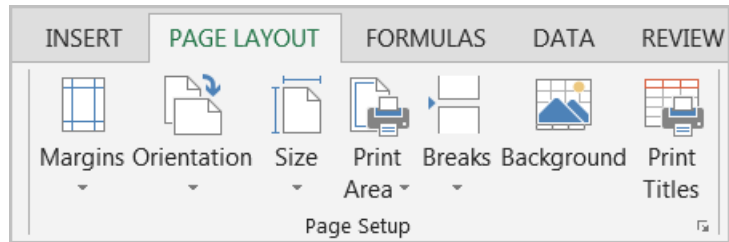


## Setting Up a Workbook:

You can set up the workbooks a certain way before you print out by using the **Page Layout** tab or by using the **Page Layout View** at the bottom right corner. The commands on the tab will let you change page orientation, paper size and margin size. You may also insert page breaks and repeat certain header row(s) to make your workbook easier to read. You can also launch the **Page Setup** dialog box and find more commands for the tab.



**Note:** Make a cell in the first column as your active cell or select an entire row if you wish to place a page break below that row by using the *Breaks* command on the ribbon.

It is easier to use the **Page Layout View** at the bottom right corner to insert the **Headers** and the **Footers** visually.

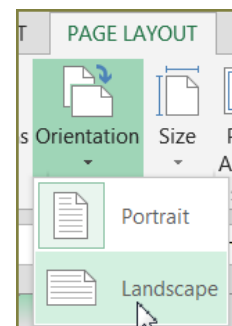


## Setting Page Orientation:

Excel offers two page orientation options: **landscape** and **portrait**. Landscape orients the page horizontally, while Portrait orients the page vertically. Portrait is especially helpful for worksheets with a lot of rows, while Landscape is best for worksheets with a lot of columns.

**Exercise:** Select *January* worksheet from the same *ExcelPart3.xlsx* to practice.

- Change the view to see the worksheet in the **Page Layout View** at the bottom right corner.
- Use the Orientation on the **Page Layout** tab to view in **Landscape**. Change it back to the **Portrait** view and see which looks better for this example.
- Since we have more rows than columns in the worksheet, **Portrait** view is better for our example.



Email Address	First Name	Last Name	Webinar Completed
Jared.Ledbetter@vestinsurance.net	Jared	Ledbetter	x
Beverly.Kelly@vestinsurance.net	Beverly	Kelly	x
Bernadette.Korth@vestinsurance.net	Bernadette	Korth	x
Gary.Smith@vestinsurance.net	Gary	Smith	x
Janele.Terrell@vestinsurance.net	Janele	Terrell	x
Bobby.Price@vestinsurance.net	Bobby	Price	x
Mario.McCauley@vestinsurance.net	Mario	McCauley	x
Wille.Martinez@vestinsurance.net	Wille	Martinez	x
Michael.Brewer@vestinsurance.net	Michael	Brewer	x
Ida.Nye@vestinsurance.net	Ida	Nye	x
Erna.Mendoza@vestinsurance.net	Erna	Mendoza	x
Vergie.Garrison@vestinsurance.net	Vergie	Garrison	x
Sandra.Moore@vestinsurance.net	Sandra	Moore	x
June.Johnson@vestinsurance.net	June	Johnson	x
Melvin.Sadler@vestinsurance.net	Melvin	Sadler	x
Kenneth.Fisher@vestinsurance.net	Kenneth	Fisher	x
Evan.Turman@vestinsurance.net	Evan	Turman	x
Andrea.Choi@vestinsurance.net	Andrea	Choi	x
Philip.Henricks@vestinsurance.net	Philip	Henricks	x
Tanya.Smith@vestinsurance.net	Tanya	Smith	x

