

| | A | B | C | D | E | F |
|---|----------------------|---|----|---|---|---|
| 1 | 34 | | 65 | | 6 | |
| 2 | 21 | | 23 | | | |
| 3 | 56 | | | | | |
| 4 | | | | | | |
| 5 | =SUM(A1:A3,C1:C2,E1) | | | | | |
| 6 | | | | | | |

6.3.1. Creating a function

Excel has a variety of functions available. Here are some of the most common functions you'll use:

- **SUM:** This function **adds** all of the values of the cells in the argument.
- **AVERAGE:** This function determines the **average** of the values included in the argument. It calculates the sum of the cells and then divides that value by the number of cells in the argument.
- **COUNT:** This function **counts** the number of cells with numerical data in the argument. This function is useful for quickly counting items in a cell range.
- **MAX:** This function determines the **highest cell value** included in the argument.
- **MIN:** This function determines the **lowest cell value** included in the argument.

To create a basic function

In our example below, we'll create a basic function to calculate the **average price per unit** for a list of recently ordered items using the AVERAGE function.

1. Select the **cell** that will contain the function.
2. Type the **equals sign (=)** and enter the desired **function name**. You can also select the desired function from the list of **suggested functions** that will appear below the cell as you type. In our example, we'll type **=AVERAGE**.

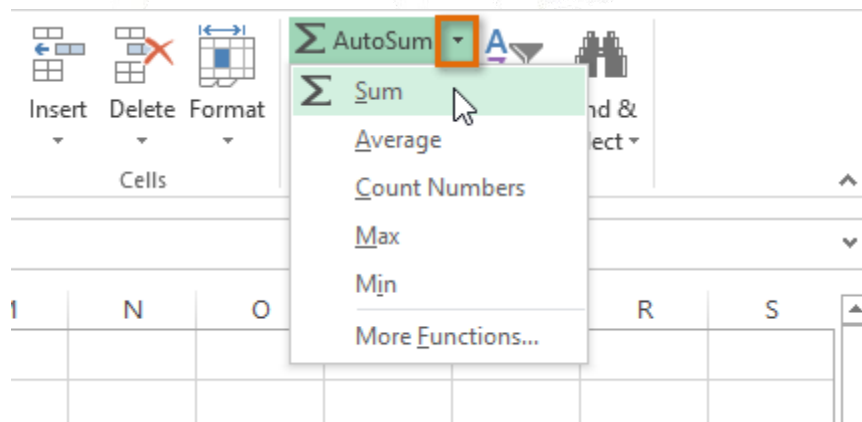
| | A | B | C | D |
|----|-----------|--------|----------|------------|
| 1 | Sales Tax | | | |
| 2 | Item | Price | Quantity | Total |
| 3 | Item 1 | \$2.00 | 4 | \$8.00 |
| 4 | Item 2 | \$4.00 | 2 | \$8.00 |
| 5 | Item 3 | \$6.00 | 1 | \$6.00 |
| 6 | Item 4 | \$3.00 | | \$0.00 |
| 7 | Item 5 | \$2.00 | 5 | \$10.00 |
| 8 | Item 6 | \$8.00 | 3 | \$24.00 |
| 9 | Item 7 | \$2.00 | 3 | \$6.00 |
| 10 | Item 8 | \$1.00 | 6 | \$6.00 |
| 11 | Item 9 | \$9.00 | 2 | \$18.00 |
| 12 | Item 10 | \$7.00 | 5 | \$35.00 |
| 13 | | | | =AVER |
| 14 | | | | AVERAGE |
| 15 | | | | AVERAGEA |
| 16 | | | | AVERAGEIF |
| 17 | | | | AVERAGEIFS |

3. Enter the **cell range** for the **argument** inside **parentheses**. In our example, we'll type **(D3:D12)**.
4. Press **Enter** on your keyboard. The function will be **calculated**, and the **result** will appear in the cell.

To create a function using the AutoSum command

The **AutoSum** command allows you to automatically insert the most common functions into your formula, including SUM, AVERAGE, COUNT, MIN, and MAX. In our example below, we'll create a function to calculate the **total cost** for a list of recently ordered items using the SUM function.

1. Select the **cell** that will contain the function.
2. In the **Editing** group on the **Home** tab, locate and select the **arrow** next to the **AutoSum** command and then choose the **desired function** from the drop-down menu. In our example, we'll select **Sum**.



- The selected **function** will appear in the cell. If logically placed, the AutoSum command will **automatically** select a cell range for the argument. You can also manually enter the desired cell range into the argument.

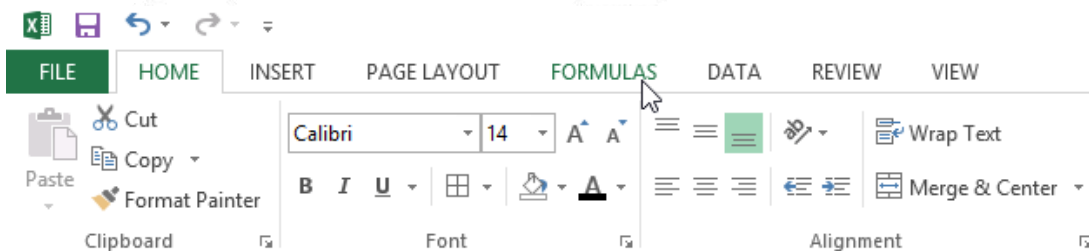
| Sales Tax | | | | |
|-----------|--------|----------|--------------|-----|
| Item | Price | Quantity | Total | Tax |
| Item 1 | \$2.00 | 4 | \$8.00 | |
| Item 2 | \$4.00 | 2 | \$8.00 | |
| Item 3 | \$6.00 | 1 | \$6.00 | |
| Item 4 | \$3.00 | | \$0.00 | |
| Item 5 | \$2.00 | 5 | \$10.00 | |
| Item 6 | \$8.00 | 3 | \$24.00 | |
| Item 7 | \$2.00 | 3 | \$6.00 | |
| Item 8 | \$1.00 | 6 | \$6.00 | |
| Item 9 | \$9.00 | 2 | \$18.00 | |
| Item 10 | \$7.00 | 5 | \$35.00 | |
| | | | =SUM(D3:D12) | |

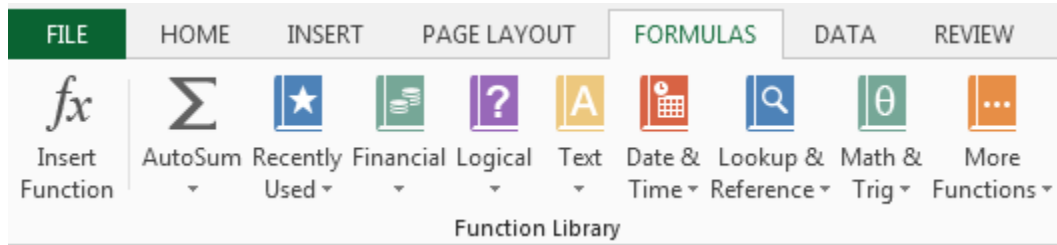
- Press **Enter** on your keyboard.

6.3.2. The Function Library

While there are hundreds of functions in Excel, the ones you use most frequently will depend on the **type of data** your workbooks contains. There is no need to learn every single function, but exploring some of the different **types of functions** will be helpful as you create new projects. You can search for functions **by category**, such as **Financial, Logical, Text, Date & Time**, and more from the **Function Library** on the **Formulas** tab.

- To access the **Function Library**, select the **Formulas** tab on the **Ribbon**. The **Function Library** will appear.

