



LOOKUP AND REFERENCE FUNCTIONS

VLOOKUP

This means the column number in which Python Marks are present

POWER =VLOOKUP(H5,\$A\$2:\$E\$6,4,FALSE)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Reg No	Name	Database	Python	Excel									
2	101	Ajay	45	65	50									
3	102	John	50	60	60									
4	103	Lee	55	55	50									
5	104	JOHN	60	50	60									
6	105	Lia	65	45	50									
7														
8														
9														
10														
11														
12														

Reg No	Python
101	=VLOOKUP(H5,\$A\$2:\$E\$6,4,FALSE)
105	VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])
102	60

HLOOKUP

POWER =HLOOKUP(K5,\$B\$1:\$G\$5,5)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	RegNo	101	102	103	104	105	106								
2	Name	Ajay	John	Lee	Lia	Peter	Lee								
3	Excel	56	78	56	98	57	45								
4	Python	45	67	72	87	48	44								
5	database	23	65	38	65	84	67								
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															

RegNo	Database
103	=HLOOKUP(K5,\$B\$1:\$G\$5,5)
106	HLOOKUP(lookup_value, table_array, row
105	84

MATCH FUNCTION

Reference to the cell which contains the value we want to search

~~Match~~

The **MATCH** function returns the position of a value in a given range.

Product	Q1 Sales	Q2 Sales	Q3 Sales	Q4 Sales	Annual Total
Laptop	120	150	180	200	650
Smartphone	200	220	250	280	950
Earphones	80	90	100	110	380
Charger	50	60	70	80	260

Product
Earphones

=MATCH(D8,A6:A9,0)

MATCH(lookup_value, lookup_array, [match_type])

INDEX

1 dimensional Index function in which we specify range of data and row number and we get data in result

The INDEX function below returns a specific value in a two-dimensional range.

		2-D			1-D	
		Row Num	Col Num	Index	Row Num	Index
23	2					
45	34		4	2	45	
67	56					
12	45					
3	99					
4	67					

`=INDEX(A17:A22,I18)`

INDEX(array, row_num, [column_num])
INDEX(reference, row_num, [column_num], [area_num])

INDEX

2 Dimensional Index: Here we specify range of two dimensional data, row number and column number and we get result as value

The INDEX function below returns a specific value in a two-dimensional range.

		2-D			1-D	
		Row Num	Col Num	Index	Row Num	Index
23	2					
45	34	4	2	=INDEX(A17:B22,E18,F18)		67
67	56					
12	45					
3	99					
4	67					

INDEX(array, row_num, [column_num])

INDEX(reference, row_num, [column_num], [area_num])

2WAY LOOKUP USING INDEX AND MATCH

Array

Row

Column

Clipboard Font Alignment Number Styles

POWER =INDEX(\$B\$5:\$D\$16,MATCH(G7,\$A\$5:\$A\$16,0),MATCH(H7,\$B\$4:\$D\$4,0))

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	2 Dimensional Lookup using Match and Index														
2															
3															
4		Laptop	Smartphone	Smartwatch											
5	Jan	544	639	189											
6	Feb	217	719	679											
7	Mar	810	178	810											
8	Apr	567	926	929											
9	May	745	230	364											
10	Jun	298	820	947											
11	Jul	457	522	832											
12	Aug	495	500	239											
13	Sep	871	391	529											
14	Oct	585	225	791											
15	Nov	478	262	540											
16	Dec	741	883	809											
17															

Month	Product	Sales
Apr	Smartphone	
Jun	Smartwatch	
Jun	Laptop	

=INDEX(\$B\$5:\$D\$16,MATCH(G7,\$A\$5:\$A\$16,0),MATCH(H7,\$B\$4:\$D\$4,0))

INDEX(array, row_num, [column_num])
INDEX(reference, row_num, [column_num], [area_num])

CASE SENSITIVE LOOKUP USING INDEX, MATCH AND EXACT

Execute this by pressing Ctrl-Shift-Enter because this is an array formula as John will be compared with complete column Name.

Clipboard Font Alignment Number

POWER

=INDEX(E4:E8,MATCH(TRUE,EXACT(G4,B4:B8),0))

	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2													
3	Reg No	Name	Database	Python	Excel								
4	101	Ajay	45	65	50		JOHN	=INDEX(E4:E8,MATCH(TRUE,EXACT(G4,B4:B8),0))					
5	102	John	50	60	60								
6	103	Lee	55	55	50								
7	104	JOHN	60	50	60								
8	105	Lia	65	45	50								
9													
10													
11													
12													
13													
14													
15													
16													

INDEX(array, row_num, [column_num])
INDEX(reference, row_num, [column_num], [area_num])

LEFT LOOKUP: USING INDEX AND MATCH

With Vlookup we can only search from left to right, in order to search from right to left, use combination of index and match. As match will return a position, and use this as an input to index and get an output

ClipboardFontAlignmentNumber

POWER

TWO COLUMN LOOKUP

POWER

X **✓** **f_x**

=INDEX(Table13[Amount],MATCH(H5&I5,Table13[Product]&Table13[Brand],0))

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1															
2				2 Column Lookup											
3															
4		Product	Brand	ID	Amount			Product	Brand	Amount					
5		Laptop	Dell	101	90000			Keyboard	Apple	=INDEX(Table13[Amount],MATCH(H5&I5,Table13[Product]&Table13[Brand],0))					
6		Laptop	HP	102	80000			Keyboard	Logitech						
7		Smartphone	Apple	103	90000										
8		Keyboard	Apple	104	10000										
9		Mouse	Hp	105	5000										
10		Keyboard	Logitech	106	2000										
11		penDrive	Kingston	107	700										
12															
13															

INDEX(array, row_num, [column_num])
INDEX(reference, row_num, [column_num], [area_num])

CLOSEST MATCH

Format Painter | Clipboard | Font | Alignment | Number | Formatting | Table | Styles

POWER | X | ✓ | fx | =INDEX(B3:B9,MATCH(MIN(ABS(C3:C9-F8)),ABS(C3:C9-F8),0))

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1																
2		Name	Sales													
3		Emily	560													
4		James	700													
5		Mia	720													
6		John	490													
7		Peter	625													
8		Lee	690													
9		Lia	740													
10																
11																
12																

Target Sales 750

=INDEX(B3:B9,MATCH(MIN(ABS(C3:C9-F8)),ABS(C3:C9-F8),0))

INDEX(array, row_num, [column_num])
INDEX(reference, row_num, [column_num], [area_num])

In a sales company, employees were assigned some target to complete. However, the sales turned out to be different for every employee. Find out the person who has achieved sales closest to the target sales



DATE & TIME FUNCTIONS

	A	B	C	D	E	F	G	H	I	J
1										
2										
3										
4										
5										
6										
7										
8										
9		19-08-2019		16:00		19-08-2019 08:30				
10										
11										
12										
13										
14										
15										
16		19-08-2019		2019						
17				8						
18				19						
19										
20										
21										
22										
23			22-08-2019							
24										
25										
26										
27										

Format of date and time

To calculate year month and day: Use
`=YEAR(B16)`
`=MONTH(B16)`
`=DAY(B16)`

To add some days to a date: use
`=(B16+3)`

DATEDIF Function

Date Of Birth

02-09-2001

Today's Data

29-08-2019

Functions

No. of Years

=DATEDIF(G36,G37,"y")

No. of Month

DATEDIF()

11

No. of Days

6570

27

Parameters to use in datedif:

“y” : to calculate years

“m”: to calculate number of months

“d”: to calculate number of days

“ym”: ignore year and days and calculate months

“md”: ignore year and month and calculate days

To add a number of years, months and/or days, use the DATE function.

=DATE(YEAR(B16)+4, MONTH(B16+3), DAY(B16)+7)

DATE(year, month, day)

Hour Function

09:45:34

18:54:12

=HOUR(L23)

HOUR(serial_number)

Time Function:

To add a number of hours, minutes and/or seconds, use the TIME function.

09:45:34

=TIME(HOUR(L30)+3, MINUTE(L30)+5, SECOND(L30)+6)

TIME(hour, minute, second)