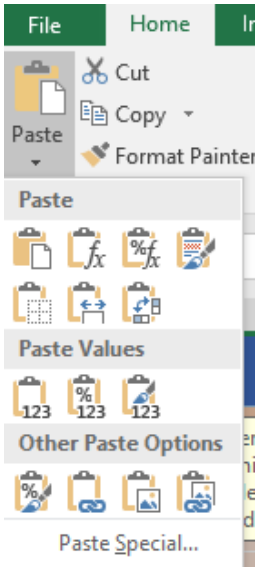
Microsoft Excel – Part 2

Paste special



Under Copy and Paste options, there are a few commands that may come in handy. To practice, open the ExcelPart2.xlsx workbook and select the PasteSpecial worksheet and select cell A1 through F15. Click on Copy button under the Home menu or do Control + C on your keyboard to copy that selection.

Now select cell H1; click the arrow under the Paste button and lay your mouse over each choices and look what the paste will look like without actually pasting the selection. **DO NOT CLICK THE MOUSE.**

Middle button on second row will not only paste your selection but also will retain source column width.

Third button on second row will transpose your data. Transpose is used to switch the orientation of an array. It converts the vertical range to a horizontal range or vice versa.

The first and second button on third row will paste your selection as fixed value so no formula will come along in the paste value.

Basics of Formula & Using basic functions such as AVERAGE, SUM, and COUNT

Just like a calculator, Excel has the ability to calculate numerical information using formulas. Excel can add, subtract, multiply, and divide. In this lesson, we'll show you how to use cell references to create simple formulas.

Note: All formulas start with the '=' equal sign. This is because the cell contains, or is equal to, the formula and the value it calculates.

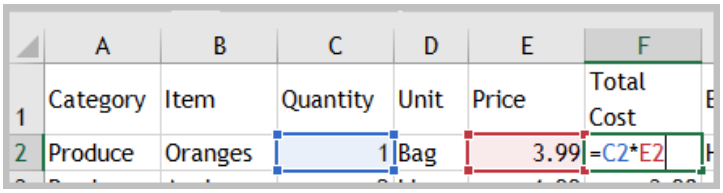
Addition	**+**	**=10+5**
Substraction	**-**	**=10-5**
Multiplication	*****	**=10*5**
Division	**/**	**=10/5**

Relative and Absolute Cell References:

There are two types of cell references: **relative** and **absolute**. Relative and absolute references behave differently when copied and filled to other cells. Relative references **change** when a formula is copied to another cell. Absolute references, on the other hand, remain **constant**, no matter where they are copied.

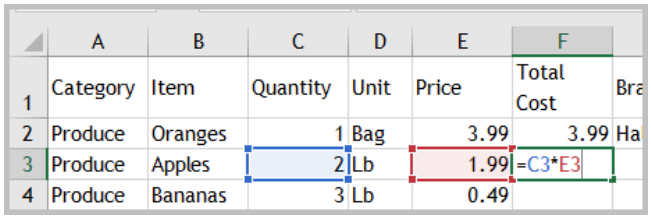
Relative Cell References: *By default*, all cell references are **relative references**. When copied across multiple cells, they change based on the *relative position of rows and columns*. For example, if you copy the formula =**A1+B1** from row 1 to row 2, the formula will become =**A2+B2**. Relative references are especially convenient whenever you need to repeat the same calculation across multiple rows or columns. Let's verify this by opening the *Grocery* worksheet in same workbook.

- Select cell F2.
- Enter the formula to find the total cost of row 2 for oranges. (Total cost = Qty * Price)
- The formula should be =C2*E2 as shown.



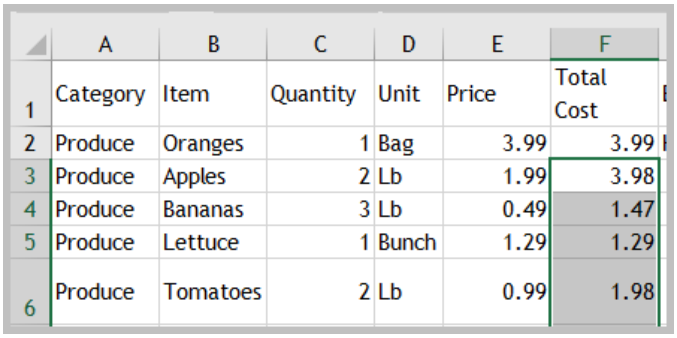
	A	B	C	D	E	F
1	Category	Item	Quantity	Unit	Price	Total Cost
2	Produce	Oranges	1	Bag	3.99	=C2*E2

