

Excel Functions

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Introduction

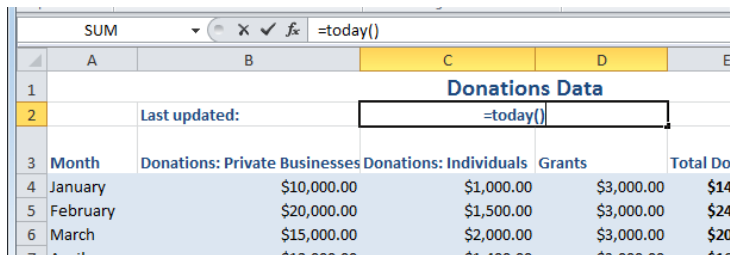
Functions in Excel are shortcuts for calculating different types of problems. They allow you to carry out an action including inserting today's date in a cell or solving a math problem without having to type out the entire problem. Normally, this would require you to type out an entire formula, but functions allow you to save time when completing your task. Each function must have an equals sign ("=") in front of it.

TODAY Function

With the TODAY function, you can display the current date without having to type it out. Use of the TODAY function saves time when you have spreadsheets such as daily reports that include the current date, because you will not have to input that information each day.

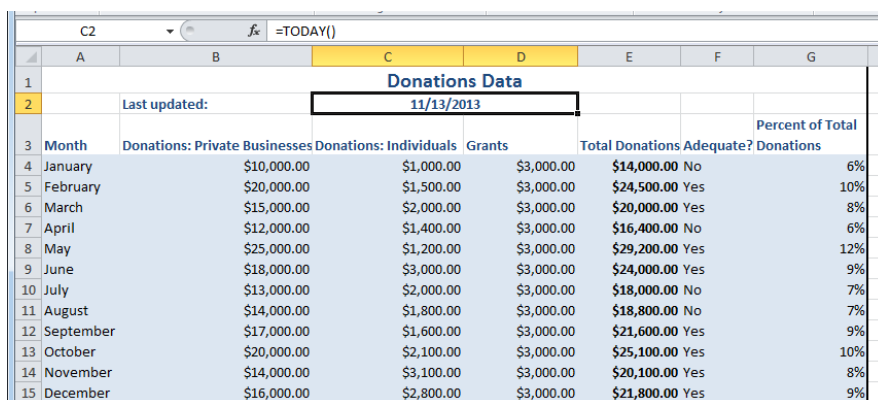
Below, the TODAY function is used to show the last date data was updated in the DonationsData worksheet.

1. Position yourself in the cell you want the date to appear in (cell C2 in our example).
2. Type an equals sign("=") with the word "TODAY" and open/closed parenthesis behind it "()".



	A	B	C	D	E
1			Donations Data		
2		Last updated:	=today()		
3	Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Dor
4	January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00
5	February	\$20,000.00	\$1,500.00	\$3,000.00	\$24,500.00
6	March	\$15,000.00	\$2,000.00	\$3,000.00	\$20,000.00
7	April	\$12,000.00	\$1,400.00	\$3,000.00	\$16,400.00

3. When you press enter, today's date will appear in that cell. The date will automatically be in MM/DD/YYYY format in the Today function. (NOTE: if the date does NOT appear in this format, go to the Excel ribbon, in the Number group, and change the number format to "Short Date" or another desired date format.)



	A	B	C	D	E	F	G
1			Donations Data				
2		Last updated:	11/13/2013				
3	Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations	Adequate?	Percent of Total Donations
4	January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00	No	6%
5	February	\$20,000.00	\$1,500.00	\$3,000.00	\$24,500.00	Yes	10%
6	March	\$15,000.00	\$2,000.00	\$3,000.00	\$20,000.00	Yes	8%
7	April	\$12,000.00	\$1,400.00	\$3,000.00	\$16,400.00	No	6%
8	May	\$25,000.00	\$1,200.00	\$3,000.00	\$29,200.00	Yes	12%
9	June	\$18,000.00	\$3,000.00	\$3,000.00	\$24,000.00	Yes	9%
10	July	\$13,000.00	\$2,000.00	\$3,000.00	\$18,000.00	No	7%
11	August	\$14,000.00	\$1,800.00	\$3,000.00	\$18,800.00	No	7%
12	September	\$17,000.00	\$1,600.00	\$3,000.00	\$21,600.00	Yes	9%
13	October	\$20,000.00	\$2,100.00	\$3,000.00	\$25,100.00	Yes	10%
14	November	\$14,000.00	\$3,100.00	\$3,000.00	\$20,100.00	Yes	8%
15	December	\$16,000.00	\$2,800.00	\$3,000.00	\$21,800.00	Yes	9%

