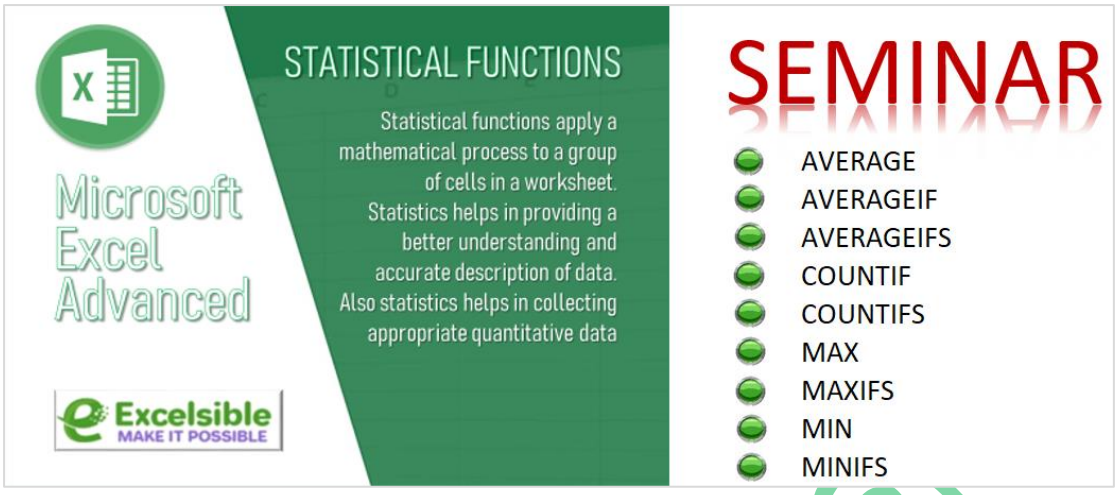
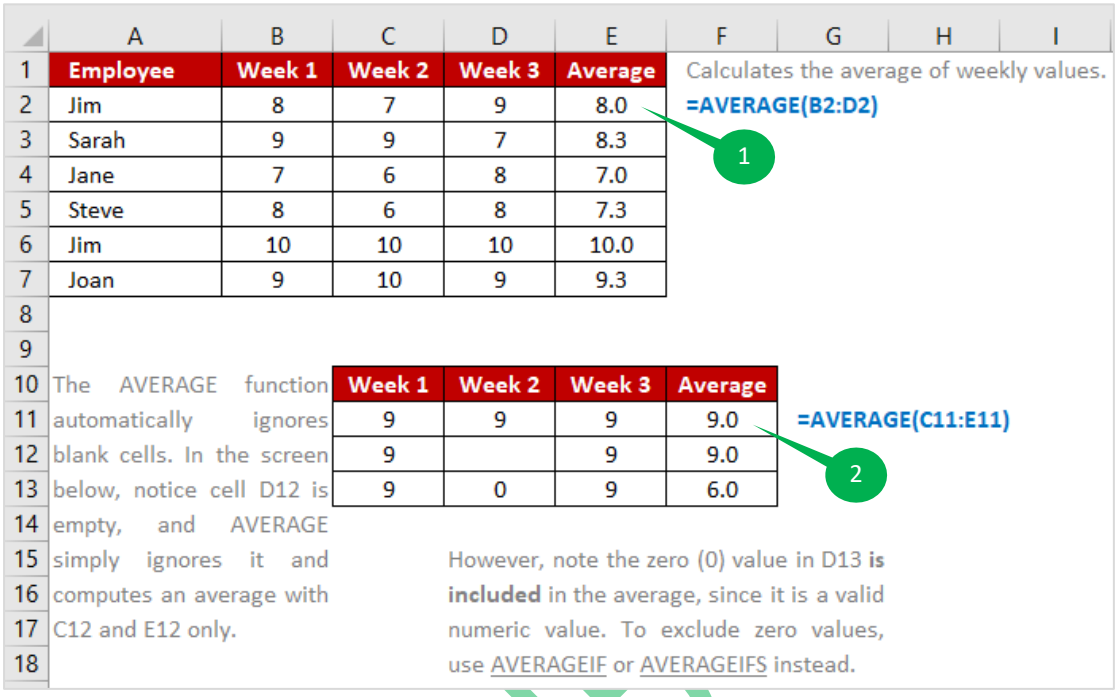


1 AVERAGE

The **AVERAGE** function in Excel is used to calculate the average of a group of numbers.



Employee	Week 1	Week 2	Week 3	Average
Jim	8	7	9	8.0
Sarah	9	9	7	8.3
Jane	7	6	8	7.0
Steve	8	6	8	7.3
Jim	10	10	10	10.0
Joan	9	10	9	9.3

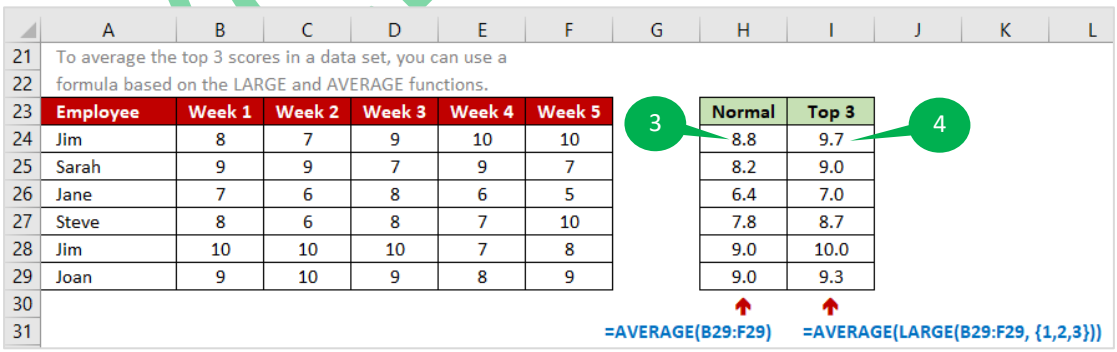
Week 1	Week 2	Week 3	Average
9	9	9	9.0
9		9	9.0
9	0	9	6.0

FUNCTION 1

In this function, if the values in cells **B2**, **C2**, and **D2** are **8**, **7**, and **9**, respectively, **AVERAGE** will return **8** as the result.

FUNCTION 2

In this function, if the values in cells **C11**, **D11**, and **E11** are **9**, **9**, and **9**, respectively, **AVERAGE** will return **9** as the result.



Employee	Week 1	Week 2	Week 3	Week 4	Week 5
Jim	8	7	9	10	10
Sarah	9	9	7	9	7
Jane	7	6	8	6	5
Steve	8	6	8	7	10
Jim	10	10	10	7	8
Joan	9	10	9	8	9

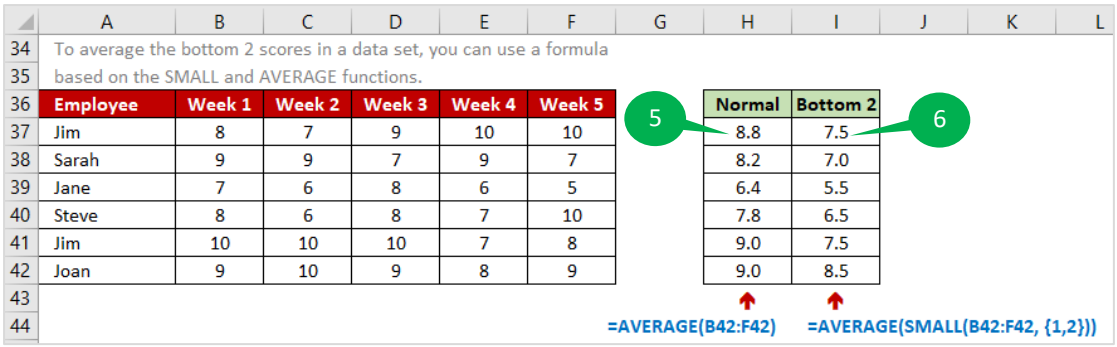
Normal	Top 3
8.8	9.7
8.2	9.0
6.4	7.0
7.8	8.7
9.0	10.0
9.0	9.3

FUNCTION 3

In this function, if the values in cells **B24**, **C24**, **D24**, **E24**, and **F24** are **8**, **7**, **9**, **10** and **10**, respectively, **AVERAGE** will return **8.8** as the result.

FUNCTION 4

The **LARGE** function takes the values in cells **B24**, **C24**, **D24**, **E24**, and **F24** returns an array of the **3 largest values** {9, 10, 10}. The **AVERAGE** function will return **9.7** as the result.



To average the bottom 2 scores in a data set, you can use a formula based on the SMALL and AVERAGE functions.

Employee	Week 1	Week 2	Week 3	Week 4	Week 5
Jim	8	7	9	10	10
Sarah	9	9	7	9	7
Jane	7	6	8	6	5
Steve	8	6	8	7	10
Jim	10	10	10	7	8
Joan	9	10	9	8	9

Normal	Bottom 2
8.8	7.5
8.2	7.0
6.4	5.5
7.8	6.5
9.0	7.5
9.0	8.5

5 6

=AVERAGE(B42:F42) =AVERAGE(SMALL(B42:F42, {1,2}))

FUNCTION 5

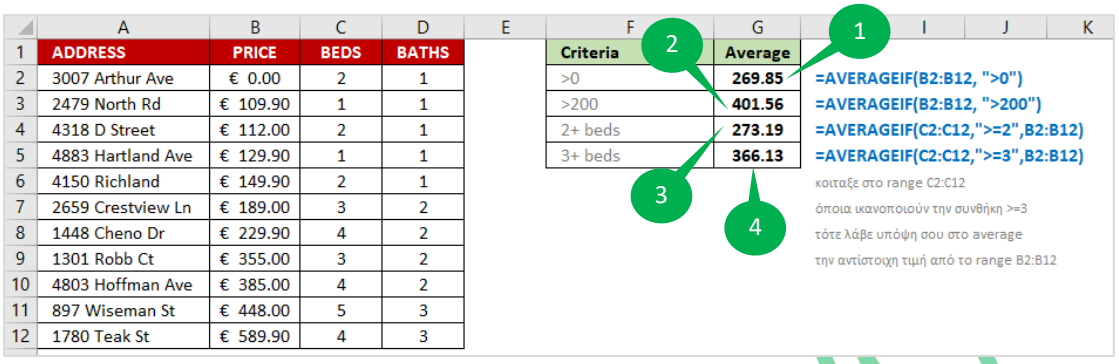
In this function, if the values in cells `B37`, `C37`, `D37`, `E37`, and `F37` are **8**, **7**, **9**, **10** and **10**, respectively, `AVERAGE` will return **8.8** as the result.

FUNCTION 6

The `LARGE` function takes the values in cells `B37`, `C37`, `D37`, `E37`, and `F37` returns an array of the **3 smallest values** {8, 7, 9}. The `AVERAGE` function will return **7.5** as the result.

2 AVERAGEIF

The **AVERAGEIF** function in Excel calculates the average of selected cells based on a given criteria.



	A	B	C	D
1	ADDRESS	PRICE	BEDS	BATHS
2	3007 Arthur Ave	€ 0.00	2	1
3	2479 North Rd	€ 109.90	1	1
4	4318 D Street	€ 112.00	2	1
5	4883 Hartland Ave	€ 129.90	1	1
6	4150 Richland	€ 149.90	2	1
7	2659 Crestview Ln	€ 189.00	3	2
8	1448 Cheno Dr	€ 229.90	4	2
9	1301 Robb Ct	€ 355.00	3	2
10	4803 Hoffman Ave	€ 385.00	4	2
11	897 Wiseman St	€ 448.00	5	3
12	1780 Teak St	€ 589.90	4	3

Criteria	Average
>0	269.85
>200	401.56
2+ beds	273.19
3+ beds	366.13

1 =AVERAGEIF(B2:B12, ">0")
=AVERAGEIF(B2:B12, ">200")
=AVERAGEIF(C2:C12,">=2",B2:B12)
=AVERAGEIF(C2:C12,">=3",B2:B12)

2 κοιταξε στο range C2:C12
όποια ικανοποιούν την συνθήκη >=3
3 τότε λάβε υπόψη σου στο average
4 την αντίστοιχη τιμή από το range B2:B12

FUNCTION 1

In this function will find the **average** of the values in the range **B2:B12** only **if the value in the cell is greater than 0**. If any of the cells in the range are not greater than 0, they will be **ignored** in the calculation.

FUNCTION 2

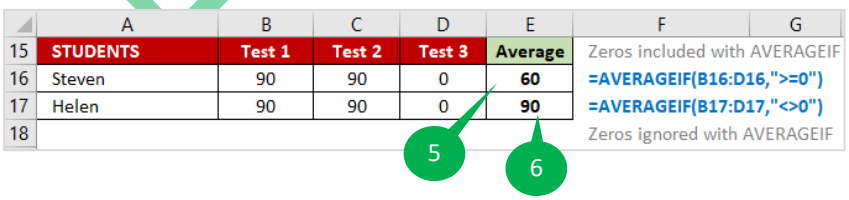
In this function will find the **average** of the values in the range **B2:B12** only **if the value in the cell is greater than 200**. If any of the cells in the range are not greater than 200, they will be **ignored** in the calculation.

FUNCTION 3

In this function will find the **average** of the values in the range **B2:B12** only **if the corresponding value** in the range **C2:C12** **is greater than or equal to 2**. If any of the cells in the range **C2:C12** are not greater than or equal to 2, the corresponding cells in the range **B2:B12** will be **ignored** in the calculation.

FUNCTION 4

In this function will find the average of the values in the range **B2:B12** only **if the corresponding value** in the range **C2:C12** **is greater than or equal to 3**. If any of the cells in the range **C2:C12** are not greater than or equal to 3, the corresponding cells in the range **B2:B12** will be **ignored** in the calculation.



	A	B	C	D	E	F	G
15	STUDENTS	Test 1	Test 2	Test 3	Average	Zeros included with AVERAGEIF	
16	Steven	90	90	0	60	=AVERAGEIF(B16:D16,">=0")	
17	Helen	90	90	0	90	=AVERAGEIF(B17:D17,"<>0")	
18						Zeros ignored with AVERAGEIF	

5 6

FUNCTION 5

In this function will find the **average** of the values in the range **B16:D16** only **if the value in the cell is greater than or equal to 0**. If any of the cells in the range are not greater than or equal to 0, they will be **ignored** in the calculation.

FUNCTION 6

In this function will find the **average** of the values in the range `B17:D17` only **if the value in the cell is not equal to 0**. If any of the cells in the range are equal to 0, they will be **ignored** in the calculation.

	A	B	C	D	E
20	Calculate the average	VALUES			
21	of all values that are	0			
22	greater than 0.	10			
23		0			
24		0			
25		20			
26		0			
27		0			
28	Average	15	=AVERAGEIF(B21:B27, ">0")		

7

FUNCTION 7

In this function will find the **average** of the values in the range `B21:B27` only **if the value in the cell is greater than 0**. If any of the cells in the range are not greater than 0, they will be **ignored** in the calculation.

	A	B	C	D	E	F
31	ITEMS	VALUES				
32	Banana	70	Calculates the average of all values if the corresponding cells in the range A32:A38 contain exactly Apple.			
33	Strawberry	1				
34	Apple	4				
35	Pear	60				
36	Kiwi	20				
37	Rasperry	5				
38	Apple	8				
39	Average	6	=AVERAGEIF(A32:A38, "Apple", B32:B38)			

8

FUNCTION 8

In this function `A32:A38` is the range of cells to be evaluated, `"Apple"` is the **criteria**, and `B32:B38` is the range of cells that contain the data that you want to **average**. The function will look at the cells in the range `A32:A38`, and **if any of those cells contain the value "Apple"**, it will include the **corresponding cell** in the range `B32:B38` in the **average calculation**. If the cell in `A32:A38` does not contain the value "Apple", it will be **ignored**.

	A	B	C	D	E	F
42	ITEMS	VALUES				
43	Banana	70	Calculates the average of all values if the corresponding cells in the range A43:A49 do not contain Banana.			
44	Strawberry	1				
45	Apple	4				
46	Pear	60				
47	Kiwi	20				
48	Rasperry	5				
49	Apple	8				
50	Average	16.33	=AVERAGEIF(A43:A49, "<>Banana", B43:B49)			

9

FUNCTION 9

In this function `A43:A49` is the range of cells to be evaluated, `"<>Banana"` is the **criteria**, and `B43:B49` is the range of cells that contain the data that you want to **average**. The function will look at the cells in the range `A43:A49`, and **if any of those cells do not contain the value "Banana"**, it will include the **corresponding cell** in the range `B43:B49` in the **average calculation**. If the cell in `A43:A49` contains the value "Banana", it will be **ignored**.

3 AVERAGEIFS

The **AVERAGEIFS** function in Excel calculates the average of cells that meet multiple criteria.

	A	B	C	D
1	ADDRESS	PRICE	BEDS	BATHS
2	3007 Arthur Ave	€ 0.00	2	1
3	2479 North Rd	€ 109.90	1	1
4	4318 D Street	€ 112.00	2	1
5	4883 Hartland Ave	€ 129.90	1	1
6	4150 Richland	€ 149.90	2	1
7	2659 Crestview Ln	€ 189.00	3	2
8	1448 Cheno Dr	€ 229.90	4	2
9	1301 Robb Ct	€ 355.00	3	2
10	4803 Hoffman Ave	€ 385.00	4	2
11	897 Wiseman St	€ 448.00	5	3
12	1780 Teak St	€ 589.90	4	3

F	G	
Criteria	Average	
>0 and <500	234.29	=AVERAGEIFS(B2:B12, B2:B12, ">0", B2:B12, "<500")
2+ beds and >1 baths	366.13	=AVERAGEIFS(B2:B12,C2:C12,">=2",D2:D12,">1")

1

2

FUNCTION 1

In this function will calculate the **average** of all cells in the **B2:B12** range that meet **both criteria** (i.e. cells that are **greater than 0** and **less than 500**). If there are **no cells** that meet both criteria, the function will return a **#DIV/0!** error.

FUNCTION 2

In this function will calculate the **average** of all cells in the **B2:B12** range that meet **both criteria** (i.e. cells where the corresponding cells in the **C2:C12** and **D2:D12** ranges are both **greater than or equal to 2** and **greater than 1**, respectively). If there are **no cells** that meet both criteria, the function will return a **#DIV/0!** error.

	A	B	C
15		VALUES	
16	Calculate the average of all values that between 500 and 1000.	58	
17		1000	
18		4	
19		1200	
20		12	
21		600	
22		9	
23	Average	800	=AVERAGEIFS(B16:B22,B16:B22, ">=500", B16:B22, "<=1000")

3

FUNCTION 3

In this function will calculate the **average** of the cells in the range **B16:B22** where the value is **greater than or equal to 500** and **less than or equal to 1000**.

	A	B	C
26	ITEMS	VALUES	VALUES
27	Apple	Green	58
28	Banana	Yellow	1000
29	Banana	Yellow	4
30	Apple	Red	1200
31	Apple	Green	12
32	Apple	Red	600
33	Banana	Yellow	9
34		Average	900

Calculates the average of all values in the range C27:C33 if the corresponding cells in the range A27:A33 contain exactly Apple and the corresponding cells in the range B27:B33 contain exactly Red.

=AVERAGEIFS(C27:C33,A27:A33,"Apple",B27:B33,"Red")

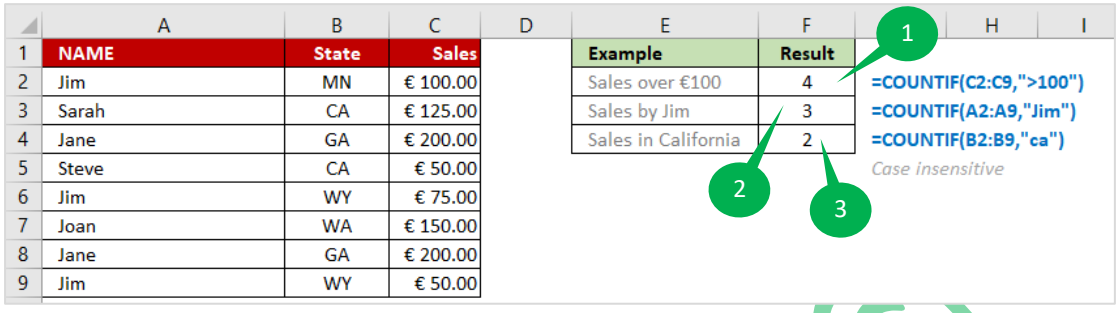
4

FUNCTION 4

In this function will calculate the **average** of the cells in the range **C27:C33** where the corresponding cell in the range **A27:A33** is "**Apple**" and the corresponding cell in the range **B27:B33** is "**Red**".

4 COUNTIF

The `COUNTIF` function in Excel counts the number of cells in a range that meet a specified criterion.



	A	B	C
1	NAME	State	Sales
2	Jim	MN	€ 100.00
3	Sarah	CA	€ 125.00
4	Jane	GA	€ 200.00
5	Steve	CA	€ 50.00
6	Jim	WY	€ 75.00
7	Joan	WA	€ 150.00
8	Jane	GA	€ 200.00
9	Jim	WY	€ 50.00

Example	Result
Sales over €100	4
Sales by Jim	3
Sales in California	2

1 =COUNTIF(C2:C9,">100")
2 =COUNTIF(A2:A9,"Jim")
3 =COUNTIF(B2:B9,"ca")
Case insensitive

FUNCTION 1

This function returns the **total** number of cells in the range `C2:C9` with values **greater than 100**.

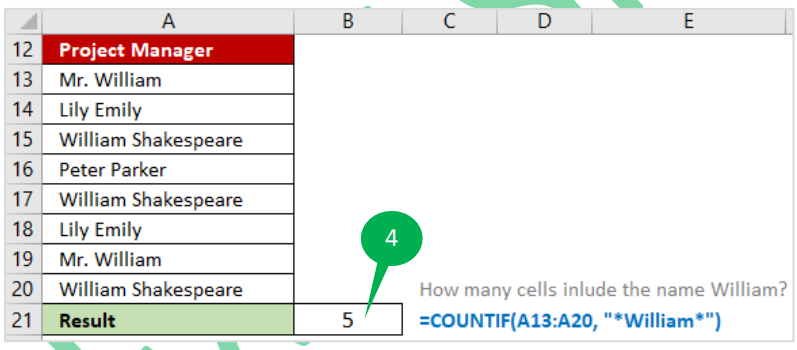
FUNCTION 2

This function returns the **total** number of cells in the range `A2:A9` with the text "**Jim**".

FUNCTION 3

This function returns the **total** number of cells in the range `B2:B9` with the text "**ca**".

***COUNTIF** function is **case-insensitive**, so it will count cells that contain "ca" regardless of whether the letters are **uppercase** or **lowercase**.*



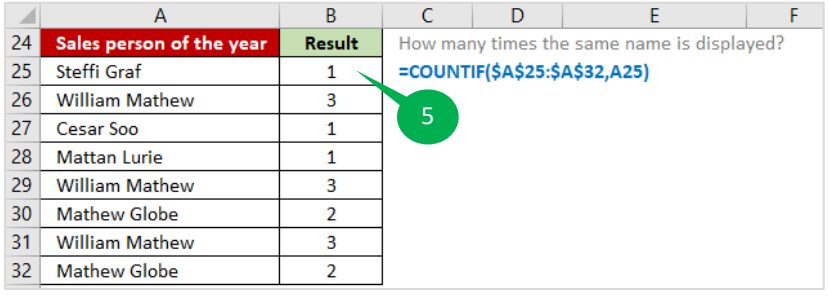
	A	B
12	Project Manager	
13	Mr. William	
14	Lily Emily	
15	William Shakespeare	
16	Peter Parker	
17	William Shakespeare	
18	Lily Emily	
19	Mr. William	
20	William Shakespeare	
21	Result	5

4 How many cells inlude the name William?
=COUNTIF(A13:A20, "*William*")

FUNCTION 4

This function returns the **total** number of cells in the range `A13:A20` with the text "**William**" (with any number of characters before or after it).

***COUNTIF** function is **case-insensitive**, so it will count cells that contain "William" regardless of whether the letters are **uppercase** or **lowercase**.*



	A	B
24	Sales person of the year	Result
25	Steffi Graf	1
26	William Mathew	3
27	Cesar Soo	1
28	Mattan Lurie	1
29	William Mathew	3
30	Mathew Globe	2
31	William Mathew	3
32	Mathew Globe	2

How many times the same name is displayed?
5 =COUNTIF($A$25:$A$32,A25)

FUNCTION 5

This function will **count the number of cells** in the range **`$A$25:$A$32`** that have the **same value as cell `A25`**.

***The **$** symbol before the column and row letter and number in a cell reference indicates that this part of the reference **should not change when the formula is copied or filled to other cells**.*

	A	B	C	D	E	F
35	How many times the same mark is displayed?	STUDENT	Marks	Result		
36		Emily	75	1	=COUNTIF($C$36:$C$43,C36)	
37		Lily	65	2		
38		William	45	3		
39		Peter	45	3		
40		Kate	45	3		
41		Mark	50	1		
42		Sean	55	1		
43		Akira	65	2		

6

FUNCTION 6

This function will **count the number of cells** in the range **`$C$36:$C$43`** that have the **same value as cell `C36`**.

***The **$** symbol before the column and row letter and number in a cell reference indicates that this part of the reference **should not change when the formula is copied or filled to other cells**.*

	A	B	C	D	E
46	How many negative numbers are they?	NUMBERS			
47		-5			
48		-6.2			
49		8			
50		7			
51		-2.1			
52		7			
53		Result	3		=COUNTIF(B47:B52,"<0")

7

FUNCTION 7

This function will **count** the **number of cells** in the range **`B47:B52`** that have a **value less than 0**.

5 COUNTIFS

The `COUNTIFS` function in Excel count the number of cells in a range that meet multiple criteria.

	EMPLOYEE	COLOR	STATE	QTY	TOTAL
2	Jim	Red	TX	1	€ 18.00
3	Sarah	Blue	CO	2	€ 34.00
4	Jane	Red	NM	2	€ 36.00
5	Steve	Blue	TX	1	€ 17.00
6	Jim	Blue	AZ	3	€ 51.00
7	Joan	Red	AZ	1	€ 17.00
8	Jane	Red	TX	2	€ 36.00
9	Helen	Red	CO	4	€ 72.00
10	David	Blue	AZ	2	€ 34.00
11	Jim	Red	TX	3	€ 54.00

Count cells that Color is equal to Red and State is equal to TX.

Result
3

1

```
=COUNTIFS(B2:B11, "red",C2:C11,"TX")
```

FUNCTION 1

This function **counts the number of cells** in the range `B2:B11` that contain the value "**red**" and the **number of cells** in the range `C2:C11` that contain the value "**TX**", and then returning the **total count of cells** that meet both criteria.

	EMPLOYEE	COLOR	STATE	QTY	TOTAL
15	Jim	Red	TX	1	€ 18.00
16	Sarah	Blue	CO	2	€ 34.00
17	Jane	Red	NM	2	€ 36.00
18	Steve	Blue	TX	1	€ 17.00
19	Jim	Blue	AZ	3	€ 51.00
20	Joan	Red	AZ	1	€ 17.00
21	Jane	Red	TX	2	€ 36.00
22	Helen	Red	CO	4	€ 72.00
23	David	Blue	AZ	2	€ 34.00
24	Jim	Red	TX	3	€ 54.00

Count cells that Color is equal to Red and Total is greater than 20.

Result
4

2

```
=COUNTIFS(B15:B24, "red",E15:E24,">20")
```

FUNCTION 2

This function **counts the number of cells** in the range `B15:B24` that contain the value "**red**" and the **number of cells** in the range `E15:E24` that are **greater than 20**, and then returning the **total count of cells** that meet both criteria.

	YEAR	PRODUCT	COST
28	2013	Oranges	12.25
29	2012	Bananas	10.50
30	2012	Apples	5.10
31	2013	Bananas	8.35
32	2013	Oranges	13.45
33	2011	Apples	7.95
34	2013	Pears	6.00
35	2009	Oranges	4.55

RESULT
1

3

```
=COUNTIFS(A28:A35,">=2009", A28:A35,"<=2012", B28:B35,"=Oranges")
```

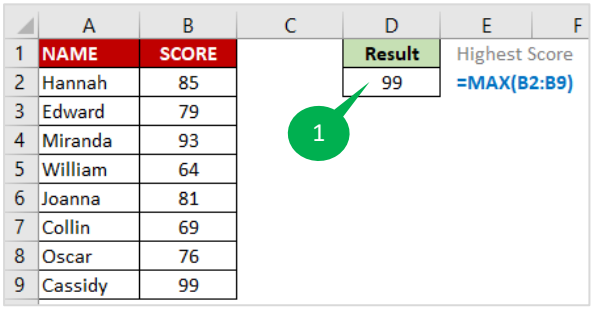
Count cells that Year is between 2009 and 2012, and Product is equal to Oranges.

FUNCTION 3

This function **counts the number of cells** in the range `A28:A35` that are **greater than or equal to 2009** and **less than or equal to 2012**, and the **number of cells** in the range `B28:B35` that contain the value "**Oranges**", and then returning the **total count of cells** that meet both criteria.

6 MAX

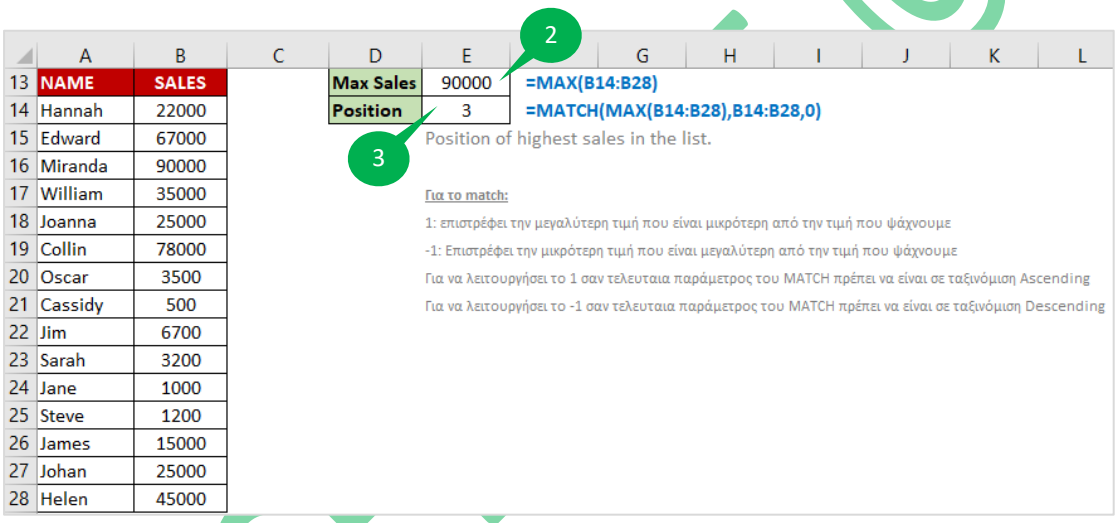
The **MAX** function in Excel calculates the maximum value from a range of cells.



	A	B	C	D	E	F
1	NAME	SCORE		Result	Highest Score	
2	Hannah	85		99	=MAX(B2:B9)	
3	Edward	79				
4	Miranda	93				
5	William	64				
6	Joanna	81				
7	Collin	69				
8	Oscar	76				
9	Cassidy	99				

FUNCTION 1

This function is returning the **maximum value** in the range **B2:B9**.



	A	B	C	D	E	G	H	I	J	K	L
13	NAME	SALES		Max Sales	90000	=MAX(B14:B28)					
14	Hannah	22000		Position	3	=MATCH(MAX(B14:B28),B14:B28,0)					
15	Edward	67000				Position of highest sales in the list.					
16	Miranda	90000									
17	William	35000				Για το match:					
18	Joanna	25000				1: επιστρέφει την μεγαλύτερη τιμή που είναι μικρότερη από την τιμή που ψάχνουμε					
19	Collin	78000				-1: Επιστρέφει την μικρότερη τιμή που είναι μεγαλύτερη από την τιμή που ψάχνουμε					
20	Oscar	3500				Για να λειτουργήσει το 1 σαν τελευταια παράμετρος του MATCH πρέπει να είναι σε ταξινόμιση Ascending					
21	Cassidy	500				Για να λειτουργήσει το -1 σαν τελευταια παράμετρος του MATCH πρέπει να είναι σε ταξινόμιση Descending					
22	Jim	6700									
23	Sarah	3200									
24	Jane	1000									
25	Steve	1200									
26	James	15000									
27	Johan	25000									
28	Helen	45000									

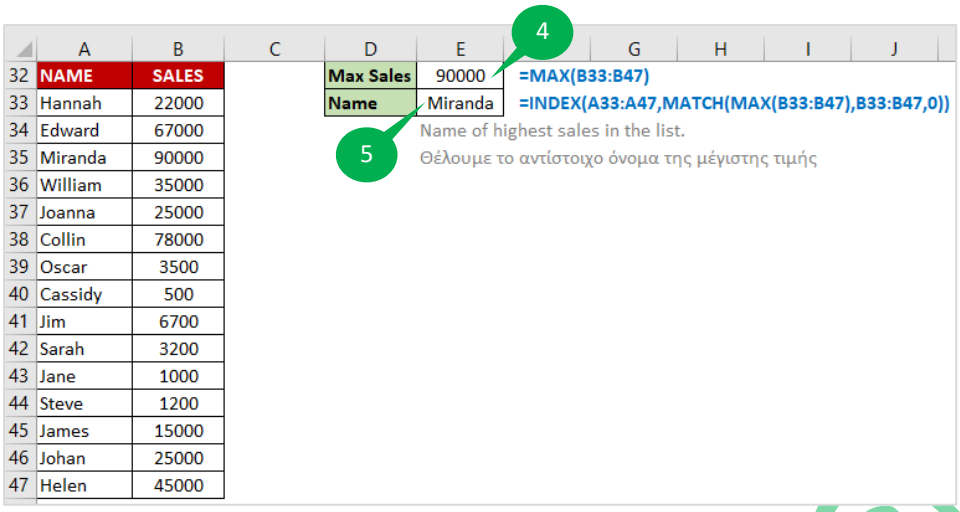
FUNCTION 2

This function is returning the **maximum value** in the range **B14:B28**.

FUNCTION 3

This function to find the **maximum value** in the range **B14:B28**. The **MATCH** function will return the **position** of the cell containing the **maximum value** within the range **B14:B28**.

*** A match_type of **0** means that the function will perform an **exact match**. If the function does **not find** an exact match, it will return an **error**.*



	NAME	SALES
33	Hannah	22000
34	Edward	67000
35	Miranda	90000
36	William	35000
37	Joanna	25000
38	Collin	78000
39	Oscar	3500
40	Cassidy	500
41	Jim	6700
42	Sarah	3200
43	Jane	1000
44	Steve	1200
45	James	15000
46	Johan	25000
47	Helen	45000

FUNCTION 4

This function is returning the **maximum value** in the range `B33:B47`.

FUNCTION 5

The **MAX** function **finds** the **maximum value** in the range `B33:B47`.

The **INDEX** function **returns** an **entire row** or **column** based on the **row_num** or **column_num** argument.

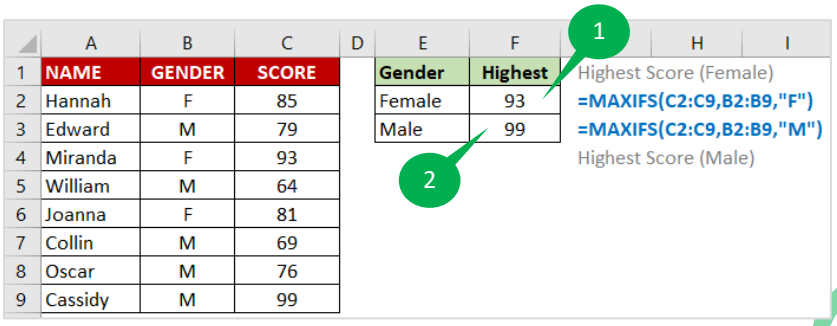
The **MATCH** function **returns** the **position of a value** in the range `B33:B47`.

*** A match_type of **0** means that the function will perform an **exact match**.*

The **INDEX** and **MATCH** functions are **being used together** in this formula to **return** the **value** in **column A** that is in the **same row** as the **maximum value** in **column B**.

7 MAXIFS

The **MAXIFS** function in Excel calculates the maximum value in a range that meets specified criteria.



	A	B	C
1	NAME	GENDER	SCORE
2	Hannah	F	85
3	Edward	M	79
4	Miranda	F	93
5	William	M	64
6	Joanna	F	81
7	Collin	M	69
8	Oscar	M	76
9	Cassidy	M	99

Gender	Highest
Female	93
Male	99

Highest Score (Female)
=MAXIFS(C2:C9,B2:B9,"F")
=MAXIFS(C2:C9,B2:B9,"M")
Highest Score (Male)

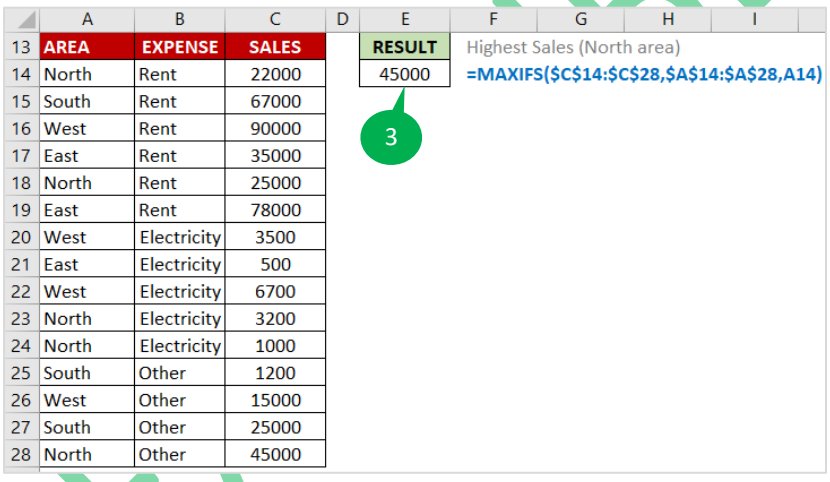
1
2

FUNCTION 1

This function looks at the range **C2:C9** and returns the **maximum value** in that range where the corresponding cell in the range **B2:B9** equals to "**F**".

FUNCTION 2

This function looks at the range **C2:C9** and returns the **maximum value** in that range where the corresponding cell in the range **B2:B9** equals to "**M**".



	A	B	C
13	AREA	EXPENSE	SALES
14	North	Rent	22000
15	South	Rent	67000
16	West	Rent	90000
17	East	Rent	35000
18	North	Rent	25000
19	East	Rent	78000
20	West	Electricity	3500
21	East	Electricity	500
22	West	Electricity	6700
23	North	Electricity	3200
24	North	Electricity	1000
25	South	Other	1200
26	West	Other	15000
27	South	Other	25000
28	North	Other	45000

RESULT
45000

Highest Sales (North area)
=MAXIFS($C$14:$C$28,$A$14:$A$28,A14)

3

FUNCTION 3

This function looks at the range **C14:C28** and **returns** the **maximum value** in that range where the **corresponding cell** in the range **A14:A28** **equals** the value in cell **A14**.

	A	B	C	D	E	F	G	H	I	J
31	AREA	EXPENSE	SALES		RESULT	Highest Sales (Electricity expenses)				
32	North	Rent	22000		6700	=MAXIFS($C$14:$C$28,B32:B46,"Electricity")				
33	South	Rent	67000							
34	West	Rent	90000							
35	East	Rent	35000							
36	North	Rent	25000							
37	East	Rent	78000							
38	West	Electricity	3500							
39	East	Electricity	500							
40	West	Electricity	6700							
41	North	Electricity	3200							
42	North	Electricity	1000							
43	South	Other	1200							
44	West	Other	15000							
45	South	Other	25000							
46	North	Other	45000							

4

FUNCTION 4

This function looks at the range **`C14:C28`** and **returns** the **maximum value** in that range where the **corresponding cell** in the range **`B32:B46`** equals "**Electricity**".

	A	B	C	D	E	F	G	H	I	J	K
49	GRADE	MARKS	LEVEL		RESULT	Highest Mark (for Grade A and Distinction level)					
50	C	25	Pass		50	=MAXIFS(B50:B60,A50:A60,"A",C50:C60,"Distinction")					
51	C	25	Pass								
52	B	35	Pass								
53	C	22	Pass								
54	A	42	Distinction								
55	A	50	Distinction								
56	D	5	Fail								
57	B	35	Fail								
58	C	22	Fail								
59	B	32	Fail								
60	A	42	Distinction								

5

FUNCTION 5

This function looks at the range **`B50:B60`** and **returns** the **maximum value** in that range where the **corresponding cell** in the range **`A50:A60`** equals "**A**" and the **corresponding cell** in the range **`C50:C60`** equals "**Distinction**".

8 MIN

The **MIN** function in Excel calculates returns the smallest value in a range of cells.

	A	B	C	D	E	F
1	NAME	SCORE		Result	Lowest Score	
2	Hannah	85		64	=MIN(B2:B9)	
3	Edward	79				
4	Miranda	93				
5	William	64				
6	Joanna	81				
7	Collin	69				
8	Oscar	76				
9	Cassidy	99				

1

FUNCTION 1

This function finds the **smallest value** in the range **B2:B9**.

	A	B	C	E	F	G	H	I
12				Lowest Sales				
13	NAME	SALES		Min Sales	500	=MIN(B14:B28)		
14	Hannah	22000		Position	8	=MATCH(MIN(B14:B28),B14:B28,0)		
15	Edward	67000		Position of lowest sales in the list.				
16	Miranda	90000						
17	William	35000						
18	Joanna	25000						
19	Collin	78000						
20	Oscar	3500						
21	Cassidy	500						
22	Jim	6700						
23	Sarah	3200						
24	Jane	1000						
25	Steve	1200						
26	James	15000						
27	Johan	25000						
28	Helen	45000						

2

3

FUNCTION 2

This function finds the **smallest value** in the range **B14:B28**.

FUNCTION 3

This function finds the **smallest value** in the range **B14:B28**. The **MATCH** function will return the **position** of the cell containing the **smallest value** within the range **B14:B28**.

*** A match_type of **0** means that the function will perform an **exact match**. If the function does **not find** an exact match, it will return an **error**.*

	A	B	C	E	F	G	H	I	J	K	L
31				Lowest Sales							
32	NAME	SALES		Min Sales	500	=MIN(B33:B47)					
33	Hannah	22000		Name	Cassidy	=INDEX(A33:A47,MATCH(MAX(B33:B47),B33:B47,0))					
34	Edward	67000		Name of lowest sales in the list.							
35	Miranda	90000		1. Βρες το max B33:B47 --> 500							
36	William	35000		2. Κάνε το match με τα στοιχεία B33:B47, άρα επέστρεψε την θέση που το βρήκες ακριβώς --> 8							
37	Joanna	25000		3. Εφάρμοσε το Index: Επέστρεψε το αντίστοιχο στοιχείο από A33:A47 σε εκείνη την θέση							
38	Collin	78000									
39	Oscar	3500									
40	Cassidy	500									
41	Jim	6700									
42	Sarah	3200									
43	Jane	1000									
44	Steve	1200									
45	James	15000									
46	Johan	25000									
47	Helen	45000									

4

5

FUNCTION 4

This function is returning the **smallest value** in the range **B33:B47**.

FUNCTION 5

The **MIN** function **finds** the **smallest value** in the range **B33:B47**.

The **INDEX** function **returns** an **entire row** or **column** based on the **row_num** or **column_num** argument.

The **MATCH** function **returns** the **position of a value** in the range **B33:B47**.

*** A match_type of **0** means that the function will perform an **exact match**.*

The **INDEX** and **MATCH** functions are **being used together** in this formula to **return** the **value** in **column A** that is in the **same row** as the **smallest value** in **column B**.

9 MINIFS

The **MINIFS** function in Excel calculates the maximum value in a range that meets specified criteria.

	A	B	C	D	E	F	G	H	I
1	NAME	GENDER	SCORE		Gender	Lowest	Lowest Score (Female)		
2	Hannah	F	85		Female	81	=MINIFS(C2:C9,B2:B9,"F")		
3	Edward	M	79		Male	64	=MINIFS(C2:C9,B2:B9,"M")		
4	Miranda	F	93				Lowest Score (Male)		
5	William	M	64						
6	Joanna	F	81						
7	Collin	M	69						
8	Oscar	M	76						
9	Cassidy	M	99						

1

2

FUNCTION 1

This function looks at the range **C2:C9** and returns the **smallest value** in that range where the corresponding cell in the range **B2:B9** equals to "**F**".

FUNCTION 2

This function looks at the range **C2:C9** and returns the **smallest value** in that range where the corresponding cell in the range **B2:B9** equals to "**M**".

	A	B	C	D	E	F	G	H	I	J	K
13	Quarter	Region	Product	Sales		RESULT	Lowest Sales (Quarter greater than 1 and Product A)				
14	1	South	A	200,000		125,000	=MINIFS(D14:D26,A14:A26,">1",C14:C26,"A")				
15	2	North	B	150,000							
16	3	West	C	50,000							
17	1	North	A	75,000							
18	2	West	B	65,000							
19	3	East	C	45,000							
20	1	West	A	120,000							
21	2	South	B	78,000							
22	3	West	C	65,000							
23	1	East	B	175,000							
24	3	North	C	85,000							
25	3	South	C	95,000							
26	2	East	A	125,000							

3

FUNCTION 3

This function returns the **minimum value** in the range **D14:D26** that meets both of the specified criteria (the value in the corresponding cell in the range **A14:A26** must be **greater than 1**, and the value in the corresponding cell in the range **C14:C26** must be "**A**").

If there are **no cells** in the range **D14:D26** that meet both criteria, the function will return an **error**.

	A	B	C	D	E	F	G	H	I
29	AREA	EXPENSE	SALES		RESULT	Lowest sales (North Area)			
30	North	Rent	22000		1000	=MINIFS($C$30:$C$44,A30:A44,"North")			
31	South	Rent	67000						
32	West	Rent	90000						
33	East	Rent	35000						
34	North	Rent	25000						
35	East	Rent	78000						
36	West	Electricity	3500						
37	East	Electricity	500						
38	West	Electricity	6700						
39	North	Electricity	3200						
40	North	Electricity	1000						
41	South	Other	1200						
42	West	Other	15000						
43	South	Other	25000						
44	North	Other	45000						

4

FUNCTION 4

This function returns the **minimum value** in the range **`$C$30:$C$44`** that meets the specified criteria (the value in the corresponding cell in the range **`A30:A44`** must be "**North**").

If there are **no cells** in the range **`$C$30:$C$44`** that meet the criteria, the function will return an **error**.

	A	B	C	D	E	F	G	H	I	J
47	GRADE	MARKS	LEVEL		RESULT	Lowest Mark (Grade C and Fail Level)				
48	C	25	Pass		5	=MINIFS(B48:B58,A48:A58,"C",C48:C58,"Fail")				
49	C	25	Pass							
50	B	35	Pass							
51	C	22	Pass							
52	A	42	Distinction							
53	A	50	Distinction							
54	C	5	Fail							
55	B	35	Fail							
56	C	22	Fail							
57	B	32	Fail							
58	A	42	Distinction							

5

FUNCTION 5

This function returns the **minimum value** in the range **`B48:B58`** that meets both of the specified criteria (the **value** in the corresponding cell in the range **`A48:A58`** must be "**C**", and the **value** in the corresponding cell in the range **`C48:C58`** must be "**Fail**").

If there are no cells in the range **`B48:B58`** that meet both criteria, the function will return an **error**.

	A	B	C	D	E	F	G	H	I
62	AREA	EXPENSE	SALES		RESULT	Lowest sales (Rent Expenses)			
63	North	Rent	22000		22000	=MINIFS($C$63:$C$77,B63:B77,"Rent")			
64	South	Rent	67000						
65	West	Rent	90000						
66	East	Rent	35000						
67	North	Rent	25000						
68	East	Rent	78000						
69	West	Electricity	3500						
70	East	Electricity	500						
71	West	Electricity	6700						
72	North	Electricity	3200						
73	North	Electricity	1000						
74	South	Other	1200						
75	West	Other	15000						
76	South	Other	25000						
77	North	Other	45000						

6

FUNCTION 6

This function returns the **minimum value** in the range **$C$63:$C$77** that meets the specified criteria (the **value** in the corresponding cell in the range **B63:B77** must be "**Rent**").

If there are no cells in the range **$C$63:$C$77** that meet the criteria, the function will return an **error**.