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Class: MSc

Subject : Application of IT- Basics and Advance Excel

Chapter: Unit 1 Chapter 6

Chapter Name: Writing Formula (Date and Time)

Entering Dates & Times into Worksheets

- *With a conditional sum, values in a range that meet one or more conditions are included in the sum.*
- *The SUMIF function is useful for single-criterion sum formulas. The SUMIF function takes three arguments*
- *range: The range containing the values that determine whether to include a particular cell in the sum.*
- *criteria: An expression that determines whether to include a particular cell in the sum.*
- *sum_range: Optional. The range that contains the cells you want to sum. If you omit this argument, the function uses the range specified in the first argument.*

Dates & Date Function

- *The most commonly used date format is month-day-year formats in Microsoft Excel 2013. January 4, 2014 can be entered as any of the following:*
 - *1/4/2014*
 - *January 4, 2014*
 - *4-Jan-2014*
 - *1/4/14**
- *If we enter only two digits to represent a year, and the digits are 30 or higher, Excel assumes the digits represent years in the twentieth century; if the digits are lower than 30, Excel assumes they represent years in the twenty-first century.*

Dates & Date Function

- *DATE function, whose arguments are DATE(year,month,day), returns the date with the given year, month, and day of the month.*
- *DATEDIF function – determine the number of complete years, months, or days between two dates.*
- *DATEDIF(start date,enddate,timeunit).*

Dates & Date Function

□ *Today's Date*

- *TODAY() function in a cell displays today's date*

□ *WORKDAY(start_date,#days,[holidays]) function*

- *Displays the date that is the number of workdays (a workday is a non weekend day) indicated by #days after a given start date.*
- *Holidays is an optional argument for the function by which you can exclude from the calculation any dates that are listed in a cell range.*

Dates & Date Function

- *NETWORKDAYS(start_date,end_date,[holidays]),*
 - *Returns the number of working days between start date and end date, excluding weekends and any listed holidays.*
 - *holidays is an optional argument identifying a cell range that lists the dates you want to count as holidays.*

Time Function

- To indicate time – enter a colon (:) after the hour and another colon before the seconds
- Date and Time in one cell – put a space after the date and enter the time
- NOW() formula gives today's date and the current time.
- To compute the just the current time, enter the =NOW()-TODAY()
- TIME function has the TIME(hour,minute,second) syntax
 - Given an hour, minutes, and seconds, the TIME function returns a time of day.

Entering Dates & Times into Worksheets

Excel handles dates by using a serial number system. The [earliest date that Excel understands is January 1, 1900](#). This date has a serial number of 1. January 2, 1900, has a serial number of 2, and so on. This system makes it easy to deal with dates in formulas

Earliest date	Jan 01, 1900 Sun		1
Last date	Dec 31, 9999 Fri		2,958,465

Date	Apr 19, 1910 Tue	Dec 14, 1937 Tue	Apr 14, 1958 Mon	Apr 27, 1960 Wed	Dec 08, 2010 Wed	May 05, 2048 Tue	Apr 09, 2049 Fri	Oct 30, 2063 Tue
Number	3,762	13,863	21,289	22,033	40,520	54,183	54,522	59,839

Entering Dates & Times into Worksheets

To insert system date (date-stamp) in a cell, keep the “CTRL” key pressed down and hit the “Colon” Key



Entering Dates & Times into Worksheets

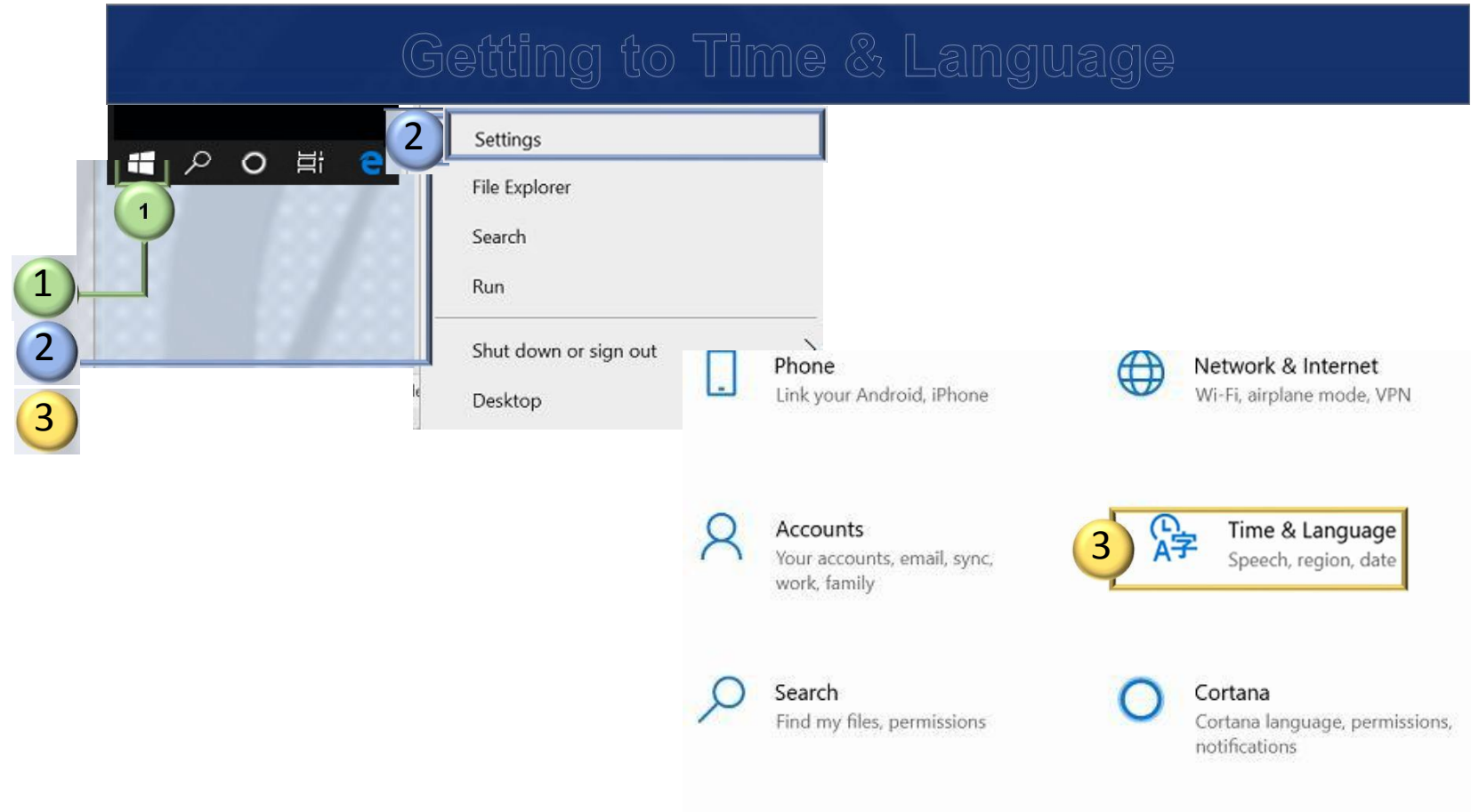
To insert system date & time (date & time stamp) in a cell, keep the “CTRL” & “Shift” keys pressed down & hit the colon Key

*Ensure
cell
format is
mmm
dd, yyyy
H:mm*



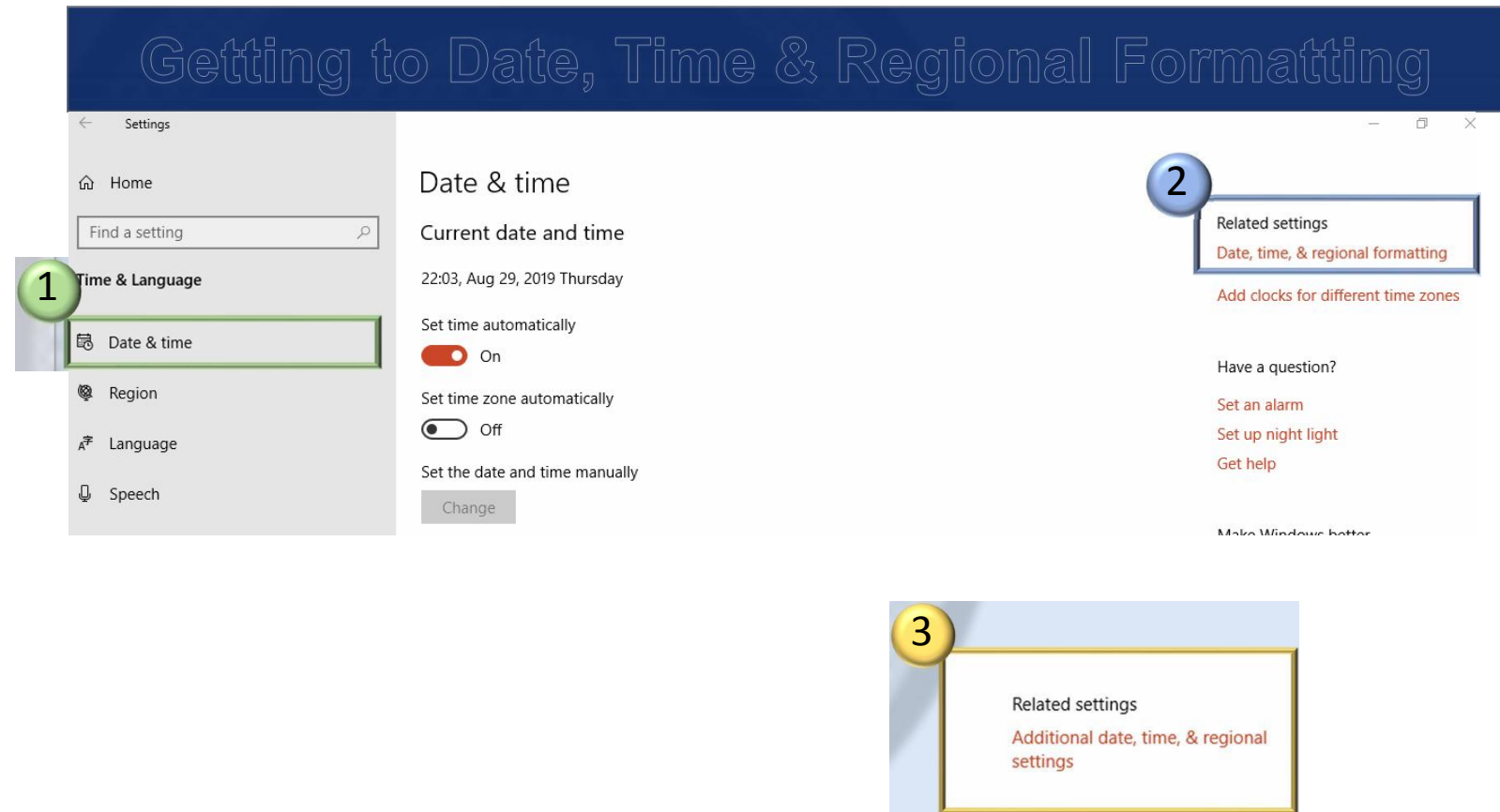
Entering Dates & Times into Worksheets

1. Right click on the “Windows” logo (start menu)
2. Click on “Settings)
3. Double click on “Time & Language”



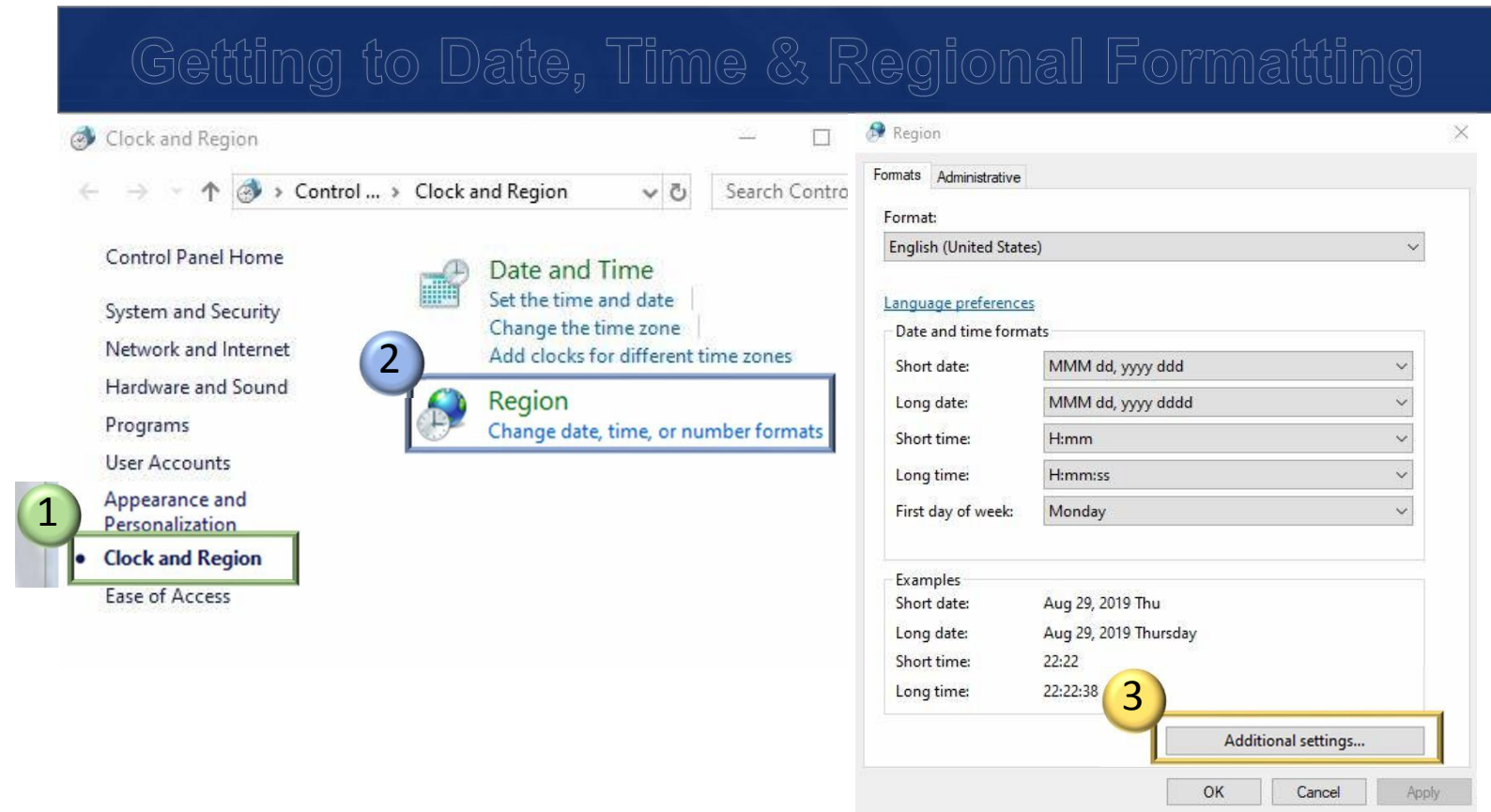
Entering Dates & Times into Worksheets

1. In “Settings”, click on “Date & Time”
2. Under “Regional Settings”, double click “Date, Time & Regional Formatting
3. Under “Related Settings”, double click on “Additional date, time & regional settings”



Entering Dates & Times into Worksheets

1. Click on “Clock & Region”
2. Under “Region”, click on “Change date, time or number formats”
3. In the opened window, click on “Additional Settings”



Entering Dates & Times into Worksheets

Data l2

1. Under “Date” tab, change date formats to as required
2. Under “Time” tab, change time formats as required
3. Click on Apply ☐ Ok to Exit

Formatting Date, Time & Regional Formats

The image shows two screenshots of the Windows 'Customize Format' dialog box, illustrating the steps to format dates and times.

Screenshot 1 (Left): The 'Date' tab is selected. The 'Short date' format is set to 'MMM dd, yyyy ddd' and the 'Long date' format is set to 'MMM dd, yyyy dddd'. The 'Calendar' section shows 'When a two-digit year is entered, interpret it as a year between: 1950 and 2049' and 'First day of week: Monday'. A green box highlights the 'Date' tab, and a green circle with the number '1' is next to it.

Screenshot 2 (Right): The 'Time' tab is selected. The 'Short time' format is set to 'H:mm' and the 'Long time' format is set to 'H:mm:ss'. The 'AM symbol' and 'PM symbol' are set to 'A.M.' and 'P.M.' respectively. A blue circle with the number '2' is next to it.

Entering Dates & Times into Worksheets

Functions

1. Understanding how date and time functions work
2. Working with date and time functions



Date Functions

- DATE
- YEAR
- MONTH
- DAY
- TODAY
- EOMONTH
- WEEKNUM
- WEEKDAY
- WORKDAY
- NETWORKDAYS
- DATEVALUE
- DATEDIF

Time Functions

- TIME
- HOUR
- MINUTE
- SECOND
- NOW
- TIMEVALUE

Entering Dates & Times into Worksheets

DATE

Returns the date.

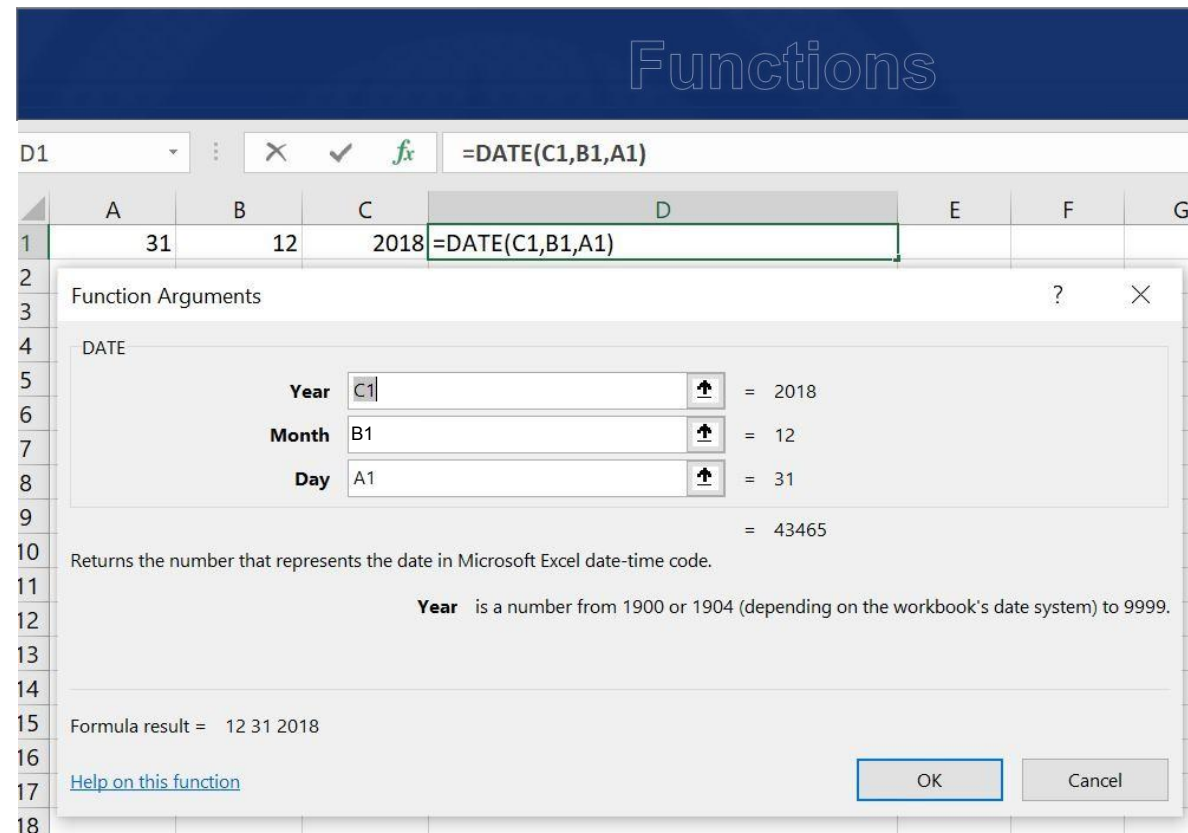
Arguments

1. Year
2. Month
3. Day

TIME

Returns the serial time value for time

1. Hour
2. Minute
3. Second



We can also use a part of the date in the referred cell for this function...

All three references can take a value, reference or a named range

Entering Dates & Times into Worksheets

The screenshot illustrates the process of entering a date into a worksheet using the DATE function. The formula bar shows the formula `=DATE(YEAR(A1),MONTH(B1),DAY(C1))` being entered in cell D1. The 'Function Arguments' dialog box is open, showing the arguments for the DATE function:

- Year:** YEAR(A1) = 2017 (Callout 1: Year Value)
- Month:** MONTH(B1) = 9 (Callout 2: Month Value)
- Day:** DAY(C1) = 22 (Callout 3: Day Value)

The dialog box also includes a description: 'Returns the number of the date that results from the year, month, and day arguments. Day is a number from 1 to 31 representing the day of the month.' The formula result is shown as 04/22/2017. The 'OK' button is visible at the bottom right of the dialog box.

We can also use a part of the date in the referred cell for this function

Functions

Year			Month			Day		
Sep 05, 2019	2019	=YEAR(A3)	Dec 21, 1949	12	=MONTH(E3)	Aug 15, 1947	15	=DAY(I3)
2019	1905	=YEAR(A4)	2019	7	=MONTH(E4)	2019	11	=DAY(I4)

**Returns YEAR value from
a date**

(Only when entire date is
provided)

**Returns MONTH value
from a date**

(Only when entire date is
provided)

**Returns DAY value from a
date**

(Only when entire date is
provided)

Functions

TODAY

Returns the current system date. This function will refresh the date whenever the worksheet recalculates

No arguments

NOW

Returns current system time

Functions			
G1	:	  	=FORMULATEXT(A1)
	A	B	C
1	Nov 02, 2013	=TODAY()	

Functions

EOMONTH

Calculates the last day of the month after adding a specified number of months to a date. The result is returned as a serial date

Arguments

1. *Months* (Can be a value, function, cell reference or a named range)
2. *Start Date* (Can be a value, function, cell reference or a named range)

Functions				
	A	B	C	D
1	Date	Months	End of Month	Formula
2	Nov 05, 2019	0	Nov 30, 2019	=EOMONTH(A2,B2)
3	Aug 06, 2018	1	Sep 30, 2018	=EOMONTH(A3,B3)
4	Mar 03, 2018	2	May 31, 2018	=EOMONTH(A4,B4)
5	May 15, 2021	3	Aug 31, 2021	=EOMONTH(A5,B5)
6	Jul 19, 2021	4	Nov 30, 2021	=EOMONTH(A6,B6)
7	Jan 18, 2019	5	Jun 30, 2019	=EOMONTH(A7,B7)

