

# How to Calculate a Weighted Average in Google Sheets: A Step-by-Step Guide

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Calculating the weighted average is an essential task in statistics and data analysis, particularly when certain data points contribute disproportionately to the final result. Unlike the simple arithmetic mean, where all values are treated equally, the weighted average assigns a specific weight or significance to each score or value. This is critical in scenarios like calculating academic grades, financial portfolio returns, or demographic averages, where inputs have varying levels of importance.

For users relying on robust, cloud-based spreadsheet tools, Google Sheets provides highly efficient and specialized functions to manage these complex calculations seamlessly. While older spreadsheet methods might involve multiple steps of multiplication and division, modern Google Sheets formulas consolidate this process, offering both direct functions and versatile array-based solutions. Understanding these methods ensures precision and efficiency in handling your data, regardless of the complexity of the weighting scheme.

## Core Methods for Calculating Weighted Average in Sheets

To accurately determine the weighted average of a dataset in Google Sheets, you can utilize one of two primary and highly effective methods. The choice between them often comes down to personal preference or the specific version of the spreadsheet software being used, though both yield mathematically identical results. These methods leverage built-in mathematical functions designed to handle the required multiplication (value by weight) and subsequent summation and division steps.

The first method employs the dedicated function, AVERAGE.WEIGHTED, which is tailored specifically for this statistical calculation. This function simplifies the process significantly by requiring only the range of values and the corresponding range of weights as arguments. The second method, which is more universal across spreadsheet platforms, utilizes a combination of the SUMPRODUCT and SUM functions. This combined approach explicitly follows the mathematical definition of a weighted average: the sum of the products of each value and its weight, divided by the sum of all weights.

The following examples illustrate the syntax for both approaches, assuming your numerical values (data points) are located in the range **B2:B5** and the corresponding weights are located in the range **C2:C5**. It is crucial to ensure that the ranges used for values and weights are of identical size to maintain the correct one-to-one correspondence between the data and its assigned importance.

### Method 1: Leveraging the AVERAGE.WEIGHTED Function

The introduction of the AVERAGE.WEIGHTED function streamlined weighted average calculations within Google Sheets. This function is the most efficient and readable method available, designed

specifically to perform the required arithmetic operation with minimal input from the user.

The syntax for this function is straightforward:

```
=AVERAGE.WEIGHTED(values, weights)
```

Where 'values' is the range containing the numbers you wish to average, and 'weights' is the range containing the factors of importance assigned to each number. This function automatically handles the multiplication of each value by its respective weight, sums those products, and then divides the result by the sum of the weights. This encapsulated process significantly reduces the chance of manual error compared to constructing multi-step formulas.

When implementing this method using our assumed ranges (B2:B5 for values and C2:C5 for weights), the required formula appears as follows:

```
=AVERAGE.WEIGHTED(B2:B5, C2:C5)
```

This approach is highly recommended for users prioritizing formula simplicity and clarity, as it perfectly captures the intent of the statistical calculation within a single, dedicated function. While both methods discussed here achieve the same result, the AVERAGE.WEIGHTED function requires less typing and is inherently less complex to audit.

## Method 2: The Traditional Approach using SUMPRODUCT and SUM

The combination of the SUMPRODUCT function and the standard SUM function offers a more traditional and mathematically explicit way to calculate the weighted average. This method directly translates the foundational mathematical formula for weighted average into spreadsheet logic.

The core mathematical principle for a weighted average ( $\bar{x}_w$ ) is defined as:

$$\bar{x}_w = \frac{\sum (x_i \cdot w_i)}{\sum w_i}$$

Where  $x_i$  represents the individual values and  $w_i$  represents their corresponding weights. The numerator requires multiplying each value by its weight and summing the results. This is precisely the purpose of the SUMPRODUCT function.

