

# How to Convert hh:mm:ss Time to Minutes in Excel

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## RECOMMENDED CITATION

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Converting time formats from **hh:mm:ss** to total minutes within **Microsoft Excel** is a fundamental skill for professionals engaged in **data analysis**, project management, and scientific research. Often, raw data is exported from tracking software in a standard duration format that, while human-readable, is not immediately conducive to mathematical operations or statistical modeling. To perform meaningful calculations, such as finding the average duration of a task or calculating total labor costs based on time, one must transform these temporal values into a uniform numerical unit, such as minutes. This process requires a nuanced understanding of how **Excel formulas** interpret time as a fraction of a 24-hour day, a concept that is critical for ensuring the accuracy of your resulting dataset.

## Understanding the Mathematical Logic of Time in Excel

Before diving into the specific **Excel functions**, it is essential to grasp how the software stores time values. In the backend of any **spreadsheet**, time is treated as a serial number where 24 hours equals the integer 1. Consequently, one hour is represented as 1/24, and one minute is represented as 1/1440. Because of this underlying architecture, simply changing the **cell formatting** does not always yield the decimal result needed for advanced **computation**. To convert a standard time string into a decimal representing minutes, we must use specific arithmetic operations to extract the hours, minutes, and seconds, then normalize them into a single unit.

One of the most robust methods for this conversion involves the decomposition of the time components using the **HOUR**, **MINUTE**, and **SECOND** functions. By isolating each part of the timestamp, you can manually calculate the total weight of each unit in minutes. For instance, hours are multiplied by 60, while seconds are divided by 60. This granular approach provides high precision, especially when dealing with durations that include fractional minutes, ensuring that your **data integrity** remains intact throughout the transformation process.

Alternatively, users can leverage the **TIMEVALUE** function, which is particularly useful when the time data is stored as a text string rather than a standard time serial. By converting the text to a decimal fraction and then multiplying by the total number of minutes in a day (1,440), you can achieve a rapid conversion. Both methods are valid, but choosing the right one depends on whether your source data is formatted as text or as a native **time format** within the workbook.

## The Decomposition Formula Method

You can use the following formula in **Excel** to convert **hh:mm:ss** into minutes:

```
=((HOUR(B2)*60)+MINUTE(B2)+(SECOND(B2)/60))
```

This particular formula is designed to perform a comprehensive conversion by targeting the hours,

minutes, and seconds stored in cell **B2**. By multiplying the result of the **HOUR** function by 60, you effectively transform the largest unit into minutes. The **MINUTE** function is added directly to this sum, as it is already in the desired unit. Finally, the **SECOND** function extracts the seconds, which are then divided by 60 to represent them as a decimal portion of a minute.

For example, if cell **B2** contains the value **1:23:30**, representing a duration of 1 hour, 23 minutes, and 30 seconds, this formula will return a value of **83.50**. This result indicates that the total elapsed time is exactly 83.50 minutes. This level of detail is invaluable when calculating performance metrics or averages across multiple observations, as it avoids the rounding errors that can occur when ignoring seconds or using less precise conversion techniques.

### Step-by-Step Implementation with Athlete Performance Data

To illustrate how to use this formula in a practical scenario, let us consider a dataset involving athletic performance. In this example, we have recorded the time it took for various athletes to complete a specific task. The data is currently formatted in **hh:mm:ss**, which makes it difficult to calculate the average completion time or compare performance across a large group.

First, let's enter the following dataset in **Excel** that shows the time (in hours, minutes, and seconds) that it took for various athletes to finish some task:

	A	B	C	D	E
1	<b>Athlete</b>	<b>Time</b>			
2	Andy	1:23:30			
3	Bob	0:55:34			
4	Chad	3:15:01			
5	Doug	3:12:09			
6	Eric	2:09:00			
7	Frank	1:00:00			
8	Greg	0:15:00			
9	Henry	0:29:34			
10	Isaac	1:34:50			
11	John	5:59:15			
12	Kendall	6:03:42			
13	Luke	6:10:15			
14					
15					
16					
17					
18					

