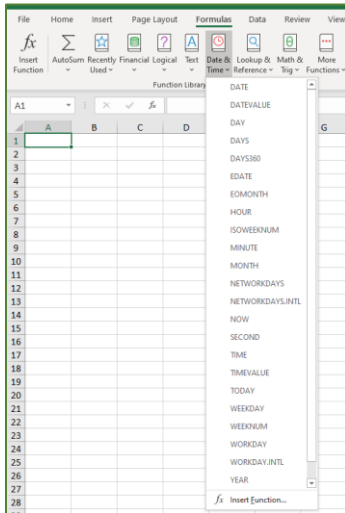
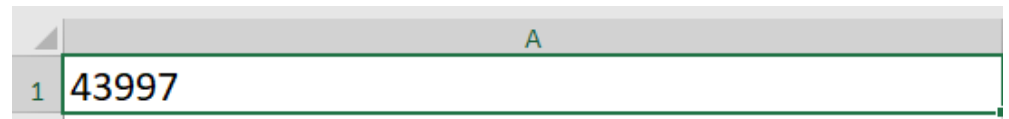
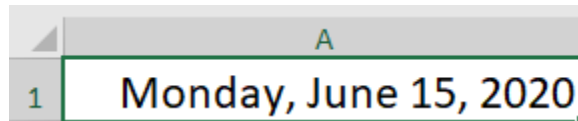


Date and Time Functions

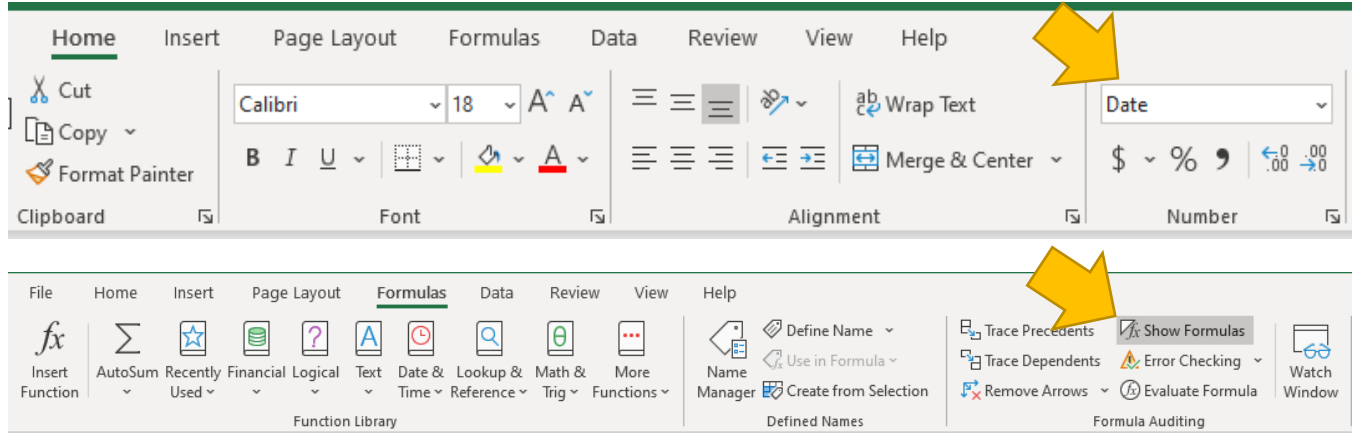
Introduction



Excel stores dates as sequential serial numbers, starting with **January 1, 1900** (i.e., serial number 1) so that they can be used in calculations. The serial number increases by 1 with each passing day. For example, the serial number for the date **June 15, 2020** in cell **A1** below is **43997**. The serial number for the following day, June 16th, will be **43998** and so on.



If a serial number appears in a worksheet cell rather than the date, make sure the cell contents are formatted as a **Date**. The date will also appear as a serial number when using **Show Formulas** (Formulas→Show Formulas).



Enter Dates and Times

You can enter dates and times in cells using a variety of formats. In Excel, dates are **values**; therefore, they align at the *right cell margin*. Use the following guidelines when entering dates and times:

- Use either the **forward slash (/)** or the **hyphen (-)** as a date separator.
 - Examples: 6/4/2020; 6-4-2020
- Use a **colon (:)** as a time separator.
 - Example: 11:05
- Separate date and time formats with a **space**
 - Example: 6/5/2020 11:05

Microsoft Excel: Date and Time Functions

- Use one of the following to enter a month:
 - a number (e.g., 1=January, 2=February)
 - the first three letters of the month's name
 - the entire month's name,
- Enter date and time values using either uppercase or lowercase letters
- To display times using the 12-hour clock, include either **am** (or just **a**) or **pm** (or just **p**)
- To enter the current date in a cell, press **Ctrl+;** (semicolon).
- To enter the current time, press **Ctrl+:** (colon)

Table 2. Date and Time Formats	
Format	Example
m/d/yy	2/25/21
d-mmm-yy	25-Feb-21
d-mmm	25-Feb (Excel assumes the current year)
mmm-yy	Feb-15 (Excel assumes the first day of the month)
h:mm:ss AM/PM	11:55:10 PM
H:mm AM/PM	11:55 PM

Source: McFedries 2007, p. 200.

DATE Function

Description

- The **DATE** function returns the sequential serial number that represents a particular date.
- Use Excel's **DATE function** when you need to take three separate values and combine them to form a date.

Syntax and Arguments

Syntax: DATE(year,month,day)

The DATE function syntax has the following arguments:

- **Year (Required)**. The value of the **year** argument can include one to four digits. Excel interprets the **year** argument according to the date system your computer is using. By default, Microsoft Excel for Windows uses the 1900 date system, which means the first date is **January 1, 1900**.

