How To Calculate *z*-scores in Microsoft Excel, Google Sheets, and Apple Numbers
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Let's say we've collected data on the number of hours that each member of a sample of college students sleep each night. In Figure 1 below, these data are illustrated in Column A with the Column Heading "Sleep (in hours)."

First, we need to calculate the Mean (illustrated in cell D2 in Figure 1 below) and the Standard Deviation (illustrated in cell E2 below) because we'll need the Mean and Standard Deviation to calculate the *z*-score of each value in our data set.

Then, to calculate each *z*-score, we first create a new Column Header called Z-Scores, as illustrated in Column B of Figure 1 below. Next we build a formula.

Figure 1 - Excel and Google Sheets

Figure 1 - Apple Numbers

The formula for computing a *z*-score is =(DataValue-Mean)/StDev. For example, to compute a *z*-score for the first value in our data set, we use the formula =(A2-$D$2)/$E$2 as Figure 1 illustrates.

Notice the dollar signs $ in the formula. These dollar signs are what are known as absolute markers. They tell the formula to always look in a specific cell for a value, even if the formula is copied into another cell. For example, with the formula =(A2-$D$2)/$E$2, our formula will always look in cell D2 for the Mean and always look in cell E2 for the Standard Deviation.

When we use the dollars signs, we need to place a dollar sign around both the letter and the number of a cell name. For example, we need to place a dollar sign around both the letter D and the number 2 (e.g., $D$2) to tell the formula to always look in cell D2 for the Mean.

Once we've calculated the *z*-score for the first data value in our data set, we can calculate the *z*-scores for all the other values. Because we used the dollar signs in our formula to tell our formula to always look in a specific cell for the Mean and to always look in another specific cell for the Standard Deviation, we can take advantage of a short cut to compute all the other *z*-values.
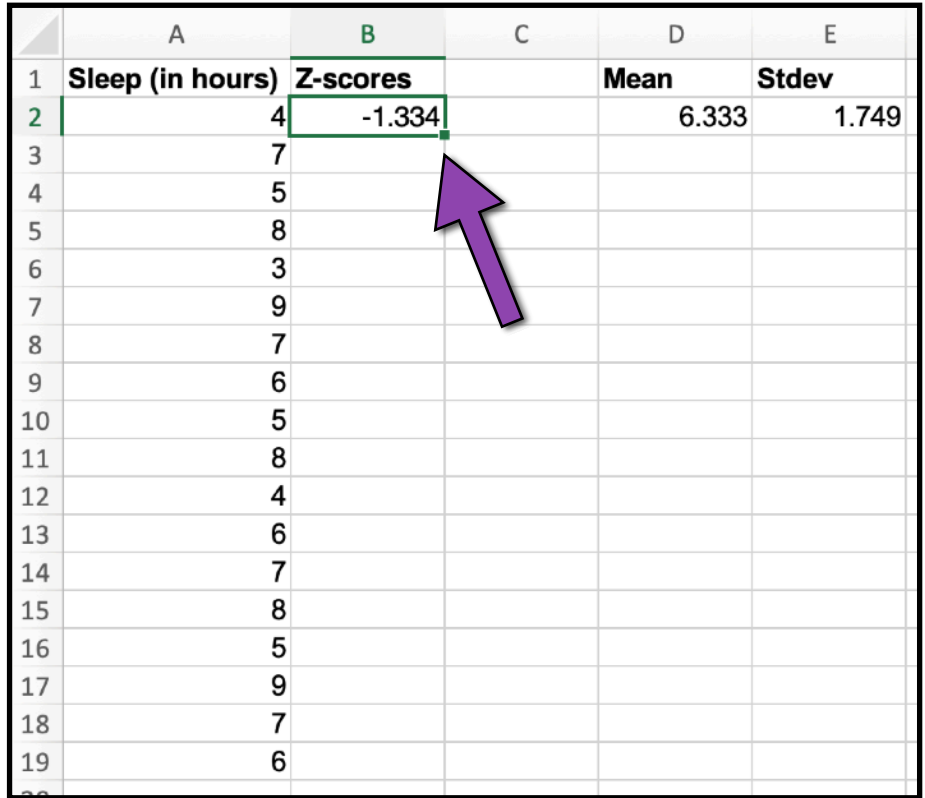
Shortcut in Microsoft Excel or Google Sheets:

To compute all the other z-scores, first, first we click on the cell that contains the formula we want to copy (in this example, B2).

Second, we place our cursor over the bottom left corner of the cell until a cross appears.

Third, once the cross appears, we double-click the cross and drag it down the column.

As we drag the cross down Column B, z-scores for each value in our data set will be computed for each data value in our Column A!