Next, we navigate to the adjacent column to perform our calculation. We can type the following formula into cell **C2** to convert the time in cell **B2** into a decimal representing total minutes:

**=((HOUR(B2)\*60)+MINUTE(B2)+(SECOND(B2)/60))**

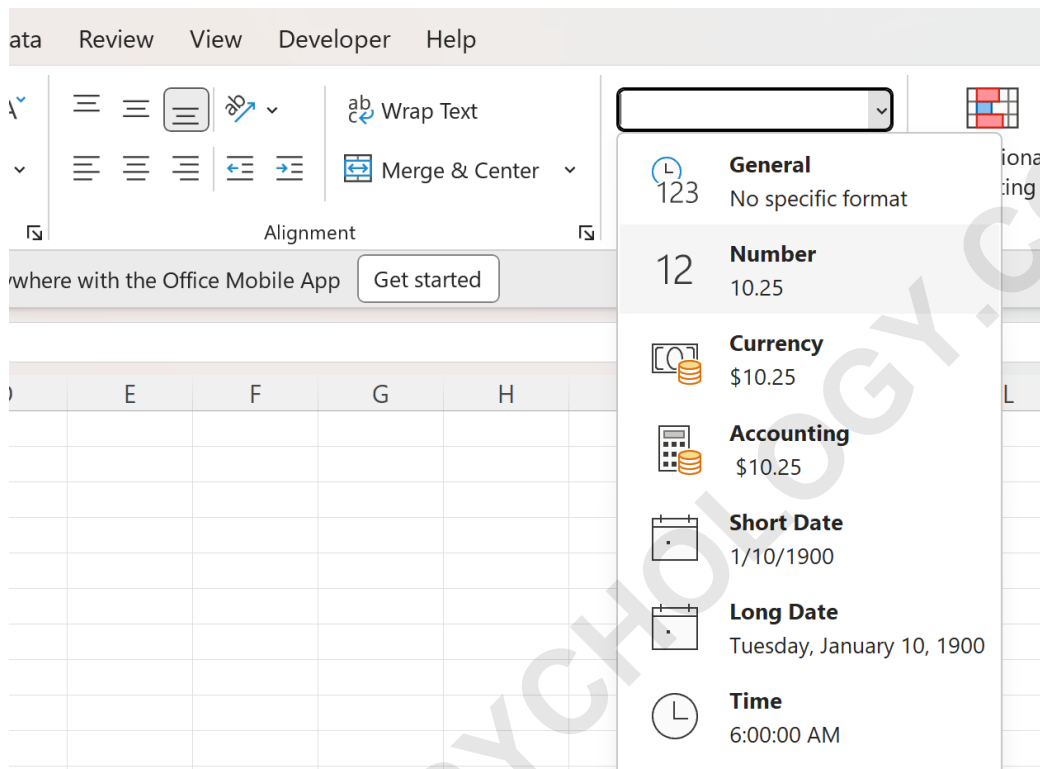
Once the formula is entered, **Excel** will calculate the value for the first entry. To apply this logic to the rest of the dataset, we can click and drag the fill handle from the bottom-right corner of cell **C2** down to each remaining cell in column C. This action uses relative cell references to automatically adjust the formula for each athlete, ensuring that cell **B3** is used for the second athlete, **B4** for the third, and so on.

	A	B	C	D	E	F	G
1	<b>Athlete</b>	<b>Time</b>	<b>Total Minutes</b>				
2	Andy	0:55:34	13:36:00				
3	Bob	1:23:30	12:00:00				
4	Chad	3:15:01	0:24:00				
5	Doug	3:12:09	3:36:00				
6	Eric	2:09:00	0:00:00				
7	Frank	1:00:00	0:00:00				
8	Greg	0:15:00	0:00:00				
9	Henry	0:29:34	13:36:00				
10	Isaac	1:34:50	20:00:00				
11	John	5:59:15	6:00:00				
12	Kendall	6:03:42	16:48:00				
13	Luke	6:10:15	6:00:00				
14							
15							
16							
17							

## Adjusting the Number Format for Clarity

A common point of confusion for many users occurs immediately after applying the formula. By default, **Excel** often detects that the source cell (B2) was a time format and automatically applies a **time format** to the result in column C. This results in the cell displaying something like "01:23:30" or "12:00 AM" instead of the expected decimal number. This does not mean the formula is incorrect; rather, it indicates that the display settings must be adjusted to reveal the underlying numerical value.

