Excel Techniques to Sum Data with Errors

There are times that you need to know the sum of numeric data even though there may be errors in it. The most common of these error values are #DIV/0!, #NUM!, #N/A and #VALUE!. #DIV/0! refers to a situation where Excel is trying to divide by zero or by a cell that is blank. This is mathematically impossible, hence the error value. The #NUM! error value refers to a situation where there is a problem with the underlying formula and the #VALUE! error value most often occurs when Excel is trying to perform a mathematical operation with text.

There are numerous functions and techniques in Excel to sum data with errors. Some have been recently developed by Microsoft and are much easier to use than the older techniques. We're going to start with the oldest technique first, then progress to the newer, easier techniques so that we cover all the versions of Excel.
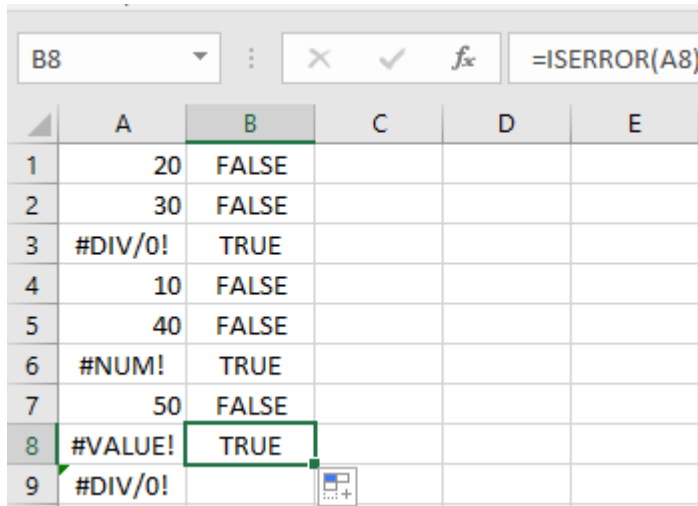
Oldest Technique – ISERROR

The ISERROR function in Excel evaluates a cell and returns TRUE if there is an error and FALSE if there is not an error. Because you only have a TRUE value or a FALSE value to work with, this function must generally be paired with an IF function to be useful. The IF function in Excel is structured so that there is a value if TRUE and a value if FALSE.
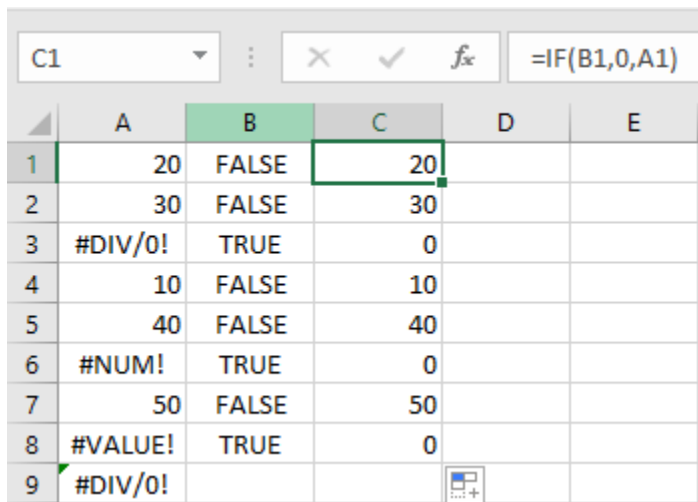
Here's an example:

First, use ISERROR to return either TRUE of FALSE to isolate the error values. The syntax for B1 is =ISERROR(A1). Copy this down to B8.

B8			×	✓	f_x	=ISERROR(A8)

	A	B	C	D	E
1	20	FALSE			
2	30	FALSE			
3	#DIV/0!	TRUE			
4	10	FALSE			
5	40	FALSE			
6	#NUM!	TRUE			
7	50	FALSE			
8	#VALUE!	TRUE			
9	#DIV/0!				

Now, in column C, we will use an IF function. The value if TRUE will be zero while the value if FALSE will be the corresponding value in column A. Cell C1 will be =IF(B1,0,A1). Copy this down to C8.

C1			×	✓	f_x	=IF(B1,0,A1)

	A	B	C	D	E
1	20	FALSE	20		
2	30	FALSE	30		
3	#DIV/0!	TRUE	0		
4	10	FALSE	10		
5	40	FALSE	40		
6	#NUM!	TRUE	0		
7	50	FALSE	50		
8	#VALUE!	TRUE	0		
9	#DIV/0!				

Lastly, you can use the SUM function to sum the results of C1:C8.

	A	B	C
1	20	FALSE	20
2	30	FALSE	30
3	#DIV/0!	TRUE	0
4	10	FALSE	10
5	40	FALSE	40
6	#NUM!	TRUE	0
7	50	FALSE	50
8	#VALUE!	TRUE	0
9	#DIV/0!		150

This involves using two extra columns of data and is a bit cumbersome. Is there a way to combine ISERROR with an IF function and a SUM function? Yes, there is.

An array formula allows you to perform tasks that may currently take more than one step, and consolidate them into one step, improving efficiency. in Excel, an array is a block of adjacent cells that are treated as a group. It is defined as a range of data. The data can be represented in a column or row or more than one column or row. In this example, we are just using one column of data.

The most important thing to remember is that all array formulas must be followed by **CTRL+SHIFT+ENTER**. If you just hit ENTER, it will not work properly. The **CTRL+SHIFT+ENTER** tells Excel that the selected range is an array and they should be calculated together.

We know that we want to sum the data if certain conditions are met. So, the first part of the formula will be =SUM. Since we want to sum the data if there is no error and replace the data where there is an error with zero, the next step is an IF function. The components of the IF function will be to evaluate A1:A8 as an array using ISERROR. If the value is TRUE, then replace it with zero. If the value if FALSE, then use the number.

The end formula will be =SUM(IF(ISERROR(A1:A8),0,A1:A8)) followed by **CTRL+SHIFT+ENTER**. We'll use cell A11 to enter this formula.

SUMIFS	▼	⋮	✕	✓	fx	=SUM(IF(ISERROR(A1:A8),0,A1:A8))		

	A	B	C	D	E	F	G
1	20	FALSE	20				
2	30	FALSE	30				
3	#DIV/0!	TRUE	0				
4	10	FALSE	10				
5	40	FALSE	40				
6	#NUM!	TRUE	0				
7	50	FALSE	50				
8	#VALUE!	TRUE	0				
9	#DIV/0!		150				
10							
11	=SUM(IF(ISERROR(A1:A8),0,A1:A8))						

Press **CTRL+SHIFT+ENTER.**

A11	▼	⋮	✕	✓	fx	{=SUM(IF(ISERROR(A1:A8),0,A1:A8))}		

	A	B	C	D	E	F	G
1	20	FALSE	20				
2	30	FALSE	30				
3	#DIV/0!	TRUE	0				
4	10	FALSE	10				
5	40	FALSE	40				
6	#NUM!	TRUE	0				
7	50	FALSE	50				
8	#VALUE!	TRUE	0				
9	#DIV/0!		150				
10							
11	150						

We've just converted a three step process into one step. By combining the ISERROR function into the IF function and using the SUM function to sum the results, an array formula has saved time and worksheet space.

This technique is older. The ISERROR function was introduced with Excel 2000. If you're using a version of Excel prior to 2007, this may be the best way to sum data with errors.

Newer Technique – IFERROR

The IFERROR function was introduced in Excel 2007 and combined the useful elements of the IF function with the ISERROR function. The syntax for IFERROR is =IFERROR(cell value, value if there is an error). The IFERROR function eliminates the need for an IF function.

Using the previous example, IFERROR will be used in column B to evaluate cells A1 – A8. The syntax for B1 is =IFERROR(A1,0). This will be copied down from B1:B8.

B1		⋮	×	✓	fx	=IFERROR(A1,0)	

	A	B	C	D	E
1	20	20			
2	30	30			
3	#DIV/0!	0			
4	10	10			
5	40	40			
6	#NUM!	0			
7	50	50			
8	#VALUE!	0			
9	#DIV/0!				

We may now sum the value in B1:B8 and arrive at a total of 150.

B9		⋮	×	✓	fx	=SUM(B1:B8)	

	A	B	C	D	E
1	20	20			
2	30	30			
3	#DIV/0!	0			
4	10	10			
5	40	40			
6	#NUM!	0			
7	50	50			
8	#VALUE!	0			
9	#DIV/0!	150			

A simpler array formula may also be used. We still want to sum the data. However, the IFERROR function has eliminated the need for an IF function. The syntax of the array formula will be =SUM(IFERROR(A1:A8,0)). In this case, the IFERROR function is evaluating the contents of cells A1:A8 and, if there is an error, replacing the error value with zero. The SUM function is then used to sum the values.

Enter this function is cell A11.

	A	B	C	D	E	F
1	20	20				
2	30	30				
3	#DIV/0!	0				
4	10	10				
5	40	40				
6	#NUM!	0				
7	50	50				
8	#VALUE!	0				
9	#DIV/0!	150				
10						
11	=SUM(IFERROR(A1:A8,0))					

Press **CTRL+SHIFT+ENTER.**

A11 — {=SUM(IFERROR(A1:A8,0))}

	A	B	C	D	E	F
1	20	20				
2	30	30				
3	#DIV/0!	0				
4	10	10				
5	40	40				
6	#NUM!	0				
7	50	50				
8	#VALUE!	0				
9	#DIV/0!	150				
10						
11	150					

The use of IFERROR provides for a two-step process without the use of array formulas and a simpler array formula. If you're using Excel 2007, this may be the best way to sum data with errors.

IFNA

IFNA was introduced with Excel 2013 and is virtually identical to IFERROR except that it only identifies and evaluates #N/A errors. It does not consider other error messages such as #DIV/0! And #NUM as errors. The syntax is: IFNA(value, value_if_na)

Newest Technique – AGGREGATE

The AGGREGATE function is found in Excel 2010 and later versions. It can provide the SUM, AVERAGE, COUNT, MIN, MAX and other functions for a range of data ignoring errors, subtotals as well as hidden

rows and columns. For this exercise, we'll only focus on using the SUM function and the option to ignore errors.

	A	B	C	D	E
1	20				
2	30				
3	#DIV/0!				
4	10				
5	40				
6	#NUM!				
7	50				
8	#VALUE!				
9	#DIV/0!				
10					
11	=aggregate(				
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

SUMIFS ▾ ⋮ ✕ ✓ *fx*   =aggregate(

AGGREGATE(**function_num**, options, array, [k])
AGGREGATE(**function_num**, options, ref1, ...)

3 - COUNTA
4 - MAX
5 - MIN
6 - PRODUCT
7 - STDEV.S
8 - STDEV.P
9 - SUM
10 - VAR.S
11 - VAR.P
12 - MEDIAN

In cell A11, we've started the AGGREGATE function. Notice the myriad of options available. In this example, we want option 9 – SUM. Select option 9, followed by a comma.

You now have options as to what should be ignored. In this example, we want to ignore error values which is option 6. Select option 6 followed by a comma.

The remainder of the formula is like the SUM function. You need to tell the function the range of data to aggregate. In this case, that range is A1:A8.

Pres Enter.

A11	▾	⋮	✕	✓	*fx*	=AGGREGATE(9,6,A1:A8)

◢	A	B	C	D	E	F
1	20					
2	30					
3	#DIV/0!					
4	10					
5	40					
6	#NUM!					
7	50					
8	#VALUE!					
9	#DIV/0!					
10						
11	150					

This is a much easier way to sum data ignoring errors. It's a one-step process that does not involve the use of array formulas on your part (Excel has performed the array formulas for you).

AGGREGATE is a powerful formula that should be explored. You may find a lot of worksheet efficiency embedded in one formula, especially if your spreadsheets contain hidden rows or columns and/or subtotals.

In this article, we've looked at the ISERROR, IFERROR and IFNA functions to identify error values, the use of array formulas to consolidate multiple tasks into one step as well as the new AGGREGATE function. CPASelfStudy.com has many courses covering these functions and techniques, and many more, in greater detail.