The SUMPRODUCT function takes multiple ranges, multiplies the corresponding elements in those ranges, and then returns the sum of those products. For our example, **SUMPRODUCT(B2:B5, C2:C5)** calculates the numerator of the weighted average formula. The denominator is simply the sum of all weights, calculated using **SUM(C2:C5)**. Combining these yields the complete formula:

```
=SUMPRODUCT(B2:B5, C2:C5)/SUM(C2:C5)
```

This method is highly valuable because the SUMPRODUCT function is widely supported across various spreadsheet applications, making this formula highly transferable. Furthermore, explicitly including the SUM function in the denominator serves as a clear reminder that the calculation involves normalizing the product sum by the total weight, ensuring complete transparency in the data analysis.

## Prerequisites: Preparing Your Dataset for Calculation

Before executing either of the calculation methods, proper structuring of the data is paramount. In Google Sheets, the data must be organized into at least two parallel columns or rows: one containing the raw values and another containing the corresponding weights. Ensuring that each value has an assigned weight is the critical first step in achieving a valid weighted average.

Consider a practical example involving calculating a student's final grade based on several exam components, where each component carries a different percentage of the total grade. The raw scores are the values, and the percentage contributions are the weights. Note that weights are often expressed as percentages (converted to decimals) or relative counts.

The following dataset demonstrates this typical setup. Column B holds the numerical scores (Values), and Column C holds the proportional Weights (expressed as decimals, where the total sum of weights must equal 1 or 100%).

	A	B	C	D	
1	<b>Exam</b>	<b>Score</b>	<b>Weight</b>		
2	Midterm 1	90	15%		
3	Midterm 2	80	15%		
4	Midterm 3	85	15%		
5	Final Exam	75	55%		
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					

In this example, the ranges are clearly defined: the values are in **B2:B5** (scores: 90, 80, 85, 75), and the weights are in **C2:C5** (weights: 0.15, 0.15, 0.15, 0.55). The substantial weight assigned to Exam 4 (55%) means that the score of 75 for that exam will have a much greater impact on the final weighted average than the scores from the earlier exams.

## Practical Application: Calculating Weighted Averages with **AVERAGE.WEIGHTED** (Example 1)

We can now apply the specialized AVERAGE.WEIGHTED function to the prepared dataset to determine the student's overall weighted score. This method requires specifying the value range first, followed by the weight range, separated by a comma. We will enter the calculation into cell **E2**.

By typing the formula below into cell **E2**, Google Sheets processes the data according to the established weighting scheme. This calculation determines the equivalent score if all components were combined based on their importance:

**=AVERAGE.WEIGHTED(B2:B5, C2:C5)**

The efficiency of the AVERAGE.WEIGHTED function ensures that this complex operation is executed in a single cell entry. The resulting value represents the true average performance, reflecting the unequal contribution of each exam component to the final grade.

The following screenshot demonstrates the successful implementation of the formula and the resulting output in cell E2:

	A	B	C	D	E
E2					$\text{=AVERAGE.WEIGHTED(B2:B5, C2:C5)}$
1	<b>Exam</b>	<b>Score</b>	<b>Weight</b>		<b>Weighted Avg.</b>
2	Midterm 1	90	15%		79.5
3	Midterm 2	80	15%		
4	Midterm 3	85	15%		
5	Final Exam	75	55%		
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Upon execution, the calculation yields a weighted average of **79.5**. It is instructive to compare this result to a simple arithmetic mean of the scores (90, 80, 85, 75), which would be 82.5. The difference demonstrates the impact of the heavy weighting on the lower score (75), pulling the overall average downward--a crucial insight gained through accurate weighted data analysis.