Figure 2 - Excel and Google Sheets

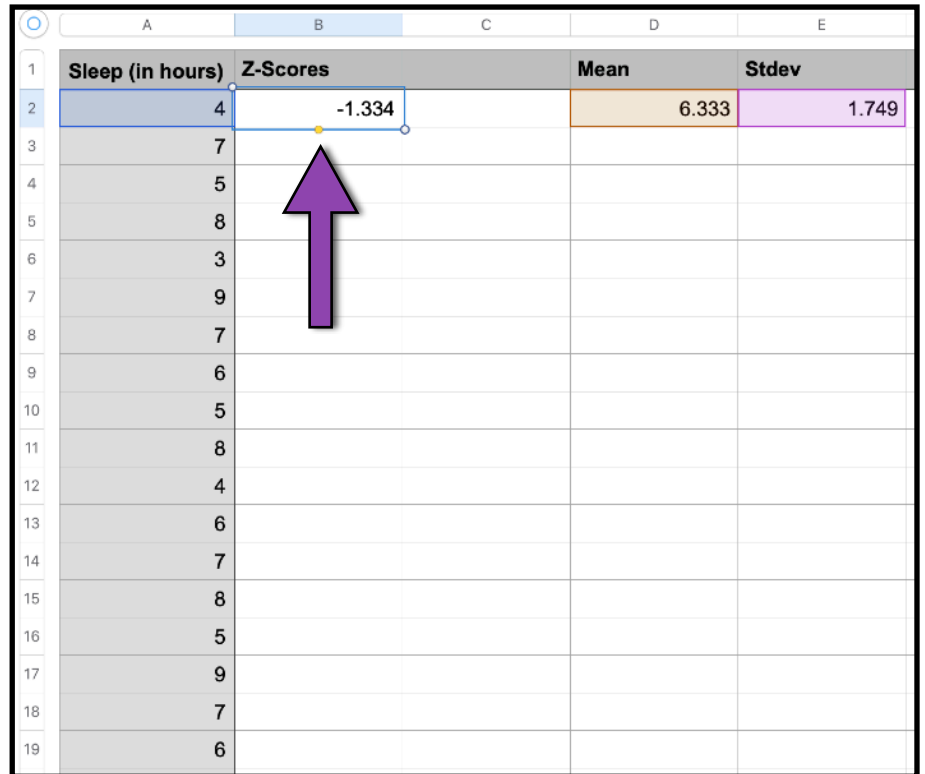|	A	B	C	D	E
1	Sleep (in hours)	Z-scores		Mean	Stdev
2	4	-1.334		6.333	1.749
3	7				
4	5				
5	8				
6	3				
7	9				
8	7				
9	6				
10	5				
11	8				
12	4				
13	6				
14	7				
15	8				
16	5				
17	9				
18	7				
19	6				

Shortcut in Apple Numbers:

To compute all the other z-scores, first, we click on the cell that contains the formula we want to copy (in this example, the cell is B2).

Second, we place our cursor over the bottom center of the cell until a vertical line with arrows appears.

Third, once the vertical line with arrows appears, we click and drag downward to select all of the cells we want to compute z-scores for.

As we drag down the Column B, z-scores will be computed for each value in our Column A!

Figure 2 - Apple Numbers

	A	B	C	D	E
1	Sleep (in hours)	Z-Scores		Mean	Stdev
2	4	-1.334		6.333	1.749
3	7				
4	5				
5	8				
6	3				
7	9				
8	7				
9	6				
10	5				
11	8				
12	4				
13	6				
14	7				
15	8				
16	5				
17	9				
18	7				
19	6				

IMPORTANT: To adhere to good scientific practice, we want to always use three decimals places for our *z*-scores (and for any other time we use decimals). We can use the tool provided by each of our data management systems. Those tools are outlined in purple in Figure 4 (below).

Figure 4 - Excel

	A	B	C	D	E	F	G	H	I	J
1	Sleep (in hours)	Percentiles		Mean	Stdev					
2	4	9.112%		6.333	1.749					
3	7	64.853%								
4	5	22.299%								
5	8	82.973%								
6	3	2.835%								
7	9	93.635%								

Figure 4 - Google Sheets

	A	B	C	D
1	Sleep (in hours)	Percentiles	Mean	Stdev
2	4	9.112%	6.333	1.749
3	7	64.853%		
4	5	22.299%		
5	8	82.973%		
6	3	2.835%		
7	9	93.635%		

Figure 4 - Apple Numbers

	A	B	C	D	E	F	G
1	Sleep (in hours)	Percentiles		Mean	Stdev		
2	4	9.108%		6.333	1.749		
3	7	64.847%					
4	5	22.292%					
5	8	82.969%					
6	3	2.833%					