

# How to calculate the Midrange in Google Sheets

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The Midrange is a straightforward measure used in statistics to determine the center of a dataset. Unlike the mean or the median, its calculation relies solely on the two extreme values: the highest number and the lowest number. In the context of data analysis using tools like Google Sheets, calculating the midrange is exceptionally simple, requiring only the combination of the built-in MAX and MIN functions. Understanding how to correctly implement this calculation is essential for quickly assessing data spread, although one must always be aware of the inherent limitations of this specific statistic.

This method involves finding the average of the maximum and minimum values within a specified range. By utilizing the structured environment of Google Sheets, we can streamline this process significantly. The resulting value provides a quick estimate of the midpoint of the data distribution. This guide will thoroughly explain the concept, provide detailed steps for its calculation in Google Sheets, and critically evaluate its usefulness compared to other standard measures of central tendency.

## Defining the Midrange Statistic

The midrange represents the arithmetic average of the maximum and minimum values found within any given distribution or sample set. It serves as one of the simplest measures of location and is often employed when a quick, rough estimate of the dataset's center is required. Because its calculation is so simplistic, it is highly sensitive to extreme values, which is a major point of consideration when deciding if it is an appropriate statistic for a specific analytical task.

Statistically, the formula for the midrange is defined as the sum of the largest value and the smallest value, divided by two. This contrasts sharply with the mean, which utilizes every data point in the set, and the median, which relies on the positional value of the center point after sorting the data. The primary utility of the midrange lies in its computational efficiency; it requires minimal processing power, making it valuable in contexts where speed is paramount, or when dealing with preliminary data checks.

While the midrange offers an immediate sense of the data's central location, experts often caution against using it as the sole indicator of central tendency for formal reporting or inferential statistics. Its reliance on just two values means that the distribution and clustering of all other data points are entirely ignored, which can lead to misleading conclusions if the data is skewed or contains anomalies. We must therefore understand its mathematical definition before applying it practically within Google Sheets.

## Understanding the Midrange Calculation Formula

To accurately calculate the midrange, regardless of the platform used, the formula remains constant. This fundamental definition is crucial for building the correct function in spreadsheet

software like Google Sheets. The calculation is defined as:

$$\text{Midrange} = (\text{Largest Value} + \text{Smallest Value}) / 2$$

In [Google Sheets](#), the largest value can be efficiently retrieved using the built-in `MAX` function, and the smallest value is retrieved using the `MIN` function. These functions automatically iterate through the selected data range to identify the extreme points. By combining these two functions within a simple arithmetic operation, we can calculate the midrange in a single cell formula.

The generalized structure of the required formula in Google Sheets looks like this: `= (MAX(range) + MIN(range)) / 2`. Note the necessity of the parentheses around the sum of the maximum and minimum values. This ensures that the addition operation is performed before the division, adhering strictly to the standard order of operations (PEMDAS/BODMAS) and guaranteeing that the correct average is returned. If the parentheses are omitted, the spreadsheet would first divide `MIN(range)` by 2 and then add that result to `MAX(range)`, yielding an incorrect result for the midrange.

## Prerequisites for Calculating Midrange in Google Sheets

Before implementing the formula, there are a few prerequisites and best practices to follow to ensure the calculation is accurate and robust within your spreadsheet environment. First and foremost, you must have a clean dataset organized in a contiguous range of cells. While the `MAX` and `MIN` functions are forgiving regarding non-numeric data (they generally ignore text), ensuring your data consists purely of numerical values intended for the statistical calculation is always the best practice.

Secondly, you need to clearly define the data range (e.g., A2:A50) that contains the set for which you want to calculate the midrange. This range specification must be consistent across both the `MAX` and `MIN` functions used in the formula. If the ranges differ, the maximum value from one set might be paired with the minimum value from another, resulting in a nonsensical statistical output. Always double-check the cell references before finalizing the formula.

Finally, consider where you want the output to be placed. Although the formula is compact, it is beneficial to place the result in a designated cell labeled clearly (e.g., "Midrange Calculation") so that the output is easily identifiable and interpretable by anyone reviewing the sheet. This practice enhances the overall readability and professionalism of your data analysis workbook, making future auditing or modification simpler.

## Step-by-Step Example: Calculating Midrange

Let us walk through a practical example using a sample dataset within [Google Sheets](#). Suppose

we have the following values representing scores in a test, located in cells A1 through A9:

|    | A                  | B | C | D |
|----|--------------------|---|---|---|
| 1  | <b>Data values</b> |   |   |   |
| 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 |                    |   |   |   |

Our goal is to calculate the midrange for this entire distribution. The necessary functions, MAX and MIN, will first identify the largest and smallest values, respectively. Observing the data manually, we can see the largest value is 37 and the smallest value is 14. We expect the final result to be  $(37 + 14) / 2 = 24.5$ .

To calculate this using a single formula in Google Sheets, select an empty cell (say, C1) and input the following comprehensive formula, making sure the range A1:A9 correctly captures all data points:

**`=(MAX(A1:A9) + MIN(A1:A9)) / 2`**

Once entered, Google Sheets automatically processes the extreme values and returns the calculated midrange. This single-formula approach is the most efficient way to derive the statistic. It is important to remember that this process must be repeated or dynamically referenced if the dataset changes or if you are calculating the midrange for different subsets of data.

Here is how the result appears in the spreadsheet, confirming the automatic calculation:

|    | A                  | B | C               | D    | E  |
|----|--------------------|---|-----------------|------|--|
| 1  | <b>Data values</b> |   |                 |      |  |
| 2  | 12                 |   | <b>Midrange</b> | 24.5 | <code>= (MAX(A2:A16)+MIN(A2:A16))/2</code> |
| 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 |                    |   |                 |      |  |

As demonstrated, the midrange for this particular dataset is definitively calculated as **24.5**. This quick result immediately provides insight into the potential center point, especially when analyzing new or raw data.

### Alternative Method: Using Helper Cells for Clarity

While the single-cell formula `= (MAX(A1:A9) + MIN(A1:A9)) / 2` is mathematically sound and efficient, sometimes it is advantageous, especially for educational purposes or complex audits, to use "helper cells." Helper cells allow you to break down the calculation into multiple, transparent steps, making it easier to verify intermediate results and debug potential errors.

The alternative method involves three steps, utilizing three separate cells:

**Identify the Maximum Value:** In cell B1 (labeled "Maximum Value"), enter the formula: `=MAX(A1:A9)`. This explicitly returns the highest value (35).

**Identify the Minimum Value:** In cell B2 (labeled "Minimum Value"), enter the formula: `=MIN(A1:A9)`. This explicitly returns the lowest value (14).

**Calculate the Midrange:** In cell B3 (labeled "Midrange"), enter the formula: `= (B1 + B2) / 2`. This calculation uses the previously derived values, yielding 24.5.

Using helper cells adds significant clarity to the analytical process. If the dataset range (A1:A9) ever changes or if you suspect an error in the data entry, you can immediately confirm that the `MAX` and `MIN` functions are correctly identifying the intended extreme values. This approach sacrifices the conciseness of the single-cell formula for enhanced auditability and step-by-step transparency, which is often preferred in highly regulated or complex reporting environments.

## The Critical Limitation: Midrange and Outliers

Despite its simplicity and ease of calculation, the primary drawback of utilizing the `midrange` is its extreme vulnerability to `outliers`. An outlier is a data point that differs significantly from other observations, either being unusually high or unusually low. Since the midrange calculation depends entirely on only the two most extreme values, a single outlier can drastically shift the calculated center point, rendering it an inaccurate representation of the overall data distribution.

Consider the original dataset where the maximum value was 35. If we introduce an outlier by changing that maximum value to 120, the impact on the midrange is profound. The minimum remains 14, but the calculation becomes  $(120 + 14) / 2 = 67$ . The midrange shifts from 24.5 to 67, a massive jump that suggests the center of the data is far higher than the vast majority of the scores actually lie. This highlights why the midrange is often discarded in favor of more robust measures when data contamination by extreme values is suspected or confirmed.

For example, if the maximum value in our dataset was artificially high (120), the effect on the calculation is immediately visible in [Google Sheets](#):

|    | A                  | B | C               | D  | E                              |
|----|--------------------|---|-----------------|----|--------------------------------|
| 1  | <b>Data values</b> |   |                 |    |                                |
| 2  | 12                 |   | <b>Midrange</b> | 66 | $=(MAX(A2:A16)+MIN(A2:A16))/2$ |
| 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 | 120                |   |                 |    |                                |
| 17 |                    |   |                 |    |                                |
| 18 |                    |   |                 |    |                                |
| 19 |                    |   |                 |    |                                |
| 20 |                    |   |                 |    |                                |

When the data is prone to outliers--such as income levels, housing prices, or certain scientific measurements--the midrange should be approached with extreme caution. In such cases, the resulting figure may reflect the influence of the anomaly rather than the true center of the typical data cluster. Robust statistical methods are required to either exclude the outliers or use measures of central tendency that inherently minimize their impact.

## Comparing Midrange with Other Measures of Central Tendency

Due to the sensitivity to outliers, the midrange is typically less preferred than the mean (average) or the median in professional statistical analysis. Both the mean and the median provide a more nuanced understanding of the data's center, especially in distributions that are not perfectly symmetrical.

The mean, calculated using the AVERAGE function in Google Sheets, takes into account every single value in the dataset. While it is still sensitive to outliers, its sensitivity is mitigated because the influence of an extreme value is spread across the total count of observations. The median, calculated using the MEDIAN function, is the value exactly at the center of the sorted dataset. Crucially, the median is highly resistant to outliers because it only depends on the position of the values, not their magnitude. If the highest value changes from 35 to 120, the median remains exactly the same, providing a stable measure of the center.

When we compare all three measures using the dataset containing the outlier (Max = 120), the disparity clearly illustrates the risk of relying solely on the midrange:

|    | A                  | B | C               | D    | E   |
|----|--------------------|---|-----------------|------|---|
| 1  | <b>Data values</b> |   |                 |      |   |
| 2  | 12                 |   | <b>Midrange</b> | 66   | = $(\text{MAX}(A2:A16)+\text{MIN}(A2:A16))/2$ |
| 3  | 14                 |   | <b>Mean</b>     | 27.8 | = $\text{AVERAGE}(A2:A16)$                    |
| 4  | 15                 |   | <b>Median</b>   | 20   | = $\text{MEDIAN}(A2:A16)$                     |
| 5  | 15                 |   |                 |      |   |
| 6  | 16                 |   |                 |      |   |
| 7  | 17                 |   |                 |      |   |
| 8  | 18                 |   |                 |      |   |
| 9  | 20                 |   |                 |      |   |
| 10 | 24                 |   |                 |      |   |
| 11 | 25                 |   |                 |      |   |
| 12 | 26                 |   |                 |      |   |
| 13 | 29                 |   |                 |      |   |
| 14 | 32                 |   |                 |      |   |
| 15 | 34                 |   |                 |      |   |
| 16 | 120                |   |                 |      |   |
| 17 |                    |   |                 |      |   |
| 18 |                    |   |                 |      |   |
| 19 |                    |   |                 |      |   |
| 20 |                    |   |                 |      |   |

Notice that the mean (40.56) is pulled significantly toward the outlier of 120, but not nearly as dramatically as the midrange (67). The median (25) remains largely unaffected, giving the most accurate sense of where the "typical" score lies. Therefore, while the midrange is a quick computational tool, the mean and especially the median are considered more accurate and robust measures of central tendency for descriptive statistics.

For further reading on related statistical methods within spreadsheet software, you may explore how to calculate the midrange in other programs such as Microsoft Excel.