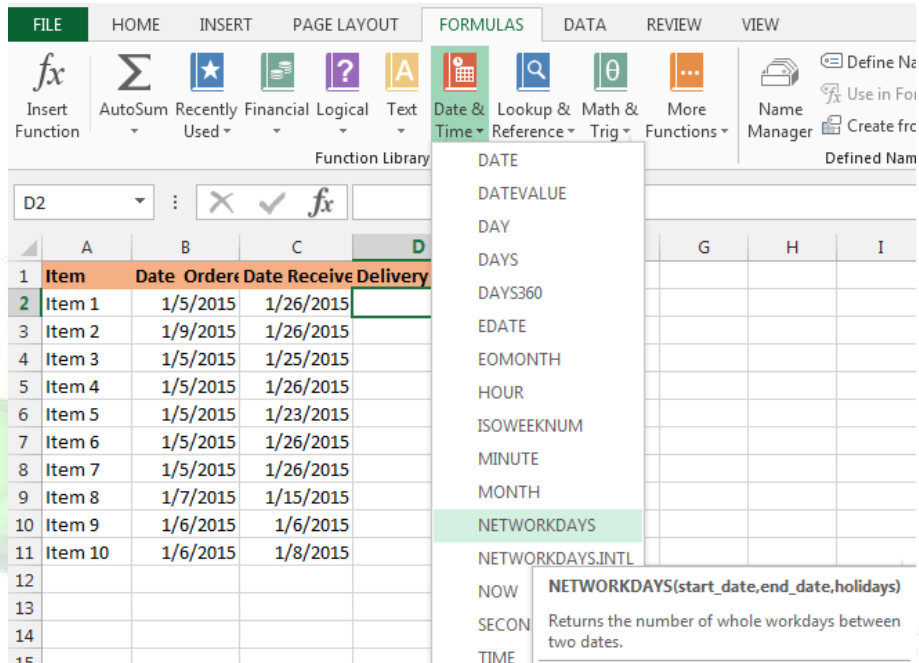




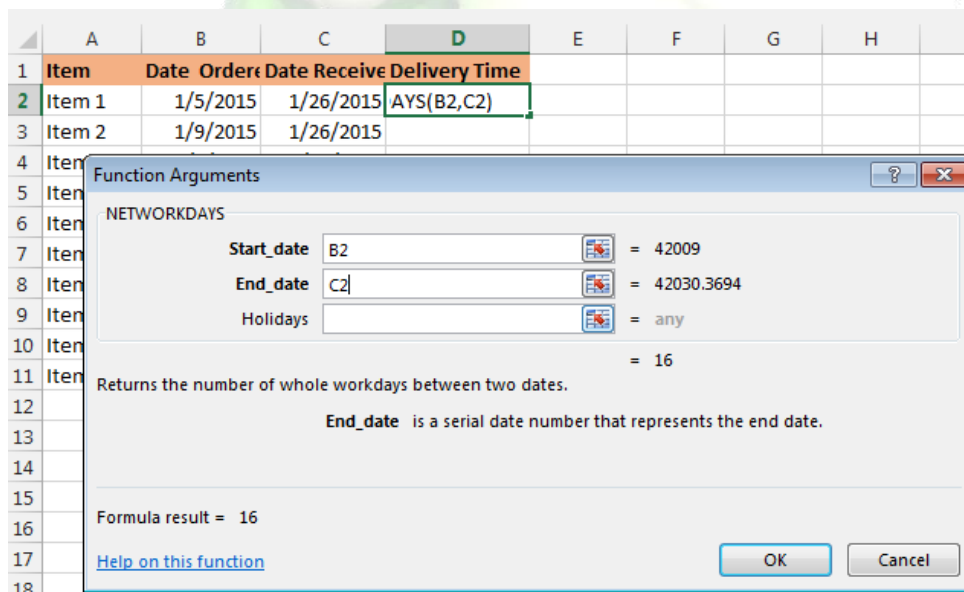
- If you're having trouble finding the right function, the **Insert Function** command allows you to search for functions using keywords.
- The **AutoSum** command allows you to automatically return results for common functions, like **SUM**, **AVERAGE**, and **COUNT**.
- The **Recently Used** command gives you access to functions that you have recently worked with.
- The **Financial** category contains functions for financial calculations like determining a payment (**PMT**) or interest rate for a loan (**RATE**).
- Functions in the **Logical** category check arguments for a value or condition. For example, if an order is over \$50 add \$4.99 for shipping, but if it is over \$100, do not charge for shipping (**IF**).
- The **Text** category contains functions that work with the text in arguments to perform tasks, such as converting text to lowercase (**LOWER**) or replacing text (**REPLACE**).
- The **Date & Time** category contains functions for working with dates and time and will return results like the current date and time (**NOW**) or the seconds (**SECOND**).
- The **Lookup & Reference** category contains functions that will return results for finding and referencing information. For example, you can add a hyperlink (**HYPERLINK**) to a cell or return the value of a particular row and column intersection (**INDEX**).
- The **Math & Trig** category includes functions for numerical arguments. For example, you can round values (**ROUND**), find the value of Pi (**PI**) multiply (**PRODUCT**), subtotal (**SUBTOTAL**), and much more.
- More Functions** contains additional functions under categories for **Statistical**, **Engineering**, **Cube, Information**, and **Compatibility**.

To insert a function from the Function Library

1. Select the **cell** that will contain the function.
2. Click the **Formulas** tab on the **Ribbon** to access the **Function Library**.
3. From the **Function Library** group, select the desired **function category**.
4. Select the **desired function** from the drop-down menu.

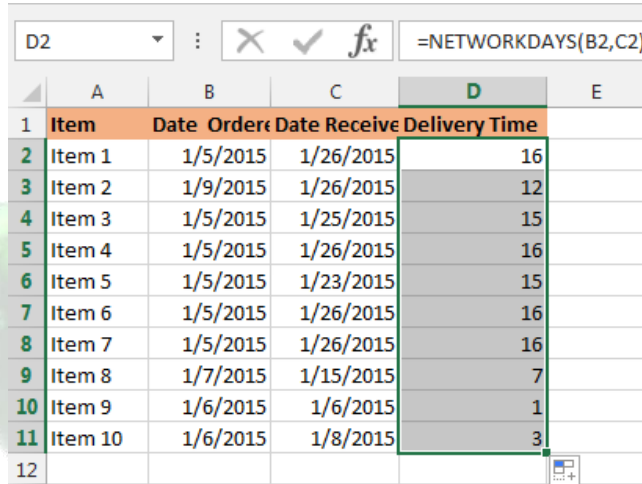


- The **Function Arguments** dialog box will appear. From here, you'll be able to enter or select the cells that will make up the arguments in the function.



- When you're satisfied with the arguments, click **OK**.
- The function will be **calculated**, and the **result** will appear in the cell.

Like formulas, functions can be copied to adjacent cells. Hover the mouse over the **cell** that contains the function, then click, hold, and drag the **fill handle** over the cells you wish to fill. The function will be copied, and values for those cells will be calculated relative to their rows or columns.



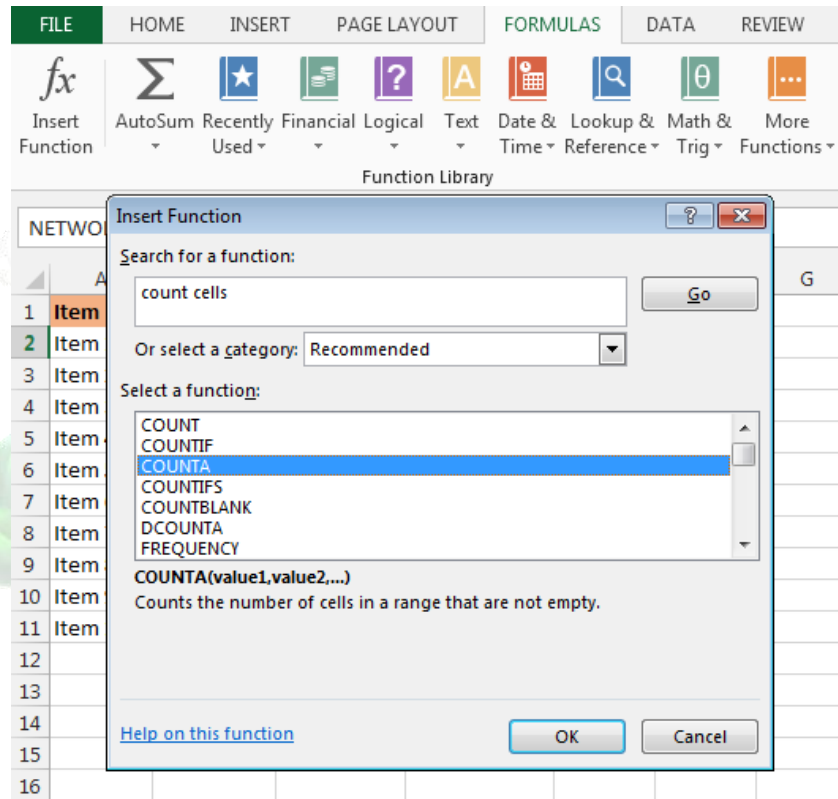
| | A | B | C | D | E |
|----|---------|------------|--------------|---------------|---|
| 1 | Item | Date Order | Date Receive | Delivery Time | |
| 2 | Item 1 | 1/5/2015 | 1/26/2015 | 16 | |
| 3 | Item 2 | 1/9/2015 | 1/26/2015 | 12 | |
| 4 | Item 3 | 1/5/2015 | 1/25/2015 | 15 | |
| 5 | Item 4 | 1/5/2015 | 1/26/2015 | 16 | |
| 6 | Item 5 | 1/5/2015 | 1/23/2015 | 15 | |
| 7 | Item 6 | 1/5/2015 | 1/26/2015 | 16 | |
| 8 | Item 7 | 1/5/2015 | 1/26/2015 | 16 | |
| 9 | Item 8 | 1/7/2015 | 1/15/2015 | 7 | |
| 10 | Item 9 | 1/6/2015 | 1/6/2015 | 1 | |
| 11 | Item 10 | 1/6/2015 | 1/8/2015 | 3 | |
| 12 | | | | | |

6.3.3. The Insert Function command

If you're having trouble finding the right function, the **Insert Function** command allows you to search for functions using **keywords**. While it can be extremely useful, this command is sometimes a little difficult to use. If you don't have much experience with functions, you may have more success browsing the **Function Library** instead. For more **advanced users**, however, the Insert Function command can be a powerful way to find a function quickly.

To use the Insert Function command

1. Select the **cell** that will contain the function.
2. Click the **Formulas** tab on the **Ribbon**, then select the **Insert Function** command.
3. The **Insert Function** dialog box will appear.
4. Type a few **keywords** describing the calculation you want the function to perform, then click **Go**.
5. Review the **results** to find the desired function, then click **OK**.



6. The **Function Arguments** dialog box will appear.
7. When you're satisfied, click **OK**.
8. The function will be **calculated**, and the **result** will appear in the cell.

Challenge!

1. Open an existing Excel workbook.
2. Create a function that contains one **argument**. If you're using the example, use the **SUM** function in cell **B16** to calculate the total quantity of items ordered.
3. Use the **AutoSum** command to insert a function.
4. Explore the **Function Library**, and try using the **Insert Function** command to search for different types of functions.

Excel Formulas You Should Definitely Know

1. SUM

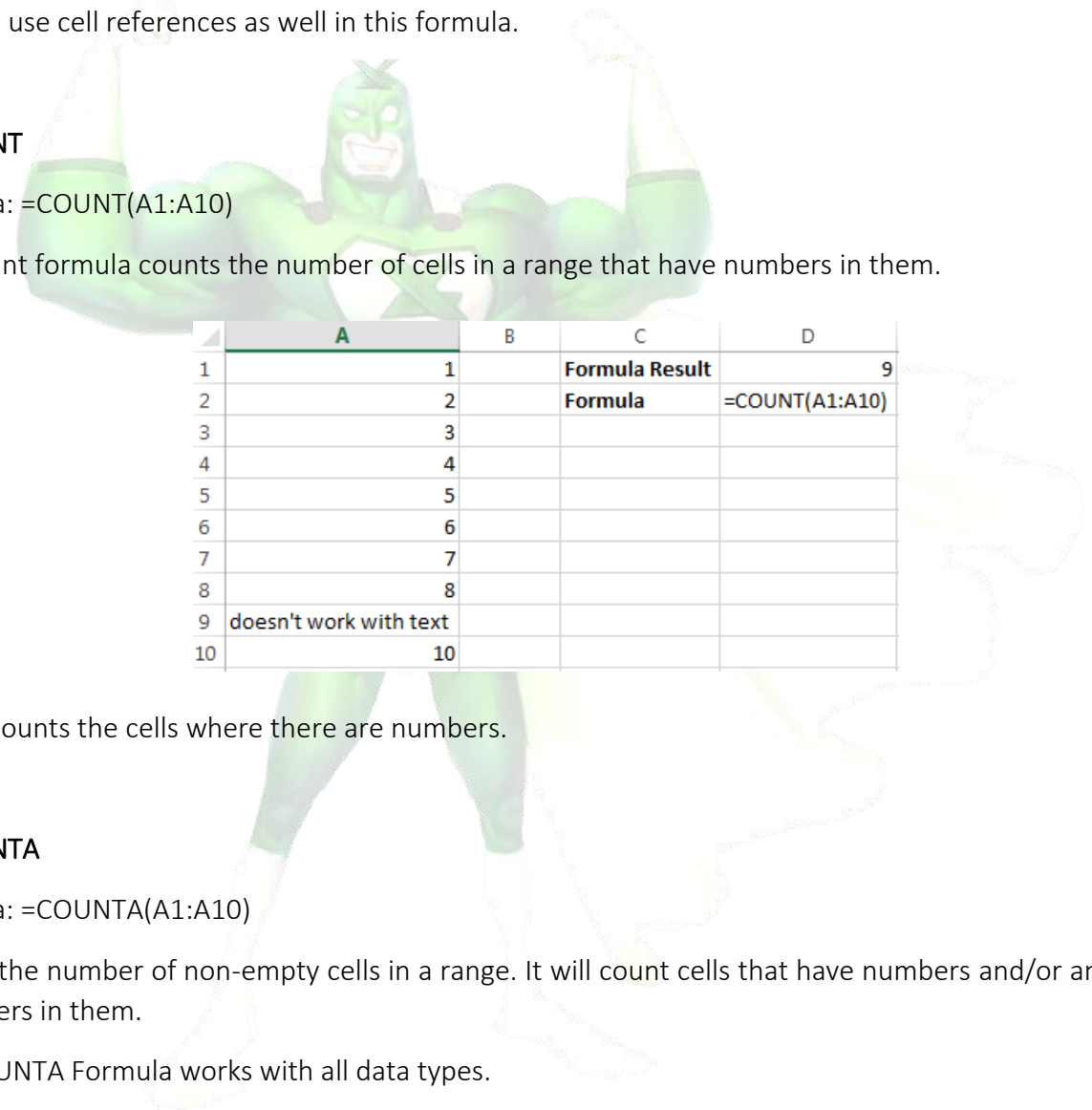
Formula: =SUM(5, 5) or =SUM(A1, B1) or =SUM(A1:B5)

The SUM formula does exactly what you would expect. It allows you to add 2 or more numbers together. You can use cell references as well in this formula.

2. COUNT

Formula: =COUNT(A1:A10)

The count formula counts the number of cells in a range that have numbers in them.



| | A | B | C | D |
|----|------------------------|---|----------------|----------------|
| 1 | 1 | | Formula Result | 9 |
| 2 | 2 | | Formula | =COUNT(A1:A10) |
| 3 | 3 | | | |
| 4 | 4 | | | |
| 5 | 5 | | | |
| 6 | 6 | | | |
| 7 | 7 | | | |
| 8 | 8 | | | |
| 9 | doesn't work with text | | | |
| 10 | 10 | | | |

It only counts the cells where there are numbers.

3. COUNTA

Formula: =COUNTA(A1:A10)

Counts the number of non-empty cells in a range. It will count cells that have numbers and/or any other characters in them.

The COUNTA Formula works with all data types.

| | A | B | C | D |
|----|----------------------|----|----------------|-----------------|
| 1 | | 1 | Formula Result | 10 |
| 2 | | 2 | Formula | =COUNTA(A1:A10) |
| 3 | | 3 | | |
| 4 | | 4 | | |
| 5 | | 5 | | |
| 6 | | 6 | | |
| 7 | | 7 | | |
| 8 | | 8 | | |
| 9 | This works with text | | | |
| 10 | | 10 | | |

It counts the number of non-empty cells no matter the data type.

4. LEN

Formula: =LEN(A1)

The LEN formula counts the number of characters in a cell. This includes spaces!

| | A | B | C | D |
|---|--------------|---|----------------|----------|
| 1 | I love Excel | | Formula Result | 12 |
| 2 | IloveExcel | | Formula | =LEN(A1) |
| 3 | | | | |
| 4 | | | Formula Result | 10 |
| 5 | | | Formula | =LEN(A2) |

Notice the difference in the formula results: 10 characters without spaces in between the words, 12 with spaces between the words.

5. VLOOKUP

Formula: =VLOOKUP(lookup_value, table_array, col_index_num, range_lookup)

Basically, VLOOKUP lets you **search for specific information** in your spreadsheet. For example, if you have a list of products with prices, you could search for the price of a specific item.

