Count how often a value occurs

Chapter 5

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COUNTIF function

Count how often a single value occurs by using the COUNTIF function

Use the **COUNTIF** function to count how many times a particular value appears in a range of cells.

	A	B	C
1	Salesperson	Invoice	
2	Buchanan	15000	
3	Buchanan	9000	
4	Suyama	8000	
5	Suyama	20000	
6	Buchanan	5000	
7	Dodsworth	22500	
8	When formula is	Description	Output
9	=COUNTIF(A2:A8,"Buchanan")	Number of entries for Buchanan	3
10	=COUNTIF(A2:A8,A4)	Number of entries in A4 (Suyama)	2
11	=COUNTIF(B2:B7,"< 20000")	Number of invoice values less than 20,000	4
12	=COUNTIF(B2:B7,">="&B5)	Number of invoice values greater than or equal to 20,000	2
13			

Count based on multiple criteria by using the COUNTIFS function

The **COUNTIFS** function is similar to the **COUNTIF** function with one important exception: COUNTIFS lets you apply criteria to cells across multiple ranges and counts the number of times all criteria are met. You can use up to 127 range/criteria pairs with COUNTIFS.

The syntax for COUNTIFS is:

COUNTIFS(criteria_range1, criteria1, [criteria_range2, criteria2],...)

See the following example:

	A	B	C	D
1	Employee ID	Department	Region No.	
2	20552	Sales	2	
3	21268	Finance	2	
4	23949	Operations	1	
5	24522	Operations	4	
6	28010	IT	3	
7	29546	Sales	4	
8	31634	IT	3	
9	32131	Human Resources	1	
10	35106	Finance	4	
11	40499	IT	2	
12	42051	Human Resources	1	
13	43068	Finance	3	
14	45382	IT	3	
15	47971	Finance	2	
16				
17	Formula		Output	
18	=COUNTIFS(C2:C15,"2",B2:B15,"Finance")		2	

C2:C15 indicates the first range (Region No.), and B2:B15 is the second range (Department). COUNTIFS checks for "2" in the first range and "Finance" in the second range, and displays 2, the total number of records of employees in Finance in region 2.

COUNT and IF function

Count based on criteria by using the COUNT and IF functions together

Let's say you need to determine how many salespeople sold a particular item in a certain region or you want to know how many sales over a certain value were made by a particular salesperson. You can use the **IF** and **COUNT** functions together; that is, you first use the **IF** function to test a condition and then, only if the result of the IF function is True, you use the **COUNT** function to count cells.

Notes:

- The formulas in this example must be entered as array formulas.

  - If you have a current version of Microsoft 365, then you can simply enter the formula in the top-left-cell of the output range, then press **ENTER** to confirm the formula as a dynamic array formula.

  - If you have opened this workbook in Excel for Windows or Excel 2016 for Mac and newer versions, and want to change the formula or create a similar formula, press **F2**, and then press **Ctrl+Shift+Enter** to make the formula return the results you expect. In earlier versions of Excel for Mac, use ⌘+**Shift+Enter.**

- For the example formulas to work, the second argument for the IF function must be a number.

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	A	B	C	D	E
	Region	Salesperson	Type	Sales	
	South	Buchanan	Beverages	3571	
	West	Davolio	Dairy	3338	
	East	Suyama	Beverages	5122	
	North	Suyama	Dairy	6239	
	South	Dodsworth	Produce	8677	
	South	Davolio	Meat	450	
	South	Davolio	Meat	7673	
	East	Suyama	Produce	664	
	North	Davolio	Produce	1500	
	South	Dodsworth	Meat	6596	
Formula	{=COUNT(IF((A2:A11="South")*(C2:C11="Meat"),D2:D11))}				
Description	Number of sales of meat in the South region.				
Output	3				
Formula	{=COUNT(IF((B2:B11="Suyama")*(D2:D11>=1000),D2:D11))}				
Description	Number of sales greater than $1,000 by Suyama.				
Output	2				

Source:
https://support.microsoft.com/en-us/excel

SUM and IF Function

Count how often multiple text or number values occur by using the SUM and IF functions together

In the examples that follow, we use the **IF** and **SUM** functions together. The **IF** function first tests the values in some cells and then, if the result of the test is True, **SUM** totals those values that pass the test.

Notes: The formulas in this example must be entered as array formulas.

- If you have a current version of Microsoft 365, then you can simply enter the formula in the top-left-cell of the output range, then press **ENTER** to confirm the formula as a dynamic array formula.

- If you have opened this workbook in Excel for Windows or Excel 2016 for Mac and newer versions, and want to change the formula or create a similar formula, press **F2**, and then press **Ctrl+Shift+Enter** to make the formula return the results you expect. In earlier versions of Excel for Mac, use ⌘+**Shift+Enter**.