Tip: Use four digits for the **year** argument to prevent unwanted results. For example, "21" could mean "1921" or "2021." **Four digit years prevent confusion.**

- If **year** is between **0 (zero)** and **1899 (inclusive)**, Excel adds that value to 1900 to calculate the year.
For example, **DATE(108,1,2)** returns **January 2, 2008 (1900+108)**.
- If **year** is between **1900** and **9999 (inclusive)**, Excel uses that value as the year.
For example, **DATE(2008,1,2)** returns **January 2, 2008**.
- If **year** is less than **0** or is **10000 or greater**, Excel returns the **#NUM!** error value.

Microsoft Excel: Date and Time Functions

- **Month (Required)**. A positive or negative integer (whole number) representing the month of the year from 1 to 12 (January to December).
 - If **month** is greater than 12, **month** adds that number of months to the first month in the year specified.
For example, **DATE(2021,14,2)** returns the serial number representing **February 2, 2022**.
 - If **month** is less than 1, **month** subtracts the magnitude of that number of months, plus 1, from the first month in the year specified.
For example, **DATE(2021,-3,2)** returns the serial number representing **September 2, 2020**.
- **Day (Required)**. A positive or negative integer representing the day of the month from 1 to 31.
 - If **day** is greater than the number of days in the month specified, **day** adds that number of days to the first day in the month.
For example, **DATE(2021,1,35)** returns the serial number representing **February 4, 2021**.
 - If **day** is less than 1, **day** subtracts the magnitude that number of days, plus one, from the first day of the month specified.
For example, **DATE(2021,1,-15)** returns the serial number representing **December 16, 2020**.

For example: **=DATE(C2,A2,B2)** combines the year from cell C2, the month from cell A2, and the day from cell B2 and puts them into one cell as a date. The example below shows the final result in cell D2.

	A	B	C	D
1	Month	Day	Year	Combined Date
2	7	4	2021	7/4/2021

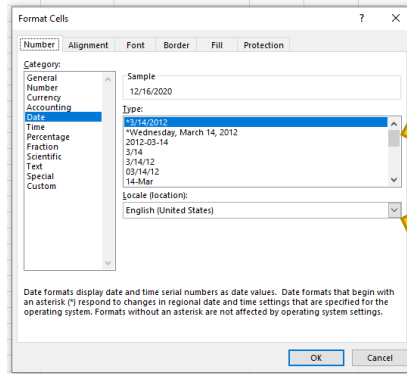
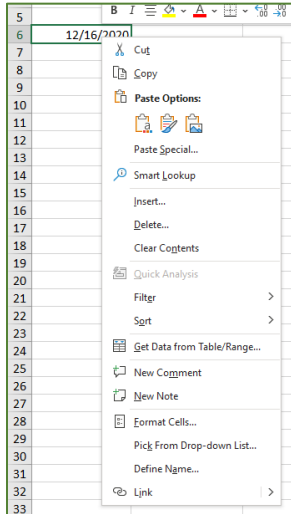
The Month (A2), Day (B2), and Year (C2) values are combined into one date (D2).

Change the Date Format

To change the date format:

1. **Right-click** the cell(s) you want to change. On a Mac, **Ctrl-click** the cells.
2. On the **Home** tab click **Format > Format Cells** or press **Ctrl+1** (**Command+1** on a Mac).
3. Choose the **Locale (location)** and **Date format** you want.

Microsoft Excel: Date and Time Functions



Calculate a Date Based on Another Date

You can use the **DATE** function to create a date that is based on another cell's date. For example, you can use the **YEAR**, **MONTH**, and **DAY** functions to create an anniversary date that's based on another cell. If an employee's first day at work is **10/1/2016**; the DATE function can be used to establish his fifth year anniversary date:

1. The **DATE** function creates a date.

`=DATE(YEAR(C2)+5,MONTH(C2),DAY(C2))`

2. The **YEAR** function looks at cell C2 and extracts "2012".
3. Then, "+5" adds 5 years, and establishes "2017" as the anniversary year in cell D2.
4. The **MONTH** function extracts the "3" from C2. This establishes "3" as the month in cell D2.
5. The **DAY** function extracts "14" from C2. This establishes "14" as the day in cell D2.

	fx = =DATE(YEAR(C2)+5,MONTH(C2),DAY(C2))				
	1	2	3	4	5
	C	D	E		
	Start Date	Fifth Anniversary			
	3/14/2012	3/14/2017			

Convert Text Strings and Numbers into Dates

If you open a file that came from another program, Excel will try to recognize dates within the data. But sometimes the dates aren't recognizable. This is may be because the numbers don't resemble a typical date, or because the data is formatted as text. If this is the case, you can use the **DATE** function to convert the information into dates.

For example, in the following illustration, cell C2 contains a date that is in the format: YYYYMMDD. It is also formatted as text. To convert it into a date, the DATE function was used in conjunction with the [LEFT](#), [MID](#), and [RIGHT](#) functions.

Microsoft Excel: Date and Time Functions

1. The **DATE** function creates a date.

`=DATE(LEFT(C2,4),MID(C2,5,2),RIGHT(C2,2))`

2. The **LEFT** function looks at cell C2 and takes the first 4 characters from the left. This establishes “2014” as the year of the converted date in cell D2.

3. The **MID** function looks at cell C2. It starts at the 5th character, and then takes 2 characters to the right. This establishes “03” as the month of the converted date in cell D2. Because the formatting of D2 set to **Date**, the “0” isn’t included in the final result.

4. The **RIGHT** function looks at cell C2 and takes the first 2 characters starting from the very right and moving left. This establishes “14” as the day of the date in D2.

The screenshot shows an Excel spreadsheet with two columns, C and D. Cell C2 contains the text "20140314". Cell D2 contains the date "3/14/2014". A formula bar at the top shows the formula `=DATE(LEFT(C2,4),MID(C2,5,2),RIGHT(C2,2))`. Four green arrows point to the arguments in the formula: 1 points to "LEFT(C2,4)", 2 points to "MID(C2,5,2)", 3 points to "RIGHT(C2,2)", and 4 points to the closing parenthesis. Below the spreadsheet, a green box contains the text "Numbers formatted as text" under column C and "Converted into a date" under column D.

Increase or Decrease a Date by a Certain Number of Days

To increase or decrease a date by a certain number of days, add or subtract the number of days to the value or cell reference containing the date.

In the example below, cell A5 contains the date that we want to increase and decrease by 7 days (the value in C5).

	A	B	C
1	Month	Day	Year
2	3	14	2012
3			
4	Sequential Dates	Formula	Increment
5	3/14/2012	=DATE(C2,A2,B2)	7
6	3/21/2012	=A5+\$C\$5	
7	3/28/2012	=A6+\$C\$5	
8	4/4/2012	=A7+\$C\$5	
9	4/11/2012	=A8+\$C\$5	
10	4/18/2012	=A9+\$C\$5	
11	4/25/2012	=A10+\$C\$5	
12	5/2/2012	=A11+\$C\$5	
13			

DATEDIF Function

Description

The **DATEDIF** function calculates the number of days, months, or years between two dates.

The DATEDIF function is useful in formulas where you need to calculate an age.

Syntax and Arguments

DATEDIF(start_date,end_date,unit)

Start_date. A date that represents the first, or starting, date of the period. Dates may be entered as text strings within quotation marks (for example, "2001/1/30"), as serial numbers (for example, 36921, which represents January 30, 2001, if you're using the 1900 date system), or as the results of other formulas or functions (for example, DATEVALUE("2001/1/30")).

End_date. A date that represents the last, or ending, date of the period.

Unit. The type of information that you want returned:

Unit	Returns
"Y"	The number of complete years in the period.
"M"	The number of complete months in the period.
"D"	The number of days in the period.
"MD"	The difference between the days in start_date and end_date. The months and years of the dates are ignored. Important: We don't recommend using the "MD" argument, as there are known limitations with it. See the known issues section below.
"YM"	The difference between the months in start_date and end_date. The days and years of the dates are ignored
"YD"	The difference between the days of start_date and end_date. The years of the dates are ignored.

Examples

Start_date	End_date	Formula	Description (Result)
1/1/2001	1/1/2003	=DATEDIF(Start_date,End_date,"Y")	Two complete years in the period (2)
6/1/2001	8/15/2002	=DATEDIF(Start_date,End_date,"D")	440 days between June 1, 2001, and August 15, 2002 (440)
6/1/2001	8/15/2002	=DATEDIF(Start_date,End_date,"YD")	75 days between June 1 and August 15, ignoring the years of the dates (75)

Known Issues

The "MD" argument may result in a negative number, a zero, or an inaccurate result. If you are trying to calculate the remaining days after the last completed month, here is a workaround:

This formula subtracts the first day of the ending month (5/1/2016) from the original end date in cell E17 (5/6/2016). Here's how it does this: First the DATE function creates the date, 5/1/2016. It creates it using the year in cell E17, and the month in cell E17. Then the 1 represents the first day of that month. The result for the DATE function is 5/1/2016. Then, we subtract that from the original end date in cell E17, which is 5/6/2016. 5/6/2016 minus 5/1/2016 is 5 days.

D	E	F	G
		=E17-DATE(YEAR(E17),MONTH(E17),1)	
Start date	End date	Result	Unit of time
1/1/2014	5/6/2016		2 years
			4 months
			5 days
		All in one: 2 years, 4 months, 5 days	

DATEVALUE Function

Description

The **DATEVALUE** function converts a date that is stored as text to a serial number that Excel recognizes as a date. For example, the formula **=DATEVALUE("1/1/2008")** returns 39448, the serial number of the date 1/1/2008. Remember, though, that your computer's system date setting may cause the results of a **DATEVALUE** function to vary from this example

The **DATEVALUE** function is helpful in cases where a worksheet contains dates in a text format that you want to filter, sort, or format as dates, or use in date calculations.

To view a date serial number as a date, you must apply a date format to the cell. Find links to more information about displaying numbers as dates in the **See Also** section.

Syntax and Arguments

DATEVALUE(date_text)

The DATEVALUE function syntax has the following arguments:

- **Date_text (Required)**. Text that represents a date in an Excel date format, or a reference to a cell that contains text that represents a date in an Excel date format. For example, "1/30/2008" or "30-Jan-2008" are text strings within quotation marks that represent dates.

Using the default date system in Microsoft Excel for Windows, the **date_text** argument must represent a date between January 1, 1900 and December 31, 9999. The **DATEVALUE** function returns the #VALUE! error value if the value of the **date_text** argument falls outside of this range.

If the year portion of the **date_text** argument is omitted, the **DATEVALUE** function uses the current year from your computer's built-in clock. Time information in the **date_text** argument is ignored.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Data		
11		
3		
2011		
Formula	Description	Result
=DATEVALUE("8/22/2011")	Serial number of a date entered as text.	40777
=DATEVALUE("22-MAY-2011")	Serial number of a date entered as text.	40685
=DATEVALUE("2011/02/23")	Serial number of a date entered as text.	40597

=DATEVALUE("5-JUL")	Serial number of a date entered as text, using the 1900 date system, and assuming the computer's built-in clock returns 2011 as the current year.	39634
=DATEVALUE(A2 & "/" & A3 & "/" & A4)	Serial number of a date created by combining the values in cells A2, A3, and A4.	40850

DAY Function

Description

Returns the day of a date, represented by a serial number. The day is given as an integer ranging from 1 to 31.

Syntax and Arguments

DAY(serial_number)

The DAY function syntax has the following arguments:

- **Serial_number (Required).** The date of the day you are trying to find. Dates should be entered by using the DATE function, or as results of other formulas or functions. For example, use DATE(2008,5,23) for the 23rd day of May, 2008.

Notes

Values returned by the YEAR, MONTH and DAY functions will be Gregorian values regardless of the display format for the supplied date value. For example, if the display format of the supplied date is Hijri, the returned values for the YEAR, MONTH and DAY functions will be values associated with the equivalent Gregorian date.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Date		
15-Apr-11		
Formula	Description (Result)	Result
=DAY(A2)	Day of the date in cell A2 (15)	15

DAYS Function

Description

Returns the number of days between two dates.

Syntax and Arguments

DAYS(end_date, start_date)

The DAYS function syntax has the following arguments.

- **End_date (Required).** Start_date and End_date are the two dates between which you want to know the number of days.
- **Start_date (Required).** Start_date and End_date are the two dates between which you want to know the number of days.

Notes

- If both date arguments are numbers, DAYS uses EndDate–StartDate to calculate the number of days in between both dates.
- If either one of the date arguments is text, that argument is treated as DATEVALUE(date_text) and returns an integer date instead of a time component.
- If date arguments are numeric values that fall outside the range of valid dates, DAYS returns the #NUM! error value.
- If date arguments are strings that cannot be parsed as valid dates, DAYS returns the #VALUE! error value.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Data		
12/31/2011		
1/1/2011		
Formula	Description	Result
=DAYS("3/15/11","2/1/11")	Finds the number of days between the end date (3/15/11) and end date (2/1/11). When you enter a date directly in the function, you need to enclose it in quotation marks. Result is 42.	42
=DAYS(A2,A3)	Finds the number of days between the end date in A2 and the start date in A3 (364).	

DAYS360 Function

Description

The **DAYS360** function returns the number of days between two dates based on a 360-day year (twelve 30-day months), which is used in some accounting calculations. Use this function to help compute payments if your accounting system is based on twelve 30-day months.

Syntax and Arguments

DAYS360(start_date,end_date,[method])

The DAYS360 function syntax has the following arguments:

- **Start_date, end_date (Required).** The two dates between which you want to know the number of days. If **start_date** occurs after **end_date**, the **DAYS360** function returns a negative number. Dates should be entered by using the **DATE** function, or derived from the results of other formulas or functions. For example, use **DATE(2008,5,23)** to return the 23rd day of May, 2008. Problems can occur if dates are entered as text.
- **Method (Optional).** A logical value that specifies whether to use the U.S. or European method in the calculation.

Method	Defined
FALSE or omitted	U.S. (NASD) method. If the starting date is the last day of a month, it becomes equal to the 30th day of the same month. If the ending date is the last day of a month and the starting date is earlier than the 30th day of a month, the ending date becomes equal to the 1st day of the next month; otherwise the ending date becomes equal to the 30th day of the same month.
TRUE	European method. Starting dates and ending dates that occur on the 31st day of a month become equal to the 30th day of the same month.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Dates		
1-Jan-11		
30-Jan-11		
1-Feb-11		
31-Dec-11		
Formula	Description	Result
=DAYS360(A3,A4)	Number of days between 1/30/2011 and 2/1/2011, based on a 360-day year.	1
=DAYS360(A2,A5)	Number of days between 1/1/2011 and 12/31/2011, based on a 360-day year.	360
=DAYS360(A2,A4)	Number of days between 1/1/2011 and 2/1/2011, based on a 360-day year.	30

EDATE Function

Description

Returns the serial number that represents the date that is the indicated number of months before or after a specified date (the start_date). Use EDATE to calculate maturity dates or due dates that fall on the same day of the month as the date of issue.

Syntax and Arguments

EDATE(start_date, months)

The EDATE function syntax has the following arguments:

- **Start_date (Required).** A date that represents the start date. Dates should be entered by using the DATE function, or as results of other formulas or functions. For example, use DATE(2008,5,23) for the 23rd day of May, 2008. Problems can occur if [dates are entered as text](#).
- **Months (Required).** The number of months before or after start_date. A positive value for months yields a future date; a negative value yields a past date.

Notes

- If **start_date** is not a valid date, EDATE returns the #VALUE! error value.
- If months is not an integer, it is truncated.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Date		
15-Jan-11		
Formula	Description	Result
=EDATE(A2,1)	The date, one month after the date above	15-Feb-11
=EDATE(A2,-1)	The date, one month before the date above	15-Dec-10
=EDATE(A2,2)	The date, two months after the date above	15-Mar-11

EOMONTH Function

Description

Returns the serial number for the last day of the month that is the indicated number of months before or after start_date. Use EOMONTH to calculate maturity dates or due dates that fall on the last day of the month.

Syntax and Arguments

EOMONTH(start_date, months)

The EOMONTH function syntax has the following arguments:

- **Start_date (Required).** A date that represents the starting date. Dates should be entered by using the DATE function, or as results of other formulas or functions. For example, use DATE(2008,5,23) for the 23rd day of May, 2008. Problems can occur if [dates are entered as text](#).

Microsoft Excel: Date and Time Functions

- **Months (Required).** The number of months before or after start_date. A positive value for months yields a future date; a negative value yields a past date.

Note: If months is not an integer, it is truncated.

Notes

- If start_date is not a valid date, EOMONTH returns the #NUM! error value.
- If start_date plus months yields an invalid date, EOMONTH returns the #NUM! error value.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Date		
1-Jan-11		
Formula	Description	Result
=EOMONTH(A2,1)	Date of the last day of the month, one month after the date in A2.	2/28/2011
=EOMONTH(A2,-3)	Date of the last day of the month, three months before the date in A2.	10/31/2010

HOUR Function

Description

Returns the hour of a time value. The hour is given as an integer, ranging from 0 (12:00 A.M.) to 23 (11:00 P.M.).

Syntax and Arguments

HOUR(serial_number)

The HOUR function syntax has the following arguments:

- **Serial_number (Required).** The time that contains the hour you want to find. Times may be entered as text strings within quotation marks (for example, "6:45 PM"), as decimal numbers (for example, 0.78125, which represents 6:45 PM), or as results of other formulas or functions (for example, TIMEVALUE("6:45 PM")).

Notes

Time values are a portion of a date value and represented by a decimal number (for example, 12:00 PM is represented as 0.5 because it is half of a day).

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Time		
0.75		
7/18/2011 7:45		
4/21/2012		
Formula	Description	Result
=HOUR(A2)	Returns 75% of 24 hours	18
=HOUR(A3)	Returns the hour portion of the date/time value.	7
=HOUR(A4)	A date with no time portion specified is considered 12:00 AM, or 0 hours.	0

SOWEENUM Function

Description

Returns number of the ISO week number of the year for a given date.

Syntax and Arguments

ISOWEENUM(date)

The ISOWEENUM function syntax has the following arguments.

- **Date (Required).** Date is the date-time code used by Excel for date and time calculation.

Notes

- If the date argument is not a valid number, ISOWEENUM returns the #NUM! error value.
- If the date argument is not a valid date type, ISOWEENUM returns the #VALUE! error value.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Date		
3/9/2012		
Formula	Description	Result
=ISOWEENUM(A2)	Number of the week in the year that 3/9/2012 occurs, based on weeks beginning on the default, Monday (10).	10

MINUTE Function

Description

Returns the minutes of a time value. The minute is given as an integer, ranging from 0 to 59.

Syntax and Arguments

MINUTE(serial_number)

The MINUTE function syntax has the following arguments:

- **Serial_number (Required).** The time that contains the minute you want to find. Times may be entered as text strings within quotation marks (for example, "6:45 PM"), as decimal numbers (for example, 0.78125, which represents 6:45 PM), or as results of other formulas or functions (for example, TIMEVALUE("6:45 PM")).

Notes

Time values are a portion of a date value and represented by a decimal number (for example, 12:00 PM is represented as 0.5, since it is half of a day).

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Time		
12:45:00 PM		
Formula	Description	Result
=MINUTE(A2)	Minute portion of the time in A2.	45

MONTH Function

Description

Returns the month of a date represented by a serial number. The month is given as an integer, ranging from 1 (January) to 12 (December).

Syntax

MONTH(serial_number)

The MONTH function syntax has the following arguments:

- **Serial_number (Required).** The date of the month you are trying to find. Dates should be entered by using the DATE function, or as results of other formulas or functions. For example, use DATE(2008,5,23) for the 23rd day of May, 2008. Problems can occur if [dates are entered as text](#).

Notes

Values returned by the YEAR, MONTH and DAY functions will be Gregorian values regardless of the display format for the supplied date value. For example, if the display format of the supplied date is Hijri, the returned values for the YEAR, MONTH and DAY functions will be values associated with the equivalent Gregorian date.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Date		
15-Apr-11		
Formula	Description	Result
=MONTH(A2)	Month of the date in cell A2	

NETWORKDAYS Function

Description

Returns the number of whole working days between start_date and end_date. Working days exclude weekends and any dates identified in holidays. Use NETWORKDAYS to calculate employee benefits that accrue based on the number of days worked during a specific term.

Tip: To calculate whole workdays between two dates by using parameters to indicate which and how many days are weekend days, use the [NETWORKDAYS.INTL function](#).

Syntax and Arguments

NETWORKDAYS(start_date, end_date, [holidays])

The NETWORKDAYS function syntax has the following arguments:

- **Start_date (Required).** A date that represents the start date.
- **End_date (Required).** A date that represents the end date.
- **Holidays (Optional).** An optional range of one or more dates to exclude from the working calendar, such as state and federal holidays and floating holidays. The list can be either a range of cells that contains the dates or an array constant of the serial numbers that represent the dates.

Important: Dates should be entered by using the DATE function, or as results of other formulas or functions. For example, use DATE(2012,5,23) for the 23rd day of May, 2012. Problems can occur if dates are entered as text.

Notes

- If any argument is not a valid date, NETWORKDAYS returns the #VALUE! error value.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Date	Description	
10/1/2012	Start date of project	
3/1/2013	End date of project	
11/22/2012	Holiday	
12/4/2012	Holiday	
1/21/2013	Holiday	
Formula	Description	Result
=NETWORKDAYS(A2,A3)	Number of workdays between the start (10/1/2012) and end date (3/1/2013).	110
=NETWORKDAYS(A2,A3,A4)	Number of workdays between the start (10/1/2012) and end date (3/1/2013), with the 11/22/2012 holiday as a non-working day.	109
=NETWORKDAYS(A2,A3,A4:A6)	Number of workdays between the start (10/1/2012) and end date (3/1/2013), with the three holidays as non-working days.	

NOW function

Description

Returns the serial number of the current date and time. If the cell format was **General** before the function was entered, Excel changes the cell format so that it matches the date and time format of your regional settings. You can change the date and time format for the cell by using the commands in the **Number** group of the **Home** tab on the Ribbon.

The **NOW** function is useful when you need to display the current date and time on a worksheet or calculate a value based on the current date and time, and have that value updated each time you open the worksheet.

Note: If the **NOW** function does not update cell values when you expect it to, you might need to change settings that control when the workbook or worksheet recalculates. These settings can be changed in Control Panel for the Excel desktop application.

Syntax and Arguments

NOW()

The NOW function syntax has no arguments.

Notes

- Numbers to the right of the decimal point in the serial number represent the time; numbers to the left represent the date. For example, the serial number 0.5 represents the time 12:00 noon.
- The results of the **NOW** function change only when the worksheet is calculated or when a macro that contains the function is run. It is not updated continuously.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Formula	Description	Result
=NOW()	Returns the current date and time.	11/6/2011 19:03
=NOW()-0.5	Returns the date and time 12 hours ago (-0.5 days ago).	11/6/2011 7:03
=NOW()+7	Returns the date and time 7 days in the future.	11/13/2011 19:03
=NOW()-2.25	Returns the date and time 2 days and 6 hours ago (-2.25 days ago).	11/4/2011 13:03

SECOND function

Description

Returns the seconds of a time value. The second is given as an integer in the range 0 (zero) to 59.

Syntax

SECOND(serial_number)

The SECOND function syntax has the following arguments:

- **Serial_number (Required)**. The time that contains the seconds you want to find. Times may be entered as text strings within quotation marks (for example, "6:45 PM"), as decimal numbers (for example, 0.78125, which represents 6:45 PM), or as results of other formulas or functions (for example, TIMEVALUE("6:45 PM")).

Notes

Time values are a portion of a date value and represented by a decimal number (for example, 12:00 PM is represented as 0.5 because it is half of a day).

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Data		
Time		
4:48:18 PM		
4:48 PM		
Formula	Description	Result
=SECOND(A3)	Seconds in the first time (18)	18
=SECOND(A4)	Seconds in the second time (0)	0

TIME function

Description

Returns the decimal number for a particular time. If the cell format was **General** before the function was entered, the result is formatted as a date.

The decimal number returned by TIME is a value ranging from 0 (zero) to 0.99988426, representing the times from 0:00:00 (12:00:00 AM) to 23:59:59 (11:59:59 P.M.).

Syntax and Arguments

TIME(hour, minute, second)

The TIME function syntax has the following arguments:

- **Hour (Required)**. A number from 0 (zero) to 32767 representing the hour. Any value greater than 23 will be divided by 24 and the remainder will be treated as the hour value. For example, TIME(27,0,0) = TIME(3,0,0) = .125 or 3:00 AM.
- **Minute (Required)**. A number from 0 to 32767 representing the minute. Any value greater than 59 will be converted to hours and minutes. For example, TIME(0,750,0) = TIME(12,30,0) = .520833 or 12:30 PM.
- **Second (Required)**. A number from 0 to 32767 representing the second. Any value greater than 59 will be converted to hours, minutes, and seconds. For example, TIME(0,0,2000) = TIME(0,33,22) = .023148 or 12:33:20 AM

Notes

Time values are a portion of a date value and represented by a decimal number (for example, 12:00 PM is represented as 0.5 because it is half of a day).

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Hour	Minute	Second
12	0	0
16	48	10
Formula	Description	Result
=TIME(A2,B2,C2)	Decimal part of a day, for the time specified in row 2 (12 hours, 0, minutes, 0 seconds)	0.5
=TIME(A3,B3,C3)	Decimal part of a day, for the time specified in row 3 (16 hours, 48 minutes, 10 seconds)	0.7001157

TIMEVALUE function

Description

Returns the decimal number of the time represented by a text string. The decimal number is a value ranging from 0 (zero) to 0.99988426, representing the times from 0:00:00 (12:00:00 AM) to 23:59:59 (11:59:59 P.M.).

Syntax and Arguments

TIMEVALUE(time_text)

The TIMEVALUE function syntax has the following arguments:

- **Time_text (Required).** A text string that represents a time in any one of the Microsoft Excel time formats; for example, "6:45 PM" and "18:45" text strings within quotation marks that represent time.

Notes

- Date information in time_text is ignored.
- Time values are a portion of a date value and represented by a decimal number (for example, 12:00 PM is represented as 0.5 because it is half of a day).

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Formula	Description	Result
=TIMEVALUE("2:24 AM")	Decimal part of a day, with only the time specified.	0.10
=TIMEVALUE("22-Aug-2011 6:35 AM")	Decimal part of a day, with date and time specified.	0.2743

TODAY Function

Description

Returns the serial number of the current date. The serial number is the date-time code used by Excel for date and time calculations. If the cell format was **General** before the function was entered, Excel changes the cell format to **Date**. If you want to view the serial number, you must change the cell format to **General** or **Number**.

The **TODAY** function is useful when you need to have the current date displayed on a worksheet, regardless of when you open the workbook. It is also useful for calculating intervals. For example, if you

Microsoft Excel: Date and Time Functions

know that someone was born in 1963, you might use the following formula to find that person's age as of this year's birthday:

= YEAR(TODAY()-1963

This formula uses the **TODAY** function as an argument for the **YEAR** function to obtain the current year, and then subtracts 1963, returning the person's age.

Note: If the **TODAY** function does not update the date when you expect it to, you might need to change the settings that control when the workbook or worksheet recalculates. On the **File** tab, click **Options**, and then in the **Formulas** category under **Calculation options**, make sure that **Automatic** is selected.

Syntax and Arguments

TODAY()

The TODAY function syntax has no arguments.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Formula	Description	Result
=TODAY()	Returns the current date.	12/1/2011
=TODAY()+5	Returns the current date plus 5 days. For example, if the current date is 1/1/2012, this formula returns 1/6/2012.	12/6/2011
=DATEVALUE("1/1/2030")-TODAY()	Returns the number of days between the current date and 1/1/2030. Note that cell A4 must be formatted as General or Number for the result to display correctly.	1/31/1918
=DAY(TODAY())	Returns the current day of the month (1 - 31).	1
=MONTH(TODAY())	Returns the current month of the year (1 - 12). For example, if the current month is May, this formula returns 5.	12

WEEKDAY Function

Description

Returns the day of the week corresponding to a date. The day is given as an integer, ranging from 1 (Sunday) to 7 (Saturday), by default.

Syntax and Arguments

WEEKDAY(serial_number,[return_type])

The WEEKDAY function syntax has the following arguments:

- **Serial_number (Required).** A sequential number that represents the date of the day you are trying to find. Dates should be entered by using the DATE function, or as results of other formulas or functions. For example, use DATE(2008,5,23) for the 23rd day of May, 2008. Problems can occur if dates are entered as text.
- **Return_type (Optional).** A number that determines the type of return value.

Return_type	Number returned
1 or omitted	Numbers 1 (Sunday) through 7 (Saturday). Behaves like previous versions of Microsoft Excel.
2	Numbers 1 (Monday) through 7 (Sunday).
3	Numbers 0 (Monday) through 6 (Sunday).
11	Numbers 1 (Monday) through 7 (Sunday).
12	Numbers 1 (Tuesday) through 7 (Monday).
13	Numbers 1 (Wednesday) through 7 (Tuesday).
14	Numbers 1 (Thursday) through 7 (Wednesday).
15	Numbers 1 (Friday) through 7 (Thursday).
16	Numbers 1 (Saturday) through 7 (Friday).
17	Numbers 1 (Sunday) through 7 (Saturday).

Notes

- If serial_number is out of range for the current date base value, a #NUM! error is returned.
- If return_type is out of the range specified in the table above, a #NUM! error is returned.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Data		
2/14/2008		
Formula	Description (Result)	Result
=WEEKDAY(A2)	Day of the week, with numbers 1 (Sunday) through 7 (Saturday) (5)	5
=WEEKDAY(A2, 2)	Day of the week, with numbers 1 (Monday) through 7 (Sunday) (4)	4
=WEEKDAY(A2, 3)	Day of the week, with numbers 0 (Monday) through 6 (Sunday) (3)	3

WEEKNUM Function

Description

Returns the week number of a specific date. For example, the week containing January 1 is the first week of the year, and is numbered week 1.

Microsoft Excel: Date and Time Functions

There are two systems used for this function:

- **System 1:** The week containing January 1 is the first week of the year, and is numbered week 1.
- **System 2:** The week containing the first Thursday of the year is the first week of the year, and is numbered as week 1. This system is the methodology specified in ISO 8601, which is commonly known as the European week numbering system.

Syntax and Arguments

WEEKNUM(serial_number,[return_type])

The WEEKNUM function syntax has the following arguments:

- **Serial_number (Required).** A date within the week. Dates should be entered by using the DATE function, or as results of other formulas or functions. For example, use DATE(2008,5,23) for the 23rd day of May, 2008. Problems can occur if dates are entered as text.
- **Return_type (Optional).** A number that determines on which day the week begins. The default is 1.

Return_type	Week begins on	System
1 or omitted	Sunday	1
2	Monday	1
11	Monday	1
12	Tuesday	1
13	Wednesday	1
14	Thursday	1
15	Friday	1
16	Saturday	1
17	Sunday	1
21	Monday	2

Notes

- If Serial_number is out of range for the current date base value, a #NUM! error is returned.
- If Return_type is out of the range specified in the table above, a #NUM! error is returned.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Data		
3/9/2012		
Formula	Description	Result
=WEEKNUM(A2)	Number of the week in the year that 3/9/2012 occurs, based on weeks beginning on Sunday (default).	10
=WEEKNUM(A2,2)	Number of the week in the year that 3/9/2012 occurs, based on a week beginning on Monday (the second argument, 2).	11

WORKDAY Function

Description

Returns a number that represents a date that is the indicated number of working days before or after a date (the starting date). Working days exclude weekends and any dates identified as holidays. Use WORKDAY to exclude weekends or holidays when you calculate invoice due dates, expected delivery times, or the number of days of work performed.

Tip: To calculate the serial number of the date before or after a specified number of workdays by using parameters to indicate which and how many days are weekend days, use the [WORKDAY.INTL function](#).

Syntax and Arguments

WORKDAY(start_date, days, [holidays])

The WORKDAY function syntax has the following arguments:

- **Start_date (Required).** A date that represents the start date.
- **Days (Required).** The number of nonweekend and nonholiday days before or after start_date. A positive value for days yields a future date; a negative value yields a past date.
- **Holidays (Optional).** An optional list of one or more dates to exclude from the working calendar, such as state and federal holidays and floating holidays. The list can be either a range of cells that contain the dates or an array constant of the serial numbers that represent the dates.

Important: Dates should be entered by using the DATE function, or as results of other formulas or functions. For example, use DATE(2008,5,23) for the 23rd day of May, 2008. Problems can occur if dates are entered as text.

Notes

- If any argument is not a valid date, WORKDAY returns the #VALUE! error value.
- If start_date plus days yields an invalid date, WORKDAY returns the #NUM! error value.
- If days is not an integer, it is truncated.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Data	
10/1/2008	Start date
151	Days to completion
11/26/2008	Holiday
12/4/2008	Holiday

1/21/2009	Holiday	
Formula	Description (Result)	Result
=WORKDAY(A2,A3)	Date 151 workdays from the start date (4/30/2009)	4/30/2009
=WORKDAY(A2,A3,A4:A6)	Date 151 workdays from the start date, excluding holidays (5/5/2009)	5/5/2009

WORKDAY.INTL function

Description

Returns the serial number of the date before or after a specified number of workdays with custom weekend parameters. Weekend parameters indicate which and how many days are weekend days. Weekend days and any days that are specified as holidays are not considered as workdays.

