How can I normalize data in Google Sheets?

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Normalizing data in Google Sheets refers to the process of organizing and formatting data in a consistent and structured manner. This ensures that the data is easier to understand, analyze, and use for various purposes. To normalize data in Google Sheets, one can use functions such as sorting, filtering, and formatting to arrange the data in a uniform way. Additionally, utilizing charts and graphs can also help visualize the data and make it more understandable. Normalizing data in Google Sheets is essential for maintaining accurate records, making informed decisions, and improving overall data management.

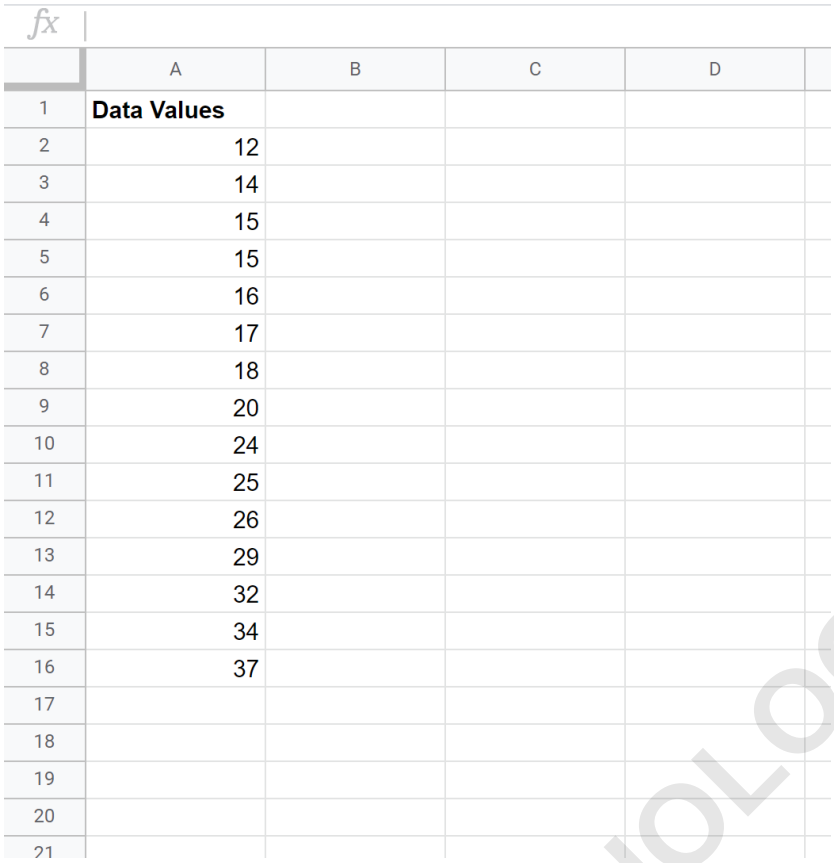
Normalize Data in Google Sheets

To normalize a set of data values means to scale the values such that the mean of all of the values is 0 and the standard deviation is 1.

This tutorial explains how to normalize data in Google Sheets.

Example: How to Normalize Data in Google Sheets

Suppose we have the following dataset in Google Sheets:

