

Learning to Find the First Day of the Week in Excel: A Step-by-Step Guide

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Introduction: Mastering Date and Week Calculations in Excel

The effective management of time-series data, complex scheduling, and analytical reporting hinges upon mastering date calculations in [Excel](#). A ubiquitous requirement across global industries is the accurate determination of the **first day of the week** corresponding to any given calendar date. This task is complicated by divergent regional standards: while many North American contexts define Sunday as the beginning of the week, the ISO 8601 standard, widely adopted throughout Europe and by major international organizations, designates Monday as the start. This comprehensive guide provides robust, dependable formulas and step-by-step instructions designed to confidently calculate the week's start date in Excel, ensuring compatibility with both the Sunday-start and Monday-start conventions.

To truly appreciate the precision of these calculations, it is essential to understand the internal mechanics of how [Excel](#) handles temporal data. Instead of storing dates in traditional format, Excel utilizes a system of **serial numbers**. This numerical foundation begins with January 1, 1900, which is assigned the value 1, with each subsequent day incrementing the count by one. This powerful system enables mathematical operations directly on dates, making intricate manipulations--such as efficiently rolling a date back to the start of its week--not only possible but highly efficient. Our methods leverage this inherent numerical mechanism, constructing formulas that guarantee consistent and accurate results regardless of the input date.

This tutorial is structured for maximum practical utility, ensuring a clear path from foundational theory to real-world application. We will first introduce the fundamental formulas, followed by a detailed dissection of the underlying mathematical principles, specifically modular arithmetic. Subsequently, we will present a practical, illustrative walkthrough using a sample dataset, guiding you through the formula application process and, critically, explaining how to convert the raw numeric output back into conventional, readable dates. By the conclusion of this guide, you will possess the specialized knowledge required to precisely calculate the start of any week, significantly boosting your proficiency in advanced date management within the [Excel](#) environment.

The Mathematical Foundation: Harnessing Modular Arithmetic

The accurate identification of the first day of a week in Excel relies heavily on the principles of modular arithmetic, implemented via the powerful [MOD function](#), applied to the date's underlying [serial number](#). The MOD function is specifically designed to calculate the remainder after a dividend (the date's serial number) is divided by a specified divisor. In the context of calendar calculations, the divisor is always 7, representing the fixed cycle of seven days in a week. By strategically adjusting the date's serial number before applying $\text{MOD}(\dots, 7)$, we can precisely calculate the number of days that must be subtracted from the current date to rewind it to the beginning of its respective weekly cycle.

The two primary formulas presented in this article address the two most widely accepted global conventions for defining the week's start: Sunday or Monday. While the structure of these two formulas appears almost identical, a subtle yet critical difference in the input adjustment factor (either -1 or -2) dictates whether the calculation aligns with a Sunday or a Monday start. This adjustment is necessary because [Excel](#) assigns specific numerical values to weekdays internally, where Sunday typically equals 1, Monday equals 2, and so forth. Understanding how we manipulate this starting point is crucial to appreciating the precision and adaptability of these solutions, allowing them to conform effortlessly to diverse regional requirements.

Before proceeding, it is vital to establish the operating context: these calculations presuppose that the cell referenced--consistently denoted here as **A2**--contains a valid calendar [date](#). If the input cell contains non-date text, is empty, or holds an incorrectly formatted date, the formulas are likely to return an error value or an incorrect number. Furthermore, these expressions are designed for maximum accessibility; they are straightforward and do not require complex array formulas or reliance on advanced Excel features. Their effectiveness lies in their direct and intelligent manipulation of Excel's reliable, underlying date numbering system.

Formula 1: Determining the Week Start Based on Sunday

When your standard calendar convention, organizational policy, or regional preference dictates that **Sunday** constitutes the first day of the week, the following concise formula provides the precise calculation required to determine that week's starting date:

=A2-MOD(A2-1, 7)

We can systematically break down this expression to reveal its elegant underlying mechanism. The core purpose is to identify the number of days that have elapsed since the most recent Sunday (inclusive of the current date) and then subtract that count from the original date. In Excel's default dating system, Sunday is assigned the [weekday](#) number 1. By executing the operation $A2-1$, we effectively adjust the date's [serial number](#) such that Sundays align perfectly with multiples of 7, resulting in a remainder of 0 when divided by 7. For example, if A2 is a Sunday, $A2-1$ will yield a number that, when divided by 7, leaves a remainder of 0. If A2 is a Monday, the remainder will be 1, signifying it is one day past the adjusted Sunday zero-point.

The term $\text{MOD}(A2-1, 7)$ therefore calculates the exact numerical distance, in days, between the date located in A2 and the preceding Sunday. This calculated remainder tells us precisely how far into the Sunday-starting week the date falls. For instance, if A2 is a Tuesday, the remainder will be 2. This remainder is then subtracted from the original date: $(A2 - \text{MOD}(\dots))$. This final subtraction step mathematically "rolls back" the date to the most recent Sunday, thereby delivering the accurate first day of the week based on the mandated Sunday start convention. This elegant

modular approach guarantees consistent accuracy for any valid input date.

Formula 2: Determining the Week Start Based on Monday (ISO 8601)

In adherence to the global [ISO 8601](#) standards, numerous regions--especially within Europe--and a significant number of global industries formally recognize **Monday** as the official commencement of the work week. For these specific scenarios, a slightly but crucially modified version of the previous formula is required to ensure the calculation correctly identifies the preceding or current Monday as the week's start:

=A2-MOD(A2-2, 7)

This formula operates using the identical foundational logic as the Sunday-start version, but incorporates a necessary adjustment factor of 2 instead of 1. This adjustment is essential because, in [Excel](#)'s default internal [weekday](#) numbering system, Monday is assigned the numerical value 2 (following Sunday=1). By subtracting 2 from the date's [serial number](#) ($A2-2$), we successfully recalibrate the zero-point for the [MOD function](#). This ensures that if A2 is a Monday, $A2-2$ results in a number that yields a remainder of 0 when divided by 7, thereby correctly establishing it as the start of the Monday-defined week cycle.

The resulting calculation, $MOD(A2-2, 7)$, precisely determines the number of days elapsed since the previous Monday. For example, if A2 is a Wednesday, the remainder will be 2 (as Wednesday is the third day of a Monday-start week). Subtracting this remainder from the original date ($A2 - MOD(\dots)$) efficiently shifts the date backward to the most recent Monday. Both formulas powerfully demonstrate the adaptability of date arithmetic in [Excel](#), allowing users to customize calendar calculations to various international conventions using highly effective, surprisingly simple expressions.

Practical Implementation: A Step-by-Step Walkthrough

To clearly illustrate how these powerful formulas translate into actionable results, let us walk through a common data scenario. We will utilize a sample list of dates and apply our derived formulas to calculate both the Sunday-start and Monday-start dates for each entry. This hands-on, step-by-step example uses a typical dataset within [Excel](#), demonstrating the input, the resulting output, and the necessary formatting adjustments.

Assume that you have imported or manually entered the following list of dates into Column A of your spreadsheet, starting in cell **A2**:

	A	B	C	D	E	F
1	Date	Sales				
2	1/4/2022	23				
3	2/15/2022	29				
4	3/23/2022	40				
5	4/15/2022	45				
6	4/18/2022	34				
7	5/1/2022	35				
8	8/7/2022	20				
9	10/31/2022	20				
10	11/4/2022	23				
11	12/19/2022	29				
12						
13						
14						
15						
16						
17						
18						
19						
20						

Our objective is straightforward: populate Column C with the calculated first day of the week based on a Sunday start, and populate Column D based on a Monday start. We begin by entering the appropriate formulas into cells **C2** and **D2**, ensuring they reference the input date located in **A2**. This initial calculation establishes the necessary expressions for the entire dataset, preparing the stage for efficient autofill propagation down the sheet.

Specifically, enter the following text strings into the corresponding cells:

For cell **C2** (Sunday as first day): `=A2-MOD(A2-1,7)`

For cell **D2** (Monday as first day): `=A2-MOD(A2-2,7)`

Once these core formulas are accurately placed in **C2** and **D2**, you can utilize Excel's efficient autofill feature to apply them across all remaining dates. To do this, select both cells **C2** and **D2** simultaneously, then move your cursor over the small square located at the bottom-right corner of the selected range (known as the fill handle). When the cursor changes into a thin plus sign, click and drag the selection downwards to the final row of your data (e.g., stopping at **C11** and **D11**). This action intelligently copies the formulas, adjusting the cell references relative to each row, thereby completing the calculation for the entire date range instantaneously.

	A	B	C	D
1	Date	Sales	First Day of Week (Sunday)	First Day of Week (Monday)
2	1/4/2022	23	44563	44564
3	2/15/2022	29	44605	44606
4	3/23/2022	40	44640	44641
5	4/15/2022	45	44661	44662
6	4/18/2022	34	44668	44669
7	5/1/2022	35	44682	44676
8	8/7/2022	20	44780	44774
9	10/31/2022	20	44864	44865
10	11/4/2022	23	44864	44865
11	12/9/2022	29	44899	44900
12			=A2-MOD(A2-1, 7)	=A2-MOD(A2-2, 7)
13				
14				
15				
16				
17				
18				
19				

Crucial Step: Formatting Serial Numbers into Readable Dates

After the successful application of the formulas, you will undoubtedly notice that the results displayed in columns C and D are not conventional calendar dates but large **numeric values**. This is the expected and mathematically correct behavior, as Excel stores dates internally as [serial numbers](#) representing the count of days since January 1, 1900. While mathematically sound, these numbers lack the necessary clarity for practical reporting and analysis. Converting this raw numeric data into a recognizable date format is a simple, yet absolutely mandatory, adjustment step.

To transform these mathematical values into a standard, user-friendly date display, follow this straightforward process:

Select the Target Range: Carefully highlight the entire block of cells that contain the numeric date values requiring conversion. In the context of our ongoing example, this range encompasses cells **C2:D11**.

Locate Formatting Tools: Navigate to the [Home tab](#) found on the Excel Ribbon interface. Within this tab, locate the "Number" group, which hosts the [Number Format](#) dropdown menu. This menu typically defaults to "General" or "Number" before formatting.

Apply the Date Format: Click the **Number Format** dropdown and select the **Short Date** option from the list. This action immediately instructs [Excel](#) to interpret the underlying serial numbers as dates, displaying them in a standard format such as "MM/DD/YYYY" or "DD/MM/YYYY," depending on your operating system's specific regional configuration.

The screenshot shows the Microsoft Excel interface. The ribbon is set to 'Home'. The formula bar contains the formula `=A2-MOD(A2-1,7)`. The spreadsheet has columns A through G. Column A contains dates from 1/2022 to 3/2022. Column B contains sales values (23, 29, 40, 45, 34, 35, 20, 20, 23, 29). Column C is titled 'First Day of Week (Sunday)' and contains serial numbers (44563, 44605, 44640, 44661, 44668, 44682, 44780, 44864, 44864, 44899). Column D is titled 'First Day of Week (Monday)' and contains serial numbers (44564, 44606, 44641, 44662, 44669, 44676, 44774, 44865, 44865, 44900). The formula bar shows `=A2-MOD(A2-1, 7)` for column C and `=A2-MOD(A2-2, 7)` for column D. A dropdown menu is open on the right, showing various number formats. The 'Short Date' option is selected, displaying '1/2/2022'.