NOW Function

With the NOW function, you can display the current date AND time, without having to type it out.

1. Position yourself in the cell that you would like the date to appear in (cell C2 in our example).
2. Type an equals sign(“=”) with the word the “NOW” and open/closed parenthesis right after it.

	A	B	C	D	E
1			Donations Data		
2		Last updated:	=now()		
3	Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations
4	January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00
5	February	\$20,000.00	\$1,500.00	\$3,000.00	\$24,500.00
6	March	\$15,000.00	\$2,000.00	\$3,000.00	\$20,000.00
7	April	\$12,000.00	\$1,400.00	\$2,000.00	\$15,400.00

3. The date will automatically be in MM/DD/YYYY format; the time will automatically use the 24-hour clock. Even though the date and time format defaults, you can change the formatting as described in step 3 of the previous section.

	A	B	C	D	E
1			Donations Data		
2		Last updated:	11/13/2013 06:34		
3	Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations
4	January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00
5	February	\$20,000.00	\$1,500.00	\$3,000.00	\$24,500.00
6	March	\$15,000.00	\$2,000.00	\$3,000.00	\$20,000.00

SUM Function

With the SUM function, the total of cell values that you select can be found.

In the example below, the SUM function is used to calculate the total amount of donations each month in the DonationsData worksheet.

1. Position yourself in the cell you want the total to appear in (cell E4 in our example).
2. Type an equals sign("="), the word "SUM", followed by an open parenthesis, followed by the range of cell addresses (starting cell and ending cell with a colon in the middle) for the cells you want to total (e.g. B4:D4). Then type a closing parenthesis.

SUM X ✓ fx =sum(b4:d4)				
	A	B	C	D
1	Donations Data			
2		Last updated:	11/13/2013 07:24	
3	Month	Donations: Private Businesses	Donations: Individuals	Grants
4	January	\$10,000.00	\$1,000.00	\$3,000.00
5	February	\$20,000.00	\$1,500.00	\$3,000.00
6	March	\$15,000.00	\$2,000.00	\$3,000.00
7	April	\$12,000.00	\$1,400.00	\$3,000.00

3. When you press enter, the total will be entered in that cell. Note that Excel will only sum numeric values.

E4 X ✓ fx =SUM(B4:D4)				
	A	B	C	D
1	Donations Data			
2		Last updated:	11/13/2013 07:35	
3	Month	Donations: Private Businesses	Donations: Individuals	Grants
4	January	\$10,000.00	\$1,000.00	\$3,000.00
5	February	\$20,000.00	\$1,500.00	\$3,000.00
6	March	\$15,000.00	\$2,000.00	\$3,000.00
7	April	\$12,000.00	\$1,400.00	\$3,000.00

4. To complete our example, we copy the SUM function in cell E4 down to the other cells that we want to display totals in.

E4 X ✓ fx =SUM(B4:D4)				
	A	B	C	D
1	Donations Data			
2		Last updated:	11/13/2013 07:40	
3	Month	Donations: Private Businesses	Donations: Individuals	Grants
4	January	\$10,000.00	\$1,000.00	\$3,000.00
5	February	\$20,000.00	\$1,500.00	\$3,000.00
6	March	\$15,000.00	\$2,000.00	\$3,000.00
7	April	\$12,000.00	\$1,400.00	\$3,000.00
8	May	\$25,000.00	\$1,200.00	\$3,000.00
9	June	\$18,000.00	\$3,000.00	\$3,000.00
10	July	\$13,000.00	\$2,000.00	\$3,000.00
11	August	\$14,000.00	\$1,800.00	\$3,000.00
12	September	\$17,000.00	\$1,600.00	\$3,000.00
13	October	\$20,000.00	\$2,100.00	\$3,000.00
14	November	\$14,000.00	\$3,100.00	\$3,000.00
15	December	\$16,000.00	\$2,800.00	\$3,000.00

AVERAGE Function

With the AVERAGE function, you can display the mean or average value of a group of values without having to manually total the values and then divide by the number of values.

In the example below, the AVERAGE function is used to calculate the average donation received by donation type in the DonationsData worksheet.

1. Position yourself in the cell that you would like the average to appear in (cell B16 in our example).
2. Type the equals sign (“=”) followed by the word AVERAGE, and within parentheses, the range of cells you want to have Excel calculate the average for.

The screenshot shows the Excel formula bar with the formula `=average(b4:b15)` entered. The worksheet displays a table with columns: Month, Donations: Private Businesses, and Donations: Ind. The data rows are numbered 4 through 15, corresponding to the months of the year. Cell B16 is highlighted with the formula `=average(b4:b15)`.

Month	Donations: Private Businesses	Donations: Ind
January	\$10,000.00	
February	\$20,000.00	
March	\$15,000.00	
April	\$12,000.00	
May	\$25,000.00	
June	\$18,000.00	
July	\$13,000.00	
August	\$14,000.00	
September	\$17,000.00	
October	\$20,000.00	
November	\$14,000.00	
December	\$16,000.00	
AVERAGES		

3. When you press enter, the average of the cells you referenced will appear in that cell.

The screenshot shows the result of the AVERAGE function in cell B16, which is **\$16,166.67**. The formula bar shows `=AVERAGE(B4:B15)`.

Month	Donations: Private Businesses	Donations: Ind
January	\$10,000.00	
February	\$20,000.00	
March	\$15,000.00	
April	\$12,000.00	
May	\$25,000.00	
June	\$18,000.00	
July	\$13,000.00	
August	\$14,000.00	
September	\$17,000.00	
October	\$20,000.00	
November	\$14,000.00	
December	\$16,000.00	
AVERAGES	\$16,166.67	

4. To complete our example, we copy the AVERAGE function in cell B16 across to the other cells that we want to display averages in.

The screenshot shows the completed table with averages for all donation types. The formula bar shows `=AVERAGE(C4:C15)` for cell C16.

Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations Adequat
January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00 No
February	\$20,000.00	\$1,500.00	\$3,000.00	\$24,500.00 Yes
March	\$15,000.00	\$2,000.00	\$3,000.00	\$20,000.00 Yes
April	\$12,000.00	\$1,400.00	\$3,000.00	\$16,400.00 No
May	\$25,000.00	\$1,200.00	\$3,000.00	\$29,200.00 Yes
June	\$18,000.00	\$3,000.00	\$3,000.00	\$24,000.00 Yes
July	\$13,000.00	\$2,000.00	\$3,000.00	\$18,000.00 No
August	\$14,000.00	\$1,800.00	\$3,000.00	\$18,800.00 No
September	\$17,000.00	\$1,600.00	\$3,000.00	\$21,600.00 Yes
October	\$20,000.00	\$2,100.00	\$3,000.00	\$25,100.00 Yes
November	\$14,000.00	\$3,100.00	\$3,000.00	\$20,100.00 Yes
December	\$16,000.00	\$2,800.00	\$3,000.00	\$21,800.00 Yes
AVERAGES	\$16,166.67	\$1,958.33	\$3,000.00	\$21,125.00

IF Function

Use the IF function to display different values based on whether a situation is true or false. For example, you might want to display the word YES in the “Adequate?” column if total donations for the month exceed 19,000, NO in the “Adequate?” column if total donations drop below 19,000.

1. In the cell you want your true or false statement to appear, enter the IF formula. The format is:
=IF(conditional statement, true statement, false statement)
 - a. The conditional statement is the statement that is being tested in the situation. This will be typed after the “=IF” in parenthesis. For example, the test could be simply to display whether a number is above or below \$19,000. The conditional statement in this case would be “E3>19000”.
 - b. The true statement is the next part of an IF function; it states what Excel will display if the conditional statement is true. The true statement would be “YES” because this is what the computer would output if the number in cell E3 is higher than \$19,000.
 - c. The false statement is the final part of the IF function; it states what Excel will display if the conditional statement is false. The false statement would be “NO” because this is what the computer would output if the number in cell E3 is lower than \$19,000.

P23								
	A	B	C	D	E	F	G	H
1	Donations Data							
2		Last updated:	7/19/2012					
3	Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations	Adequate?		
4	January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00	=IF(E4>19000, "YES", "NO")		
5	February	\$20,000.00	\$1,500.00	\$3,000.00	\$24,500.00	YES		
6	March	\$15,000.00	\$2,000.00	\$3,000.00	\$20,000.00	YES		
7	April	\$12,000.00	\$1,400.00	\$3,000.00	\$16,400.00	NO		
8	May	\$25,000.00	\$1,200.00	\$3,000.00	\$29,200.00	YES		
9	June	\$18,000.00	\$3,000.00	\$3,000.00	\$24,000.00	YES		
10	July	\$13,000.00	\$2,000.00	\$3,000.00	\$18,000.00	NO		
11	August	\$14,000.00	\$1,800.00	\$3,000.00	\$18,800.00	NO		
12	September	\$17,000.00	\$1,600.00	\$3,000.00	\$21,600.00	YES		
13	October	\$20,000.00	\$2,100.00	\$3,000.00	\$25,100.00	YES		
14	November	\$14,000.00	\$3,100.00	\$3,000.00	\$20,100.00	YES		
15	December	\$16,000.00	\$2,800.00	\$3,000.00	\$21,800.00	YES		
16								
17								
18								

2. When you press enter, either the true statement value or the false statement value will be displayed in the cell.

F4		=IF(E4>19000, "YES", "NO")						
	A	B	C	D	E	F	G	H
1	Donations Data							
2		Last updated:	7/19/2012					
3	Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations	Adequate?		
4	January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00	NO		
5	February	\$20,000.00	\$1,500.00	\$3,000.00	\$24,500.00	YES		
6	March	\$15,000.00	\$2,000.00	\$3,000.00	\$20,000.00	YES		
7	April	\$12,000.00	\$1,400.00	\$3,000.00	\$16,400.00	NO		

Vertical LOOKUP Function

With the Vertical Lookup (VLOOKUP) function, a value can be found based on another value. The vertical lookup function is often used when you have a value that you want to translate into a different value, but the different value is on another worksheet. VLOOKUP is vital to any type of business because it saves a lot of time. Instead of having to copy information from one worksheet to another, the function will find and copy the data for you. Also, if the original data changes, the VLOOKUP function will change the “looked-up” values automatically.

For example, you may have a Balance Sheet on one worksheet (“BalanceSheet”) that needs to pull in total donations for each month that are stored on another worksheet (“DonationsData”). Using VLOOKUP, we can indicate to Excel that if the “Month” value on the DonationsData worksheet matches the “Month” value on the BalanceSheet worksheet, then copy the Total Donations value for that month on the DonationsData worksheet to the appropriate place on the BalanceSheet worksheet.

1. In the cell you want to store the copied value, enter the VLOOKUP formula. The format is **=VLOOKUP(lookup_value, table_array, col_index_num, range_lookup)**.
 - a. The **lookup_value** indicates the cell that you want to look up information for. This would be the cell on our worksheet that contains the word “January” in our example (B2).
 - b. The **table_array** is either a name assigned to a table of data OR a range of cells containing data. The table array in our example is cells A4:E15 on the DonationsData worksheet because the data we want to match (i.e., “January”) and the data we want to bring into our current worksheet (i.e., total donations) is contained in these cells.
 - c. The **col_index_num** is the column the information you want to “look up” is in. In this example, the column index number is 5 because the column that the total donations is in is the fifth one in the table.
 - d. The **range_lookup** value indicates whether you want to find an exact match on your lookup_value, or whether you will accept the closest approximate match. “FALSE” returns an exact match; “TRUE” returns an approximate match. This argument is optional—if not entered, the default will be TRUE.

SUM		=VLOOKUP(B2, DonationsData!\$A\$4:\$E\$15, 5, FALSE)												
	A	B	C	D	E	F	G	H	I	J	K	L	M	
1	Balance Sheet													
2		January	February	March	April	May	June	July	August	September	October	November	December	
3	Assets	\$28,435.70	\$40,259.40	\$37,683.70	\$32,985.40	\$45,319.60	\$38,922.20	\$35,003.40	\$35,318.50	\$36,622.70	\$39,746.10	\$37,333.90	\$37,229.70	
4														
5	Nonfinancial Assets	\$13,360.20	\$14,713.30	\$16,754.10	\$15,922.60	\$15,151.00	\$14,147.00	\$16,009.10	\$15,527.10	\$14,135.30	\$13,874.60	\$16,427.70	\$14,372.90	
6														
7	Real estate	\$8,170.20	\$9,165.80	\$10,909.00	\$9,945.20	\$9,388.00	\$8,306.00	\$8,775.00	\$9,009.00	\$8,556.00	\$9,061.00	\$9,493.00	\$8,394.00	
8	Equipment and software	\$3,601.60	\$3,851.00	\$4,012.20	\$4,190.80	\$4,091.00	\$4,163.00	\$5,748.20	\$4,968.40	\$3,894.80	\$3,457.30	\$4,957.90	\$4,920.40	
9	Inventories	\$1,588.40	\$1,696.50	\$1,832.90	\$1,786.60	\$1,672.00	\$1,678.00	\$1,485.90	\$1,549.70	\$1,684.50	\$1,356.30	\$1,976.80	\$1,058.50	
10														
11	Financial assets	\$15,075.50	\$25,546.10	\$20,929.60	\$17,062.80	\$30,168.60	\$24,775.20	\$18,994.30	\$19,791.40	\$22,487.40	\$25,871.50	\$20,906.20	\$22,856.80	
12														
13	Checkable deposits and currency	\$268.00	\$150.80	\$143.20	\$30.60	\$138.40	\$69.50	\$239.40	\$143.60	\$59.70	\$86.70	\$20.80	\$90.50	
14	Time and savings depositions	\$450.40	\$497.00	\$441.30	\$381.90	\$390.30	\$402.80	\$373.60	\$489.30	\$389.50	\$390.20	\$439.20	\$512.30	
15	Commercial paper	\$111.00	\$122.70	\$69.50	\$57.30	\$102.40	\$78.30	\$98.20	\$69.90	\$129.40	\$78.90	\$89.20	\$180.20	
16	Treasury securities	\$52.10	\$45.50	\$38.30	\$30.50	\$50.20	\$42.60	\$36.70	\$48.50	\$49.20	\$36.20	\$46.90	\$35.40	
17	Consumer credit	\$59.60	\$57.00	\$59.30	\$56.30	\$48.50	\$58.80	\$57.00	\$46.30	\$67.30	\$34.20	\$42.80	\$58.20	
18	Total Donations	=VLOOKUP(B2, DonationsData!\$A\$4:\$E\$15, 5, FALSE)												
19	Money market fund shares	\$134.40	\$173.10	\$178.00	\$106.20	\$238.80	\$123.20	\$189.40	\$193.80	\$192.30	\$145.30	\$167.30	\$180.20	
20														
21	Liabilities	\$356.80	\$332.40	\$246.70	\$431.40	\$269.40	\$362.00	\$372.80	\$321.60	\$354.10	\$266.50	\$303.50	\$159.30	

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2. When you press enter, the “looked-up” value appears.

[illegible]

NOTE: In our example above, we copied the VLOOKUP formula to the other cells in the row, in order to get the total donations for the remaining months.