Calculate the Interquartile Range in Google Sheets

Authored by

Mohammed looti

November 7, 2025

Understanding the Interquartile Range (IQR)

The **Interquartile Range** (IQR) is a fundamental measure in descriptive statistics used to quantify the spread or variability of the central portion of a dataset. Specifically, the IQR captures the range spanned by the middle 50% of the data points, providing a stable metric of dispersion.

The calculation of the IQR is straightforward: it is defined as the difference between the third quartile (Q3) and the first quartile (Q1). These critical values, known as quartiles, are points that divide the ordered dataset into four sections, each containing an equal number of observations.

Understanding the IQR is essential for anyone performing data analysis, as it offers a robust alternative to simpler metrics like the overall range (maximum value minus minimum value). By focusing on the inner half of the data, we gain insights into the typical variability, setting the stage for more advanced statistical interpretation.

Why the IQR is a Robust Measure of Dispersion

One of the primary advantages of using the interquartile range over the standard range is its inherent resistance to outliers. An outlier is an observation point that is distant from other observations, and these extreme values can disproportionately inflate measures of spread like the overall range.

Since the IQR only considers the values between the 25th percentile (Q1) and the 75th percentile (Q3), it deliberately excludes the most extreme 25% of data at both the low and high ends. This exclusion means that unusually small or large data points have no effect on the final IQR value, rendering it a highly reliable measure of dispersion.

In contrast, the range is highly susceptible to skewness and outliers. If a dataset contains even one erroneous or highly unusual measurement, the calculated range may provide a misleading impression of the data's overall variability. Therefore, the IQR is often the preferred choice when analyzing data that may contain significant extremes or requires a conservative estimation of spread.

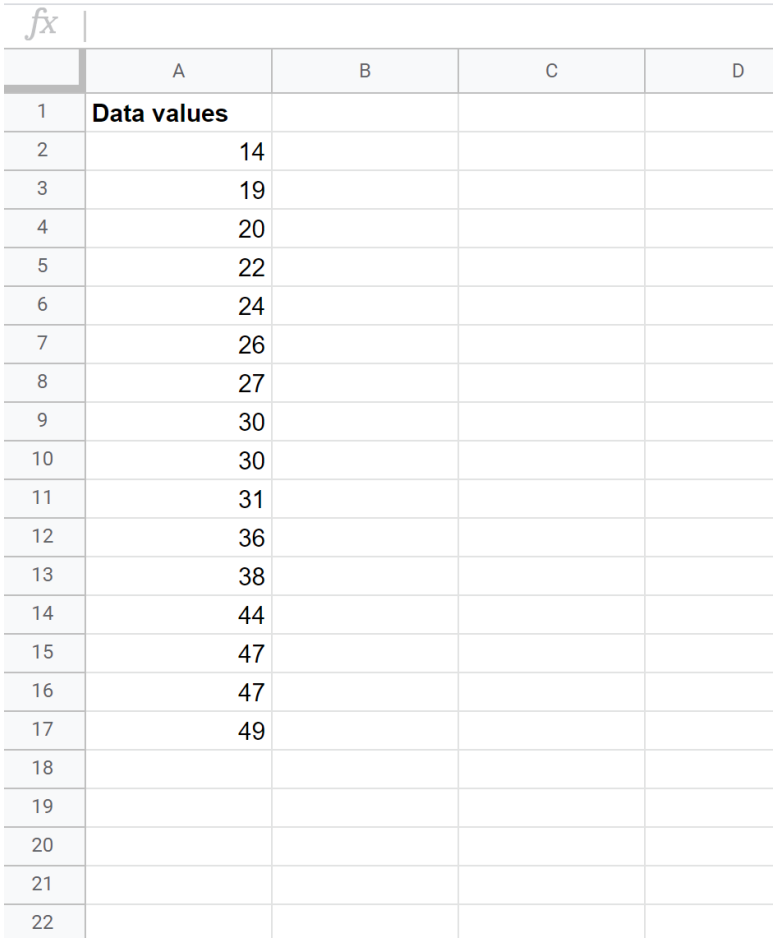
Prerequisites for Calculating IQR in Google Sheets

Google Sheets provides powerful built-in functions that simplify complex statistical calculations, including the determination of the IQR. Before we begin the calculation, the first step involves correctly structuring and entering the data into your spreadsheet environment.

Ensure that all values belonging to the dataset are entered sequentially into a single column. For optimal clarity and organization, it is often helpful to label the column clearly, although this is not

strictly necessary for the calculation itself.

For our example calculation, we will use the following dataset entered into Column A:



	A	B	C	D
1	**Data values**			
2	14			
3	19			
4	20			
5	22			
6	24			
7	26			
8	27			
9	30			
10	30			
11	31			
12	36			
13	38			
14	44			
15	47			
16	47			
17	49			
18				
19				
20				
21				
22				

Once the data is entered, we will rely on the powerful `QUARTILE()` function available in Google Sheets to efficiently find Q1 and Q3, bypassing the need for manual sorting or complex array formulas.

Step-by-Step Guide: Calculating Q1 and Q3

The core of the IQR calculation relies on accurately identifying the first quartile (Q1) and the third quartile (Q3). In Google Sheets, this is accomplished using the `QUARTILE()` function, which requires two specific arguments to operate correctly.

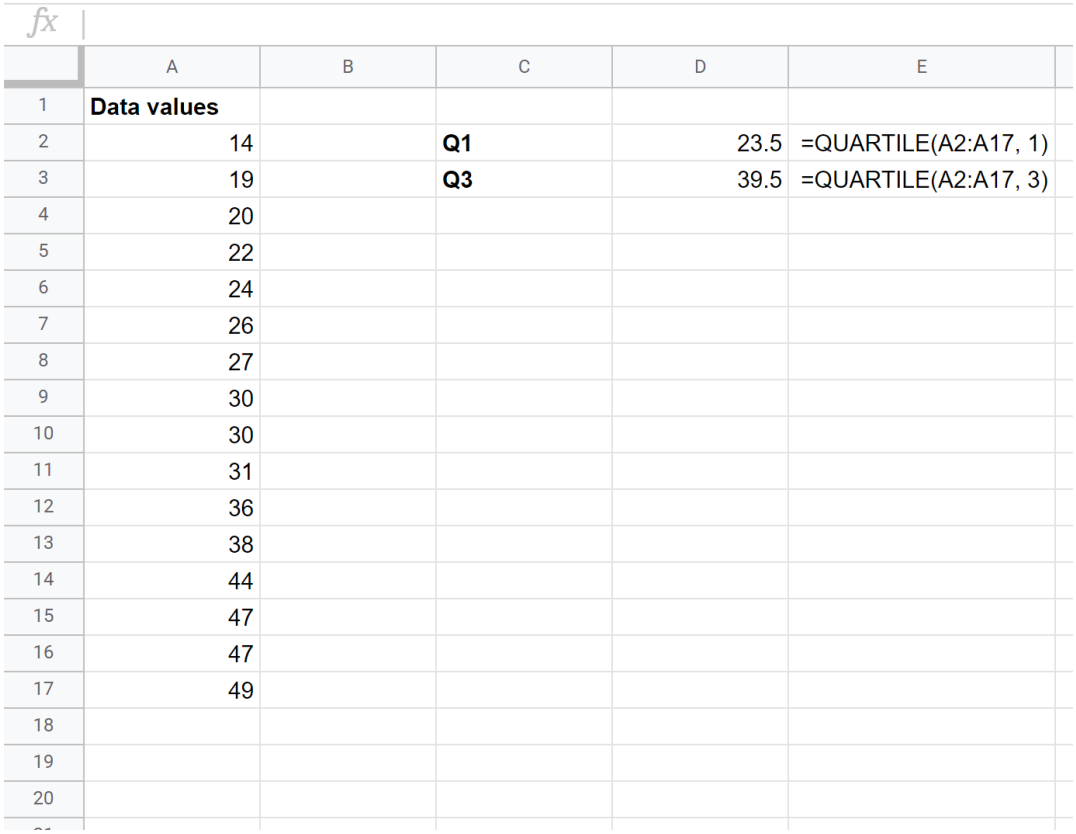
The syntax for this function is defined as:

QUARTILE(data, quartile_number)

Where the arguments are defined as:

data: This specifies the range or array containing the dataset values (e.g., `A2:A15`).
quartile_number: This is a numerical identifier indicating which quartile value the function should return. You will use 1 for the first quartile (Q1, the 25th percentile) and 3 for the third quartile (Q3, the 75th percentile).

To calculate Q1, we would enter the formula `=QUARTILE(A2:A15, 1)` into an empty cell. Similarly, for Q3, we would use `=QUARTILE(A2:A15, 3)`. The following image illustrates the application of these formulas to our sample data, resulting in the calculated values for Q1 and Q3:



	A	B	C	D	E
1	**Data values**				
2	14		**Q1**	23.5	=QUARTILE(A2:A17, 1)
3	19		**Q3**	39.5	=QUARTILE(A2:A17, 3)
4	20				
5	22				
6	24				
7	26				
8	27				
9	30				
10	30				
11	31				
12	36				
13	38				
14	44				
15	47				
16	47				
17	49				
18					
19					
20					

Calculating the Final IQR Value

Once the values for Q1 and Q3 have been determined, the final step in finding the interquartile range is a simple arithmetic operation: subtraction. By definition, the IQR is the difference between the third quartile (Q3) and the first quartile (Q1).

If we assume that Q1 is calculated in cell D3 and Q3 is calculated in cell D4 (as seen in the example image above), the formula for the IQR is simply `=D4 - D3`. This calculation yields the numerical value representing the spread of the central 50% of the data points.

The resulting calculation for our dataset is shown below:

	A	B	C	D	E
1	**Data values**				
2	14		**Q1**	23.5	=QUARTILE(A2:A17, 1)
3	19		**Q3**	39.5	=QUARTILE(A2:A17, 3)
4	20		**IQR**	16	=D3-D2
5	22				
6	24				
7	26				
8	27				
9	30				
10	30				
11	31				
12	36				
13	38				
14	44				
15	47				
16	47				
17	49				
18					
19					
20					
21					

As demonstrated, the interquartile range for this specific dataset turns out to be **16**. This numerical result completes the computational requirement and provides the statistical metric needed for further analysis.

Interpreting the Result

A calculated IQR of **16** means that the distance covering the middle 50% of the values in the dataset is 16 units. The smaller the IQR, the less spread out the central values are, indicating that the data points are tightly clustered around the median. Conversely, a larger IQR suggests greater variability among the typical data points.

The IQR is not just a measure of spread; it is also a critical component used in constructing a box plot (or box-and-whisker plot). In a box plot visualization, the box itself spans the IQR, providing a visual representation of the central data distribution and the identification of potential outliers.

Statisticians frequently use the IQR to establish criteria for identifying extreme observations. Any data point that falls more than 1.5 times the IQR below Q1 or above Q3 is conventionally marked as a potential outlier, further demonstrating the practical utility and significance of this measure in rigorous data cleaning and analysis procedures.

Further Resources

For those looking to expand their knowledge of dispersion measures and Google Sheets functionalities, the following resources may prove beneficial:

How to Calculate the Interquartile Range (IQR) in Excel
How to Calculate Standard Deviation in Google Sheets
How to Calculate a Five Number Summary in Google Sheets
How to Make a Box Plot in Google Sheets