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COUNT Function

It counts the number of cells that contain numbers. It counts numbers within the list of arguments.
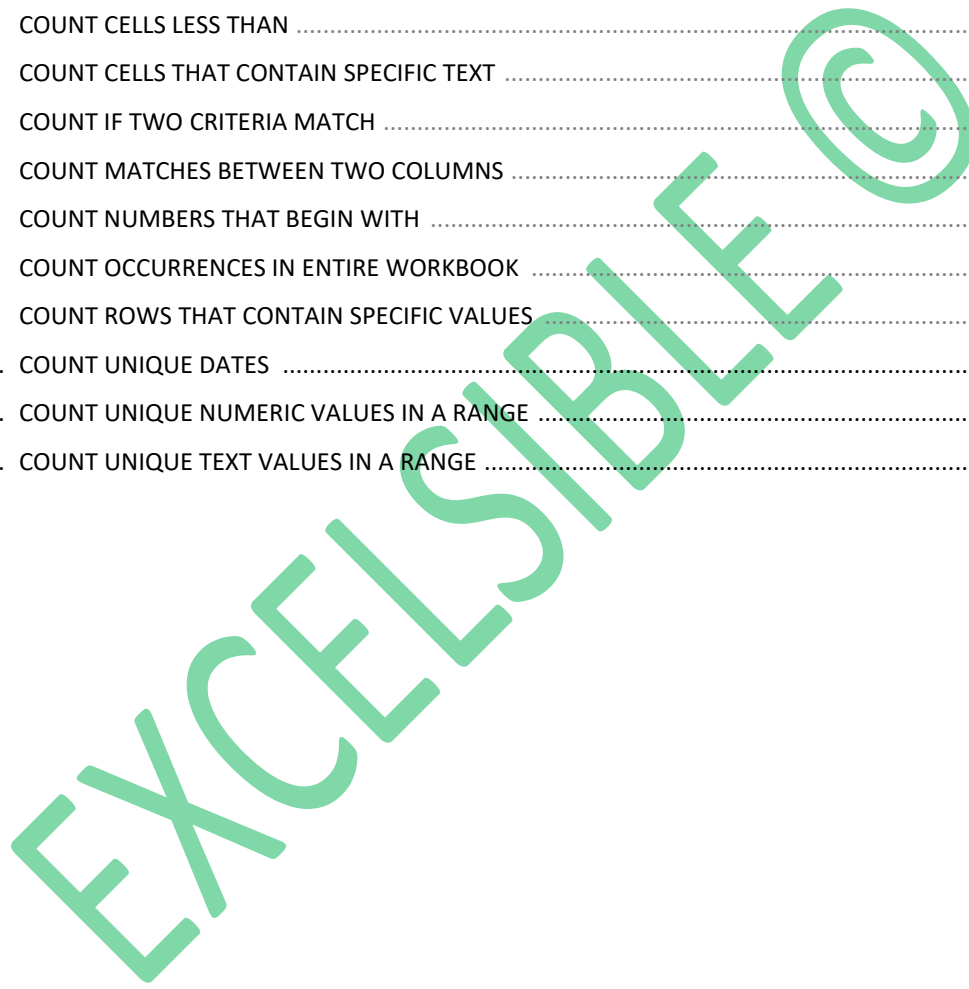
Combinations with:
1. COUNTIF/COUNTIFS
2. SUMPRODUCT
3. INDIRECT
4. MMUL
5. TRANSPOSE
6. COLUMN
7. UNIQUE
8. SUM/FREQUENCY

Microsoft Excel Advanced

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SEMINAR

- Count Cells Equal To
- Count Cells Greater Than
- Count Cells Less Than
- Count Cells That Contain Specific Text
- Count If Two Criteria Match
- Count Matches Between Two Columns
- Count Numbers That Begin With
- Count Occurrences In Entire Workbook
- Count Rows That Contain Specific Values
- Count Unique Dates
- Count Unique Numeric Values in a Range
- Count Unique Text Values in a Range