To switch to a decimal number format, follow these steps. Highlight the specific range of cells that contain your results, which in this case is **C2:C13**. Then, navigate to the **Home** tab located on the top **ribbon**. Locate the **Number Format** dropdown menu--which usually defaults to "Custom" or "Time"--and select **Number** from the list. This tells **Excel** to display the raw value as a standard digit with decimal places.



## Final Results and Data Validation

Upon changing the format, the times in column C will now be shown in a clear, decimal format that is easy to read and use for further analysis. This transformation allows you to see exactly how much time has passed in a singular unit, making it possible to sum the values, find the mean, or use them as a variable in a regression analysis. The precision of the **SECOND** function ensures that even small increments of time are accounted for in the decimal.

The following image demonstrates the successfully converted dataset:

	A	B	C	D	E
1	<b>Athlete</b>	<b>Time</b>	<b>Total Minutes</b>		
2	Andy	0:55:34	55.57		
3	Bob	1:23:30	83.50		
4	Chad	3:15:01	195.02		
5	Doug	3:12:09	192.15		
6	Eric	2:09:00	129.00		
7	Frank	1:00:00	60.00		
8	Greg	0:15:00	15.00		
9	Henry	0:29:34	29.57		
10	Isaac	1:34:50	94.83		
11	John	5:59:15	359.25		
12	Kendall	6:03:42	363.70		
13	Luke	6:10:15	370.25		
14					
15					
16					
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Reviewing the results confirms the accuracy of the mathematical decomposition:

A duration of 55 minutes and 34 seconds is converted to **55.57** minutes.

A duration of 1 hour, 23 minutes, and 30 seconds is converted to **83.50** minutes.

A duration of 3 hours, 15 minutes, and 1 second is converted to **195.02** minutes.

By following this methodical approach, you ensure that every second is accurately reflected in your final calculation, which is vital for high-stakes **data analysis**.

### Alternative Shortcut: Using the TIMEVALUE and MINUTE Functions

While the decomposition method is highly reliable, **Excel** offers alternative routes for users seeking a more streamlined approach. If your time data is stored as a string, you can use the **TIMEVALUE** function. The syntax "**=TIMEVALUE(A1)\*24\*60**" works by first converting the text string in A1 into an **Excel** serial number. Multiplying this serial number by 24 converts it to hours, and multiplying by another 60 converts it to minutes. This method is exceptionally fast and reduces the complexity of the formula, though it requires the input to be in a recognizable time string format.

Furthermore, if your objective is simply to extract the minute component of a timestamp without totaling the hours or seconds, the **MINUTE** function can be used in isolation. For example,

"=MINUTE(A1)" will return only the integer representing the minutes past the hour. While this is not a total conversion of the entire duration, it is a useful tool for categorizing data by the specific minute it occurred. Understanding the difference between extracting a component and converting the entire value is key to effective **spreadsheet** management.

## Enhancing Your Data Workflow in Excel

Mastering time conversion is just the beginning of optimizing your workflow in **Microsoft Excel**. Once your data is in a decimal minute format, you can easily integrate it into **Pivot Tables**, create insightful charts, or use it as a basis for conditional formatting. This flexibility is essential for turning raw numbers into actionable insights. Moreover, by utilizing consistent **Excel formulas**, you reduce the risk of manual entry errors and ensure that your calculations remain dynamic as new data is added to your workbook.

The ability to handle various time formats allows for better collaboration across different departments that may use different tracking standards. Whether you are analyzing athlete performance, as shown in the example, or monitoring manufacturing cycle times, these techniques provide a standardized framework for **data analysis**. Always remember to check your **cell formatting** after any time-based calculation to ensure that the visual representation aligns with your analytical goals.

The following tutorials explain how to perform other common operations in **Excel**: