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Using Functions

Formulas Tab

The Formulas tab in Excel 2016, shown in Figure 1, provides access to a library of formulas and functions. On this tab, you can use commands for quickly inserting functions, inserting totals, and displaying a visual map of cells that are dependent on a formula.

Figure 1: The Formulas Tab in Excel 2016.

In this lecture, you learn how to use a variety of simple functions to perform calculations in a worksheet.

SUMMARIZING DATA WITH FUNCTIONS

Functions provide an easy way to perform mathematical work on a range of cells, quickly and conveniently. This section shows you how to use some of the basic functions in Excel: SUM, AVERAGE, MIN, and MAX.

Using the SUM Function

Adding a range of cells is one of the most common calculations performed on worksheet data. The ==SUM== function totals all of the cells in a range, easily and accurately. **AutoSum** makes that task even easier by calculating (by default) the total from the adjacent cell up to the first non-numeric cell, using the SUM function in its formula. SUM is usually the first function most people learn how to use in Excel.

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Use the SUM Function

LAUNCH Excel if it is not already running.

1. OPEN the data file.
2. In cell B7, type =SUM (B3:B6) and press Enter.

Excel will be summing the values of cells from B3 to B6 and give the result of summing.

** Remember that all formulas must start with an equal sign (=). A function is simply a pre-defined formula, so you must use the equal sign.

3. Click in cell C7. Click the Formulas tab and then click the top part of the AutoSum button. The SUM function appears with arguments filled in, but only C6 is included. See Figure 2.

C7			×	✓	f_x	=SUM(C3:C6)			
	A		B	C	D	E	F	
1	**2017 Housing Expenses**							
2	**Expense Category**		**Jan**	**Feb**	**Mar**	**Apr**	**May**	
3	Rent		1200	1200	1200	1200	1200	
4	Renter's Insurance		40	40	40	40	40	
5	Furnishings		500					
6	Miscellaneous		400	100	200		100	
7	*Nonutility Subtotals*		2140	=SUM(C3:C6)				
8	Utilities			SUM(**number1**, [number2], ...)				
9	Electricity		180	180	180	150	150	
10	Gas		120	120	110	90	80	
11	Water		35	35	35	35	35	

Figure 2: Using the Sum function.

The alternative to the SUM function is to create an addition formula using cell references for every cell value to be added, such as the following:= B7+ C 7+D 7+E 7+F 7+ G 7+H7+I7+J7+K 7+L7+M7The easier way to achieve the same result is to

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use the **SUM** function or **AutoSum**. AutoSum is a built-in feature of Excel that recognizes adjacent cells in rows and columns as the logical selection to perform the AutoSum.

Using the AVERAGE Function

The **AVERAGE** function adds a range of cells and then divides by the number of cell entries, determining the mean value of all values in the range.

To apply this function, type in any cell the following formula:

=AVERAGE(Data)

Example:

=AVERAGE(B3:B7)

Figure 3: Using Average Function.

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Using the MIN Function

The **MIN** function allows you to determine the minimum value in a range of cells. Instead of entering the formula manually, you'll use the Function Library group on the Formulas tab to build the formula.

=Min(Data)

Example:

=Min (M3:M10)

	Expense Category	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total			
3	Rent	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	14400			
4	Renter's Insurance	40	40	40	40	40	40	40	40	40	40	40	40	480			
5	Furnishings	500												500	COUNT	COUNTA	COUNTBLANK
6	Miscellaneous	400	100	200		100	100	300	200		100		100	1600	9	10	3
7	Nonutility Subtotals	2140	1340	1440	1240	1340	1340	1540	1440	1240	1340	1240	1340	16980			
8	Utilities														AVERAGE	MIN	
9	Electricity	180	180	180	150	150	180	220	230	160	150	160	170	2110	175.8333	=MIN(B9:M9)	
10	Gas	120	120	110	90	80	70	70	70	80	90	100	120	1R x 12C	20	93.33333	MIN(number1, [number2], ...)
11	Water	35	35	35	35	35	35	35	35	35	35	35	35	420			

Figure 4: Using Min Function.

Using the MAX Function

The **MAX** function returns the largest value in a set of values. The MAX function works the same way as MIN, except MAX determines the maximum value in a range of cells. To use MAX in a formula, let's enter the function manually.

To apply this function, type in any cell the following formula:

=MAX(Data)

Example:

=MAX (C1:C15)