- When we copied this formula from cell F2 to the lower cell F3 by using the **Fill Handle**, the cell reference changed based on the *relative position of the row* – in this case, Row 3. So, the copied formula becomes =C3*E3



	A	B	C	D	E	F
1	Category	Item	Quantity	Unit	Price	Total Cost
2	Produce	Oranges	1	Bag	3.99	3.99
3	Produce	Apples	2	Lb	1.99	=C3*E3
4	Produce	Bananas	3	Lb	0.49	

- Select cell F3 again; use the **Fill Handle**, and copy the formula to all lower cells by dragging the mouse or double-clicking the mouse. Remaining rows now will have copied formulas with the cell references changed to the relative position of their row numbers.



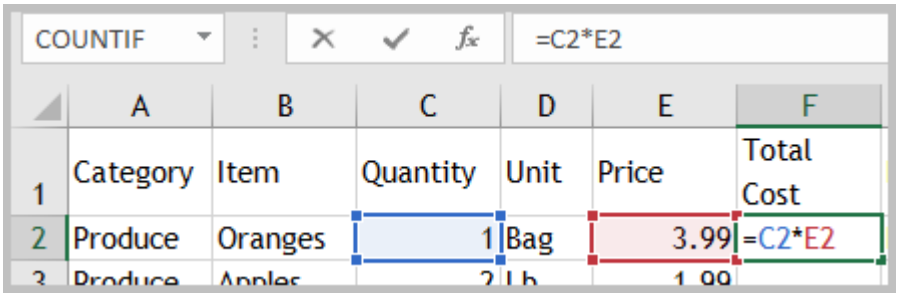
	A	B	C	D	E	F
1	Category	Item	Quantity	Unit	Price	Total Cost
2	Produce	Oranges	1	Bag	3.99	3.99
3	Produce	Apples	2	Lb	1.99	3.98
4	Produce	Bananas	3	Lb	0.49	1.47
5	Produce	Lettuce	1	Bunch	1.29	1.29
6	Produce	Tomatoes	2	Lb	0.99	1.98

- Format column E (price column) and column F (total cost column) in accounting number format with $ sign.

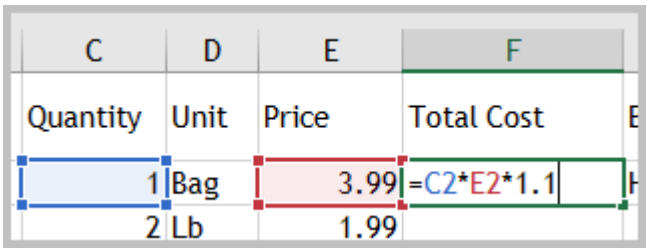
To Edit a Formula:

When you need to edit an existing formula, you can do so in a number of ways. Let's assume we are going to edit our formula in Cell F2 in *Grocery* worksheet to include the markup of 10%. That would require to multiply the original formula =C2*E2 with 1.1 as =C2*E2*1.1. To do this, follow these steps.

- Double-click on Cell F2 where we entered our original formula. The cursor should be blinking at the end of the existing formula. (If not, move your cursor to the end of the existing formula.)

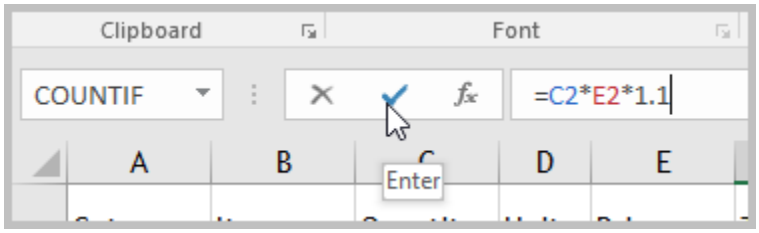


- Then type in the multiplication symbol "*" and "1.1" as shown.

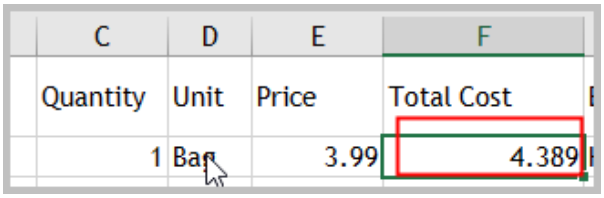


OR

- You can also click directly in the formula bar area to fix the formula. When finished, hit **Enter** key on your keyboard or select the **Enter** command  in the formula bar.