We're going to use VLOOKUP to find the price of the **Photo frame**. You can probably already see that the price is \$9.99, but that's because this is a simple example. Once you learn how to use VLOOKUP, you'll be able to use it with larger, more complex spreadsheets, and that's when it will become truly useful.

| | A | B | C | D | E | F |
|----|--------------------|---------|---|---|---|---|
| 1 | Item | Price | | | | |
| 2 | Spice rack | \$19.99 | | | | |
| 3 | Stationery | \$5.49 | | | | |
| 4 | Gift basket | \$25.99 | | | | |
| 5 | Cutting board | \$24.99 | | | | |
| 6 | Landscape painting | \$35.99 | | | | |
| 7 | Greeting card | \$4.99 | | | | |
| 8 | T-shirt | \$15.49 | | | | |
| 9 | Scarf | \$29.99 | | | | |
| 10 | Coffee mug | \$8.99 | | | | |
| 11 | Tea set | \$16.99 | | | | |
| 12 | Serving bowl | \$12.99 | | | | |
| 13 | Wrapping paper | \$3.99 | | | | |
| 14 | Photo frame | \$9.99 | | | | |
| 15 | Handmade soap | \$4.49 | | | | |
| 16 | Gourmet hot cocoa | \$5.99 | | | | |

As with any formula, you'll start with an equal sign (=). Then, type the formula name.

`=VLOOKUP("Photo frame"`

The second argument is the **cell range that contains the data**. In this example, our data is in A2:B16. As with any function, you'll need to use a comma to separate each argument:

`=VLOOKUP("Photo frame", A2:B16`

Note: It's important to know that VLOOKUP will **always search the first column** in this range. In this example, it will search column A for "Photo frame". In some cases, you may need to move the columns around so that the first column contains the correct data.

The third argument is the **column index number**. It's simpler than it sounds: The first column in the range is 1, the second column is 2, etc. In this case, we are trying to find the **price of the item**, and the prices are contained in the **second column**. That means our third argument will be 2:

`=VLOOKUP("Photo frame", A2:B16, 2`

The fourth argument tells VLOOKUP whether to look for **approximate matches**, and it can be either TRUE or FALSE. If it is TRUE, it will look for approximate matches. Generally, this is only useful if the first column has numerical values that have been sorted. Since we're only looking for exact matches, the fourth argument should be **FALSE**. This is our last argument, so go ahead and close the parentheses:

`=VLOOKUP("Photo frame", A2:B16, 2, FALSE)`

And that's it! When you press enter, it should give you the answer, which is **9.99**.

| | | | | | | | | | |
|----|---|---|------|---|---|--|--|--|--|
| fx | | | | | =VLOOKUP("Photo frame", A2:B16, 2, FALSE) | | | | |
| | C | D | E | F | G | | | | |
| | | | | | | | | | |
| | | | 9.99 | | | | | | |

6. IF Statements

Formula: =IF(logical_statement, return this if logical statement is true, return this if logical statement is false).

Example

Let's say a salesperson has a quota to meet. You used VLOOKUP to put the revenue next to the name. Now you can use an IF statement that says: "IF the salesperson met their quota, say "Met quota", if not say "Did not meet quota"
=IF(C3>D3, "Met Quota", "Did Not Meet Quota")

This IF statement will tell us if the first salesperson met their quota or not. We would then copy and paste this formula along all the entries in the list. It would change for each sales person.

| | A | B | C | D | E |
|----|-----------------|-------------------|---|---------------|--------------------|
| 1 | Master List | | | | |
| 2 | Sales Person ID | Sales Person Name | Sales Person Revenue | Quota | Met Quota? |
| 3 | 1 | John | \$ 232,103.00 | \$ 500,000.00 | Did Not Meet Quota |
| 4 | 2 | Joe | \$ 835,477.00 | \$ 500,000.00 | Met Quota |
| 5 | 3 | Jen | \$ 116,371.00 | \$ 500,000.00 | Did Not Meet Quota |
| 6 | 4 | Frank | \$ 393,841.00 | \$ 500,000.00 | Did Not Meet Quota |
| 7 | 5 | Mark | \$ 989,303.00 | \$ 500,000.00 | Met Quota |
| 8 | 6 | Amanda | \$ 641,883.00 | \$ 500,000.00 | Met Quota |
| 9 | 7 | Erik | \$ 525,894.00 | \$ 500,000.00 | Met Quota |
| 10 | 8 | Mike | \$ 732,195.00 | \$ 500,000.00 | Met Quota |
| 11 | 9 | Matt | \$ 513,372.00 | \$ 500,000.00 | Met Quota |
| 12 | 10 | Josh | \$ 961,561.00 | \$ 500,000.00 | Met Quota |
| 13 | 11 | Shea | \$ 235,652.00 | \$ 500,000.00 | Did Not Meet Quota |
| 14 | | | | | |
| 15 | | | Formula | | |
| 16 | | | =IF(C3>D3, "Met Quota", "Did Not Meet Quota") | | |

7. Working with Data

Whenever you're working with a lot of data, it can be difficult to **compare** information in your workbook.

7.1 Freezing Panes and View Options

Excel includes several tools that make it easier to view content from different parts of your workbook at the same time, such as the ability to **freeze panes** and **split** your worksheet.

To freeze rows

You may want to see certain rows or columns all the time in your worksheet, especially **header cells**. By **freezing** rows or columns in place, you'll be able to scroll through your content while continuing to view the frozen cells.

1. Select the **row** below the row(s) you wish to **freeze**.
2. Click the **View** tab on the **Ribbon**.
3. Select the **Freeze Panes** command, then choose **Freeze Panes** from the drop-down menu.

| | A | B | C | D |
|----|---------|--------------|---------------|---|
| 1 | Item | Date Ordered | Date Received | |
| 2 | Item 1 | 1/5/2015 | 1/26/2015 | |
| 3 | Item 2 | 1/9/2015 | 1/26/2015 | |
| 4 | Item 3 | 1/5/2015 | 1/25/2015 | |
| 5 | Item 4 | 1/5/2015 | 1/26/2015 | |
| 6 | Item 5 | 1/5/2015 | 1/23/2015 | |
| 7 | Item 6 | 1/5/2015 | 1/26/2015 | |
| 8 | Item 7 | 1/5/2015 | 1/26/2015 | |
| 9 | Item 8 | 1/7/2015 | 1/15/2015 | |
| 10 | Item 9 | 1/6/2015 | 1/6/2015 | |
| 11 | Item 10 | 1/6/2015 | 1/8/2015 | |

The rows will be **frozen** in place, as indicated by the **gray line**. You can **scroll down** the worksheet while continuing to view the frozen rows at the top.

To freeze columns

1. Select the **column** to the right of the column(s) you wish to **freeze**.

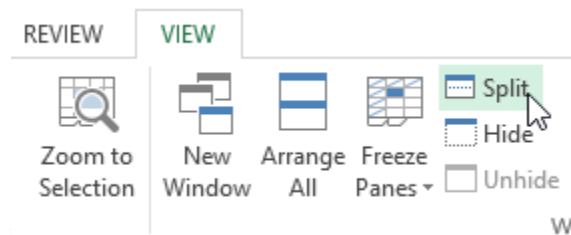
2. Click the **View** tab on the **Ribbon**.
3. Select the **Freeze Panes** command, then choose **Freeze Panes** from the drop-down menu.
4. The column will be **frozen** in place, as indicated by the **gray line**. You can **scroll across** the worksheet while continuing to view the frozen column on the left.

To **unfreeze** rows or columns, click the **Freeze Panes** command, then select **Unfreeze Panes** from the drop-down menu.

To split a worksheet

Sometimes you may want to compare different sections of the same workbook without creating a new window. The **Split** command allows you to **divide** the worksheet into multiple panes that scroll separately.

1. Select the **cell** where you wish to split the worksheet.
2. Click the **View** tab on the **Ribbon**, then select the **Split** command.



3. The workbook will be **split** into different **panes**. You can scroll through each pane separately using the **scroll bars**, allowing you to compare different sections of the workbook.

To remove the split, click the **Split** command again.

Challenge!

1. Open an existing Excel workbook.
2. Try **freezing** a row or column in place.
3. Use the **Split** command to split your worksheet into multiple panes.

7.2 Sorting Data

As you add more content to a worksheet, organizing that information becomes especially important. You can quickly **reorganize** a worksheet by **sorting** your data. For example, you could organize a list of contact information by last name. Content can be sorted alphabetically, numerically, and in many other ways.

When sorting data, it's important to first decide if you would like the sort to apply to the **entire worksheet** or just a **cell range**.

- **Sort sheet** organizes all of the data in your worksheet by one column.
- **Sort range** sorts the data in a range of cells, which can be helpful when working with a sheet that contains several tables. Sorting a range will not affect other content on the worksheet.

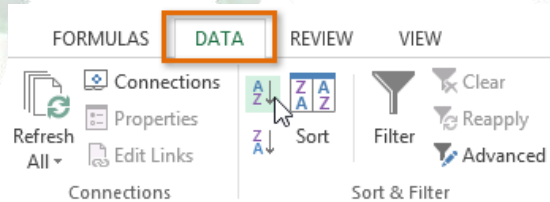
To sort a sheet

In our example, we'll sort a T-shirt order form alphabetically by **Last Name** (column C).

1. Select a **cell** in the column you wish to sort by. In our example, we'll select cell **C2**.

| | A | B | C | D | E | F |
|----|------------|------------|-----------|--------------|----------------|---|
| 1 | Homeroom # | First Name | Last Name | T-Shirt Size | Payment Method | |
| 2 | 105 | Christiana | Chen | Medium | Cash | |
| 3 | 105 | Melissa | White | Small | Debit Card | |
| 4 | 105 | Esther | Yaron | Small | Check | |
| 5 | 135 | Anisa | Naser | Small | Check | |
| 6 | 135 | Chantal | Weller | Medium | Cash | |
| 7 | 220-A | Juan | Flores | X-Large | Pending | |
| 8 | 220-B | Malik | Reynolds | Small | Cash | |
| 9 | 220-B | Avery | Kelly | Medium | Debit Card | |
| 10 | 105 | Derek | MacDonald | Large | Cash | |

2. Select the **Data** tab on the **Ribbon**, then click the **Ascending** command to Sort A to Z, or the **Descending** command to Sort Z to A. In our example, we'll click the **Ascending** command.



3. The worksheet will be **sorted** by the selected column. In our example, the worksheet is now sorted by **last name**.

| | A | B | C | D | E | F |
|----|------------|------------|-----------|--------------|----------------|---|
| 1 | Homeroom # | First Name | Last Name | T-Shirt Size | Payment Method | |
| 2 | 110 | Kris | Ackerman | Large | Money Order | |
| 3 | 105 | Nathan | Albee | Medium | Check | |
| 4 | 220-B | Samantha | Bell | Medium | Check | |
| 5 | 110 | Matt | Benson | Medium | Money Order | |
| 6 | 105 | Christiana | Chen | Medium | Cash | |
| 7 | 110 | Gabriel | Del Toro | Medium | Cash | |
| 8 | 220-A | Brigid | Ellison | Small | Cash | |
| 9 | 220-A | Juan | Flores | X-Large | Pending | |
| 10 | 220-B | Tyrese | Hanlon | X-Large | Debit Card | |


7.3 Filtering Data

If your worksheet contains a lot of content, it can be difficult to find information quickly. **Filters** can be used to **narrow down** the data in your worksheet, allowing you to view only the information you need.

To filter data

1. In order for filtering to work correctly, your worksheet should include a **header row**, which is used to identify the name of each column.
2. Select the **Data** tab, then click the **Filter** command.

The screenshot shows the Microsoft Excel interface with the **DATA** tab selected. The **Filter** button (funnel icon) is highlighted in the **Sort & Filter** group. A dialog box titled **Filter (Ctrl+Shift+L)** is open, providing instructions: "Turn on filtering for the selected cells. Then, click the arrow in the column header to narrow down the data." Below the dialog, a worksheet is visible with columns **Item**, **Date Ordered**, and **Date Received**.

3. A **drop-down arrow**  will appear in the header cell for each column.
4. Click the **drop-down arrow** for the column you wish to filter.

5. The **Filter** menu will appear.
6. **Uncheck** the box next to **Select All** to quickly deselect all data.
7. **Check** the boxes next to the data you wish to filter, then click **OK**.

To remove all filters from your worksheet, click the **Filter** command on the **Data** tab.

8. Working with Charts

Creating a chart in Microsoft Office Excel is quick and easy. Excel provides a variety of chart types that you can choose from when you create a chart. Excel offers Pie, Line, Bar, and Column charts to name but a few. Showing data in a chart can make it clearer, more interesting and easier to read. Charts can also help you evaluate your data and make comparisons between different values.

8.1. Understanding charts

Excel has several different **types of charts**, allowing you to choose the one that best fits your data. In order to use charts effectively, you'll need to understand how different charts are used.

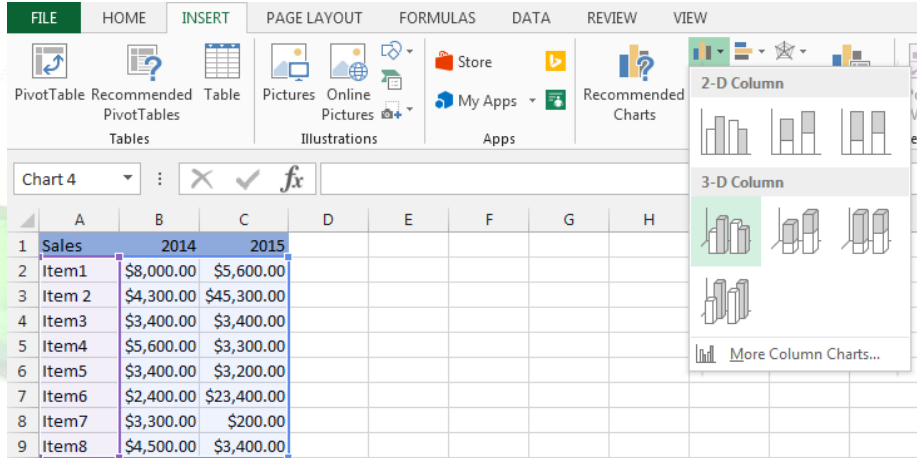
Types of Charts:


- Column charts** use vertical bars to represent data. They can work with many different types of data, but they're most frequently used for comparing information.
- Line charts** are ideal for showing trends. The data points are connected with lines, making it easy to see whether values are increasing or decreasing over time.
- Pie charts** make it easy to compare proportions. Each value is shown as a slice of the pie, so it's easy to see which values make up the percentage of a whole.
- Bar charts** work just like Column charts, but they use horizontal bars instead of vertical bars.
- Area charts** are similar to line charts, except that the areas under the lines are filled in.
- Surface charts** allow you to display data across a 3D landscape. They work best with large data sets, allowing you to see a variety of information at the same time.

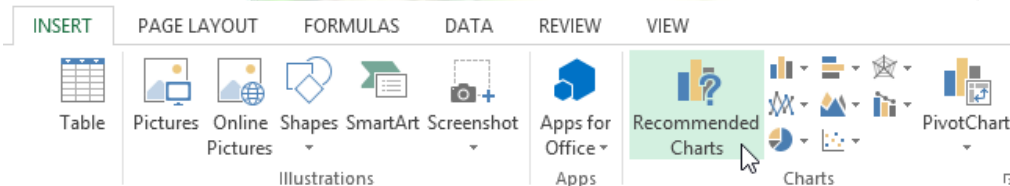
To insert a chart

1. **Select the cells** you want to chart, including the column titles and row labels. These cells will be the source data for the chart.

2. From the **Insert** tab, click the desired Chart command.
3. **Choose** the desired chart type from the drop-down menu.



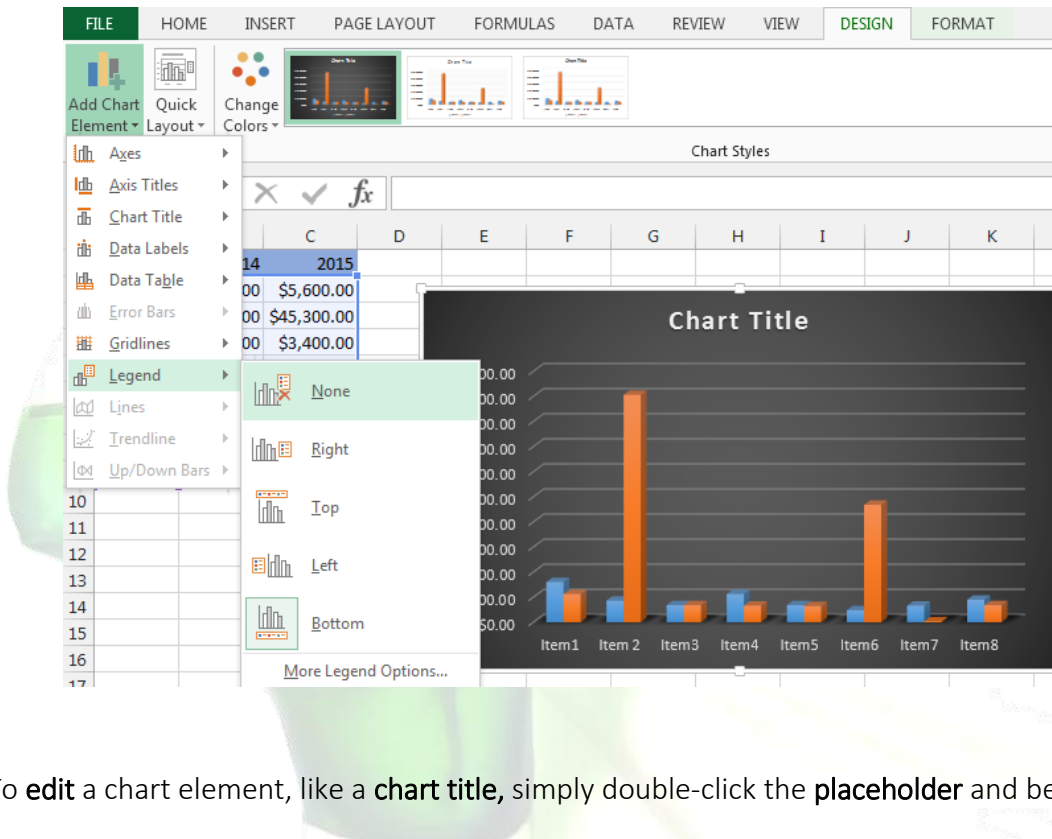
4. The selected chart will be inserted in the worksheet.
-  **TIP:** If you're not sure which type of chart to use, the **Recommended Charts** command will suggest several different charts based on the source data.



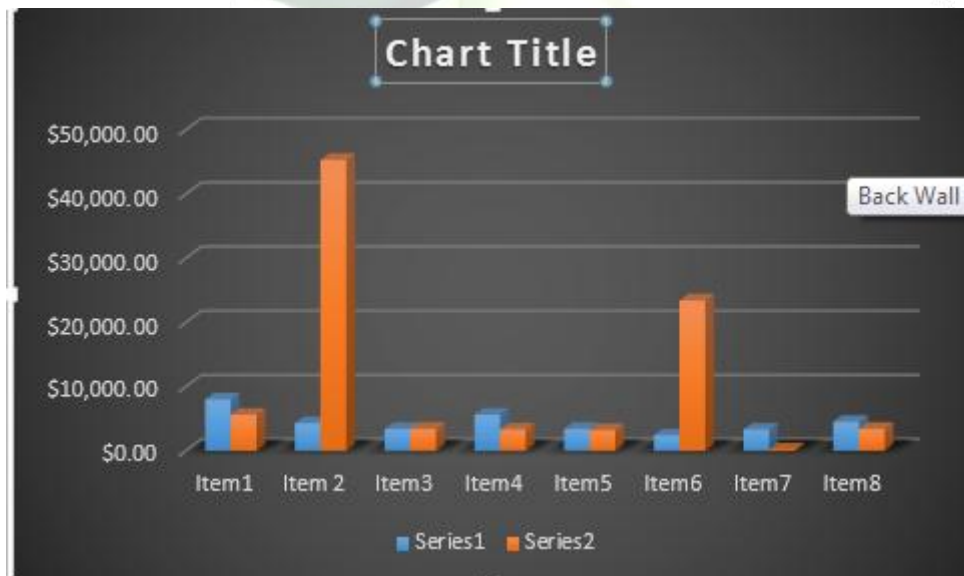
8.2. Chart layout and style

After inserting a chart, there are several things you may want to change about the way your data is displayed. It's easy to edit a chart's **layout** and **style** from the **Design** tab.

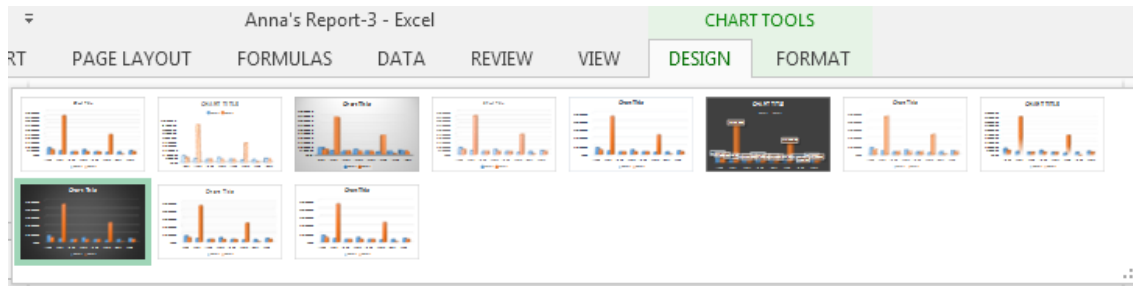
- Excel allows you to add **chart elements**—such as **chart titles**, **legends**, and **data labels**—to make your chart easier to read. To add a chart element, click the **Add Chart Element** command on the **Design** tab, then choose the **desired element** from the drop-down menu.




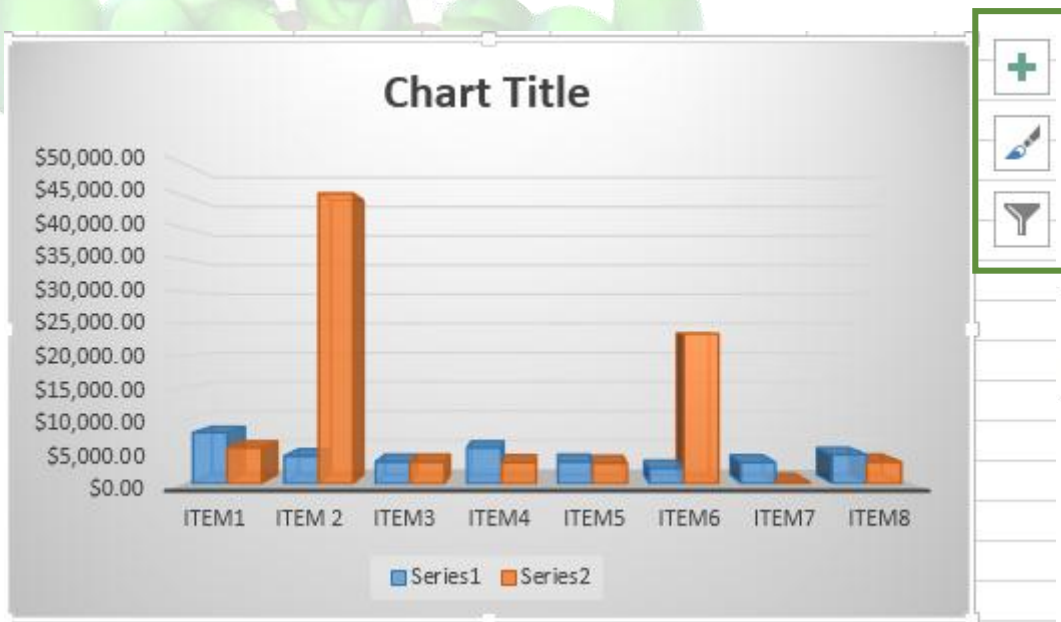
- ☑ To **edit** a chart element, like a **chart title**, simply double-click the **placeholder** and begin typing.



- ☑ If you don't want to add chart elements individually, you can use one of Excel's predefined layouts. Simply click the **Quick Layout** command, then choose the **desired layout** from the drop-down menu.
- ☑ Excel also includes several different **chart styles**, which allow you to quickly modify the look and feel of your chart. To change the chart style, select the **desired style** from the **Chart styles** group.



 **TIP:** You can also use the chart formatting shortcut buttons to quickly **add chart elements**, change the **chart style**, and **filter** the chart data.



8.3. Other chart options

There are lots of other ways to customize and organize your charts. For example, Excel allows you to **rearrange** a chart's data, change the **chart type**, and even **move** the chart to a different location in the workbook.

To switch row and column data

Sometimes you may want to change the way charts **group** your data. For example, in the chart below, the Book Sales data are grouped **by year**, with columns for **each genre**. However, we could switch the rows and columns so the chart will group the data **by genre**, with columns for **each year**. In both cases, the chart contains the same data—it's just organized differently.

1. Select the **chart** you wish to modify.

- From the **Design** tab, select the **Switch Row/Column** command.



- The rows and columns will be **switched**.

To change the chart type

If you find that your data isn't well suited to a certain chart, it's easy to switch to a new **chart type**. In our example, we'll change our chart from a **Column** chart to a **Line** chart.

- From the **Design** tab, click the **Change Chart Type** command.

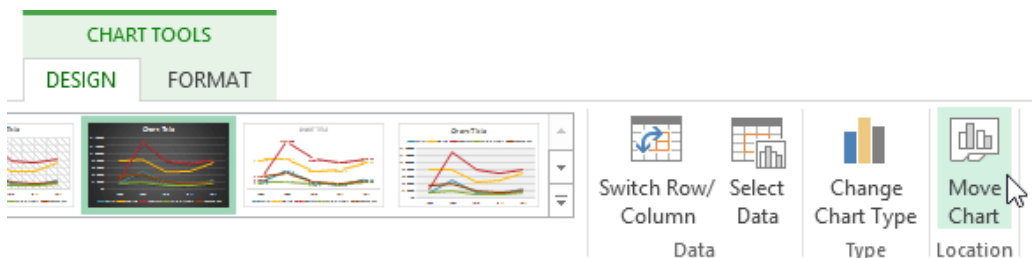


- The **Change Chart Type** dialog box will appear.
- The selected chart type will appear.

To move a chart

Whenever you insert a new chart, it will appear as an object on the same worksheet that contains its source data. Alternatively, you can **move** the chart to a **new worksheet** to help keep your data organized.

- Select the **chart** you wish to move.
- Click the **Design** tab, then select the **Move Chart** command.



3. The **Move Chart** dialog box will appear. Select the **desired location** for the chart.
4. Click **OK**.
5. The chart will appear in the selected location.

Challenge!

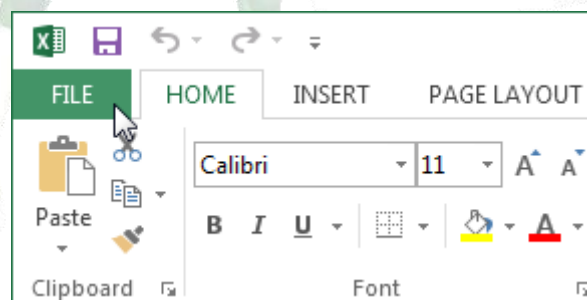
1. Open an **existing Excel workbook**.
2. Use worksheet data to create a **chart**.
3. Change the **chart layout**.
4. Apply a **chart style**.
5. **Move** the chart.

9. Printing Workbooks

There may be times when you want to **print a workbook** to view and share your data **offline**. Once you've chosen your **page layout** settings, it's easy to preview and print a workbook from Excel using the **Print** pane.

To access the Print pane

1. Select the **File** tab. **Backstage view** will appear.



2. Select **Print**. The **Print** pane will appear.

The image shows the Excel Print dialog box with several sections and callout boxes:

- Print Section:**
 - Callout: "When you are ready to print the workbook, click the **Print** button."
 - Control: "Copies: 1" (with a spinner box)
 - Callout: "Here you can choose how many **copies** of the workbook you wish to print."
 - Control: "Print" button
 - Callout: "You may need to **select the printer** you want to use if your computer is connected to **multiple printers**."
- Printer Section:**
 - Control: "CSD2851 on PRINTS Ready" (with a printer icon)
 - Label: "Printer Properties"
- Settings Section:**
 - Control: "Print Active Sheets" (with a grid icon)
 - Text: "Only print the active sheets"
 - Callout: "Here you can choose to print the **active sheets**, the **entire workbook**, or a **selection of**"
 - Control: "Pages: [] to []" (with spinner boxes)
 - Control: "Print on Both Sides" (with a document icon)
 - Text: "Flip pages on long edge"
 - Callout: "Here you can choose whether to print on **one side** or **both sides** of the paper."
 - Control: "Collated" (with a document icon)
 - Text: "1,2,3 1,2,3 1,2,3"
 - Control: "Portrait Orientation" (with a document icon)
 - Callout: "Here you can choose **Portrait** or **Landscape** orientation."
 - Control: "Letter (8.5\" x 11\")" (with a document icon)
 - Text: "8.5\" x 11\""
 - Control: "Normal Margins" (with a grid icon)
 - Text: "Left: 0.7\" Right: 0.7\""
 - Control: "No Scaling" (with a document icon)
 - Text: "Print sheets at their actual size"
 - Callout: "Here you can adjust the **page margins**, which can help your data fit more comfortably on the page."
 - Control: "100" (with a document icon)
 - Text: "Print sheets at their actual size"
 - Label: "Page Setup"
- Callout Boxes (Left Side):**
 - Callout: "If you are printing multiple copies, you can choose whether you want the copies **collated** or **uncollated**."
 - Callout: "If your printer uses different paper sizes, you can choose the **paper size** you wish to use."
 - Callout: "Here you can choose how to **scale** your worksheets for the printed page. You can scale worksheets at their **actual size**, **fit the entire worksheet** on one page, **fit all columns** on one page, or **fit all rows** on one page."

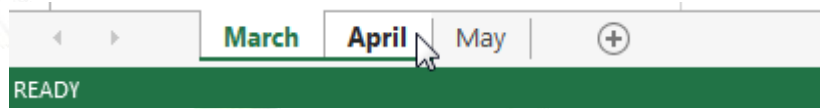
9.1. Choosing a print area

Before you print an Excel workbook, it's important to decide exactly what information you want to print. For example, if you have multiple worksheets in your workbook, you will need to decide if you want to print the **entire workbook** or only **active worksheets**. There may also be times when you want to print only a **selection** of content from your workbook.

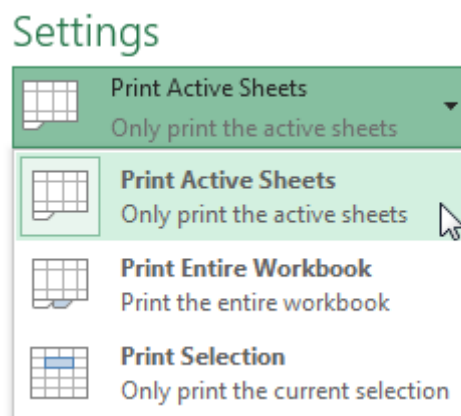
To print active sheets

Worksheets are considered active when **selected**.

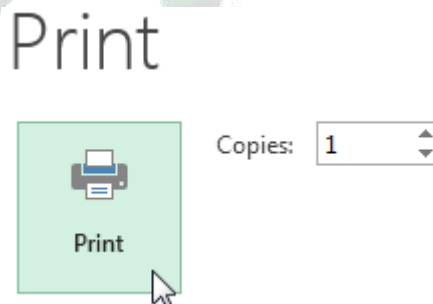
1. Select the **worksheet** you want to print. To print **multiple worksheets**, click the first worksheet, hold the **Ctrl** key on your keyboard, then click any other worksheets you want to select.



2. Navigate to the **Print** pane.
3. Select **Print Active Sheets** from the **Print Range** drop-down menu.



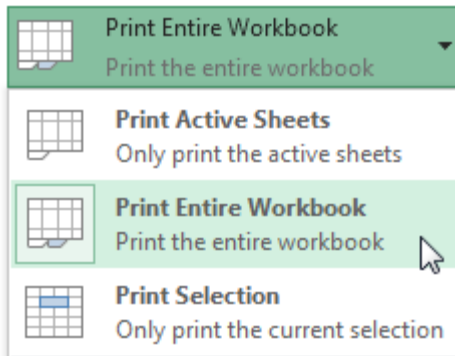
4. Click the **Print** button.



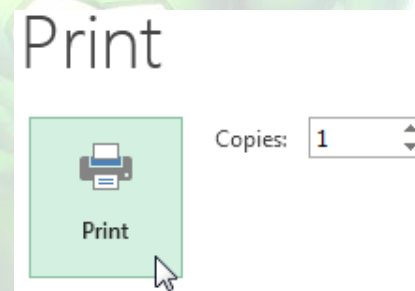
To print the entire workbook

1. Navigate to the **Print** pane.
2. Select **Print Entire Workbook** from the **Print Range** drop-down menu.

Settings



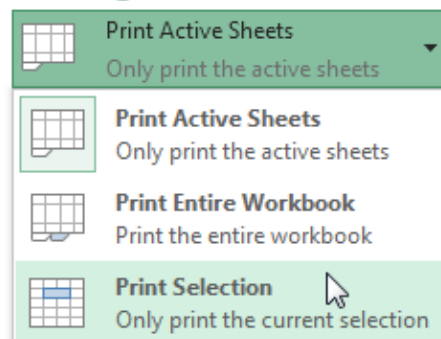
3. Click the **Print** button.



To print a selection

1. Select the **cells** you wish to print.
2. Navigate to the **Print** pane.
3. Select **Print Selection** from the **Print Range** drop-down menu.


Settings

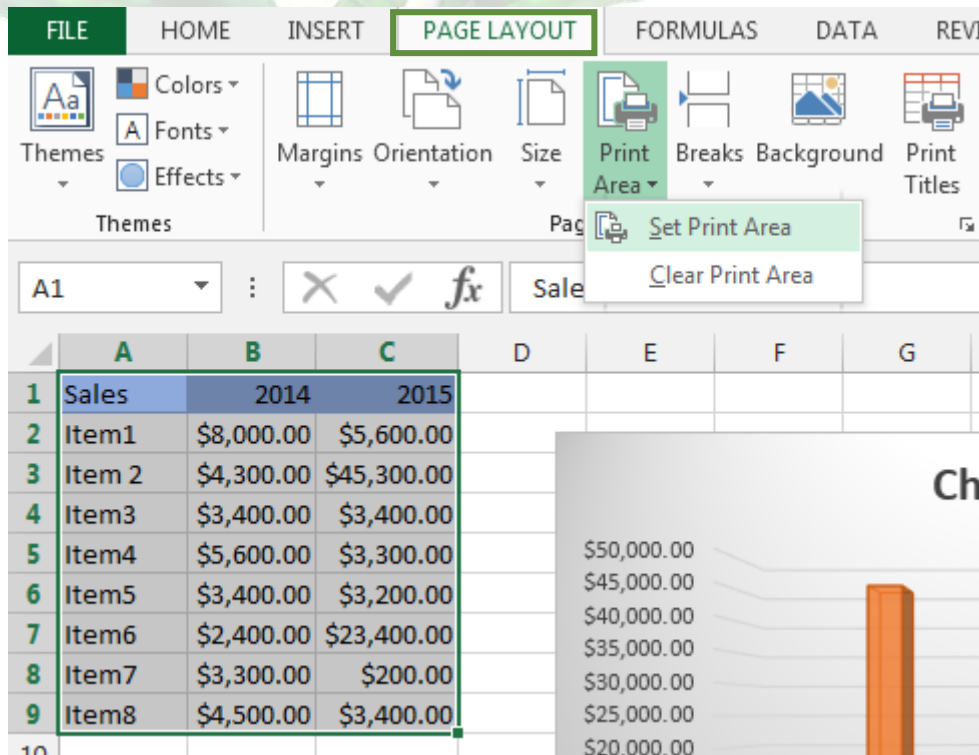


4. A **preview** of your selection will appear in the **Preview** pane.
5. Click the **Print** button to print the selection.

Print



 **TIP:** If you prefer, you can also set the **print area** in advance so you'll be able to visualize which cells will be printed as you work in Excel. Simply **select** the cells you want to print, click the **Page Layout** tab, select the **Print Area** command, then choose **Set Print Area**.



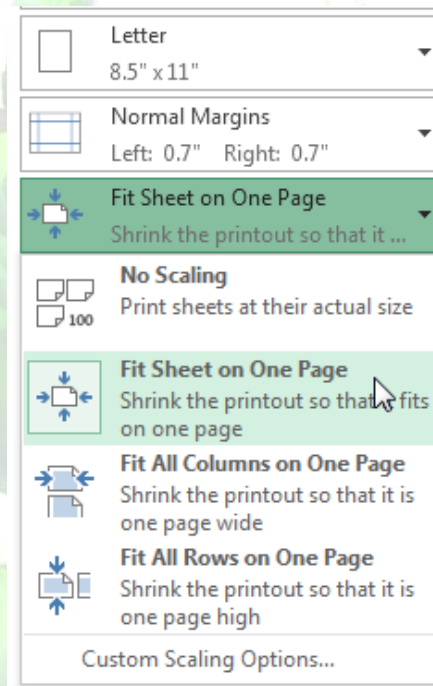
9.2. Fitting and scaling content

On occasion, you may need to make **small adjustments** from the Print pane to fit your workbook content neatly onto a printed page. The Print pane includes several tools to help fit and scale your content, such as **scaling** and **page margins**.

To fit content before printing

If some of your content is being cut off by the printer, you can use **scaling** to fit your workbook to the page automatically.

1. Navigate to the **Print** pane.
2. Select the desired option from the **Scaling** drop-down menu. In our example, we'll select **Fit Sheet on One Page**.

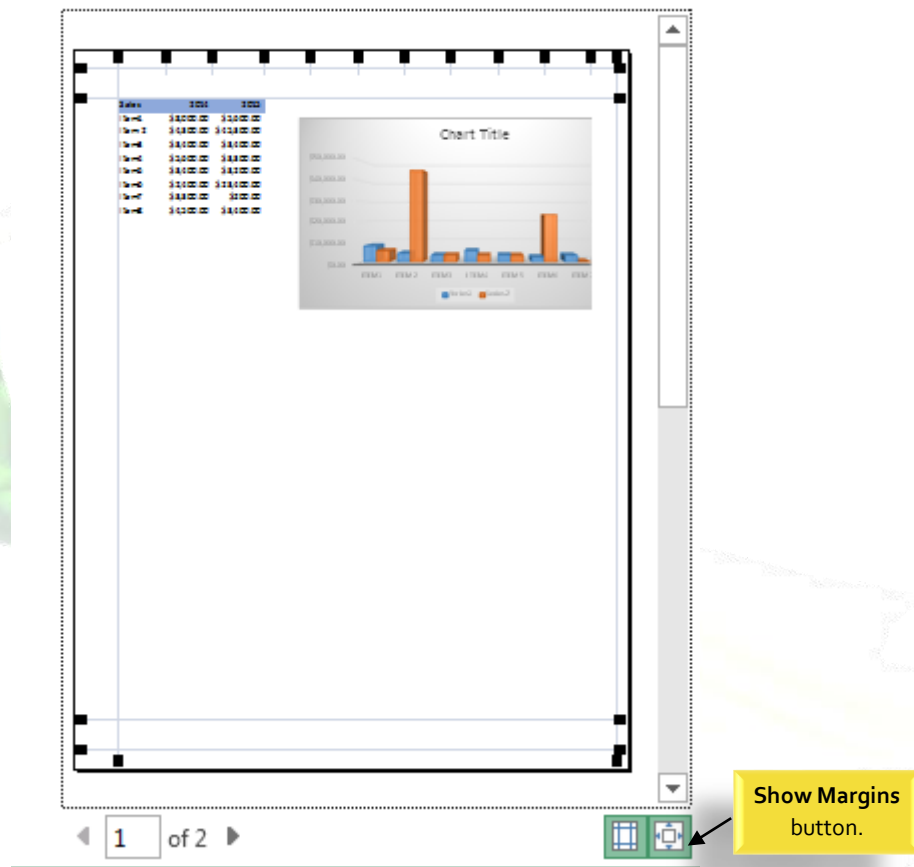


3. The worksheet will be **condensed** to fit onto a single page.
4. When you're satisfied with the scaling, click **Print**.

To modify margins in the Preview pane

Sometimes you may only need to adjust a **single margin** to make your data fit more comfortably. You can modify individual page margins from the **Preview** pane.

1. Navigate to the **Print** pane, then click the **Show Margins** button in the lower-right corner.



2. The **page margins** will appear in the **Preview** pane. Hover the mouse over one of the **margin markers** until the cursor becomes a **double arrow** ⇄.
3. Click, hold, and drag the mouse to **increase** or **decrease** the **margin width**.
4. Release the mouse. The margin will be modified. In our example, we were able to fit an additional column on the page.

Challenge!

1. Open an existing Excel workbook.
2. Try printing two **active worksheets**.
3. Try printing only a **selection** of cells.
4. Try the **scaling** feature to condense your workbook content.
5. Adjust the **margins** from the **Preview** pane.