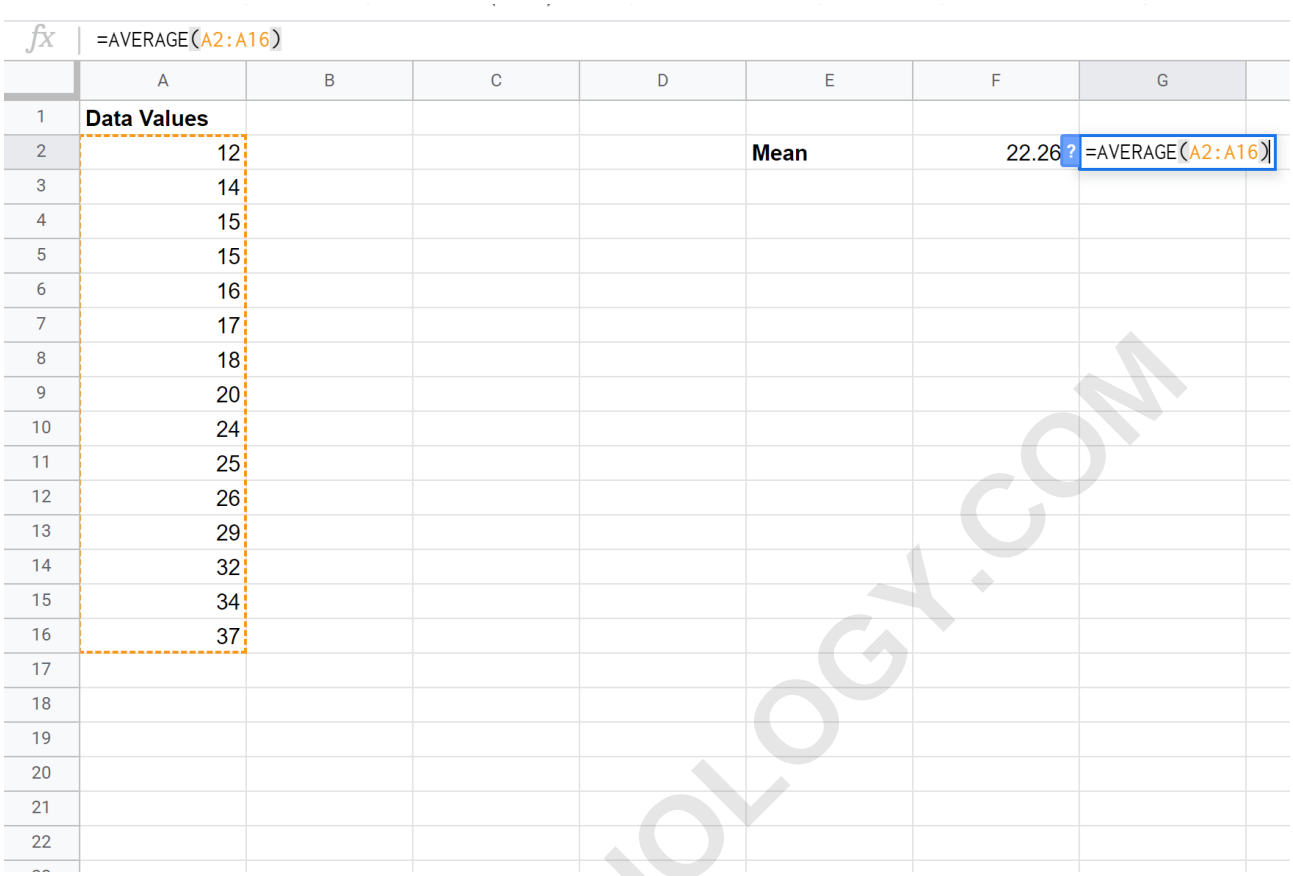


	A	B	C	D
1	**Data Values**			
2	12			
3	14			
4	15			
5	15			
6	16			
7	17			
8	18			
9	20			
10	24			
11	25			
12	26			
13	29			
14	32			
15	34			
16	37			
17				
18				
19				
20				
21				

Use following steps to normalize this set of data values.

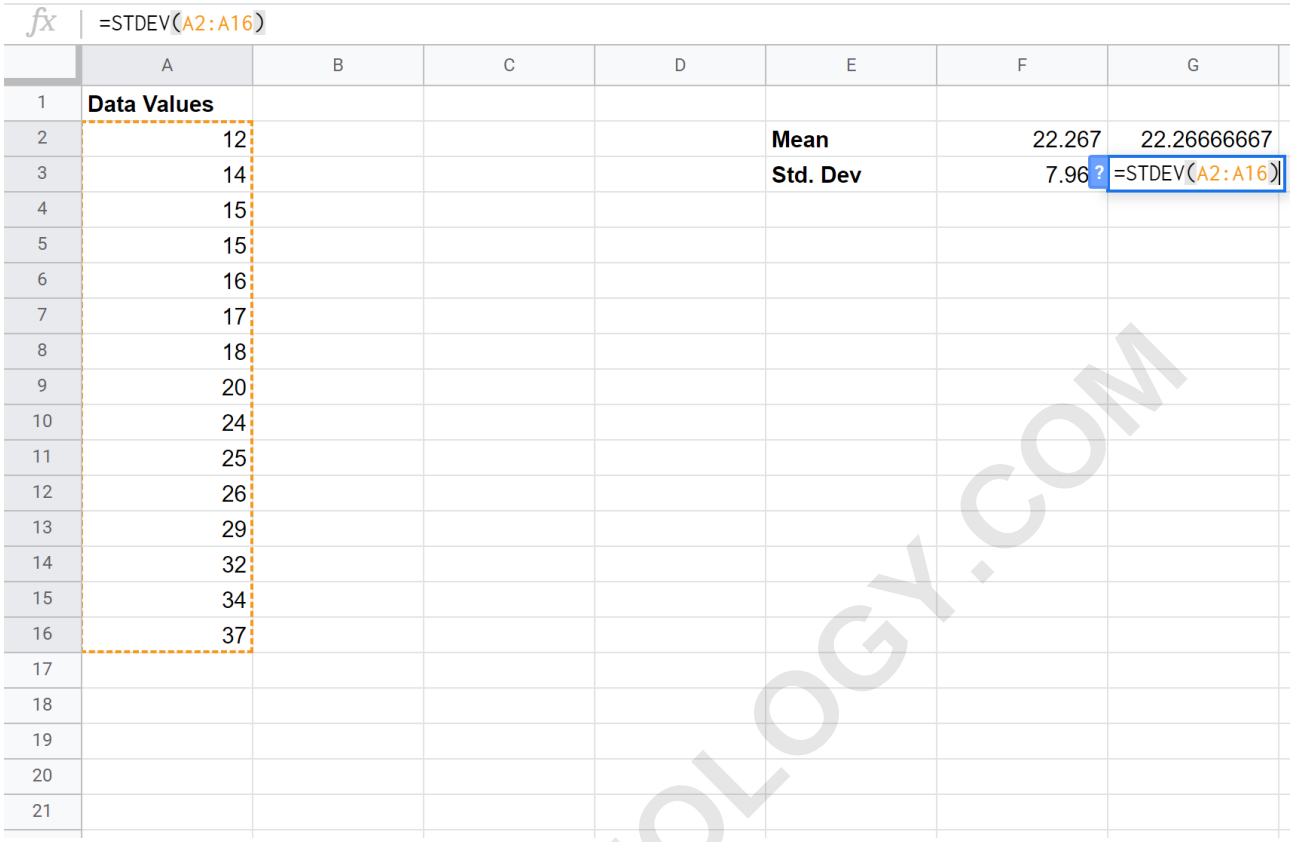
Step 1: Calculate the mean.

First, we will use the =AVERAGE(range of values) function to find the mean of the dataset.



Step 2: Find the standard deviation.

Next, we will use the =STDEV(range of values) function to find the standard deviation of the dataset.



Step 3: Normalize the values.

Lastly, we will use the STANDARDIZE(x, mean, standard_dev) function to normalize each of the values in the dataset.

NOTE:

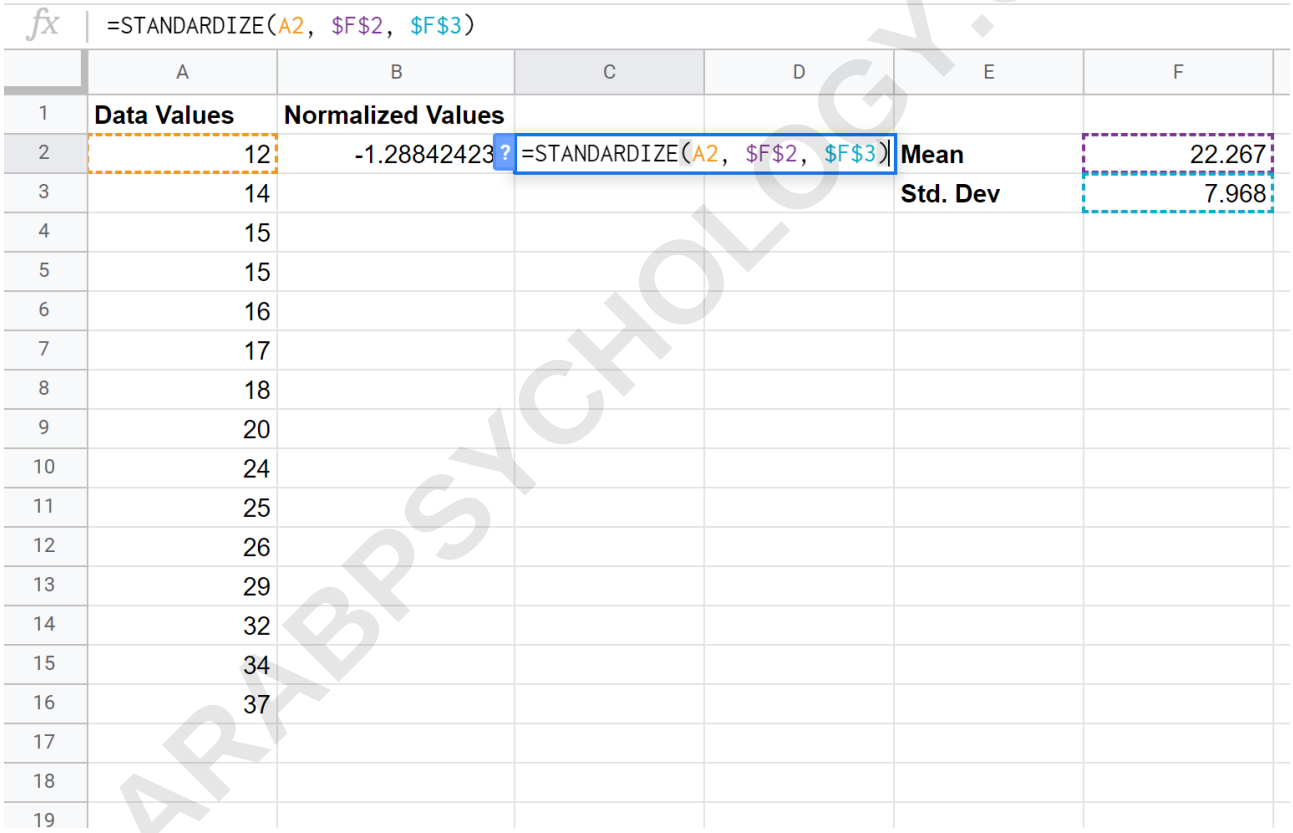
The STANDARDIZE function uses the following formula to normalize a given data value:

Normalized value = (x - x) / s

where:

x = data valuex = mean of datasets = standard deviation of dataset

The following image shows the formula used to normalize the first value in the dataset:



Once we normalize the first value in cell B2, we can hover the mouse over the bottom right corner of cell B2 until a small + appears. Double click the + to copy the formula down to the remaining cells:

	A	B	C	D
1	**Data Values**	**Normalized Values**		
2	12	-1.288		
3	14	-1.037		
4	15	-0.912		
5	15	-0.912		
6	16	-0.786		
7	17	-0.661		
8	18	-0.535		
9	20	-0.284		
10	24	0.218		
11	25	0.343		
12	26	0.469		
13	29	0.845		
14	32	1.221		
15	34	1.472		
16	37	1.849		
17				
18				
19				
20				

Now every value in the dataset is normalized.

How to Interpret Normalized Data

The formula that we used to normalize a given data value, x, was as follows:

Normalized value = (x - x) / s

where:

x = data valuex = mean of datasets = standard deviation

of dataset

If a particular data point has a normalized value greater than 0, it means that the data point is greater than the mean. Conversely, a normalized value less than 0 is an indication that the data point is less than the mean.

In particular, the normalized value tells us how many standard deviations the original data point is from the mean. For example, consider the data point "12" in our original dataset:

	A	B	C	D
1	**Data Values**	**Normalized Values**		
2	12	-1.288		
3	14	-1.037		
4	15	-0.912		
5	15	-0.912		
6	16	-0.786		
7	17	-0.661		
8	18	-0.535		
9	20	-0.284		
10	24	0.218		
11	25	0.343		
12	26	0.469		
13	29	0.845		
14	32	1.221		
15	34	1.472		
16	37	1.849		
17				
18				
19				
20				

The normalized value for "12" turned out to be -1.288, which was calculated as:

Normalized value = (x - x) / s = (12 - 22.267) / 7.968 = -1.288

This tells us that the value "12" is 1.288 standard deviations below the mean in the original dataset.

Each of the normalized values in the dataset can help us understand how close or far a particular data value is from the mean. A small normalized value indicates that a value is close to the mean while a large normalized value indicates that a value is far from the mean.

How to Normalize Data in Excel

How to Normalize Data in R