Syntax and Arguments

WORKDAY.INTL(start_date, days, [weekend], [holidays])

The WORKDAY.INTL function syntax has the following arguments:

- **Start_date (Required).** The start date, truncated to integer.
- **Days (Required).** The number of workdays before or after the start_date. A positive value yields a future date; a negative value yields a past date; a zero value yields the start_date. Day-offset is truncated to an integer.
- **Weekend (Optional).** Indicates the days of the week that are weekend days and are not considered working days. Weekend is a weekend number or string that specifies when weekends occur.

Weekend number values indicate the following weekend days:

weekend-number	Weekend days
1 or omitted	Saturday, Sunday
2	Sunday, Monday
3	Monday, Tuesday
4	Tuesday, Wednesday
5	Wednesday, Thursday
6	Thursday, Friday
7	Friday, Saturday
11	Sunday only
12	Monday only
13	Tuesday only
14	Wednesday only
15	Thursday only
16	Friday only
17	Saturday only

Microsoft Excel: Date and Time Functions

Weekend string values are seven characters long and each character in the string represents a day of the week, starting with Monday. **1** represents a non-workday and **0** represents a workday. Only the characters **1** and **0** are permitted in the string. **1111111** is an invalid string.

For example, **0000011** would result in a weekend that is Saturday and Sunday.

- **Holidays (Optional).** An optional set of one or more dates that are to be excluded from the working day calendar. Holidays shall be a range of cells that contain the dates, or an array constant of the serial values that represent those dates. The ordering of dates or serial values in holidays can be arbitrary.

Notes

- If start_date is out of range for the current date base value, WORKDAY.INTL returns the #NUM! error value.
- If any date in holidays is out of range for the current date base value, WORKDAY.INTL returns the #NUM! error value.
- If start_date plus day-offset yields an invalid date, WORKDAY.INTL returns the #NUM! error value.
- If a weekend string is of invalid length or contains invalid characters, WORKDAY.INTL returns the #VALUE! error value.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Formula	Description	Live Result
=WORKDAY.INTL(DATE(2012,1,1),30,0)	Using a 0 for the Weekend argument results in a #NUM! error.	#NUM!
=WORKDAY.INTL(DATE(2012,1,1),90,11)	Finds the date 90 workdays from 1/1/2012, counting only Sundays as a weekend day (Weekend argument is 11).	41013
=TEXT(WORKDAY.INTL(DATE(2012,1,1),30,17),"m/dd/yyyy")	Uses the TEXT function to format the resulting serial number (40944) in a "m/dd/yyyy" format. Finds the date 30 workdays from 1/1/2012, counting	2/05/2012

	only Saturdays as a weekend day (Weekend argument is 17).	
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YEAR Function

Description

Returns the year corresponding to a date. The year is returned as an integer in the range 1900-9999.

Syntax and Arguments

YEAR(serial_number)

The YEAR function syntax has the following arguments:

- **Serial_number (Required).** The date of the year you want to find. Dates should be entered by using the DATE function, or as results of other formulas or functions. For example, use DATE(2008,5,23) for the 23rd day of May, 2008. Problems can occur if dates are entered as text.

Notes

Values returned by the YEAR, MONTH and DAY functions will be Gregorian values regardless of the display format for the supplied date value. For example, if the display format of the supplied date is Hijri, the returned values for the YEAR, MONTH and DAY functions will be values associated with the equivalent Gregorian date.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Data		
Date		
7/5/2008		
7/5/2010		
Formula	Description (Result)	Result
=YEAR(A3)	Year of the date in cell A3 (2008)	2008
=YEAR(A4)	Year of the date in cell A4 (2010)	2010

YEARFRAC Function

Description

Calculates the fraction of the year represented by the number of whole days between two dates (the start_date and the end_date). Use the YEARFRAC worksheet function to identify the proportion of a whole year's benefits or obligations to assign to a specific term.

Syntax and Arguments

YEARFRAC(start_date, end_date, [basis])

The YEARFRAC function syntax has the following arguments:

- **Start_date (Required).** A date that represents the start date.
- **End_date (Required).** A date that represents the end date.
- **Basis (Optional).** The type of day count basis to use.

Basis	Day count basis
0 or omitted	US (NASD) 30/360
1	Actual/actual
2	Actual/360
3	Actual/365
4	European 30/360

Notes

- All arguments are truncated to integers.
- If start_date or end_date are not valid dates, YEARFRAC returns the #VALUE! error value.
- If basis < 0 or if basis > 4, YEARFRAC returns the #NUM! error value.

Example

Copy the example data in the following table, and paste it in cell A1 of a new Excel worksheet. For formulas to show results, select them, press F2, and then press Enter. If you need to, you can adjust the column widths to see all the data.

Data	Description	
1/1/2012	Start date	
7/30/2012	End date	
Formula	Description	Result
=YEARFRAC(A2,A3)	Fraction of the year between 1/1/2012 and 7/30/12, omitting the Basis argument.	0.58055556
=YEARFRAC(A2,A3,1)	Fraction between same dates, using the Actual/Actual basis argument. Because 2012 is a Leap year, it has a 366 day basis.	0.57650273
=YEARFRAC(A2,A3,3)	Fraction between same dates, using the Actual/365 basis argument. Uses a 365 day basis.	0.57808219

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