- In either case the calculated value will show in Cell F2.
- **Undo your change by clicking on the undo command on quick access toolbar or Control+Z**.



Absolute Cell Reference:

There may be times when you do not want a cell reference to change when filling cells. Unlike **relative references**, **absolute references** do not change when copied or filled. When you want to keep a row and/or column *constant,* use an **absolute reference**.

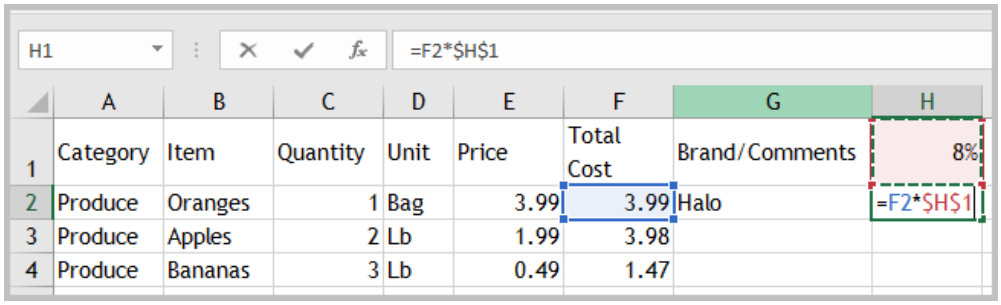
An absolute reference is designated in a formula by the addition of a dollar sign ($). It can precede the column reference, the row reference, or both. See the examples, below.

A2	**The column and the row do not change when copied**
$A2	**The column does not change when copied**
A$2	**The row does not change when copied**

← Used generally more than the other two formats.

When writing a formula, select the cell you want to change and press the **F4** key on your keyboard to switch between relative and absolute cell references. This is an easy way to quickly insert an absolute reference. Let's do the exercise below.

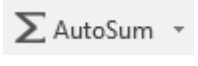
- Select cell H1.
- Click on the % sign in the *Number* group to indicate that you are formatting cell H1 content as percentage.
- Enter number 8 in cell H1.
- You will see 8% in cell H1. Consider this number as a discount you are going to apply to all rows in *Total Cost* column.
- Select cell H2.
- Enter the formula =F2*H1 (by pointing and clicking on those cells). Then hit function key F4 before you hit the Enter button. Your formula would change from =F2*H1 to =F2*H1

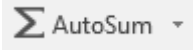


	A	B	C	D	E	F	G	H
1	Category	Item	Quantity	Unit	Price	Total Cost	Brand/Comments	8%
2	Produce	Oranges	1	Bag	3.99	3.99	Halo	=F2*H1
3	Produce	Apples	2	Lb	1.99	3.98		
4	Produce	Bananas	3	Lb	0.49	1.47		

- Select cell H2 again. Use the **Fill Handle** and copy the formula to the rows below. Examine each cell from H3 onward. The first cell reference changes to the relative cell from F2 to F3, F4 and so on relatively. However, the second sell reference H1 stays the same no matter what row you are looking at.

Instead of typing in fixed numbers such as "10" or "5", we will use cell references by pointing and clicking the cell we want to include in our formulas. We will use the *Formulas* worksheet in the same workbook.

1) In Cell F2, enter the formula to find the total cost for row 2. (Hint: Qty*Price =C4*E4).
2) Once the answer in cell F2, copy the formula to all rows below. (Hint: double-click on fill-handle)
3) Select cells F2:F10 and format as "Accounting".
4) Select cell A11 and Type in "Average Price".
5) Select cell E11 and find out the average price of the price column E by using the =AVERAGE under the 

function drop down arrow.
6) Select cell A12 and type in "Grand Total Cost".
7) Select cell F12and find out the Sum by using the 

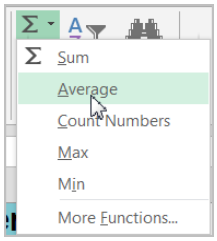
function. **Note:** Be sure to exclude average price Cell F11 in your summation.

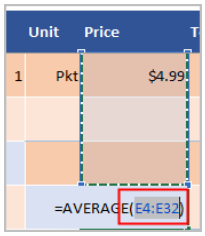
8) Change row heights of row 1 and 12 to “30” by using Format>Row Height in Home>Cells group.
9) Rename the Grocery worksheet as “Jan”.
10) Follow instructor in this step to “Move” or “Copy” sheets into a New Workbook; make another copy of “Jan” worksheet in the new workbook and rename “Jan(2)” as “Feb”.
11) Select both “Jan” and “Feb” worksheet.
12) Select cell A3:F3. Change the Fill color to dark brown. Change the Font color to white.
13) Deselect from having both sheets and select only “Jan” sheet.
14) Select cell A2:F12 and use “*Linked Cell*” Style.
15) Finally, select columns C through E and change the column width to “10” by using the right click menu.

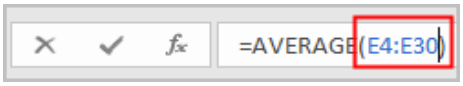
Open ***WeekOne*** worksheet in the same workbook to practice creating arguments.

AVERAGE Function:

- In Cell **E33** we want to calculate the average price per unit. Select Cell **E33.**
- Click on the drop-down arrow next to the **Sum** function in the **Editing Group** under the **Home** tab. Select **Average.**
- The selected function will appear in the cell. If logically placed, the **Average** command will automatically select a cell range for the argument. In our example, cells **E4:E32** were selected automatically. In our case, there is no data in **E31 and E32**. You can manually fix the argument directly in the formula bar area by using the backspace button on your keyboard and change the cell address from **E32** to **E30.** (OR you can use your mouse; click and drag to include the desired cell range into the argument as well.)



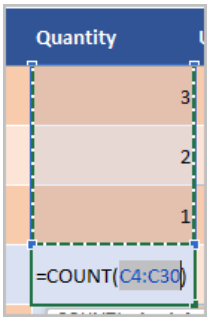




SUM Function: Find out the sum of Total Cost column, **Column F**.

- Click on Cell **F34**.
- Select the **Sum** function from the list.
- Fix the cell range in the formula bar using the backspace to change F33 to F30 since there is no data F31:F33.
- Hit **Enter**. The sum of **Total Cost** in our example is: $180.67.

COUNT Function:



Finds the number of cells within a range of cells that contain values (**numbers**) in them. For example: =COUNT(A10:A20) means count the numbers between cell A10 through A20.

- Select **Cell C32**.
- Since the *column includes numbers*, we will select the **Count** function from the list. We are using the **Count Function** here to count how many items are on the list. We are **NOT ADDING** the items.
- The formula appears =COUNT(C4:C31). Fix the formula to include up to C30 only.
- Hit **Enter.** The count should give you **27** meaning there are 27 items where there is a number in the Quantity column. **Note** the **Count Function** will count any number including **zero**. But it will not count neither blank nor text.

MAXIMUM Function: Find out the most expensive item in column **E (Price Column)** in cell **E35** by using the =MAX(E4:E30). The result should be: $6.99 for Coffee.

MININUM Function: Find out the least expensive item in column **E (Price Column)** in cell **E36** by using the =MIN(E4:E30). The result should be: $.49 for Bananas.

Multiple Argument Example: A function can contain multiple arguments. Each argument has to be separated by the "comma". For example, in **Cell F37**, we want to find out total costs for all "Produce", "Pasta" and "Supplies" selectively. The function =SUM(F4:F8, F20:F21;F29:F30) will add the values of all the cells in the three arguments. The answer should be $40.19.

Now Function: Displays the computer's current date and time. The formula will update the date and time next time the workbook is opened. Select Cell **C2** and type in **=Now()**

Today Function: Displays the computer's current date. The formula will update the date next time the workbook is opened. Select Cell **B2** and type in **=Today()**

LEFT, MID, and RIGHT Formula in Excel

Left returns the beginning characters of a string. Mid returns the middle characters of a string. Right returns the ending characters of a string. Use *Phones* worksheet to practice.

Left(String, NumberOfCharacters)

Mid(String, StartingPosition [, NumberOfCharacters])

Right(String, NumberOfCharacters)

Let's say you want to split the phone numbers into separate 3 columns. Select Phones worksheet and look at the first row how the formulas are entered to get the left, mid, and right characters.

Phone No.	Left	Mid	Right
702-771-7149	702	771	7149

=LEFT(A2,3) gave the first 3 digits from the left in Cell A2.

=MID(A2,5,3)gave the middle 3 digits beginning from 5th position in Cell A2.

=RIGHT(A2,4) gave the last 4 digits from the right in Cell A2.

TRIM Formula in Excel

Removes all spaces from text except for single spaces between words. Use TRIM on text that you have received from another application that may have irregular spacing. It deletes all leading, trailing and in-between spaces except for a single space character between words.

In *Trim* worksheet, select Cell B2 and enter =TRIM(A2). Copy that formula to lower rows by using Fill Handle.

Creating charts

Charts allow you to illustrate your workbook data graphically, which makes it easy to visualize comparisons and trends. 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. They can be found under the **Insert** tab in the **Charts** group. **Recommended Charts** will pick the most suitable chart for your data automatically. However, you can select your own type. Most frequently used charts are:

Column Charts use vertical bars to represent data. They're most frequently used for comparing information.

Line Charts are ideal for showing trends 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.

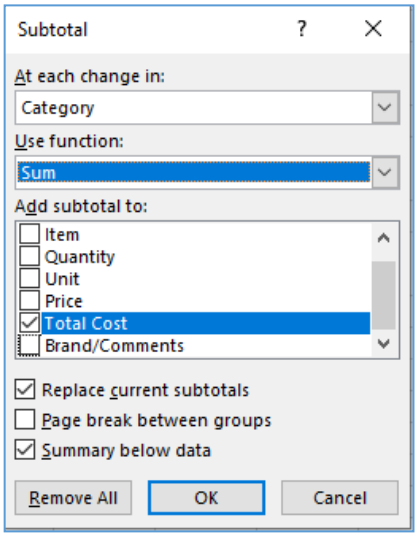
Bar charts work just like Column charts, but they use horizontal bars instead of vertical bars.

Area charts are similar to line charts, except that the areas under the lines are filled in.

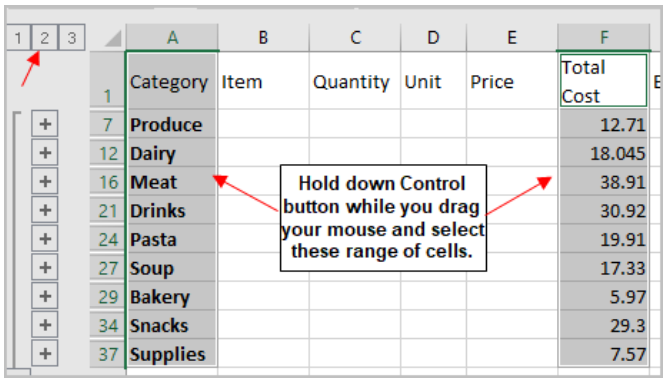
Surface charts allow you to display data across a 3D landscape. They work best with large data sets, allowing you to see a variety of information at the same time. Source: GCFlearnfree.org

---

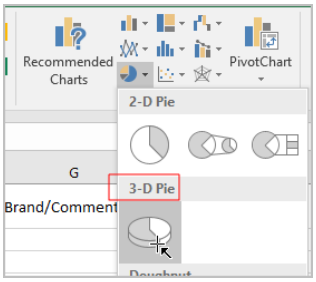
Let's try a Pie chart by using the *Grocery worksheet*. You want to know how much % of the grocery budget is spent on what category. First, you want to find the subtotals of each category.



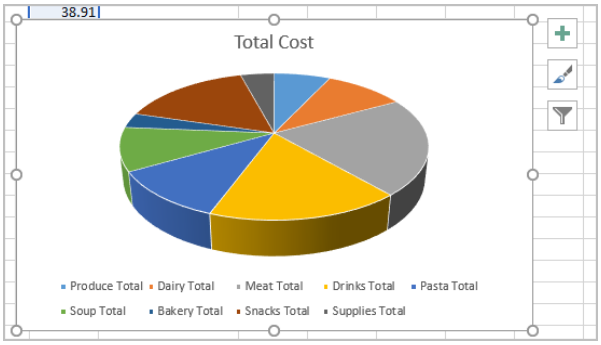
- Click anywhere inside the data.
- Click on Data>Subtotal.
- Select **Sum** for function and check **Total Cost** to subtotal on it.
- Click on **OK**.
- Click on Level 2 on top left corner to hide detailed rows for each category. Your spreadsheet should only have two columns with data in it – Column A for **Category** and Column F for **Total Cost.**
- Hold down the Control button on your keyboard and select Cells A1:A37 and F1:F37 as it appears in the picture shown.



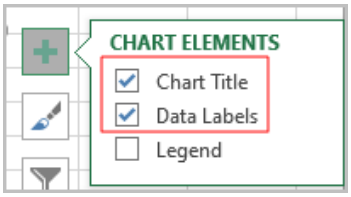
- Click on **Insert Tab** and select the 3-D Pie from the Charts group. You will get a pie chart that is suitable to show the proportions of a whole.

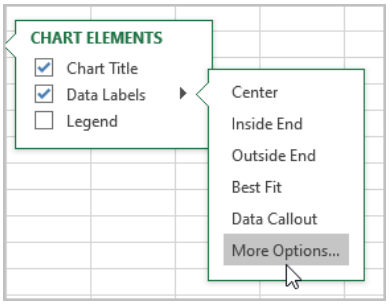


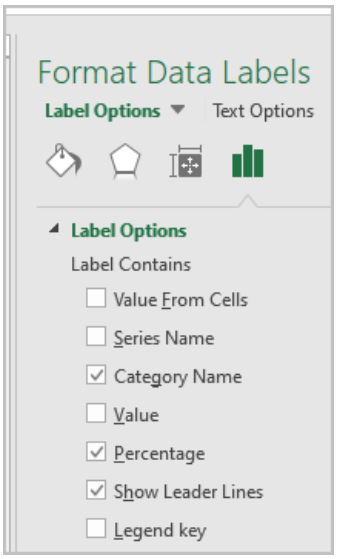
Let's enhance the chart by clicking on the Plus sign next to the chart to format Data Labels. Check Chart Title and Data Labels and uncheck the Legend.



- Click on Data Labels arrow and click on More Options from the list.

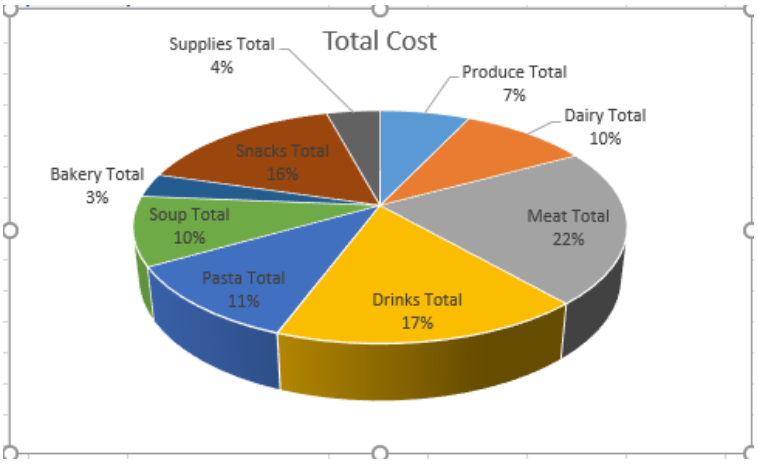






- On the right Format Data Labels pane, check boxes for Category Name, Percentage, and Show Leader Lines.

- Your enhanced Pie Chart now has better labels to indicate how much percentage of your grocery money is spent on each category.



For practice, use the same data (limit to two columns only – Category and Total Cost) and insert a 3D column chart. Play around to place some Data Labels, axis titles, chart titles, etc.

Using keyboard shortcuts to save time (Practice on your own)

There are many shortcuts to use in Excel to save time. A few notable commands are listed below.

Workbook Shortcut Keys	
To create a new workbook	Ctrl + N
To open an existing workbook	Ctrl + O
To save a workbook/spreadsheet	Ctrl + S
To close the current workbook	Ctrl + W
To close Excel	Ctrl + F4
Cell Formatting Shortcut Keys	
To edit a cell	F2
To copy and paste cells	Ctrl + C, Ctrl + V
To italicize and make the font bold	Ctrl + I, Ctrl + B
To move to the next cell	Tab
To move to the previous cell	Shift + Tab
To select all the cells on the right	Ctrl + Shift + Right arrow
To select all the cells on the left	Ctrl + Shift + Left Arrow
To select all the cells above the selected cell	Ctrl + Shift + Up Arrow
To select all the cells below the selected cell	Ctrl + Shift + Down Arrow
To display find and replace	Ctrl + H
Row and Column Formatting Shortcut Keys	
To select the entire row	Shift + Space
To select the entire column	Ctrl + Space
To select the first cell in worksheet	Ctrl + Home
To select the last cell in worksheet	Ctrl + End