Example 1

`{=SUM(IF((C2:C7="Buchanan")+(C2:C7="Dodsworth"),1,0))}`

C	D	E	F	G
Salesperson	**Invoice**			
Buchanan	15000			
Buchanan	9000			
Suyama	8000			
Suyama	20000			
Buchanan	5000			
Dodsworth	22500			
No. of invoices for Buchanan or Dodsworth.	4			

The above function says if C2:C7 contains the values *Buchanan* and *Dodsworth*, then the SUM function should display the sum of records where the condition is met. The formula finds three records for Buchanan and one for Dodsworth in the given range, and displays 4.

Example 2

`{=SUM(IF((D2:D7<9000)+(D2:D7>19000),1,0))}`

	C	D	E	F	G
	Salesperson	Invoice			
	Buchanan	15000			
	Buchanan	9000			
	Suyama	8000			
	Suyama	20000			
	Buchanan	5000			
	Dodsworth	22500			
	No. of invoices with values less than $9,000 or greater than $19,000.	4			

The above function says if D2:D7 contains values lesser than $9000 or greater than $19,000, then SUM should display the sum of all those records where the condition is met. The formula finds two records D3 and D5 with values lesser than $9000, and then D4 and D6 with values greater than $19,000, and displays 4.

Source: https://support.microsoft.com/en-us/excel

Example 3

`{=SUM(IF(C2:C7="Buchanan",IF(D2:D7<9000,1,0)))}`

	C	D	E	F	G
	Salesperson	Invoice			
	Buchanan	15000			
	Buchanan	9000			
	Suyama	8000			
	Suyama	20000			
	Buchanan	5000			
	Dodsworth	22500			
	No. of invoices for Buchanan with a value less than $9,000.	1			

The above function says if D2:D7 has invoices for Buchanan for less than $9000, then SUM should display the sum of records where the condition is met. The formula finds that C6 meets the condition, and displays *1*.

Source: https://support.microsoft.com/en-us/excel

Count how often multiple values occur by using a Pivot Table

Count how often multiple values occur by using a PivotTable

You can use a PivotTable to display totals and count the occurrences of unique values. A PivotTable is an interactive way to quickly summarize large amounts of data. You can use a PivotTable to expand and collapse levels of data to focus your results and to drill down to details from the summary data for areas that are of interest to you. In addition, you can move rows to columns or columns to rows ("pivoting") to see a count of how many times a value occurs in a PivotTable. Let's look at a sample scenario of a Sales spreadsheet, where you can count how many sales values are there for Golf and Tennis for specific quarters.

1. Enter the following data in an Excel spreadsheet.

	A	B	C	D	E
1	Sport	Quarter	Sales		
2	Golf	Qtr 3	$1,500		
3	Golf	Qtr 4	$2,000		
4	Tennis	Qtr 3	$600		
5	Tennis	Qtr 4	$1,500		
6	Tennis	Qtr 3	$4,070		
7	Tennis	Qtr 4	$5,000		
8	Golf	Qtr 3	$6,430		
9					

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2. Select A2:C8

3. Click **Insert** > **PivotTable**.

4. In the Create PivotTable dialog box, click **Select a table or range**, then click **New Worksheet**, and then click **OK**.

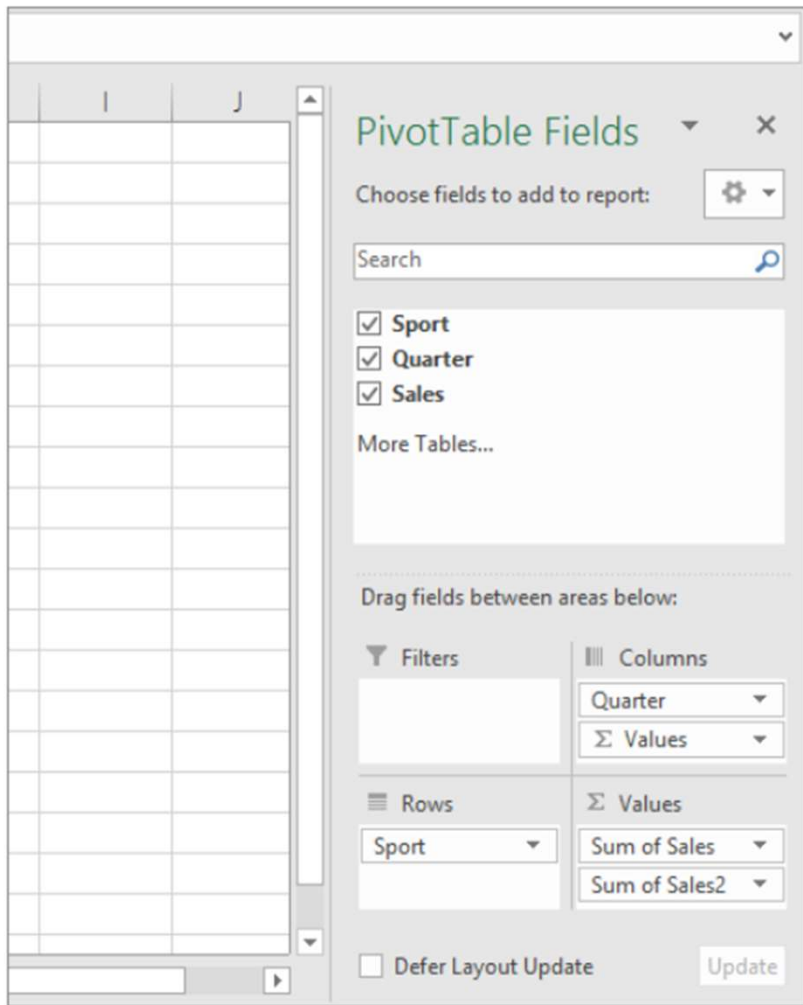   An empty PivotTable is created in a new sheet.

5. In the PivotTable Fields pane, do the following:

   a. Drag **Sport** to the **Rows** area.

   b. Drag **Quarter** to the **Columns** area.

   c. Drag **Sales** to the **Values** area.

d. Repeat step c.

The field name displays as **SumofSales2** in both the PivotTable and the Values area.

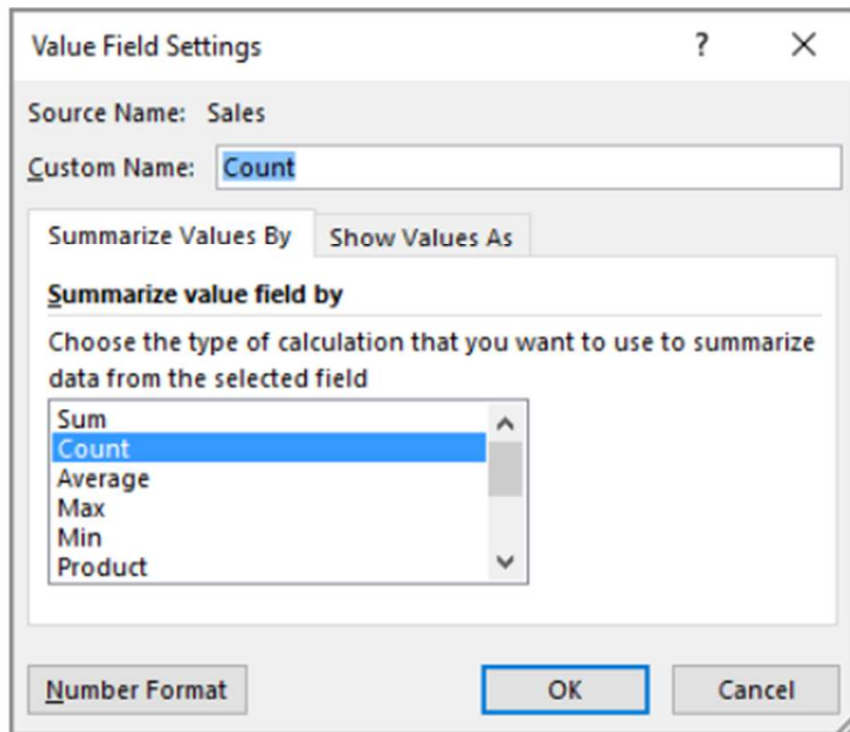At this point, the PivotTable Fields pane looks like this:

e. In the **Values** area, click the dropdown next to **SumofSales2** and select **Value Field Settings.**

f. In the **Value Field Settings** dialog box, do the following:

    i. In the **Summarize value field by** section, select **Count.**

    ii. In the **Custom Name** field, modify the name to **Count.**

    iii. Click **OK.**

Source:
https://support.microsoft.com/en-
us/excel

The PivotTable displays the count of records for Golf and Tennis in Quarter 3 and Quarter 4, along with the sales figures.

Total Sales by Quarter

Sport	Qtr3		Qtr4		Total Sales	Total Count
	Sales	Count	Sales	Count		
Golf	$7,930	2	$2,000	1	$9,930	3
Tennis	$5,300	2	$6,500	2	$11,800	4
Grand Total	$13,230	4	$8,500	3	$21,730	7

Thank you