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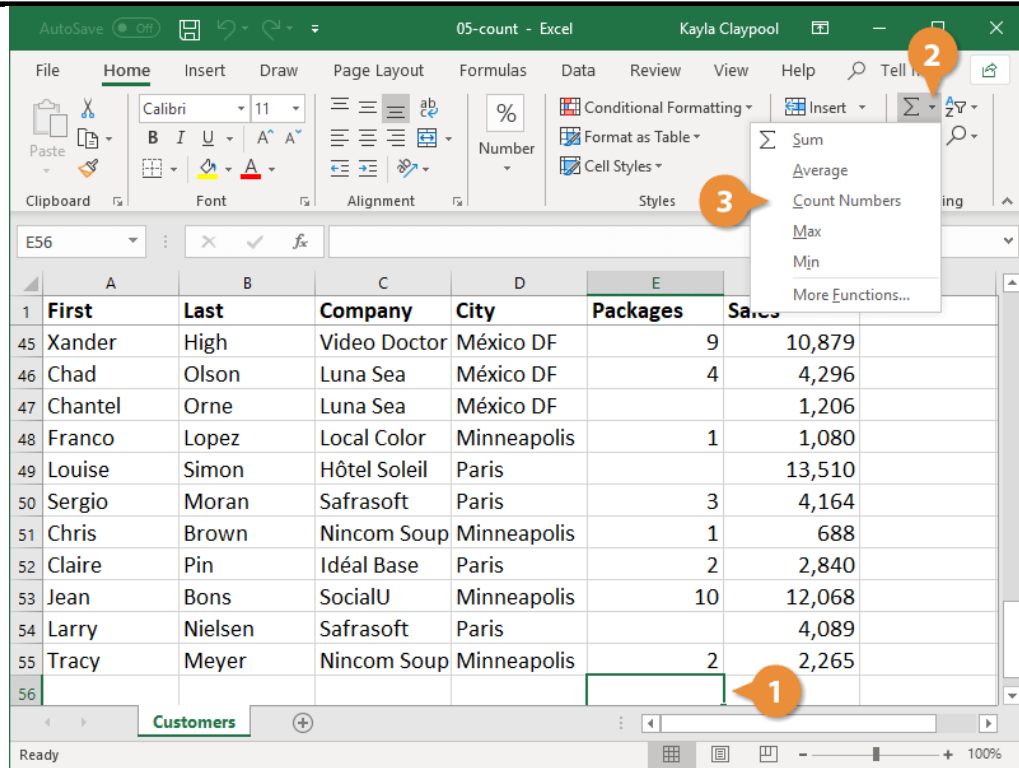| Total			
14400			
480			
500	COUNT	COUNTA	COUNTBLANK
1600	9	10	3
16980			
	AVERAGE	MIN	MAX
2110	175.8333	150	230
1120	93.33333	70	120
420			
600			
600			
780			
1620			

MAX function results

Figure 5: Using Max Function.

COUNT Function in Excel

- **COUNT:** Counts cells that contain numbers; blank cells and cells with text aren't counted. Syntax: = COUNT(A2:A10).
- **COUNTA:** Counts cells that contain any kind of data, including numbers and text. Syntax: = COUNTA(A2:A10).
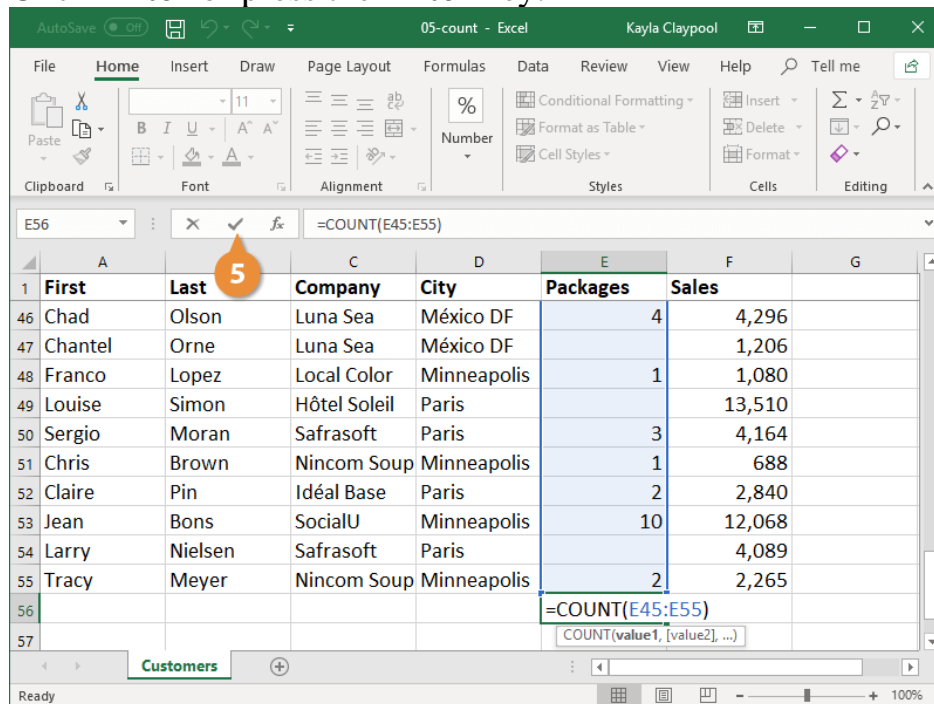- **COUNTBLANK:** Counts blank or empty cells. Syntax: = COUNTBLANK(A2:A10).

The COUNT function counts cells that contain numbers; blank cells and cells with text aren't included.

1. Click in the cell where you want to add the formula.

2. Click the **AutoSum** button list arrow.

3. Select **Count Numbers**.

4. If necessary, select the desired cell range.

5. Click **Enter** or press the **Enter** key.

Excel displays the number of cells that contain numbers in the range.

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SQRT Function

Step 1: Click on the cell where you want to calculate the value

Step 2: Type **"=SQRT"** -> click the formula name in the formula prompt -> select the cell which contains the number -> press **"Enter"** key

For example: 4 is the value in cell A5. To calculate the square root of 4, you will use **"=SQRT(A5)"** as shown in the image below.

	A	B	C
1	Value	Square Root	
2	1	1.0	
3	2	1.4	
4	3	1.7	
5	4	=SQRT(A5)	
6	5	2.2	
7	6	2.4	
8	7	2.6	
9	8	2.8	
10	9	3.0	
11	10	3.2	
12	11	3.3	
13	12	3.5	
14	13	3.6	
15	14	3.7	

Image displaying the SQRT function in Excel
Note: If the numeric value input is less than zero, the formula returns #NUM! error value.