

How to Extract Minutes from a Date & Time Value in Excel

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The ability to accurately parse and manipulate time data is fundamental when working with spreadsheets, particularly within Excel. When dealing with a comprehensive datetime field that contains both the date and the time down to the second, isolating a specific component, such as the minutes, requires the use of specialized time functions. While various methods exist, including complex mathematical calculations involving the date's underlying serial number representation, the most efficient and straightforward solution involves dedicated functions designed for this exact purpose.

One common, though slightly complex, approach is utilizing the TIME function in conjunction with calculations, returning the fraction of a day that represents the time, which then must be scaled up (multiplied by 1440, the number of minutes in a day) to yield the total minutes. However, the superior method, favored for its clarity and directness, is the use of the MINUTE function. This built-in tool is specifically engineered to extract the minute value (an integer between 0 and 59) directly from any valid datetime field reference, eliminating the need for further conversion or multiplication.

Understanding Excel's Serial Date System

Before diving into the extraction formulas, it is crucial to understand how Excel handles dates and times internally. Unlike standard text strings, Excel stores dates and times as sequential serial numbers. The integer portion of this number represents the date (counting days starting from January 1, 1900), while the decimal portion represents the time of day. For instance, the time 12:00 PM is represented by the decimal 0.5 because it is exactly halfway through the 24-hour day. Understanding this numerical basis explains why certain extraction or conversion methods sometimes involve multiplying by 24 (for hours) or 1440 (for minutes), although dedicated functions generally abstract this complexity away.

When a cell contains a full datetime field, such as 10/27/2023 14:35:15, Excel is actually storing a single serial number (e.g., 45226.6078125). The time functions, including **MINUTE**, are designed to look specifically at the fractional part of this serial number to isolate the relevant component. This mechanism ensures high precision and reliability when performing time-based calculations, regardless of the complexity of the date format displayed to the user.

The key advantage of using the fractional component for time is consistency across all calculations. By knowing that the time portion is always a value between 0 (midnight) and 0.99999 (just before midnight), Excel can quickly calculate intervals, duration, and specific time components. While the **MINUTE** function handles this parsing automatically, understanding the underlying serial number structure provides context for why other, more manual extraction techniques might exist, particularly when integrating Excel data with other applications or programming languages that require raw numeric time values.

The Direct Method: Using the MINUTE Function

The most straightforward and highly recommended way to extract the minutes from a datetime field in Excel is by employing the **MINUTE** function. This function requires only one argument: the serial number or a reference to the cell containing the datetime value from which you wish to extract the minute component. It returns an integer result ranging from 0 to 59, representing the specific minute of the hour specified in the provided time.

The syntax for the **MINUTE** function is incredibly simple: `=MINUTE(serial_number)`. The `serial_number` argument can be a direct input of an Excel serial time (a decimal number), or more commonly, a reference to a cell containing the date and time. This simplicity is why the **MINUTE** function is preferred over alternative mathematical approaches, as it significantly reduces the likelihood of formula errors and enhances the readability of the spreadsheet logic. For content maintainability and auditing, using dedicated functions is always best practice.

To illustrate its direct usage, if you have a datetime value in cell **A2**, you can use the following formula to extract the minutes. This process is immediate, requires no formatting adjustments to the output cell, and provides the necessary numeric data for further analysis or time-based comparisons:

You can use the **MINUTE** function in Excel to extract the minutes from a datetime.

For example, you can use the following formula to extract the minutes from the datetime in cell **A2**:

=MINUTE(A2)

Practical Application: Step-by-Step Example

To demonstrate the utility of the **MINUTE** function, let us consider a real-world scenario involving sales data tracking. Suppose a company records the exact moment each sale is finalized, resulting in a dataset where Column A contains comprehensive date and time stamps. The goal is to isolate the minute of the hour for each transaction, perhaps to analyze traffic patterns or processing efficiency within specific time segments. This step-by-step example walks through implementing the formula.

The following example shows how to use this formula in practice.

Example: Extract Minutes from Datetime in Excel

Suppose we have the following dataset in Excel that shows the number of sales made during various dates and times for some company:

	A	B	C	D	E
1	Datetime	Sales			
2	1/1/2023 4:14:59	14			
3	1/2/2023 10:15:01	19			
4	1/2/2023 8:14:09	22			
5	1/2/2023 23:34:45	24			
6	1/3/2023 12:14:50	38			
7	1/4/2023 1:15:24	10			
8	1/5/2023 5:27:48	14			
9	1/5/2023 5:38:35	13			
10	1/6/2023 16:45:58	18			
11					
12					
13					
14					
15					

As depicted in the image above, Column A contains the full datetime stamp, and our objective is to populate a new column, Column C, with only the minute component. This requires targeting the first cell containing the datetime value, which is cell A2, and applying the **MINUTE** function directly within cell C2. This action tells Excel to look up the time portion of the serial number in A2 and return the minute value as a numerical integer.

Suppose we would like to extract the minutes from each datetime in column A.

To do so, we can type the following formula into cell **C2**:

=MINUTE(A2)

Once the formula is entered in C2, the next crucial step is propagation. Instead of manually typing the formula for every row, we utilize Excel's fill handle feature. By clicking on the small square at the bottom-right corner of cell C2 and dragging it down the column, the formula is automatically adjusted for each subsequent row (C3 uses A3, C4 uses A4, and so on). This efficient process ensures that the minute extraction is applied consistently across the entire dataset, regardless of its size, yielding the final desired output as shown below:

We can then click and drag this formula down to each remaining cell in column C:

C2 ✕ ✓ <i>f_x</i> =MINUTE(A2)					
	A	B	C	D	E
1	Datetime	Sales	Minutes		
2	1/1/2023 4:14:59	14	14		
3	1/2/2023 10:15:01	19	15		
4	1/2/2023 8:14:09	22	14		
5	1/2/2023 23:34:45	24	34		
6	1/3/2023 12:14:50	38	14		
7	1/4/2023 1:15:24	10	15		
8	1/5/2023 5:27:48	14	27		
9	1/5/2023 5:38:35	13	38		
10	1/6/2023 16:45:58	18	45		
11					
12					
13					
14					

Column C now displays only the minutes value from each datetime in column A.

Alternative Approach: Utilizing the TIME Function for Conversion

While the **MINUTE** function is generally preferred for its simplicity, there are scenarios, often related to backward compatibility or integration with legacy systems, where extracting minutes using the TIME function and arithmetic manipulation might be necessary. This method relies on extracting the time component as a decimal fraction of a day and then scaling it up to minutes.

The core concept of this alternative method involves leveraging the fact that there are 24 hours in a day, 60 minutes in an hour, totaling 1440 minutes (24 * 60) in a full day. If we can isolate the time portion of the datetime field and express it as a fraction, multiplying that fraction by 1440 will give us the total elapsed minutes from midnight (00:00:00). However, this total includes hours converted to minutes, making it useful only if you need the absolute total minutes passed since midnight, not just the minute component of the hour.

A slightly different application of the TIME function is to rebuild the time using components derived from the original datetime, which isn't necessary for simple extraction but is vital for calculations. If the user originally intended to use `=TIME(HOUR(A2), MINUTE(A2), SECOND(A2))`, this returns the time as a fraction. To extract only the minutes using a calculation that doesn't involve the **MINUTE** function directly, one would typically use `=INT((A2-INT(A2))*1440)`, which isolates the time

fraction and multiplies it by 1440 to get total minutes, then uses the MOD function if only the minute-of-the-hour is needed: `=MOD(INT((A2-INT(A2))*1440), 60)`. This complex formula clearly demonstrates why the **MINUTE** function remains the superior and more readable choice for simple extraction.

Advanced Extraction: Combining Minutes and Seconds

In many analytical contexts, isolating the minute is insufficient; often, the seconds component is equally important for granular time measurement, especially when tracking machine processes or high-frequency data logging. While we could extract the minute and second into two separate columns using the **MINUTE** and **SECOND** functions independently, it is often useful to concatenate these two values into a single text string formatted as "MM:SS".

To achieve this combined output, we must link the results of the **MINUTE** function with the result of the **SECOND** function using the ampersand (&) operator, which serves as Excel's standard concatenation tool. A key refinement is necessary when extracting the seconds: the **SECOND** function returns an integer between 0 and 59. If the seconds value is less than 10 (e.g., 5 seconds), it returns the integer 5, not the desired two-digit string "05".

To ensure consistent two-digit formatting for the seconds, we must wrap the **SECOND** function within the **TEXT** function, using the format code "00". This forces the output to always display two digits, preventing formatting errors in the resulting time string. The final combined formula seamlessly extracts the two components and formats them correctly with a colon delimiter, creating a readable time snippet:

If you would also like to extract the seconds along with the minutes, you can use the following formula instead:

=MINUTE(A2)&":"&TEXT(SECOND(A2), "00")

The following screenshot shows how to use this formula in practice:

D2 ✕ ✓ fx =MINUTE(A2)&":"&TEXT(SECOND(A2), "00")					
	A	B	C	D	E
1	Datetime	Sales	Minutes	Minutes & Seconds	
2	1/1/2023 4:14:59	14	14	14:59	
3	1/2/2023 10:15:01	19	15	15:01	
4	1/2/2023 8:14:09	22	14	14:09	
5	1/2/2023 23:34:45	24	34	34:45	
6	1/3/2023 12:14:50	38	14	14:50	
7	1/4/2023 1:15:24	10	15	15:24	
8	1/5/2023 5:27:48	14	27	27:48	
9	1/5/2023 5:38:35	13	38	38:35	
10	1/6/2023 16:45:58	18	45	45:58	
11					
12					
13					
14					

Note that in this formula we used the **MINUTE** function to extract the minutes from the datetime and the **&** symbol to concatenate the minutes and seconds.

Why Extract Minutes? Common Use Cases

Extracting the minute component from a comprehensive datetime field is not merely a technical exercise; it serves several critical analytical and operational purposes across various industries. The primary motivation is to normalize data points based on short-term intervals, allowing analysts to aggregate events that occur within the same sixty-second window, irrespective of the specific hour or day they occurred. This allows for powerful comparative analysis.

One common use case is in operational efficiency and queue management. For instance, in a call center, extracting the minute allows managers to track how many calls start during minute '05' versus minute '55' of the hour. If specific minutes consistently show higher volumes, it suggests a non-uniform distribution of activity that may require specific staffing adjustments. Similarly, in manufacturing, extracting the minute can help isolate precise moments of machine failure or processing bottlenecks, which are often correlated with the start or end of automated cycles that operate on minute-level timers.

Furthermore, minute extraction is essential for creating custom time groupings beyond Excel's standard hourly or daily pivot table aggregations. Analysts can use the extracted minute value (0-59) to assign data points to custom 15-minute or 10-minute buckets using simple arithmetic

(e.g., `=FLOOR(MINUTE(A2), 15)`). This segmentation is invaluable for pattern recognition in high-frequency trading data, server logs, or real-time monitoring applications where quick shifts in activity levels are defined by minute-by-minute fluctuations.

Troubleshooting and Common Errors

While the **MINUTE** function is robust, users sometimes encounter issues stemming primarily from data formatting or incorrect data types. Understanding these pitfalls ensures successful minute extraction every time. One of the most frequent problems occurs when the source cell does not contain a valid datetime field serial number but instead holds a text string that looks like a date or time. If the function returns the `#VALUE!` error, this usually indicates that Excel cannot recognize the input as a numerical serial date. The solution involves checking the cell's formatting and, if necessary, converting the text-based date/time into a numerical format using functions like **DATEVALUE** or **TIMEVALUE**.

Another common error arises when the function is applied to a cell that only contains a date (i.e., the time portion is midnight, or 0.0000). In this scenario, the **MINUTE** function correctly returns 0, as midnight is 00:00. Users who expected a different result often misunderstand that a date without a specified time defaults to the start of the day. Similarly, if the source cell is completely empty, the function treats it as serial number 0 (January 0, 1900, at 00:00), which also results in a minute extraction of 0. Always verify that the referenced cell contains the intended time component.

Finally, when performing advanced extractions that involve concatenation (as seen in the combined Minutes and Seconds example), ensure that the output cell is formatted as a General or Text type. If the output cell retains a Custom Time format, Excel may attempt to interpret the concatenated text string (e.g., "35:15") as a time serial number, which can lead to incorrect or misleading display values, even if the underlying formula calculation is sound. Formatting consistency between input and output is essential for reliable time manipulation.

Related Time Extraction Functions

The **MINUTE** function is part of a larger family of time-specific functions within Excel, all designed to parse the serial date/time number into its constituent parts. For comprehensive time analysis, it is often necessary to extract hours and seconds as well. These related functions adhere to the same simple syntax as **MINUTE**, requiring only the serial number reference as the argument.

HOUR Function: This function extracts the hour component from the datetime. The syntax is `=HOUR(A2)`, and it returns an integer between 0 (12:00 AM) and 23 (11:00 PM). This is vital for separating data into hourly buckets for time-of-day analysis.

SECOND Function: This function isolates the seconds component. The syntax is `=SECOND(A2)`,

and it returns an integer between 0 and 59. As noted previously, this function is critical when high granularity (sub-minute timing) is required.

TIME Function: Although primarily used to construct a time value from separate hour, minute, and second arguments, `=TIME(hour, minute, second)` can also be used in conjunction with the extraction functions (HOUR, MINUTE, SECOND) to normalize or reconstruct time values based on extracted components.

By using these functions in combination, users can disassemble a single datetime field into its individual elements, perform calculations (such as calculating duration or time differences), and then reassemble the results into new, formatted time values using functions like **TIME** or **TEXT**. Mastery of the **MINUTE function** provides a foundation for exploiting the full power of Excel's time manipulation capabilities.