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1 COUNT CELLS EQUAL TO

	A	B	C	D	E	F	G	H
1	Order	Size	Color	Amount				
2	01001	Large	Red	€ 14.00				
3	01002	Medium	Red	€ 14.00				
4	01003	Medium	Blue	€ 15.00				
5	01004	Small	Black	€ 18.00				
6	01005	Large	Blue	€ 15.00				
7	01006	Large	Purple	€ 18.00				
8	01007	Medium	Red	€ 17.00				
9	01008	Medium	Green	€ 15.00				
10	01009	Small	Blue	€ 15.00				
11	01010	Medium	Red	€ 17.00				
12	01011	Large	Purple	€ 18.00				
13	01012	Medium	Black	€ 18.00				

Count the number of cells equal to Red Color

Count of Red

4   =COUNTIF(C2:C13,"red")

1

FUNCTION 1

In this function, `COUNTIF` is counting the **number of cells** in the range `C2:C13` that contain the text "**red**".

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2 COUNT CELLS GREATER THAN

	A	B	C	D	E	F	G	H
1	**Name**	**Score**		Count the number of cells with score greater than 90				
2	Jim	79		Count the number ofcells with score greater than or equal to 90				
3	Adrian	82						
4	Sandy	86					①	
5	Ayako	91		**CRITERIA**	**RESULT**			
6	Sylvia	77		>90	2	=COUNTIF(B2:B13,D5)		
7	Miguel	81		>=90	3	=COUNTIF(B2:B13,D6)		
8	Yuri	90						
9	Kay	83			②			
10	Harry	75						
11	Jane	93						
12	Robert	70						
13	Emily	88						

FUNCTION 1

In this function, `COUNTIF` is counting the **number of cells** in the range `B2:B13` that are **equal to the value** in cell `D5`.

FUNCTION 2

In this function, `COUNTIF` is counting **the number of cells** in the range `B2:B13` that are **equal to the value** in cell `D6`.

	A	B	C	D	E	F	G	H
17	**Name**	**Score**		**CRITERIA**	**RESULT**		③	
18	Jim	79		90	2	=COUNTIF(B18:B29,">" &D18)		
19	Adrian	82			3	=COUNTIF(B18:B29,">=" &D18)		
20	Sandy	86						
21	Ayako	91			④			
22	Sylvia	77						
23	Miguel	81						
24	Yuri	90						
25	Kay	83						
26	Harry	75						
27	Jane	93						
28	Robert	70						
29	Emily	88						

FUNCTION 3

In this function, `COUNTIF` is counting the **number of cells** in the range `B18:B29` that are **greater than the value** in cell `D18`.

FUNCTION 4

In this function, `COUNTIF` is counting the **number of cells** in the range `B18:B29` that are **greater than or equal to the value** in cell `D18`.

3 COUNT CELLS LESS THAN

	A	B	C	D	E	F	G	H
1	**Name**	**Score**		Count the number of cells with score less than 90				
2	Jim	79		Count the number ofcells with score less than or equal to 90				
3	Adrian	82						
4	Sandy	86		**CRITERIA**	**RESULT**			
5	Ayako	91		<75	1	=COUNTIF(B2:B13,D5)		
6	Sylvia	77		<=75	2	=COUNTIF(B2:B13,D6)		
7	Miguel	81						
8	Yuri	90						
9	Kay	83						
10	Harry	75						
11	Jane	93						
12	Robert	70						
13	Emily	88						

FUNCTION 1

In this function, `COUNTIF` is counting the **number of cells** in the range `B2:B13` that are **equal to the criteria** in cell `D5`.

FUNCTION 2

In this function, `COUNTIF` is counting the **number of cells** in the range `B2:B13` that **equal to the criteria** in cell `D6`.

	A	B	C	D	E	F	G	H
17	**Name**	**Score**		**CRITERIA**	**RESULT**			
18	Jim	79		75	1	=COUNTIF(B18:B29,"<" &D18)		
19	Adrian	82			2	=COUNTIF(B18:B29,"<=" &D18)		
20	Sandy	86						
21	Ayako	91						
22	Sylvia	77						
23	Miguel	81						
24	Yuri	90						
25	Kay	83						
26	Harry	75						
27	Jane	93						
28	Robert	70						
29	Emily	88						

FUNCTION 3

In this function, `COUNTIF` is counting the **number of cells** in the range `B18:B29` that are **less than the value** in cell `D18`.

FUNCTION 4

In this function, `COUNTIF` is counting the **number of cells** in the range `B18:B29` that are **less than or equal to the value** in cell `D18`.

4 COUNT CELLS THAT CONTAIN SPECIFIC TEXT

	A	B	C	D	E	F
1	**Data**					
2	APP-0234-R		Count cells that contain specific text as shown below:			
3	APP-0235-G					
4	APP-0235-S		**TARGET**	**COUNT**		
5	AXX-0299-Y		contains "a"	6	=COUNTIF(A2:A12, "*a*")	
6	HAT-0456-B	as text	contains "2"	4	=COUNTIF(A2:A12, "*2*")	
7	HAT-0457-R		contains "-s"	3	=COUNTIF(A2:A12, "*-s*")	
8	EQU-0876-S		contains "x"	2	=COUNTIF(A2:A12, "*x*")	
9	EQU-0877-S					
10	RSL-0933-F					
11	RSL-1044-R					
12	VXT-1414-R					

FUNCTION 1

In this function, the range being counted is `A2:A12`.
The criterion is `"*a*"`, which means that the function will count the **number of cells** in the range that contain the letter "**2**" **anywhere within the cell**.

FUNCTION 2

In this function, the range being counted is `A2:A12`.
The criterion is `"*2*"`, which means that the function will count the **number of cells** in the range that contain the number "**2**" **anywhere within the cell**.

FUNCTION 3

In this function, In this function, the range being counted is `A2:A12`.
The criterion is `"*-s*"`, which means that the function will count the **number of cells** in the range that contain the string "**-s**" **anywhere within the cell**.

FUNCTION 4

In this function, the range being counted is `A2:A12`.
The criterion is `"*x*"`, which means that the function will count the **number of cells** in the range that contain the letter "**x**" **anywhere within the cell**.

5 COUNT IF TWO CRITERIA MATCH

	A	B	C		E	F		
1	**Color**	**Qty**	**Date**					
2	Red	10	15-Jan-22		Count if two criteria match.			
3	Red	12	20-Aug-22					
4	Blue	25	25-Aug-22		**CRITERIA**	**RESULT**		1
5	Black	30	30-Aug-22		Blue >15	3	=COUNTIFS(A2:A12,"blue",B2:B12,">15")	
6	Blue	20	04-Aug-22		Red >15	1	=COUNTIFS(A2:A12,"RED",B2:B12,">15")	
7	Purple	30	09-Aug-22				*case insensitive*	
8	Red	10	10-Sep-22					2
9	Green	12	15-Sep-22					
10	Blue	20	12-Oct-22					
11	Red	25	13-Oct-22					
12	Purple	10	14-Nov-22					

FUNCTION 1

In this function, is counting cells in the range `A2:A12` that contain the text "**blue**" and cells in the range `B2:B12` that are **greater than 15**.

FUNCTION 2

In this function, is counting cells in the range `A2:A12` that contain the text "**RED**" and cells in the range `B2:B12` that are **greater than 15**.
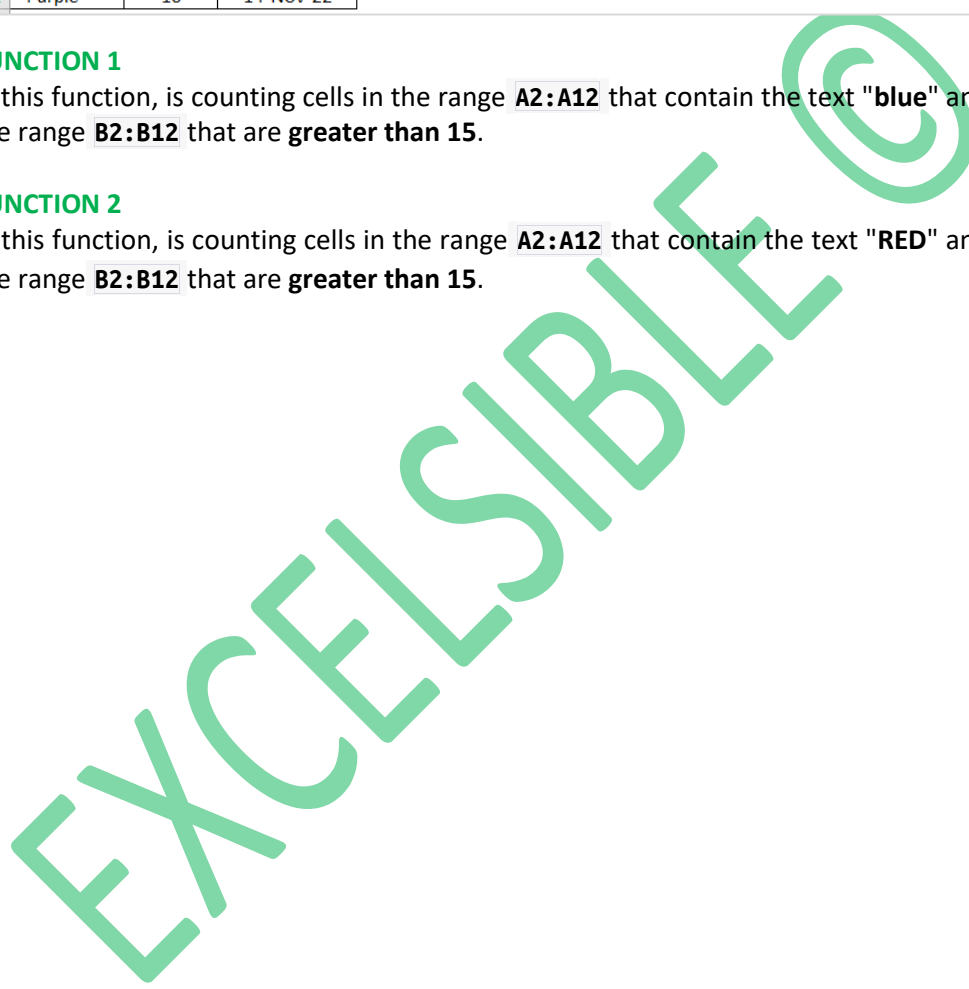
6 COUNT MATCHES BETWEEN TWO COLUMNS

	A	B	C	D	E	F	G	H
1	Column #1	Column #2						
2	AZXB	AZXB		Count matches between two columns.				
3	YFHD	YFHD						
4	YFDX	YFDX		MATCH	9	=SUMPRODUCT(--(A2:A12=B2:B12))		
5	XCGE	XCGE		NON-MATCH	2	=SUMPRODUCT(--(A2:A12<>B2:B12))		
6	XDBH	XDCC	X					
7	CXHZ	CXHZ		SUMPRODUCT will actually return **zero** because **TRUE** and **FALSE**				
8	XCDX	XCDX		values are not counted as numbers in Excel by default. numbers.				
9	XYEF	XYEF		**The double negative (--) is a simple way to do that.**				
10	XDXB	XDXB						
11	YZBY	YBBY	X					
12	CXFY	CXFY		To get SUMPRODUCT to treat **TRUE as 1** and **FALSE as**				
13				**zero**, we need to "coerce" them into.				
14								
15								
16								
17								
18	*The double negative (--) coerces the TRUE FALSE values to 1s and 0s, respectively.*							

FUNCTION 1

In this function, `SUMPRODUCT` is being used with the logical operator `--` and the `=` operator, which tests for **equality between elements** in the range `A2:A12` and the range `B2:B12`.

The `--` operator before the parentheses converts the resulting array of **TRUE** and **FALSE** values to **1s** and **0s**, respectively.

FUNCTION 2

In this function, `SUMPRODUCT` is being used with the logical operator `--` and the `<>` operator, which tests for **inequality between elements** in the range `A2:A12` and the range `B2:B12`.

The `--` operator before the parentheses converts the resulting array of **TRUE** and **FALSE** values to **1s** and **0s**, respectively.

7 COUNT NUMBERS THAT BEGIN WITH

	A	B	C	D
1	**Number**			
2	250648			
3	250876		Count numbers that begin with the following codes:	
4	350345		**CODE**	**RESULT**
5	450654		25	5
6	250756		35	2
7	450890		45	3
8	250879		55	1
9	450537			
10	250237		*Numbers in column C are*	
11	351645		*entered as text values.*	
12	551287			

=SUMPRODUCT(--(LEFT(A2:A12,LEN(C5))=C5))

Numbers in column A are entered as text

The double negative (--) coerces the TRUE FALSE values to 1s and 0s, respectively.
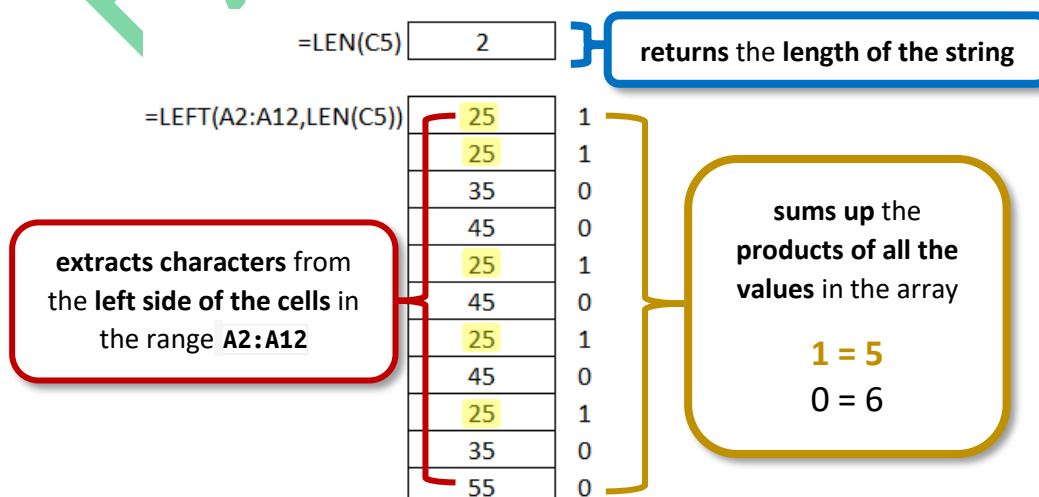
FUNCTION 1

The **LEFT** function **extracts characters** from the **left side of the cells** in the range `A2:A12`.

The **LEN** function returns the **length of the string** in cell `C5`.

The `=C5` part of the function **compares** the **result** of the **LEFT** function to the **value** in cell `C5`. If the values **are equal**, the formula returns **TRUE** for that cell. If the values are **not equal**, the formula returns **FALSE** for that cell.

The `--` operator in front of the array formula **converts** the array of **TRUE** and **FALSE** values returned by the formula to **1s** and **0s**. **TRUE** values are converted to **1s**, and **FALSE** values are converted to **0s**.

The **SUMPRODUCT** function **sums up** the **products of all the values** in the array. If all of the values in the array are **1**, the function will return the **number of elements** in the array. If any of the values are **0**, the function will return a **value less than the number of elements** in the array.

=LEN(C5) [2] → **returns** the **length of the string**

=LEFT(A2:A12,LEN(C5))

25	1
25	1
35	0
45	0
25	1
45	0
25	1
45	0
25	1
35	0
55	0

extracts characters from the **left side of the cells** in the range `A2:A12`

sums up the **products of all the values** in the array

1 = 5
0 = 6

8 COUNT OCCURRENCES IN ENTIRE WORKBOOK

Count occurrences of name 'Steven' in entire workbook.

Result: 3

=SUMPRODUCT(COUNTIF(INDIRECT("'" & Sheets & "'!" & A5),A2))
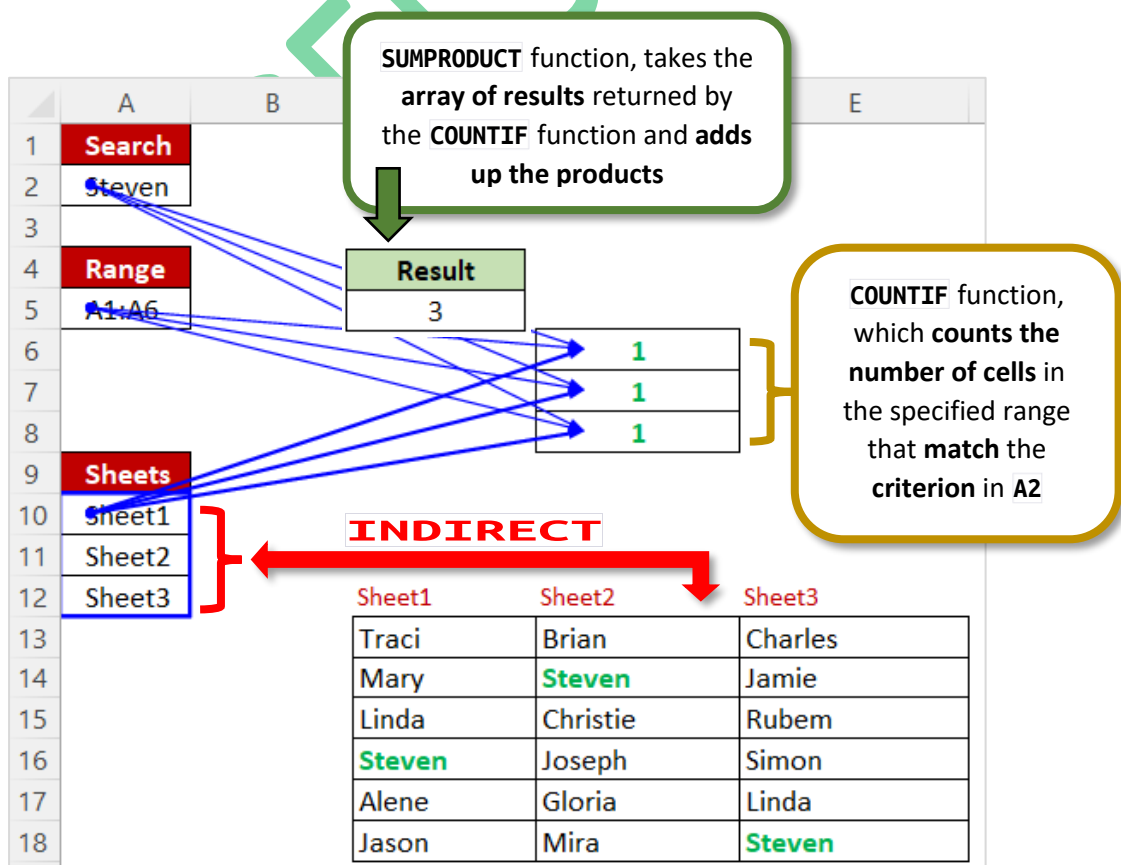
Sheets is the named range A10:A12.

FUNCTION 1

The **INDIRECT** function is being used to build a **reference to a range of cells on multiple sheets**. The **sheet names** are stored in the **Sheets** range and the **cell reference A5** is **concatenated** to the **sheet names** using the **&** operator.

The **resulting reference** is **passed** as the **range argument** to the **COUNTIF** function, which **counts the number of cells** in the specified range that **match** the **criterion** in **A2**.

Finally, the **SUMPRODUCT** function takes the **array of results** returned by the **COUNTIF** function and **adds up the products**.

The overall effect of this formula is to **count** the **number of cells in multiple sheets** that **match** a **criterion** in cell **A2** and then **add up the counts**.

SUMPRODUCT function, takes the **array of results** returned by the **COUNTIF** function and **adds up the products**

COUNTIF function, which **counts the number of cells** in the specified range that **match** the **criterion** in **A2**

INDIRECT

	Sheet1	Sheet2	Sheet3
13	Traci	Brian	Charles
14	Mary	**Steven**	Jamie
15	Linda	Christie	Rubem
16	**Steven**	Joseph	Simon
17	Alene	Gloria	Linda
18	Jason	Mira	**Steven**

9 COUNT ROWS THAT CONTAIN SPECIFIC VALUES

	A	B	C	D	E	F	G
1	19	23	19	X	Count the number of rows that		
2	21	15	18		contain the value 19.		
3	19	22	22	X			
4	17	15	23		Value	19	
5	16	22	24				
6	18	16	16		Result	5	
7	17	17	25				
8	16	19	19	X			
9	24	21	18		=SUM(--(MMULT(--(A1:C12=F4),TRANSPOSE(COLUMN(A1:C12)^0))>0))		
10	17	18	25				
11	19	22	25	X			
12	25	19	25	X			
13							
14	Data is the named range A1:C12.						
15							
16	The double negative (--) coerces the TRUE						
17	FALSE values to 1s and 0s, respectively.						

FUNCTION 1

- Check if the **values** in a range called "**data**" are **equal to the value** in cell `F4`.
- Count the **number of times** that this **condition** is **true**.

The `SUM` function is used to add up the results of the condition being checked.

The `MMULT` function is used to multiply two arrays of values. In this case, the `--` operator is being used to **convert** the arrays of **TRUE** and **FALSE** values returned by the `data=F4` condition into arrays of **1s** and **0s**. The `TRANSPOSE` function is used to **transpose the array**.

The `COLUMN` function is used to **return** an **array** of the **column numbers** for a **given range**. In this case, the `^0` operator is used to **raise each column number to the power of 0**, which has the effect of returning an **array of 1s** with the **same size** as the **data range**.

Finally, the `>0` operator is used to check if the **result** of the `MMULT` function is **greater than 0**. This returns an array of **TRUE** and **FALSE** values, which are then converted to **1s** and **0s** using the `--` operator. The `SUM` function is then used to **add up all of the 1s in the array**, giving the **final result**.

Count the **number of ROWS** the **value 19** is found.

Count the **number of TIMES** the **value 19** is found in **each row**.

Transpose the table in order to read each value **row by row**

=TRANSPOSE(COLUMN(A1:C12))

MMULT(--(data=F4),TRANSPOSE(COLUMN(data)^0))

10 COUNT UNIQUE DATES

	A	B	C	D	E	F	G	H
1	**Date**	**Stock**	**Quantity**	**Action**		Count total trades		
2	01/10/2022	AAPL	100	Buy				
3	01/10/2022	CONS	100	Buy		**Total trades**		
4	05/10/2022	INTC	100	Sell		12	=COUNT(date)	
5	05/10/2022	PFE	50	Sell				
6	05/10/2022	HLT	100	Sell		①		
7	07/10/2022	AMZN	25	Buy		Count unique dates		
8	07/10/2022	CAT	150	Sell				
9	09/10/2022	MMM	100	Sell		**Trading days**		
10	09/10/2022	IBM	50	Sell		5	=COUNT(UNIQUE(date))	
11	12/10/2022	MSFT	200	Buy				
12	12/10/2022	HD	50	Buy		②		
13	12/10/2022	GILD	100	Sell				

FUNCTION 1

This function is using the range called "**date**" as the **input**. The function will **count** the **number of cells** in the range `A2:A13` that contain a **number**, and return the **result** as a **numerical value**.

If the range contains any cells with **text** or **other non-numeric values**, those cells will be **ignored**. Only cells that contain **numbers**, including **dates formatted as numbers**, will be counted.

FUNCTION 2

This function is using the **UNIQUE** function as an **input**. The **UNIQUE** function takes a range range called "**date**" as **input** and returns a **list** of **unique values** in that range.

The **COUNT** function then **counts the number of cells in the list** returned by the **UNIQUE** function and returns the **result** as a **numerical value**.

11 COUNT UNIQUE NUMERIC VALUES IN A RANGE

	A	B	C	D	E
1	**EMPL ID**	**HOURS**		Count uniqe Empl ID values.	
2	905	2			
3	905	4		**Unique count w/FREQUENCY**	4
4	905	5		=SUM(--(FREQUENCY(A2:A11,A2:A11)>0))	
5	905	2			
6	773	4			
7	773	8			
8	801	5			
9	963	8			
10	963	9			
11	963	6			
12					
13	*The double negative (--) coerces the TRUE FALSE values to 1s and 0s, respectively.*				

FUNCTION 1

The SUM function **adds up** all of the **values** in a **range of cells**. In this case, the range of cells being summed is produced by the FREQUENCY function.

The FREQUENCY function takes **two arguments**: an **array of data**, and **an array of bins**. The function returns an **array** that represents the **frequency distribution of the data**, with **each element** in the output array corresponding to the **number of occurrences of the data** within the corresponding bin.

The -- operator in front of the FREQUENCY function **converts** the output of the function from an array to **a series of values**.

The >0 part of the formula **filters** the **series of values**, so that only the **non-zero values** are **included** in the **final sum**.

So, the overall formula returns the **sum** of the **number of occurrences** of all **unique values** in the range A2:A11.

12 COUNT UNIQUE TEXT VALUES IN A RANGE

	A	B	C	D	E
1	**NAME**	**HOURS**		Count uniqe Name values.	
2	Jim	2			
3	Jim	4		**Unique count w/FREQUENCY**	4
4	Jim	5		=SUMPRODUCT(--	
5	Sue	2		(FREQUENCY(MATCH(A2:A11,A2:A11,0),RO	
6	Sue	4		W(A2:A11)-ROW(B5)+1)>0))	
7	Mark	8			
8	Mark	5			
9	Mark	8			
10	Tony	9			
11	Tony	6			
12					
13	*The double negative (--) coerces the TRUE FALSE values to 1s and 0s, respectively.*				

FUNCTION 1

The `SUMPRODUCT` function returns the **sum of the products** of corresponding entries in one or more arrays. The `--` operator is used to **convert** the results of the `FREQUENCY` function, which are arrays of logical values, to arrays of **1s** and **0s**. The `FREQUENCY` function returns a frequency distribution, which is a **summary** of **how often each value occurs in a range**. It takes **two arguments**: an **array of data** and an **array of bins**.

The `MATCH` function is used to **find the position of a value in an array**. It takes **three arguments**: the **value** you want to **find**, the **range to search**, and the **type of match you want**. In this case, the **value** you want to find is `A2`, the **range** to search is `A2:A11`, and the **type** of match you want is `0`, which specifies an **exact match**.

The `ROW` function returns the **row number of a reference**. It takes **one argument**, which can be a **cell reference** or a **range of cells**. In this case, `ROW(A2:A11)` returns an array of row numbers for the cells in the range `A2:A11`, and `ROW(B5)` returns the row number of cell `B5`.

The `+1` at the end of the `ROW` function **increases the row numbers by 1**. This is necessary because the `FREQUENCY` function **expects the bins array** to start at **1, not 0**.

The final part of the formula, `>0`, checks if the **value** is **greater than 0**. If it is, the result is `TRUE`, which is **converted** to **1** by the `--` operator. If it is **not**, the result is `FALSE`, which is **converted** to **0** by the `--` operator.

So, to summarize, this formula returns the **sum of the number of occurrences of each value** in the range `A2:A11`.