Portrait View

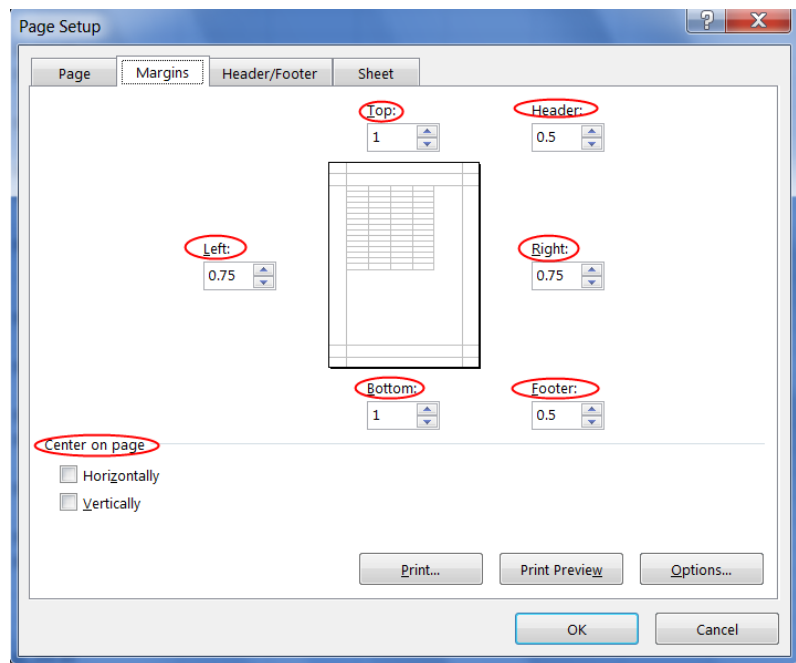
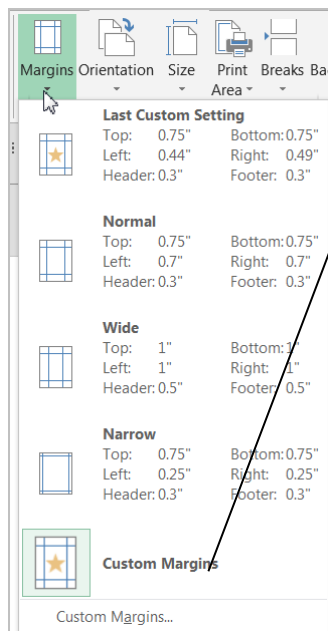
Email Address	First Name	Last Name	Webinar Completed
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Beverly.Kelly@vestinsurance.net	Beverly	Kelly	x
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Gary.Smith@vestinsurance.net	Gary	Smith	x
Janele.Terrell@vestinsurance.net	Janele	Terrell	x
Bobby.Price@vestinsurance.net	Bobby	Price	x
Mario.McCauley@vestinsurance.net	Mario	McCauley	x
Wille.Martinez@vestinsurance.net	Wille	Martinez	x
Michael.Brewer@vestinsurance.net	Michael	Brewer	x
Ida.Nye@vestinsurance.net	Ida	Nye	x
Erna.Mendoza@vestinsurance.net	Erna	Mendoza	x
Vergie.Garrison@vestinsurance.net	Vergie	Garrison	x
Sandra.Moore@vestinsurance.net	Sandra	Moore	x
June.Johnson@vestinsurance.net	June	Johnson	x
Melvin.Sadler@vestinsurance.net	Melvin	Sadler	x
Kenneth.Fisher@vestinsurance.net	Kenneth	Fisher	x
Evan.Turman@vestinsurance.net	Evan	Turman	x
Andrea.Choi@vestinsurance.net	Andrea	Choi	x
Gary.Miller@vestinsurance.net	Gary	Miller	x

Landscape View

### Setting Page Margins:

A margin is the distance from the edge of the page to the content on your page. By default, every workbook's margins are set to Normal, which is a one-inch space between the content and each edge of the page. Sometimes you may need to adjust the margins to make your data fit more comfortably on the page. Excel includes a variety of predefined margin sizes.

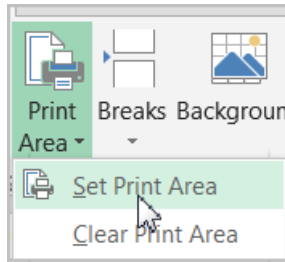
**Exercise:** Use the same *January* worksheet to practice.



- Click on the **Page Layout** view button on the bottom right corner of the screen. Then click on the **Page Layout** tab on the Ribbon and select the **Margins** command.
- Select the desired margin size from the drop-down menu. Select the **Wide** margin for our example to see how it looks to have a wider margin for the workbook.

- You may also select the **Custom Margins** command. **Page Setup** dialog box will be activated. Change the numbers of the **Left, Right, Top,** and **Bottom** to customize your margin width.
- You may also change the numbers under **Header** and **Footer** boxes to specify how much space do you want to keep between the edge of the paper and either a header or a footer.
- You can also specify how much you want to see your data centered on your worksheet printout. This is especially useful if you do not have much data.

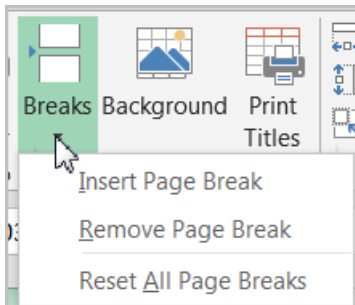
## Setting Print Area:



Use the same workbook to practice this function. This command is especially useful if you want to print the subset of your huge data.

- Keep the worksheet in the **Layout** view.
- Select Cells A1:D8 to set as the Print Area.
- Click on the arrow on **Print Area** command and select **Set Print Area**. No matter how large your data is, you are just setting to print that selection only.
- Click on **Print Area** one more time and select **Clear Print Area** to clear the chosen print area.

## Inserting or Removing Page Breaks



You can add a break where you want the next page to begin in the printed copy. *Your page break will be inserted above and to the left of your selection.*

- Keep the worksheet in the **normal** view. We want to start a new page beginning row 16.
- Click on Cell A16 or select the entire row 16. (It is important you select the entire row or click the cell in the first column of the row to insert a page break.)
- Click on **Insert Page Break**. Click it away from row 16 and you should see the page break line above row 16.
- **Remove Page Break** – you need to select a cell right below the page break line to use this. In this example, entire row 16 or any cells on row 16.
- **Reset All Page Breaks** – your cell selection can be anywhere on your worksheet. By clicking this will reset all page breaks you put on your worksheet regardless of your selection.

- You can also view your worksheet in the **Page Break**

**Preview**



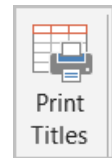
by clicking on the last button at the bottom right corner. You shall see the page with *solid* dark blue lines as the page breaks. In this view, you can also move the breaks by pointing onto the lines and drag the mouse to the new location – up/down or left/right. Default page breaks lines are represented by the *dotted* dark blue lines and the manually created one has *solid* dark blue lines just like the boundary lines.

	A	B	C	D
1	Webinar Training Log: January			
2	Email Address	First Name	Last Name	Webinar Completed:
3	JaredBLedbetter@vestainsurance.net	Jared	Ledbetter	x
4	BeverlyJKelly@vestainsurance.net	Beverly	Kelly	x
5	BernadetteRKorth@vestainsurance.net	Bernadette	Korth	x
6	GaryVSmith@vestainsurance.net	Gary	Smith	x
7	JanelleCTerrell@vestainsurance.net	Janelle	Terrell	x
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11	MichaelLBrewer@vestainsurance.net	Michael	Brewer	x
12	IdaCNye@vestainsurance.net	Ida	Nye	x
13	ErnaBMendoza@vestainsurance.net	Erna	Mendoza	x
14	VergieBGarrison@vestainsurance.net	Vergie	Garrison	x
15	SandraMoore@vestainsurance.net	Sandra	Moore	x
16	JuneDJohnson@vestainsurance.net	June	Johnson	x
17	MelvinNSadler@vestainsurance.net	Melvin	Sadler	x
18	KennethVFisher@vestainsurance.net	Kenneth	Fisher	x
19	EvanRTurman@vestainsurance.net	Evan	Turman	x

**Page Break Preview**

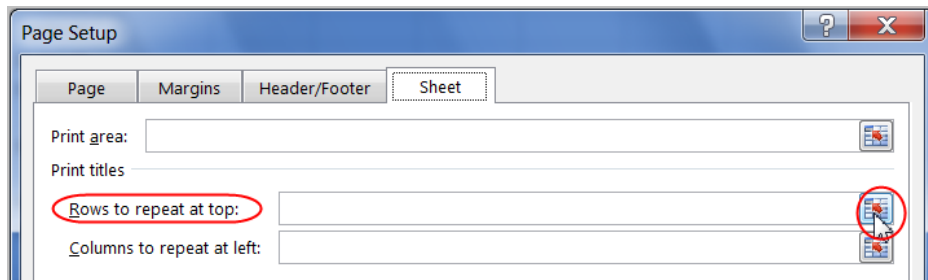
### Printing Titles or Repeating Rows at the Top:

If your worksheet uses title headings, it's important to include these headings on each page of your printed worksheet. It would be difficult to read a printed workbook if the title headings appeared only on the first page. The **Print Titles** command allows you to select specific rows and columns to appear on each page.

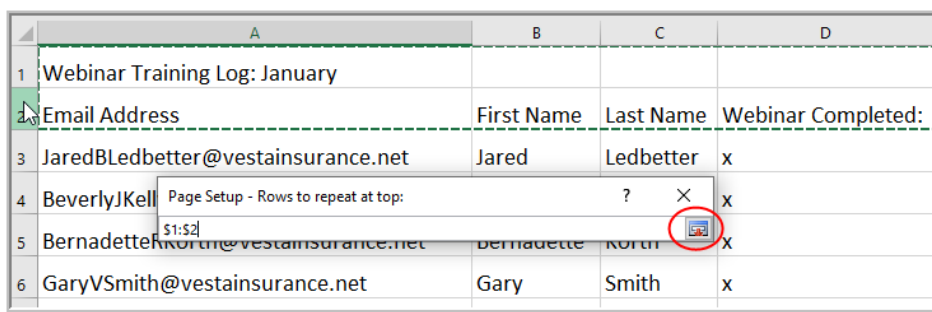


**Exercise:** Use the same worksheet – *January* and go back to normal view from the bottom right.

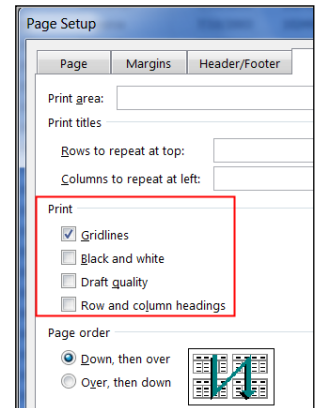
- Click on **Print Titles** command from the **Page Setup** tab. Page Setup dialog box will come up.
- Click on the red arrow for the box says – *Rows to repeat at the top* as shown below. (**Note:** you can also use the function *Columns to repeat at left* if you need the print out with repeated column(s) on every page.)