	Sales	First Day of Week (Sunday)	First Day of Week (Monday)
1/2022	23	44563	44564
2/2022	29	44605	44606
3/2022	40	44640	44641
4/2022	45	44661	44662
5/2022	34	44668	44669
6/2022	35	44682	44676
7/2022	20	44780	44774
8/2022	20	44864	44865
9/2022	23	44864	44865
10/2022	29	44899	44900

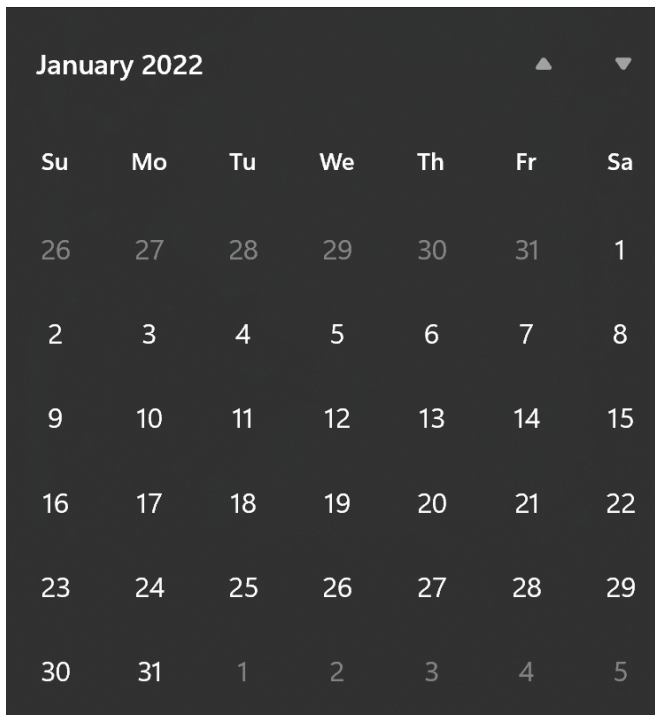
This essential formatting step renders your calculated first days of the week intelligible and immediately ready for reporting, presentation, or subsequent analysis. Ignoring this conversion would leave the raw serial numbers, which, although mathematically flawless, entirely obscure the meaningful temporal data they are intended to convey to the user.

	A	B	C	D
1	Date	Sales	First Day of Week (Sunday)	First Day of Week (Monday)
2	1/4/2022	23	1/2/2022	1/3/2022
3	2/15/2022	29	2/13/2022	2/14/2022
4	3/23/2022	40	3/20/2022	3/21/2022
5	4/15/2022	45	4/10/2022	4/11/2022
6	4/18/2022	34	4/17/2022	4/18/2022
7	5/1/2022	35	5/1/2022	4/25/2022
8	8/7/2022	20	8/7/2022	8/1/2022
9	10/31/2022	20	10/30/2022	10/31/2022
10	11/4/2022	23	10/30/2022	10/31/2022
11	12/9/2022	29	12/4/2022	12/5/2022
12			=A2-MOD(A2-1, 7)	=A2-MOD(A2-2, 7)
13				
14				
15				
16				
17				
18				

Verification: Cross-Referencing Calculations with a Calendar

Following implementation and successful formatting, the final and most rigorous step involves verifying the calculated results against a known source to confirm the accuracy of the underlying logic. This process guarantees that the formulas are functioning as intended and that the derived week start [date](#) aligns perfectly with established calendar conventions. We will select a specific date from our sample dataset and cross-check the Excel output against an actual calendar representation.

Let us focus on the input date **January 4, 2022**, obtained from our original Column A. By examining a calendar visualization for January 2022, we can visually determine its exact position within the weekly cycle:



January 2022						
Su	Mo	Tu	We	Th	Fr	Sa
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

The calendar clearly indicates that **January 4, 2022, was a Tuesday**. We now compare this reality against the results calculated by our two distinct formulas:

Under the **Sunday Start** convention, the closest preceding Sunday to Tuesday, January 4, 2022, is **January 2, 2022**. The formula in Column C for this row must therefore return this specific date.

Under the **Monday Start** convention, the closest preceding Monday to Tuesday, January 4, 2022, is **January 3, 2022**. The formula in Column D for this row must accurately return this date.

When reviewing the corresponding output in the formatted Excel sheet for January 4, 2022, you will observe that the formulas flawlessly return **1/2/2022** in the Sunday-start column (C) and **1/3/2022** in the Monday-start column (D). This precise correspondence confirms the robust reliability and mathematical correctness of the derived formulas, instilling absolute confidence in their application for any date-based calculation requiring the identification of the week's beginning.

Advanced Insight: Deeper Understanding of Modular Arithmetic

The efficiency and elegance inherent in the formulas, `=A2-MOD(A2-1, 7)` and `=A2-MOD(A2-2, 7)`, are derived directly from their sophisticated application of modular arithmetic to Excel's underlying date [serial numbers](#). To fully appreciate this powerful technique, it is helpful to reiterate how Excel assigns numerical values to weekdays: typically, Sunday is 1, Monday is 2, extending sequentially up to Saturday being 7. The [MOD function](#) calculates the remainder following division, using a divisor of 7 to represent the natural weekly cycle.

In the Sunday-start formula, $=A2-MOD(A2-1, 7)$, the term $A2-1$ is the critical adjustment factor. If $A2$ represents a Sunday ([weekday 1](#)), subtracting 1 yields a number that effectively has a remainder of 0 when divided by 7, thereby establishing Sunday as the conceptual zero-point of the week cycle. If $A2$ is a Tuesday ([weekday 3](#)), $A2-1$ results in a number that yields a remainder of 2 when divided by 7. This remainder (2) indicates that Tuesday is exactly two days past the adjusted Sunday zero-point. By subtracting this remainder from the original date ($A2 - MOD(\dots)$), the calculation precisely shifts the date backward by two days, landing exactly on the desired Sunday start.

Conversely, examining the Monday-start formula, $=A2-MOD(A2-2, 7)$, the adjustment is $A2-2$. If $A2$ is a Monday (Excel [weekday 2](#)), then $A2-2$ results in a serial number whose remainder when divided by 7 is 0, correctly setting Monday as the cycle's zero-point. If $A2$ is a Thursday ([weekday 5](#)), then $A2-2$ gives a number whose remainder when divided by 7 is 3. This remainder (3) signifies that Thursday is three days past the adjusted Monday. Subtracting this remainder from the original date ($A2 - MOD(\dots)$) ensures the date is rolled back exactly three days to the preceding Monday. This intelligent mathematical leveraging of Excel's date system provides a robust and highly efficient method for standardizing week start calculations, regardless of calendar conventions.

Conclusion: Enhancing Date Management and Reporting in Excel

The effective calculation and management of dates in [Excel](#) remain fundamental competencies, essential for streamlining complex analytical tasks, project scheduling, and high-level reporting. The ability to calculate the **first day of the week** with precision, accommodating both Sunday-start and Monday-start conventions, introduces significant flexibility into data aggregation and time-based analysis. By employing the simple yet potent formulas, $=A2-MOD(A2-1, 7)$ for Sunday-start weeks and $=A2-MOD(A2-2, 7)$ for Monday-start weeks, you can consistently achieve accurate results tailored precisely to specific regional or project requirements.

This comprehensive guide has provided a detailed journey, starting with the conceptual understanding of Excel's internal date system and the mechanics of modular arithmetic, progressing through a practical, step-by-step implementation example. We emphasized the necessity of converting the calculated numeric output back into readable calendar [date](#) formats--a step critical for any practical utility--and concluded with a rigorous verification process that confirmed the robust reliability of the methods presented.

Integrating these powerful, efficient techniques into your daily Excel workflow will not only streamline date-related operations but also significantly enhance the clarity, consistency, and trustworthiness of your data outputs. These formulas serve as excellent examples of leveraging Excel's built-in functions to solve complex, real-world data challenges with surprising simplicity. We

strongly encourage you to continue exploring the vast array of functions available in Excel to further unlock your data analysis potential.

Further Resources for Excel Mastery

For users seeking to further advance their date and time manipulation skills in Excel, the following resources provide guidance on related, common operations: