set 1252 (Western European, Windows), you should set **File Origin** to 1252.

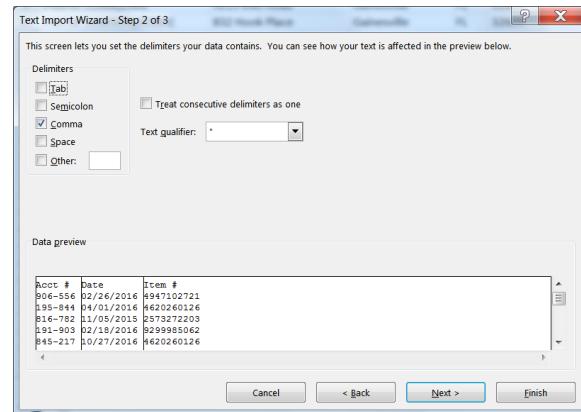
Preview of file This box displays the text as it will appear when it is separated into columns on the worksheet.

Step 2 of 3 (Delimited data)

Delimiters Select the character that separates values in your text file. If the character is not listed, select the **Other** check box, and then type the character in the box that contains the cursor. These options are not available if your data type is Fixed width.

Treat consecutive delimiters as one

Select this check box if your data contains a delimiter of more than one character between data fields or if your data contains multiple custom delimiters.



Text qualifier Select the character that encloses values in your text file. When Excel encounters the text qualifier character, all of the text that follows that character and precedes the next occurrence of that character is imported as one value, even if the text contains a delimiter character. For example, if the delimiter is a comma (,) and the text qualifier is a quotation mark ("), "Dallas, Texas" is imported into one cell as **Dallas, Texas**. If no character or the apostrophe (') is specified as the text qualifier, "Dallas, Texas" is imported into two adjacent cells as "Dallas" and "Texas".

If the delimiter character occurs between text qualifiers, Excel omits the qualifiers in the imported value. If no delimiter character occurs between text qualifiers, Excel includes the qualifier character in the imported value. Hence, "Dallas Texas" (using the quotation mark text qualifier) is imported into one cell as **"Dallas Texas"**.

This page is modified from the Excel Help file

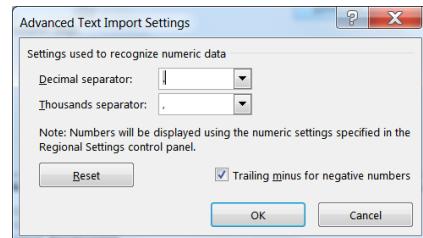
Step 2 of 3 (Fixed width data)

Data preview Set field widths in this section. Click the preview window to set a column break, which is represented by a vertical line. Double-click a column break to remove it, or drag a column break to move it.

Step 3 of 3

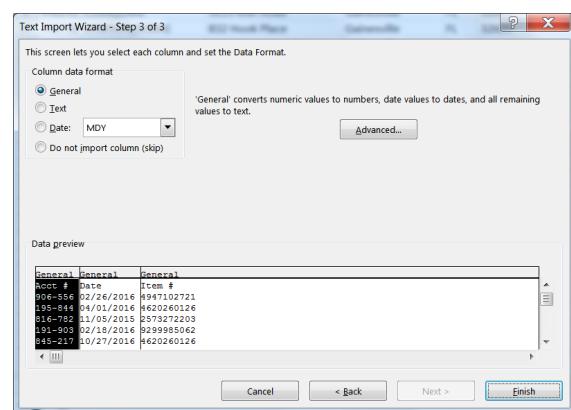
Click the Advanced button to do one or more of the following:

- Specify the type of decimal and thousands separators that are used in the text file. When the data is imported into Excel, the separators will match those that are specified for your location in Regional and Language Options or Regional Settings (Windows Control Panel).
- Specify that one or more numeric values may contain a trailing minus sign.



Column data format Click the data format of the column that is selected in the **Data preview** section. If you do not want to import the selected column, click **Do not import column (skip)**.

After you select a data format option for the selected column, the column heading under Data preview displays the format. If you select Date, select a date format in the Date box.



Choose the data format that closely matches the preview data so that Excel can convert the imported data correctly. For example:

- To convert a column of all currency number characters to the Excel Currency format, select General.
- To convert a column of all number characters to the Excel Text format, select Text.
- To convert a column of all date characters, each date in the order of year, month, and day, to the Excel Date format, select Date, and then select the date type of YMD in the Date box.

Excel will import the column as **General** if the conversion could yield unintended results. For example:

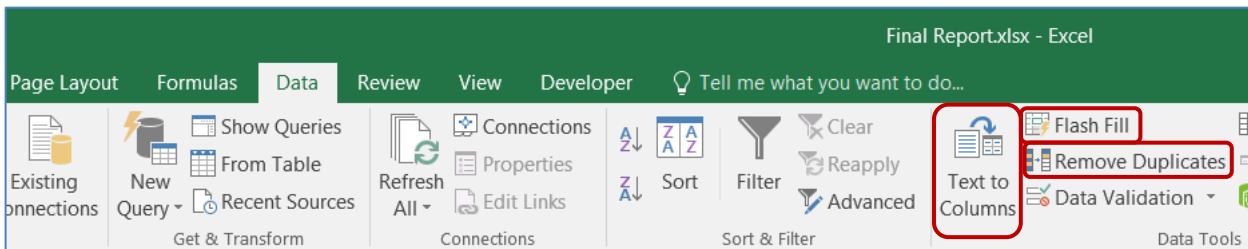
- If the column contains a mix of formats, such as alphabetical and numeric characters, Excel converts the column to **General**.
- If, in a column of dates, each date is in the order of year, month, and date, and you select **Date** along with a date type of **MDY**, Excel converts the column to General format. A column that contains date characters must closely match an Excel built-in date or custom date formats.

If Excel does not convert a column to the format that you want, you can convert the data after you import it.

This page is modified from the Excel Help file

Data Cleanup

The **Data** tab has several powerful tools to help you clean up data. In our class today, we will use Text to Columns, Flash Fill, and Remove Duplicates.



Text to Columns

- Turn to *Inventory* worksheet
- Select Column C
- From the **Data** tab choose **Text to Columns**
 - o This wizard should look familiar; it is almost identical to the **Import Text Wizard**.
 - o We want a column of Items, Sizes, and Colors. Our data in Column C has a space between each word, so the values are **Delimited** by spaces.
 - Step 1: Choose **Delimited** (Next)
 - Step 2: Choose **Space** (Next or Finish)
 - Step 3: Click **Finish**

Text to Columns

Split a single column of text into multiple columns.

For example, you can separate a column of full names into separate first and last name columns.

You can choose how to split it up: fixed width or split at each comma, period, or other character.

Weird fact – This sets the default for Excel to look for spaces as delimiters. If you paste something from outside of Excel, the program may try to put each word in different columns, because they are space delimited. To get around this paste the data into the cell while in Edit or Enter modes, or go through the wizard again and choose the Tab delimiter. When you exit, Excel will revert to the default Tab delimiter.

Convert to Number

Because this tool is so good at identifying text, dates, and numbers, it can help *shock* numbers stored as text into number values. Make sure the column has a **General Number** format, not a **Text** format before you try this trick.

Change Numeric Text to Numbers

- Select Column A, *Stock#*
- From the **Data** tab choose **Text to Columns**
- Click **Finish**, you'll be able to tell it worked because the stock numbers will move to the right side of the cell

| | A | B | C | D | E |
|---|------------|-------|-------|--------|-------|
| 1 | Stock# | Price | Item | Size | Color |
| 2 | 1379323202 | \$ 42 | Pants | Large | Blue |
| 3 | 2573272203 | \$ 46 | Pants | Large | Red |
| 4 | 2792658379 | \$ 37 | Pants | Large | White |
| 5 | 2949386116 | \$ 48 | Pants | Medium | Blue |

Flash Fill

Flash Fill is a new tool to Office 2013 and beyond. It takes a couple of times to work out the patterns, and they don't always work, but it's pretty awesome when it does. This tool takes the place of a lot of text functions that were used to capitalization, split, and merge data.



Automatically fill in values. Enter a couple of examples you want as output and keep the active cell in the column you want filled in.

First, we need to set up the Acct # to have a dash in the middle. We can do a custom format, but that will only be an optical illusion, it would not match our Data worksheet and will not work for our vLookups. An alternate method is to use the formula **=LEFT(A2,3) & "-" & RIGHT(A2,3)**, fill the equation, copy, and pasted values over the original and delete the formula. This new tool is way cooler!



Create Account # Column

- Turn to Accounts worksheet
- In Cell G1, type Acct #
 - o You don't have to title the column first
- In Cell G2, type 119-494
- Accept the entry, stay on cell G2, and from the **Data** tab choose **Flash Fill**
- Cut Column G, paste onto Column A to replace with the new format



Create First Name and Last Name Columns

- In Cell G1, type **First Name**
- In Cell G2, type **Annie** and accept
- Click in Cell G2, Flash Fill
- In Cell H1, type **Last Name**
- In Cell H2, type **Adams** and accept
- Click in Cell H2, Flash Fill
- Cut Columns G and H, right-click on Column C and **Insert Cut Cells** to move
- Delete the Column D (Name)

As with any type of separation of name fields, be wary of the middle names, multi-part names, and suffixes (Jr, PhD...). You do not have to start at the top of the column; Use the most complicated name as your example.

You can use functions like **LEN()** which counts the number of characters to check your split columns with the original data.

Example: **Len(A1)=Len(B1)+1+Len(C1)**

- TRUE or FALSE answer
- The plus one (+1) is to count the comma

| A | B | | |
|---|--------|------------------|-------------|
| 1 | Acct # | Name | Address |
| 2 | 119494 | ADAMS,ANNIE | 6831 NW 41 |
| 3 | 451139 | APPLETON,APRIL | PO Box 456 |
| 4 | 822426 | ARLINGTON,ARNOLD | 234 SE 45th |
| 5 | 151691 | BROWN,BOBBIE | 234 Peter P |
| 6 | 865688 | BRUCE,BUTCH | 3243 SE 4th |
| 7 | 508838 | CAPPERS,CATHY | RR 2 Box 65 |
| 8 | 303476 | CARLSON,CARLY | 1943 NW M |
| 9 | 948240 | CLARK,CARL | 9213 Kiwi R |

| A | B | | | |
|---|---------|------------|-----------|-------------|
| 1 | Acct # | First Name | Last Name | Address |
| 2 | 119-494 | Annie | Adams | 6831 NW 41 |
| 3 | 451-139 | April | Appleton | PO Box 456 |
| 4 | 822-426 | Arnold | Arlington | 234 SE 45th |
| 5 | 151-691 | Bobbie | Brown | 234 Peter P |
| 6 | 865-688 | Butch | Bruce | 3243 SE 4th |
| 7 | 508-838 | Cathy | Cappers | RR 2 Box 65 |
| 8 | 303-476 | Carly | Carlson | 1943 NW M |
| 9 | 948-240 | Carl | Clark | 9213 Kiwi R |

Conditional Functions

Functions like SUM() and COUNT() calculate everything in the range. We can use the SUBTOTAL worksheet function on filtered data, but conditional functions can calculate based on criteria.

Countif

Counts the number of nonblank cells that meet the given criteria

Syntax: COUNTIF(range, criteria)

Range is the range of cells from which you want to count cells.

Criteria is the criteria in the form of a number, expression, or text that defines which cells will be counted. For example, criteria can be expressed as 32, "32", ">32", "apples".

| | A | B |
|---|---------|----|
| 1 | Apples | 32 |
| 2 | Oranges | 53 |
| 3 | Peaches | 75 |
| 4 | Apples | 86 |

| | |
|---------------------------|---|
| =COUNTIF(A1:A4, "apples") | 2 |
| =COUNTIF(B1:B4, ">55") | 2 |

Create # of Sales

Count the number of times the Stock# in Cell A2 occurs in Column C of worksheet Data.

- Turn to *Inventory* worksheet; Title Column F: **# of Sales**
- In Cell F2 Build the expression: =COUNTIF(Data!C:C, Inventory!A:A) *answer: 47*
 - o If you have Inventory!A2, the formula will break when the data is sorted, use the full column address so the results will reflect the current row.
- Copy or fill the expression for all the stock items

Sumif

Adds the cells specified by given criteria

Syntax: SUMIF(range, criteria, sum_range)

Range is the range of cells you want evaluated.

Criteria is the criteria in the form of a number, expression, or text that defines which cells will be added. For example, criteria can be expressed as 32, "32", ">32", "apples".

| | A | B |
|---|-----------|------------|
| 1 | Value | Commission |
| 2 | \$10, 000 | \$500 |
| 3 | \$20, 000 | \$1,500 |
| 4 | \$30, 000 | \$2,100 |
| 5 | \$40, 000 | \$2,800 |

Sum_range are the actual cells to sum. The cells in *sum_range* are summed only if their corresponding cells in *range* match the criteria. If *sum_range* is omitted, the cells in **Range** are summed.

| | |
|--------------------------------|---------|
| =SUMIF(A2:A5, ">25000", B2:B5) | \$4,900 |
| =SUMIF(A2:A5, "<25000", B2:B5) | \$2,000 |

Create Price

Sum the price of the items listed on the Data worksheet, for each customer. Before we can set up our SUMIF we need to put in a Price column in our Data.

- Turn to *Data* worksheet, Title column D: **Price**
- In Cell D2, build the expression: =VLOOKUP(C:C, Inventory!A:B, 2, FALSE) *answer: 48*
- Fill the expression down the column and Format the number with a dollar sign \$

Create Customer Balance

- Turn to *Accounts* worksheet; Title Column H: **Balance**
- In Cell H2, build the expression: =SUMIF(Data!A:A, Accounts!A:A, Data!D:D) *answer: 319*
- Fill the expression down the column and Format the number with a dollar sign \$

PivotTables

The conditional functions put the answers in the spreadsheet with your data, but for a quick report, use a PivotTable.



Create a PivotTable

- Return to **Data** worksheet
- Click on a single cell inside the dataset
- From the **Insert** tab, choose **PivotTable**
 - o Put the table on a new worksheet



"SumIf" PivotTable

- Acct # as **Row Heading** and Sum of Amount as the **Value**

PivotTable Fields

Choose fields to add to report:

Search

Acct #
 Date
 Item #
 Amount

MORE TABLES...

Drag fields between areas below:

FILTERS COLUMNS

ROWS VALUES

Acct # Sum of Amount

Defer Layout Update UPDATE



"CountIf" PivotTable

- Clear the table
- Item # as **Row Heading** and Count of Item # as the **Value**
 - o You will need to change the value to a count. Click on the **Sum of Item #** field in the values area and choose Value Field Settings. Change to the Count option and click OK.

PivotTable Fields

Choose fields to add to report:

Search

Acct #
 Date
 Item #
 Amount

MORE TABLES...

Drag fields between areas below:

FILTERS COLUMNS

ROWS VALUES

Item # Count of Item #

Defer Layout Update UPDATE



Pivot Chart

Create a **City** field in the Data worksheet so the PivotTable can summarize the number of sales by City.

PivotTable Fields

Choose fields to add to report:

Search

Acct #
 City
 Date
 Item #
 Amount

MORE TABLES...

Drag fields between areas below:

FILTERS COLUMNS

ROWS VALUES

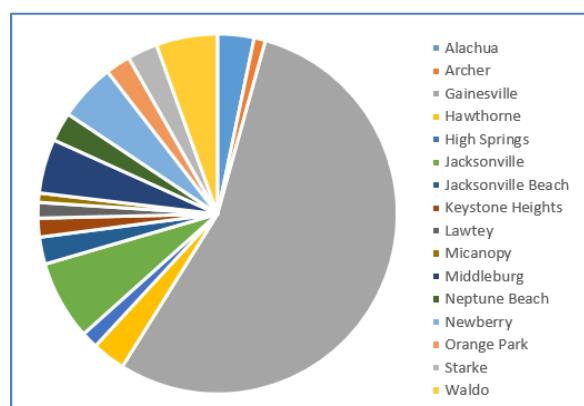
City Count of Item #

Defer Layout Update UPDATE



Add City to PivotTable

- Return to the **PivotTable**
 - o *There's no City!*
- Right-click in the table and **Refresh** the data
- Clear the PivotTable
- City as **Row Heading**, and **Value (count)**



Create a PivotChart

- Create a Pie Chart from the **Insert** or **Analyze** tab. Any chart you insert while you are in a PivotTable becomes a PivotChart.
 - o *Optional:* Look on the Analyze tab to remove the grey **Field Buttons** from the chart. Click on the legend and resize it.

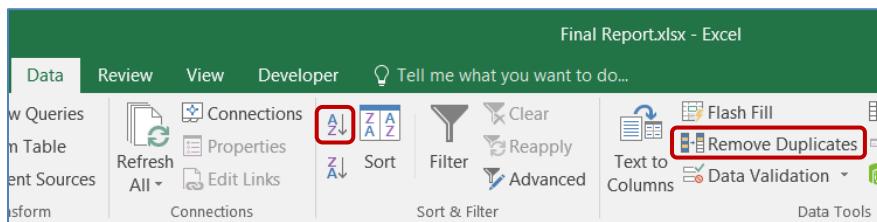
Substitution List

There are too many cities to make an effective chart. A larger category such as County will work better. There is currently no County field in this workbook. This happens all the time in data collection. Too many options, too many entries. It could be poor data entry (Gainesville, GNV, Gville), or as in this example too many values that can easily be grouped into larger categories.



Make a list of Unique Values

- Turn to **Accounts** worksheet
- Copy Column E (**City**)
- Create a new worksheet
- Paste in Cell A1
- From the **Data** tab in the ribbon, click **Remove Duplicates**, click **OK**
- Sort the new list of values



Create a column of Substitute Values

- Title Column B: **County**
- Type in the new values
- Name the worksheet **Counties**

Use vLookup to Find New Values

- Return to **Accounts** worksheet
- Insert a column after Zip (Column H), name it **County**
- Under the title, build the expression:
=VLOOKUP(E:E, Counties!A:B, 2, FALSE) *Alachua*

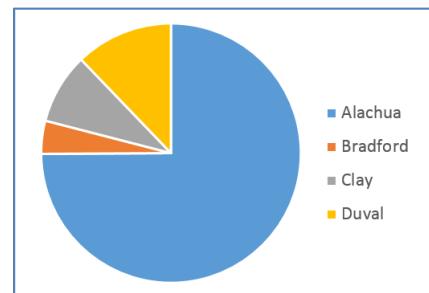
Use vLookup to put new values in worksheet Data

- Return to **Data** worksheet
- Clear City Column
- Title the column **County**
- Under the title, build the expression:
=VLOOKUP(A:A, Accounts!A:H, 8, FALSE) *Alachua*

| City | County |
|--------------------|---------------|
| Alachua | Alachua |
| Archer | Alachua |
| Gainesville | Alachua |
| Hawthorne | Alachua |
| High Springs | Alachua |
| Jacksonville | Duval |
| Jacksonville Beach | Duval |
| Keystone Heights | Clay |
| Lawtey | Bradford |
| Micanopy | Alachua |
| Middleburg | Clay |
| Neptune Beach | Duval |
| Newberry | Alachua |
| Orange Park | Clay |
| Starke | Bradford |
| Waldo | Alachua |

Update the Pivot Table

- Return to the **PivotTable**
- Right-click in the table and **Refresh** the data
- County as **Row Heading**, and **Value (count)**
- Rename worksheet to **County Pivot**



Saving Filters with Logic Functions

As with sorting, Excel only remembers the most recent filter. One way to have saved filters is to create a **Filter By This** column, more commonly called a **Flag**. We put an X on the cells that match our criteria.



Create IF Statements to match Criteria

- Turn to **Accounts** worksheet
- Add these titles

| | J | K | L |
|---|------------------|--------------------|---------------------|
| 1 | Gainesville >500 | Alachua Not Gnv | Bradford or >600 |

- As you build the equations in Row 2, the initial result for all three of these functions will appear blank Row 2 the questions/logic tests will return FALSE for Row 2's values.

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---------|------------|-----------|-----------------------|-------------|-------|-------|----------|-----------|---------------------|--------------------|---------------------|
| 1 | Acct # | First Name | Last Name | Address | City | State | Zip | County | Balance | Gainesville >500 | Alachua Not Gnv | Bradford or >600 |
| 2 | 119-494 | Annie | Adams | 6831 NW 4th Ave | Gainesville | FL | 32614 | Alachua | \$ 319.00 | | | |
| 3 | 451-139 | April | Appleton | PO Box 456 | Orange Park | FL | 32073 | Clay | \$ 288.00 | | | |
| 4 | 822-426 | Arnold | Arlington | 234 SE 45th Road | Gainesville | FL | 32627 | Alachua | \$ 451.00 | | | |
| 5 | 151-691 | Bobbie | Brown | 234 Peter Pan Terrace | Alachua | FL | 32616 | Alachua | \$ 464.00 | x | | |
| 6 | 865-688 | Butch | Bruce | 3243 SE 4th Terrace | Starke | FL | 32091 | Bradford | \$ 577.00 | | x | |
| 7 | 508-838 | Cathy | Cappers | RR 2 Box 659 | Gainesville | FL | 32612 | Alachua | \$ 636.00 | x | | x |



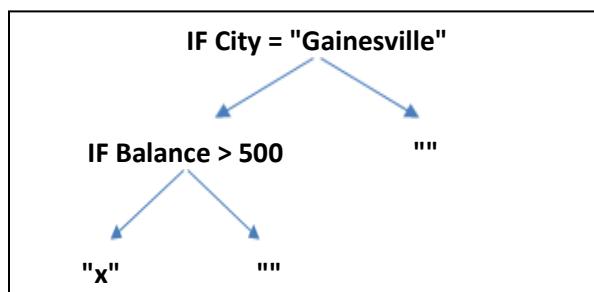
Nested IF(), AND(), OR() Functions

IF statements have three parts, Question/Logic Test, what do to if the result is **TRUE**, what to do if the result is **FALSE**. = IF(**Question**, **True**, **False**)

- Text values are placed in quotes "", Numbers are left as is. If you need to use dates, you will need to work with the Date Codes, which is beyond the scope of this class. To check for or return a "blank" cell, use an empty set of quotes "".
- Logic Qualifiers
 - o = Equal; <> Not Equal; > Greater Than, < Less Than, >= Greater or equal, <= Less or equal

Column J: Gainesville > 500 - If City is equal to "Gainesville" and If Balance is Greater Than 500, place an X in the cell.

=IF(E2="Gainesville", IF(I2>500, "x", ""), "")

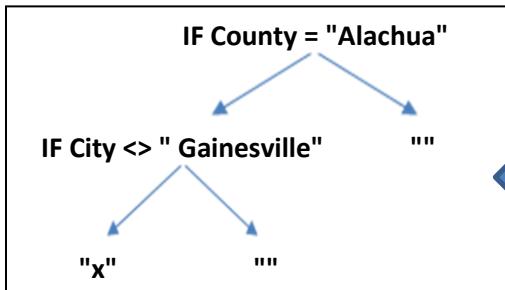




Column K: Alachua not GNV - If County is equal to "Alachua", **AND** City is NOT equal to "Gainesville", place an X in the cell. Since all "False" results are the same we can use **AND** for our "questions".

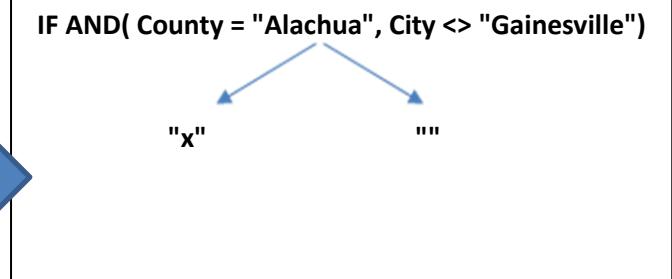
Nested IF:

```
=IF(H2="Alachua", if(E2<>"Gainesville", "x", ""), "")
```



AND statement

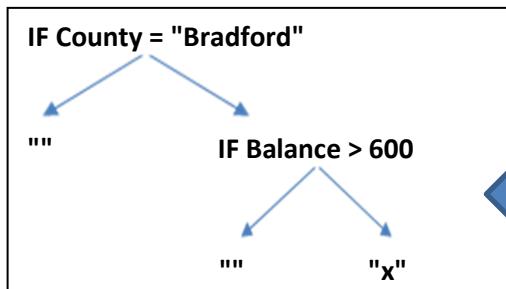
```
=IF(AND(H2="Alachua", E2<>"Gainesville"), "x", "")
```



Column L: Bradford or >600 - If County is equal to "Bradford" **OR** If Balance is Greater Than 600, place an X in the cell. Since all "True" results are the same we can use **OR** for our "questions".

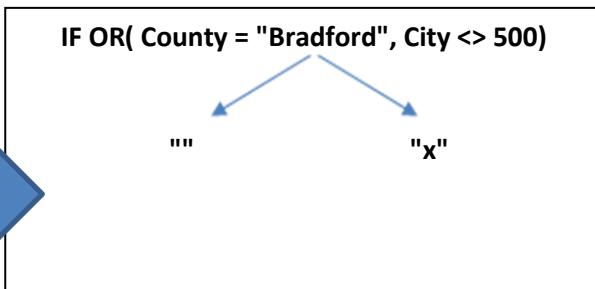
Nested IF:

```
=IF(H2="Bradford","x", IF(I2>600, "x", ""))
```



OR statement

```
=IF(OR(H2="Bradford", I2>600), "x", "")
```



Filter Matched Criteria

- Right-click on any X and filter by selected cells value

| | A | B | C | D | E | F | G | H | I | J | K | L |
|----|---------|------------|-----------|-------------------------|----------|-------|-------|---------|-----------|------|---------|------------------------|
| 1 | Acct # | First Name | Last Name | Address | City | State | Zip | Count | Balance | >500 | Alachua | Bradford or Not Gnv |
| 5 | 151-691 | Bobbie | Brown | 234 Peter Pan Terrace | Alachua | FL | 32616 | Alachua | \$ 464.00 | x | | |
| 15 | 543-952 | Francis | Fuller | 123 South Main Street | Newberry | FL | 32669 | Alachua | \$ 323.00 | x | | |
| 23 | 362-549 | Julie | Jacobs | 2039 Lemon Tree Way | Alachua | FL | 32616 | Alachua | \$ 676.00 | x | x | |
| 25 | 866-129 | Jennifer | Jenkins | 78349 Lost Boys Ave | Newberry | FL | 32669 | Alachua | \$ 502.00 | x | | |
| 27 | 116-814 | Jose | Jimenez | 12 South University Ave | Waldo | FL | 32694 | Alachua | \$ 367.00 | x | | |
| 31 | 985-515 | Jill | Jones | 209 Cantaloupe Way | Micanopy | FL | 32667 | Alachua | \$ 321.00 | x | | |

Other Logic Functions

TRUE

Returns the logical value TRUE.

Syntax: `TRUE()`

Remark: You can enter the value TRUE directly into cells and formulas without using this function.

FALSE

Returns the logical value FALSE.

Syntax: `FALSE()`

Remark: You can also type the word FALSE directly onto the worksheet or into the formula, and Microsoft Excel interprets it as the logical value FALSE.

AND

Returns TRUE if all its arguments are TRUE

Syntax: `AND(logical1, logical2, ...)`

Logical1, logical2, ... are 1 to 30 conditions you want to test that can be either TRUE or FALSE.

The arguments must evaluate to logical values such as TRUE or FALSE. If the specified range contains no logical values, returns the #VALUE! error value.

| | |
|--------------------------------|-------|
| <code>=AND(TRUE, TRUE)</code> | TRUE |
| <code>=AND(TRUE, FALSE)</code> | FALSE |

| | |
|---------------------------------|-------|
| <code>=AND(FALSE, FALSE)</code> | FALSE |
| <code>=AND(2+2=4, 2+3=5)</code> | TRUE |

OR

Returns TRUE if any argument is TRUE

Syntax: `OR(logical1, logical2, ...)`

Logical1, logical2, ... are 1 to 30 conditions you want to test that can be either TRUE or FALSE.

The arguments must evaluate to logical values such as TRUE or FALSE. If the specified range contains no logical values, returns the #VALUE! error value.

| | |
|-------------------------------|------|
| <code>=OR(TRUE, TRUE)</code> | TRUE |
| <code>=OR(TRUE, FALSE)</code> | TRUE |

| | |
|--------------------------------|-------|
| <code>=OR(FALSE, FALSE)</code> | FALSE |
| <code>=OR(1+1=1, 2+2=5)</code> | FALSE |

NOT

Reverses the value of its argument. Syntax: `NOT(logical)` *Logical* is a value or expression that can be evaluated to TRUE or FALSE. If logical is FALSE, NOT returns TRUE; if logical is TRUE, NOT returns FALSE.

| | |
|--------------------------|------|
| <code>=NOT(FALSE)</code> | TRUE |
|--------------------------|------|

| | |
|--------------------------|-------|
| <code>=NOT(1+1=2)</code> | FALSE |
|--------------------------|-------|

This page is
modified from the
Excel Help file

Dashboard

The term Dashboard within the scope of Microsoft Excel, is a worksheet that displays a highly visual summary of the data, usually with tables and charts. While the dashboard tables and charts can pull the data from multiple locations, it's often easier to pull all the data into one location.

Since I would like to break down data by item, size, and color, I need to create those fields in my Data worksheet.

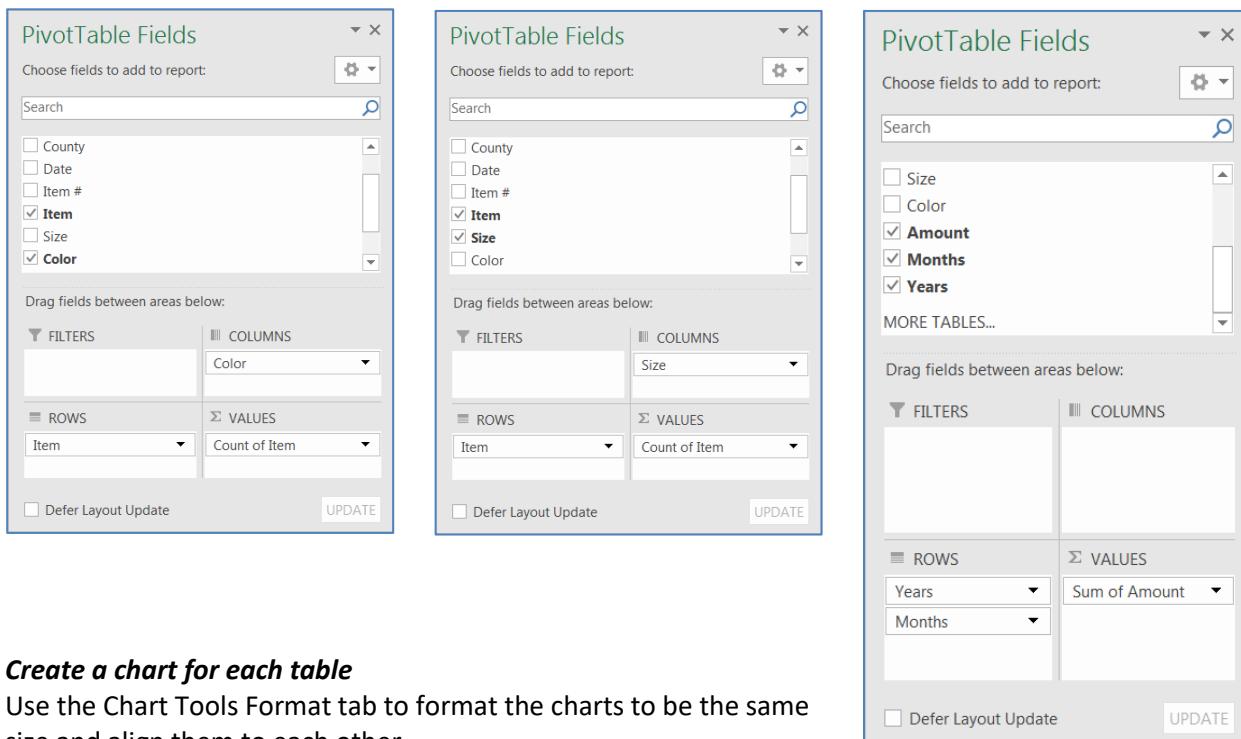
Create Item, Size, and Color columns in Data

- Turn to the Data worksheet, fill each formula down as you complete it.
- In Cell F1, Title: Item
- In Cell F2, build the expression: =VLOOKUP(D:D, Inventory!A:F, 3, FALSE) *Shirts*
- In Cell G1, Title: Size
- In Cell G2, build the expression: =VLOOKUP(D:D, Inventory!A:F, 4, FALSE) *Large*
- In Cell H1, Title: Color
- In Cell H2, build the expression: =VLOOKUP(D:D, Inventory!A:F, 5, FALSE) *White*

Create the Dashboard on Page 15 of this packet

See next page for step-by-step details.

Once you have created a PivotTable, you can use copy and paste to create more. While each table can be copied, cleared, and rebuilt, each chart needs to be created from scratch.



The image shows three separate screenshots of the PivotTable Fields ribbon in Microsoft Excel, illustrating the setup for three different PivotTables:

- PivotTable 1 (Left):** Fields chosen for report: Item, Color. Filters: Item. Rows: Item. Values: Count of Item.
- PivotTable 2 (Middle):** Fields chosen for report: Item, Size. Filters: Item. Rows: Item. Values: Count of Item.
- PivotTable 3 (Right):** Fields chosen for report: Amount, Months, Years. Filters: None. Rows: Years, Months. Values: Sum of Amount.

Create a chart for each table

Use the Chart Tools Format tab to format the charts to be the same size and align them to each other.

Create the PivotTable as shown here. Then use the PivotTable Tool Tabs to modify the look of the table.

- Remove Field Headers (Analyze tab)
- Remove Grand Totals (Design tab)
- Change **Count of Item** to **# of Items by Color**

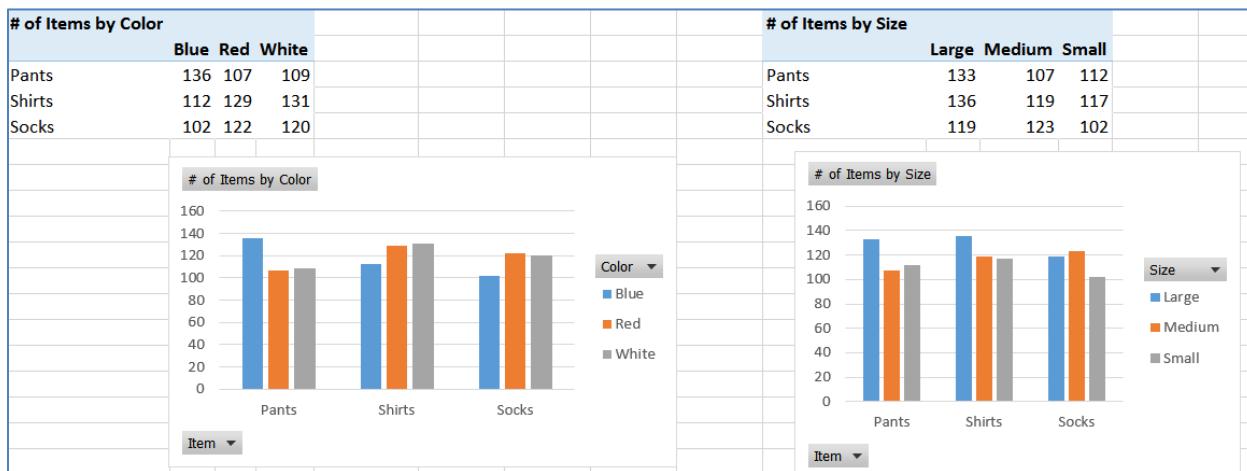
The second PivotTable is similar.

- Copy the **# of Items by Color** PivotTable
- Paste in Cell J3
- From the column headings, remove the **Color** and add **Size**
- Rename to **# of Items by Size**

Delete Rows 1 and 2.

Build a (clustered) column chart for each table.

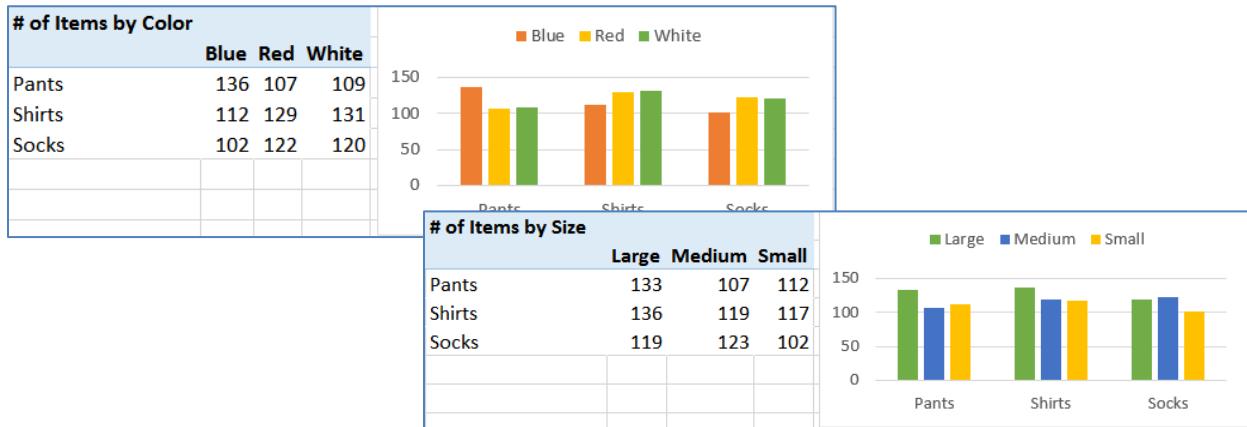
Click in the table, Go to the Insert Tab, Choose Recommended Chart and Click OK



- Remove the Field buttons (Analyze tab)
- Move the Legend to the top of the charts (Add Chart Element on the Design tab)
- Change the color scheme of each chart to be different (Design tab)

Resize both charts at once

- Use the **Shift** key to select both charts at the same time (select one, shift-click the other)
- Change the Height to 1.5", the Width to 3" (far right side of the Format tab)
- Align the charts to the top of each other (Format tab)



SAVE YOUR FILE!

Make the final PivotTable

- Copy one of the pivot tables and paste into cell A11
- Clear the Pivot table
- Add Item to the Column Heading
- Add Price to the Values
- Add Date to the Row Heading
- Rename to **Sales**

| | A | B | C | D |
|----|--------------|-------|--------|-------|
| 11 | Sum of Price | | | |
| 12 | | Pants | Shirts | Socks |
| 13 | ⊕ 2015 | 2254 | 1739 | 1622 |
| 14 | ⊕ 2016 | 11525 | 9017 | 7200 |

Expand the date to show months

- Remove Quarters from the Row Headings
- Click on the Expand (+) buttons to show the months

Note: If you want to modify the dates, right-click on one of the years and change the Group options.

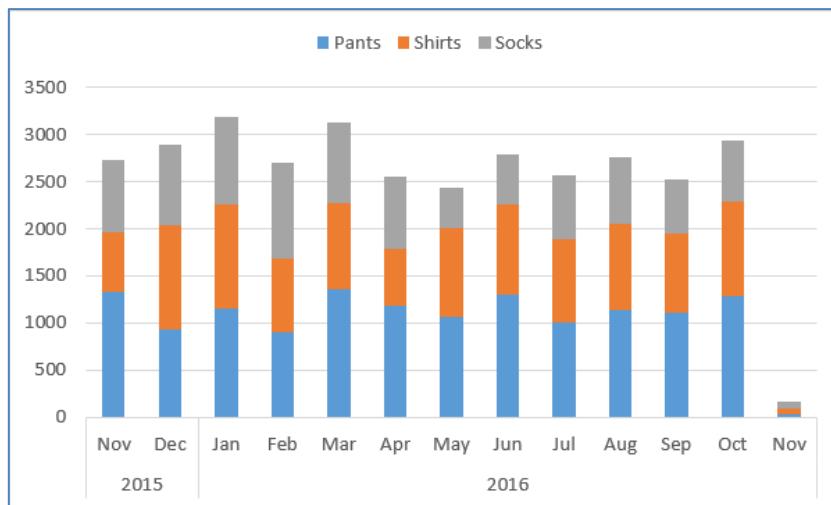
Modify the table

- Hide the +/- buttons (*Analyze* tab)
- Change Report Layout to Tabular Form (*Design* tab)

Create a Stacked Column chart

- Remove the Field buttons (*Analyze* tab)
- Move the Legend to the top of the charts (*Add Chart Element* on the *Design* tab)

| Sales | | | | |
|-------|-----|-------|--------|-------|
| | | Pants | Shirts | Socks |
| 2015 | Nov | 1327 | 634 | 764 |
| | Dec | 927 | 1105 | 858 |
| 2016 | Jan | 1155 | 1111 | 921 |
| | Feb | 902 | 779 | 1024 |
| | Mar | 1354 | 921 | 848 |
| | Apr | 1186 | 607 | 757 |
| | May | 1067 | 937 | 426 |
| | Jun | 1294 | 962 | 539 |
| | Jul | 1004 | 884 | 678 |
| | Aug | 1136 | 911 | 717 |
| | Sep | 1101 | 850 | 579 |

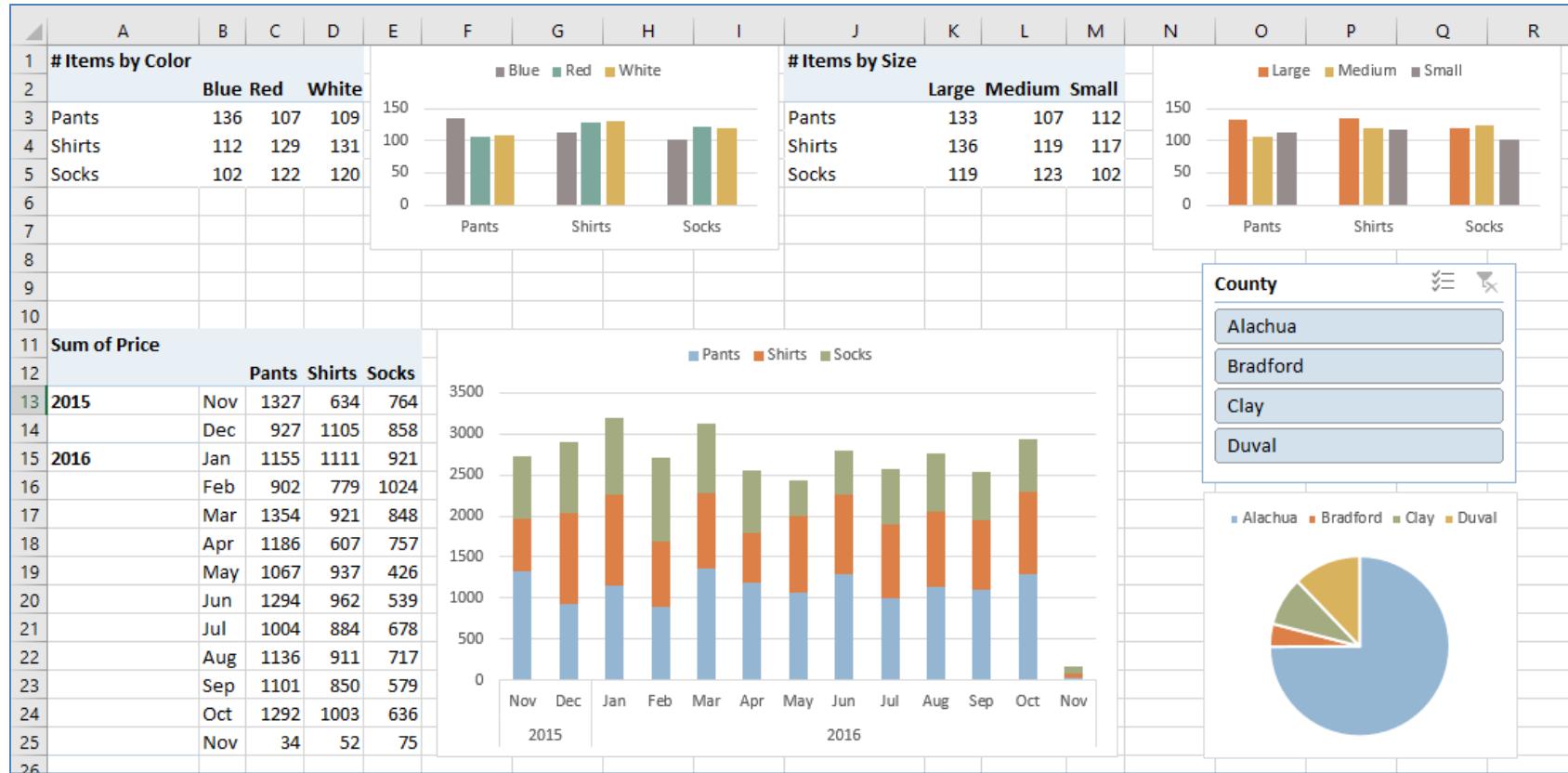


Change the Theme Colors

- **Save**
- Turn to the *Page Layout* tab and change the theme *Colors*

Move Pie Chart

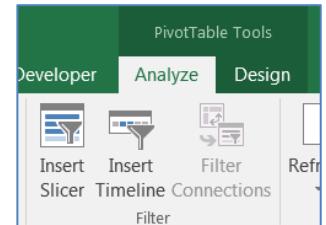
- Turn to the County Pivot worksheet
- Click on the Pie Chart
- From the Analyze or Design tab choose Move Chart
- Move the chart to our dashboard worksheet



Slicers

We can add a filter to each of the tables, but a **Slicer** can filter all three at once.

- Click inside any PivotTable and choose **Insert Slicer** from the **Analyze** tab
 - Choose **County** and click **OK**
 - Notice County is not in our tables, but we can still use the slicer to filter by the values we choose.
- While the slicer is selected choose **Report Connections** from the **Options** tab
- Check all three tables on the list and click **OK**
 - The Pie chart is not an option here because it has a different data source. You can use the **Select Data** option on the **Design** tab, if you want to link it.



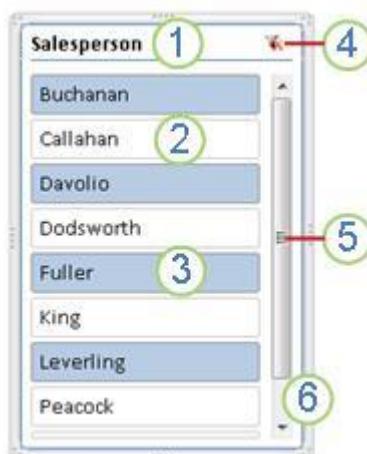
Caution: If you turn close a Slicer before clearing the filter, the tables are still filtered.

What are Slicers?

Slicers are easy-to-use filtering components that contain a set of buttons that enable you to quickly filter the data in a PivotTable report, without the need to open drop-down lists to find the items that you want to filter.

When you use a regular PivotTable report filter to filter on multiple items, the filter indicates only that multiple items are filtered, and you have to open a drop-down list to find the filtering details. However, a slicer clearly labels the filter that is applied and provides details so that you can easily understand the data that is displayed in the filtered PivotTable report.

A slicer typically displays the following elements:



1. A slicer header indicates the category of the items in the slicer.
2. A filtering button that is not selected indicates that the item is not included in the filter.
3. A filtering button that is selected indicates that the item is included in the filter.
4. A Clear Filter button removes the filter by selecting all items in the slicer.
5. A scroll bar enables scrolling when there are more items than are currently visible in the slicer.
6. Border moving and resizing controls allow you to change the size and location of the slicer.

Using Slicers

There are several ways to create slicers to filter your PivotTable data. In an existing PivotTable, you can:

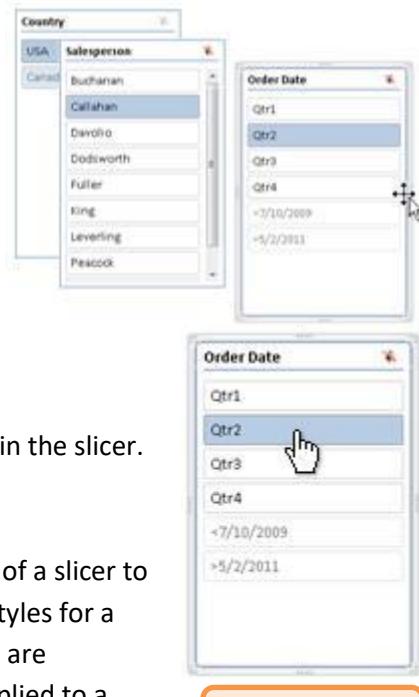
Because each slicer that you create is designed to filter on a specific PivotTable field, it is likely that you will create more than one slicer to filter a PivotTable report.

After you create a slicer, it appears on the worksheet alongside the PivotTable, in a layered display if you have more than one slicer. You can move a slicer to another location on the worksheet, and resize it as needed.

To filter the PivotTable data, simply click one or more of the buttons in the slicer.

Formatting Slicers for a Consistent Look

To create professional looking reports or simply to match the format of a slicer to the format of the associated PivotTable report, you can apply slicer styles for a consistent look. By applying one of the various predefined styles that are available for slicers, you can closely match the color theme that is applied to a PivotTable.



Sharing slicers between PivotTables

When you have many different PivotTables in one report, such as a Business Intelligence (BI) report that you are working with, it is likely that you will want to apply the same filter to some or all of those PivotTables. You can share a slicer that you created in one PivotTable with other PivotTables. No need to duplicate the filter for each PivotTable!

When you share a slicer, you are creating a connection to another PivotTable that contains the slicer that you want to use. Any changes that you make to a shared slicer are immediately reflected in all PivotTables that are connected to that slicer. For example, if you use a Country slicer in PivotTable1 to filter data for a specific country, PivotTable2 that also uses that slicer will display data for the same country.

Create a slicer in an existing PivotTable



1. Click anywhere in the PivotTable report for which you want to create a slicer. This displays the PivotTable Tools, adding an Options and a Design tab.
2. On the Options tab, in the Sort & Filter group, click Insert Slicer.
3. In the Insert Slicers dialog box, select the check box of the PivotTable fields for which you want to create a slicer.
4. Click OK.
A slicer is displayed for every field that you selected.
5. In each slicer, click the items on which you want to filter.
To select more than one item, hold down CTRL, and then click the items on which you want to filter.

Format a slicer

1. Click the slicer that you want to format. This displays the Slicer Tools, adding an Options tab.
2. On the Options tab, in the Slicer Styles group, click the style that you want. To see all available styles, click the More button .

Disconnect or delete a slicer

If you no longer need a slicer, you can disconnect it from the PivotTable report, or you can delete it.

Disconnect a slicer

1. Click anywhere in the PivotTable report for which you want to disconnect a slicer. This displays the PivotTable Tools, adding an Options and a Design tab.
2. On the Options tab, in the Sort & Filter group, click the Insert Slicer arrow, and then click Slicer Connections.
3. In the Slicer Connections dialog box, clear the check box of any PivotTable fields for which you want to disconnect a slicer.

Delete a slicer

Click the slicer, and then press DELETE; or Right-click the slicer, and then click Remove <Name of slicer>.

*This page is modified
from the Excel Help file*