## Mathematical Breakdown of AVERAGE.WEIGHTED

To fully appreciate the result, it is beneficial to examine how the AVERAGE.WEIGHTED function performs the calculation. It executes the following precise steps, corresponding exactly to the mathematical definition:

**Product Calculation:** Each value is multiplied by its corresponding weight:

$$\$90 \text{ times } 0.15 = 13.5\$$$

$$\$80 \text{ times } 0.15 = 12.0\$$$

$$\$85 \text{ times } 0.15 = 12.75\$$$

$$\$75 \text{ times } 0.55 = 41.25\$$$

**Summation of Products (Numerator):** The resulting products are summed:  $\$13.5 + 12.0 + 12.75$

+ 41.25 = 79.5\$.

**Summation of Weights (Denominator):** The weights are summed:  $\$0.15 + 0.15 + 0.15 + 0.55 = 1.0\$$ . (Note: When weights sum to 1, the denominator is 1, simplifying the final division.)

**Final Calculation:** The product sum is divided by the weight sum:  $\$79.5 / 1.0 = 79.5\$$ .

The explicit calculation confirms: Weighted Average =  $(90*0.15 + 80*0.15 + 85*0.15 + 75*0.55) / (0.15 + 0.15 + 0.15 + 0.55) = 79.5$ . This confirms the accuracy and validity of the calculation performed by the AVERAGE.WEIGHTED function.

## Practical Application: Calculating Weighted Averages with SUMPRODUCT (Example 2)

For users who prefer the explicit mathematical breakdown or require compatibility with other spreadsheet environments, the SUMPRODUCT method offers a powerful alternative. This approach is highly flexible and demonstrates a strong understanding of fundamental spreadsheet functions.

We will again target cell **E2** for the result, using the same data ranges (B2:B5 for values and C2:C5 for weights). The formula requires the numerator (calculated by SUMPRODUCT) to be divided by the denominator (calculated by SUM):

**=SUMPRODUCT(B2:B5, C2:C5)/SUM(C2:C5)**

This formula instructs the spreadsheet to first calculate the sum of the products of scores and weights, and then to divide this sum by the total of all weights. This combination is mathematically sound and yields the exact definition of a weighted average.

The subsequent screenshot illustrates the implementation of this combined formula in the context of the Google Sheets environment:

E2  $\text{fx}$  =SUMPRODUCT(B2:B5, C2:C5)/SUM(C2:C5)

	A	B	C	D	E
1	<b>Exam</b>	<b>Score</b>	<b>Weight</b>		<b>Weighted Avg.</b>
2	Midterm 1	90	15%		79.5
3	Midterm 2	80	15%		
4	Midterm 3	85	15%		
5	Final Exam	75	55%		
6					
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As anticipated, the execution of the SUMPRODUCT method returns the exact same result: a weighted average of **79.5**. This consistency confirms that both primary methods are valid and reliable tools for advanced data analysis in Google Sheets.

## Comparative Analysis and Best Practices

When choosing between the AVERAGE.WEIGHTED and SUMPRODUCT methods, several factors should guide the decision, primarily focusing on efficiency, compatibility, and complexity.

The AVERAGE.WEIGHTED function is undoubtedly the superior option for maximizing efficiency within Google Sheets. It is succinct, requiring only two arguments, and clearly communicates the purpose of the cell calculation. It is the modern, purpose-built function for this statistical calculation, reducing the potential for syntax errors associated with combining multiple functions.

Conversely, the SUMPRODUCT and SUM method provides greater universality. If the spreadsheet must be shared or migrated to other software (such as Microsoft Excel), this formula structure is often more reliable, as AVERAGE.WEIGHTED is specific to Google Sheets. Moreover, constructing the formula using SUMPRODUCT can sometimes be beneficial in advanced array formulas where conditional weighting is necessary, offering flexibility that the more rigid

AVERAGE.WEIGHTED might not provide.

Ultimately, both formulas are powerful tools for generating accurate weighted averages. For simple, direct calculations in Google Sheets, use **AVERAGE.WEIGHTED**. For ensuring broad compatibility or for complex scenarios involving conditional criteria, the classic combination of **SUMPRODUCT/SUM** remains a robust and reliable choice for sophisticated data analysis.

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