- The **Page Setup** dialog box will be resized to a smaller size as shown in the picture below.



- To repeat the first row in our example where column headings are, click on Row Number 1 and 2 as if you are selecting the entire Rows 1 and 2. The row selection will show as dotted moving lines. And the selection of the Row 1 will appear in the box as \$1:\$2 to indicate that we are selecting to repeat Rows 1 and 2 on the top of every printed page.
- Click on the red arrow and the **Page Setup** box should open again.
- Click on **Print Preview** button to see that the header row is repeated on every page of the print out.
- **Gridlines:** Cell gridlines you see on screen will not print out unless you check out the **Gridlines** box in **Page Setup** box. This can be used alternative to setting **Borders** in cell.
- **Row and column headings:** If you desire to include the column names such as A, B, C and the row numbers 1, 2, 3 in your printout, check this box.



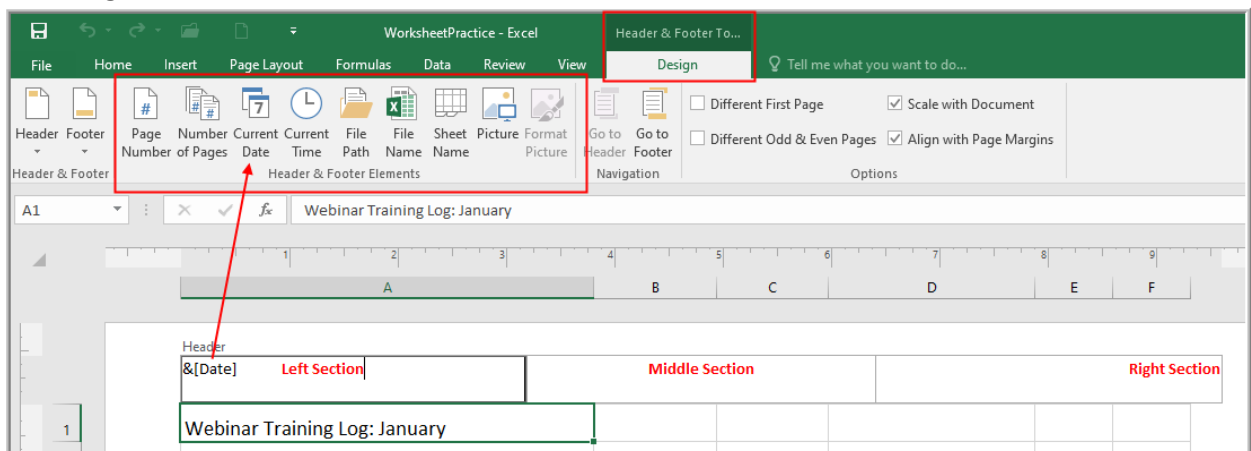
### Inserting Headers and Footers:

The **header** is a section of the workbook that appears in the **top margin**, while the **footer** appears in the **bottom margin**. Headers and footers generally contain information such as page number, date, and workbook name that you want to repeat on every page. It is easier to insert headers and

footers while in the **Page Layout** view .

**Exercise:** Use the same worksheet *January* above.

- Click on the **Page Layout** view on bottom right corner.
- Click in one of the three sections (left, middle, or right) appear in the header section of our worksheet. You should see **Header & Footer Tools** tab will appear on the **Ribbon**. Click on the **Design** tab.

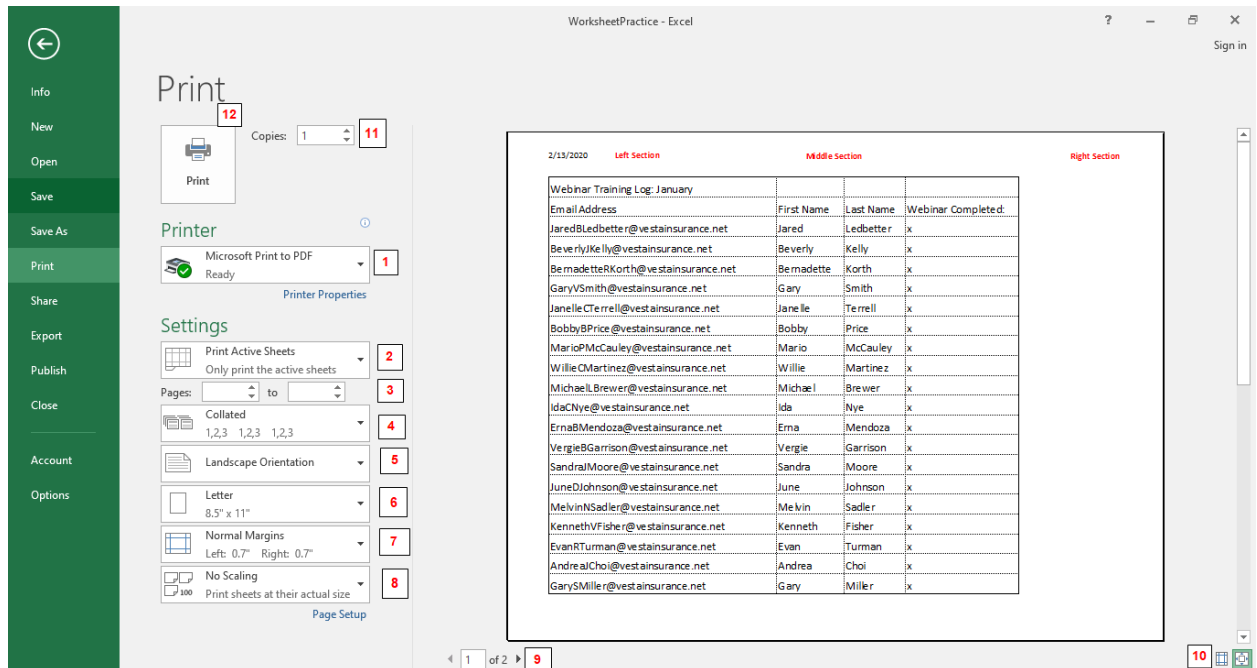


- From here, you can access commands that will automatically include page numbers, dates, and workbook names in any of the three sections.

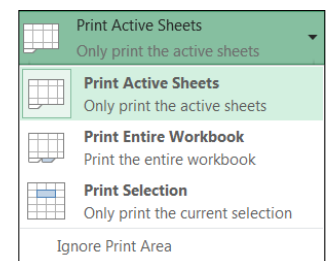
- Click on the **Current Date** command in the left section.
- Click in the middle section and type in your name.
- Click in the right section and then click on the **Page Number** command on the ribbon.
- You can click in the bottom part of the page to switch to the **Footer Section** and insert these commands or enter anything.

## Printing

- To access the print pane, click on **File** menu on top. Click on **print** command.
- Print Preview will be shown as below.

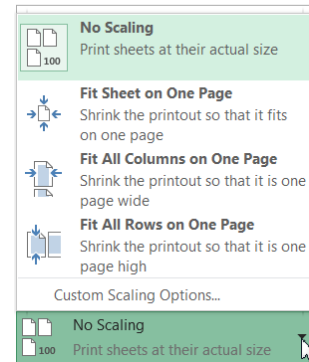


1. **Printer:** If your computer is connected to multiple printers, click on the drop-down and select the printer.
2. **Print Active Sheets:** If your workbook has more than one worksheets and you want to print multiple worksheets, activate the worksheets first before you get to this Print Preview pane and select **Print Active Sheets**. Or select **Print Entire Workbook** OR choose **Print Selection** if you just highlighted a block of data to print.
3. **Pages:** You can specify particular pages to print by selecting page numbers in these two boxes.
4. **Collated:** If you are printing multiple copies, you can choose whether you want the copies **collated** or **uncollated**.
5. **Portrait Orientation:** Choose **Portrait** or **Landscape**.



- Letter:** If your printer uses different paper sizes, you can select your **paper size** here.
- Custom Margins:** Here you can adjust the **page margins** to fit the data better.
- No Scaling: Scaling** helps you to make small adjustments from the Print pane to fit your workbook content neatly onto a printed page. **Note:** Worksheets will become more difficult to read as they are scaled down, so you may not want to use this option when printing a worksheet with a lot of information.
- Flipping through pages:** Use right and left arrows to **print preview** your workbook with multiple pages to print.

### Settings



- Show Margins:** Use this to view and adjust margins visually in print preview pane. The page margins will appear in the Preview pane. (See picture on right) Hover the mouse over one of the **margin markers** until the cursor becomes a double arrow. In our example, we'll extend the left margin to place the spreadsheet more towards the center of the page.

Webinar Training Log: January			
Email Address	First Name	Last Name	Webinar Completed:
JaredBLedbetter@vestainsurance.net	Jared	Ledbetter	x
BeverlyKelly@vestainsurance.net	Beverly	Kelly	x
Be madetteRKorth@vestainsurance.net	Be madette	Korth	x
GaryVSmith@vestainsurance.net	Gary	Smith	x
JanelleCTerrell@vestainsurance.net	Janelle	Terrell	x
BobbyBPrice@vestainsurance.net	Bobby	Price	x
MarioPMcCauley@vestainsurance.net	Mario	McCauley	x
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VergieBGarrison@vestainsurance.net	Vergie	Garrison	x
SandraMoore@vestainsurance.net	Sandra	Moore	x
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KennethVFisher@vestainsurance.net	Kenneth	Fisher	x
EvanRTurman@vestainsurance.net	Evan	Turman	x
AndreaiChoi@vestainsurance.net	Andrea	Choi	x
GarySMiller@vestainsurance.net	Gary	Miller	x

- Copies:** Verify the number of copies you wish to print here.
- Print:** If you're satisfied with all the adjustments you have made, click on Print to print your worksheet(s) or workbook.

## Introduction to Formulas:

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

## Understanding Cell Reference:

As shown in the table above, you can simply create formulas manually by typing in fixed numbers to get calculation. However, most of the time, you will use cell addresses to create a formula. This is known as making a **cell reference**. **Cell reference** identifies individual cells, rows, and/or columns in a worksheet. They tell Excel where to look for values to use in a formula. Using cell references will ensure that your formulas are always accurate because you can change the value of **referenced cells** without having to rewrite the formula.

To practice, **open up add a new worksheet by clicking on the + sign in sheet tab area** in same workbook **ExcelPart3.xlsx**. Enter 10 in Cell A1 and 5 in Cell A2. Instead of typing in =10+5 to get the result in Cell A3, you can use Cell addresses to get the same result. See the formula entered into Cell A3 (Figure 1) displays the answer to the equation =A1+A2 in Figure 2. If any value in those referenced cells (A1 or A2) changes – such as changing the value in Cell A1 to 20, the result cell A3 will automatically recalculates for you as shown in Figure 3.

	A	B	C
1	10		
2	5		
3	=A1+A2		
4			
5			

The formula in Cell A3 refers to the value in Cell A1 plus the value in Cell A2

Figure 1

	A	B	C
1	10		
2	5		
3	15		
4			

The fomula calculates and displays the answer to the equation A1 plus A2

Figure 2

	A	B	C
1	20		
2	5		
3	25		
4			

The formula in Cell A3 automatically recalculates when value in referenced Cell A1 changes

Figure 3



By combining a mathematical operator with cell references, you can create a variety of simple formulas in Excel. Formulas can also include a combination of cell references and numbers, as in the examples below:

Cell Ref	Meaning	Practice
=F2-1	Subtract 1 from Cell F2	In cell C1, enter =A3-1
=G2/F2	Divide Cell G2 by Cell F2	In cell C2, enter =A3/A2
=F2*1.5	Multiply Cell F2 by 1.5	In cell C3, enter =A3*1.5

Basic Mathematical Functions		
<b>AVERAGE</b>	Finds the average within a range of cells.	=AVERAGE(A10:A20)
<b>MAXIMUM</b>	Finds the <b>largest</b> number within a range of cells.	=MAX(D3:D15)
<b>MINIMUM</b>	Finds the <b>smallest</b> number within a range of cells.	=MIN(D3:D15)
<b>SUM</b>	Finds the total or sum within a range of cells.	=SUM(A10:A20)

### To Create a Formula Using the Point-and-Click Method:

Rather than typing cell addresses manually, you can **point and click** on the cells you wish to include in your formula. This method can save a lot of time and effort when creating formulas.

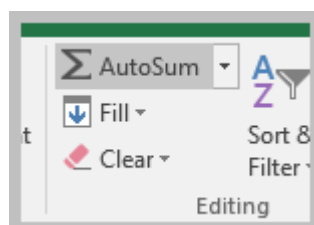
**Exercise:** Use *Monthly Budget* worksheet to practice some formulas in same workbook.

1. Enter a formula to add all income lines. Three ways to add income lines:
  - o Select Cell B13.
  - o Type in the equal sign “=”.
  - o Point and click individual cells to be included in the formula as shown. Type in “+” sign after each cell is selected except in the last cell.

Monthly Budget Template	
Monthly income for the month of:	
Item	Amount
Salary	2500
Spouse's salary	2400
Dividends	
Interest	
Other	200
<b>Total</b>	=B8+B9+B10+B11+B12

OR

- o Select Cell B13.
- o Click on AutoSum function in Editing group.
- o Fix the formula to include all cells to be included in the formula by either typing or using your mouse function.



Monthly income for the month of:	
Item	Amount
Salary	2500
Spouse's salary	2400
Dividends	
Interest	
Other	200
<b>Total</b>	=SUM(B8:B12)

OR

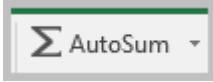
- Select Cell B13.
- Type in the equal sign “=”.
- Type in “ SUM(“ and point and click to select all cells to be included in the formula as shown. Type in “,” after each cell reference and “)” at the end of the formula.

Item	Amount
Salary	2500
Spouse's salary	2400
Dividends	
Interest	
Other	200
<b>Total</b>	<b>=sum(B8,B9,B10,B11,B12)</b>

As you can see, there are more than one way to address cell references in the formula. The followings are examples on cell references.

**Other Examples on Cell References:**

Cell references	Refer to values in
A10	the cell in column A and row 10
A10,A20	cell A10 and cell A20 <i>as in =SUM(B8,B9,B10,B11,B12)</i>
A10:A20	the range of cells in column A and rows 10 through 20 <i>as in =SUM(B8:B12)</i>
B15:E15	the range of cells in row 15 and columns B through E
A10:E20	the range of cells in columns A through E and rows 10 through 20

2. Select cell B37. Use the AutoSum function  to total all expenses in that column (Cell B19 through B36).

**To reference cells or link data in same or across worksheets**

Excel allows you to refer to any cell on any worksheet, which can be especially helpful if you want to reference a specific value from one cell to another in the same worksheet or in another workbook. If a value changes in the source cell, the change in reflect in the result cell automatically.

3. Select cell B43. In this cell, we want to have our total income figure from cell B13 appear. So we will link cell B43 to cell B13. In other words, we will reference this cell B43 to cell B13 in the same worksheet.
  - Linking is like entering a formula. It begins with an equal sign. And the formula begins where you want to see the result. In this case, we want to see the total income figure in cell B43.
  - Select cell B43.
  - Type in equal “=” sign.
  - Then click the reference cell B13.
  - Press Enter on your keyboard. The value of the referenced cell will appear in cell B43.

39		
40	<b>Income vs. Expenses</b>	
41		
42	<b>Item</b>	<b>Amount</b>
43	Monthly income	=
44	Monthly expenses	
45	<b>Difference</b>	

<b>Item</b>	<b>Amount</b>
Monthly income	5100
Monthly expenses	
<b>Difference</b>	

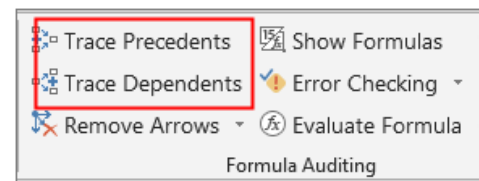
5	Monthly income for the month of:	
6		
7	<b>Item</b>	<b>Amount</b>
8	Salary	2500
9	Spouse's salary	2400
0	Dividends	
1	Interest	
2	Other	200
3	<b>Total</b>	<b>5100</b>
4		

42	<b>Item</b>	<b>Amount</b>
43	Monthly income	5200
44	Monthly expenses	4145
45	<b>Difference</b>	<b>=B43-B44</b>
46		

- Apply the same method and link Cell B44 to cell B37.
- Test to change the Salary figure in cell B8 to 2600. You will see the immediate change in related cells B13 and referenced cell B43.
- Enter the subtraction formula in cell B45 to find out Difference (Income-Expenses).

### Trace Precedents and Dependents:

Sometimes, checking **formulas** for accuracy or finding the source of an error can be difficult when the formula uses precedent or dependent cells. For practice, let's use the same workbook.



- **Trace Precedents** shows arrows that indicate which cells affect the value of the currently selected cell. In our example, if you want to check which are the values that affect the value in cell "B45", this is where "Trace Precedents" help. Select B45. Go to the **Formula** tab and select **Trace Precedents**. You will see the blue line pointing out the cells (Cell B43 and B44) that can affect the value in cell B45. Click **Trace Precedents** again since it runs the precedents in recursion, and blue line extends to cell B37 (Total Expense) and B13 (Total Income). Clicking on **Trace Precedents** one more time will extend to include all those rows in the expense column and all rows in income column which creates values in Cell B13 and B37. So if any of the value in income and expense cells changes, cells B13, B37 and ultimately B45 will be affected.

40	<b>Income vs. Expenses</b>	
41		
42	<b>Item</b>	<b>Amount</b>
43	Monthly income	5200
44	Monthly expenses	4145
45	<b>Difference</b>	<b>1055</b>

To remove the arrows, use the "Remove Arrows" button from "Formulas" toolbar.

- **Trace Dependents** does exactly the opposite. This option shows which are the cells affected by values from this cell. In our example let's take a look at cell "B8". Click on **Trace Dependents**. You will see cell B13 (Total income) depends on it. Click **Trace Dependents** again since it runs the dependency in recursion, and another arrow pointing to cell B43 indicates the value in cell B43 is also depending on the value in cell B13. Clicking on **Trace Dependents** one more time will show that value in cell B45 is depending on cell B43. So if value in cell B8 changes, values in cells B43 and B45 will be affected.

To remove the arrows, use the "Remove Arrows" button from "Formulas" toolbar.

## 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.)

	A	B	C	D	E	F
1	Category	Item	Quantity	Unit	Price	Total Cost
2	Produce	Oranges	1	Bag	3.99	=C2*E2
3	Produce	Apples	2	Lb	1.99	

- 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.

	C	D	E	F
	Quantity	Unit	Price	Total Cost
	1	Bag	3.99	=C2*E2*1.1
	2	Lb	1.99	

Clipboard      Font

COUNTIF      X      ✓      fx      =C2\*E2\*1.1

Enter

- 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.**

	C	D	E	F
	Quantity	Unit	Price	Total Cost
	1	Bag	3.99	4.389

### 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.

<b>\$A\$2</b>	<b>The column and the row do not change when copied</b>
<b>\$A2</b>	<b>The column does not change when copied</b>
<b>A\$2</b>	<b>The row does not change when copied</b>

← 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\*\$H\$1

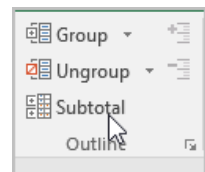
	A	B	C	D	E	F	G	H
1	Category	Item	Quantity	Unit	Price	Total Cost	Brand/Comments	8%
2	Produce	Oranges	1	Bag	3.99	3.99	Halo	=F2*\$H\$1
3	Produce	Apples	2	Lb	1.99	3.98		
4	Produce	Bananas	3	Lb	0.49	1.47		

- 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 cell reference \$H\$1 stays the same no matter what row you are looking at.

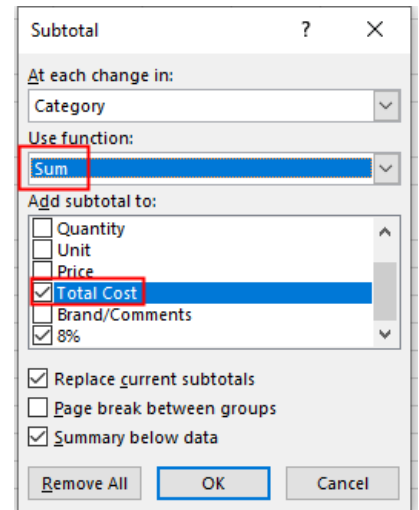
## Subtotal Data

When you have a list of data in a column, just like you have in *Grocery* worksheet, you can automatically calculate subtotals and grand totals by using the **Subtotal** command in the **Outline** group on the **Data** tab. You may want to find out the subtotal for Produce, Meat, Dairy, etc. *Keep the data you want to subtotal in the furthest left column – in this example “Category” as we want to find out the subtotals on each category.* You can find **Sum** or **Average** or more in the SUBTOTAL. Let's practice by using the *Grocery* worksheet.

- Click anywhere on the data first.
- Click on **Data>Subtotal** command in the **Outline** group.



- **Subtotal** window will pop up. In here you can select Sum, Average, etc. under the Use Function. We will select Sum as we want to find out total on each category.
- Select “Total Cost” and “8%” columns to subtotal figures in those two columns. (**Note:** you want to select only those boxes where adding, counting, finding averages provide meaningful data. In here checking the “Brand/Comments” column will not provide any meaningful data. In other words, select the data that is calculable.)
- Click on OK button.
- Once you created the Subtotals, you will see the outline symbols at the upper left corner of the worksheet.



	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	0.3192
3	Produce	Apples	2	Lb	1.99	3.98		0.3184
4	Produce	Bananas	3	Lb	0.49	1.47		0.1176
5	Produce	Lettuce	1	Bunch	1.29	1.29		0.1032
6	Produce	Tomatoes	2	Lb	0.99	1.98		0.1584
7	Produce					12.71		1.0168

- The highest number Level 3 gives you the most detailed with Subtotals for each category with the **Sum** figures for selected boxes – Total Cost and 8% columns.
- Clicking on the Level 2 will only provide Subtotals for each category hiding the details on each row.
- Clicking on the Level 1 will only provide the Grand Totals for the entire sheet.

(To remove subtotals, click the Subtotals command again and click the “Remove All” button in the Subtotals box.)

	A	B	C	D	E	F	G	H
1	Category	Item	Quantity	Unit	Price	Total Cost	Brand/Comments	8%
7	Produce					12.71		1.0168
12	Dairy Total					18.045		1.4436
16	Meat Total					38.91		3.1128
21	Drinks					30.92		2.4736
24	Pasta Total					19.91		1.5928
27	Soup Total					17.33		1.3864
29	Bakery					5.97		0.4776
34	Snacks					29.3		2.344
37	Supplies					7.57		0.6056
48	Grand					180.665		14.4532