The formula returns the serial number of the date, but because the cell is formatted to "mmm dd, yyyy" it displays the date in the correct format

A great function to use when you need to go to the 1st of next month

Functions

WEEKNUM

Takes a date and returns a week number (1-54) that corresponds to the week of year

Arguments

1. Serial Number (Can be cell reference, value, formula or a named range)
2. Return Type (Optional)

Functions			
	A	B	C
1	Date	Week Num	Formula in B
2	Mar 18, 2019 Mon	12	=WEEKNUM(A2)
3	Jun 26, 2019 Wed	26	=WEEKNUM(A3)
4	Mar 06, 2019 Wed	10	=WEEKNUM(A4)
5	Jul 08, 2019 Mon	28	=WEEKNUM(A5)
6	Feb 20, 2019 Wed	8	=WEEKNUM(A6)
7	Jul 23, 2019 Tue	30	=WEEKNUM(A7)
8	Feb 03, 2019 Sun	6	=WEEKNUM(A8)
9	Aug 11, 2019 Sun	33	=WEEKNUM(A9)
10	Feb 23, 2019 Sat	8	=WEEKNUM(A10)
11	Sep 14, 2019 Sat	37	=WEEKNUM(A11)

1. - Sunday
2. - Monday
- 11 - Monday
- 12 - Tuesday
- 13 - Wednesday
- 14 - Thursday
- 15 - Friday
- 16 - Saturday
- 17 - Sunday
- 21 - Monday (With return type 21, week 1 is the week containing the first Thursday of the year)

Return Type

Controls which day of the week is used to begin a new week number. Default value is "1"

Functions

WEEKDAY

Takes a date and returns a number between 1-7 representing the day of week. By default, WEEKDAY returns 1 for Sunday and 7 for Saturday

Arguments

1. Serial Number (Can be cell reference, value, formula or a named range)
2. Return Type (Optional)

Functions					
	A	B	C	D	E
1	Date	Return Type	Week Day Name	Week Day	Formula in B
2	Sep 05, 2019	1	Thu	5	=WEEKDAY(A2,B2)
3	Sep 05, 2019	2	Thu	4	=WEEKDAY(A3,B3)
4	Sep 05, 2019	3	Thu	3	=WEEKDAY(A4,B4)
5	Sep 05, 2019	11	Thu	4	=WEEKDAY(A5,B5)
6	Sep 05, 2019	12	Thu	3	=WEEKDAY(A6,B6)
7	Sep 05, 2019	13	Thu	2	=WEEKDAY(A7,B7)
8	Sep 05, 2019	14	Thu	1	=WEEKDAY(A8,B8)
9	Sep 05, 2019	15	Thu	7	=WEEKDAY(A9,B9)
10	Sep 05, 2019	16	Thu	6	=WEEKDAY(A10,B10)
11	Sep 05, 2019	17	Thu	5	=WEEKDAY(A11,B11)

Return type	Numeric result	Day mapping	1st Day
none	1 - 7	Sunday-Saturday	Sunday
1	1 - 7	Sunday-Saturday	Sunday
2	1 - 7	Monday-Sunday	Monday
3	0 - 6	Monday-Sunday	Monday
11	1 - 7	Monday-Sunday	Monday
12	1 - 7	Tuesday-Monday	Tuesday
13	1 - 7	Wednesday-Tuesday	Wednesday
14	1 - 7	Thursday-Wednesday	Thursday
15	1 - 7	Friday-Thursday	Friday
16	1 - 7	Saturday-Friday	Saturday
17	1 - 7	Sunday-Saturday	Sunday

Functions

WORKDAY

Based on start date provided, number of work days required and list of holidays to be considered, returns the date of completion

Arguments

1. *Start date (Can be a value, formula, cell reference or a named range)*
2. *Days (Can be a value, formula, cell reference or a named range)*
3. *Holidays (List)*

Functions				
	A	B	C	D
1	Date	Days Required	Week Day Name	Formula in C
2	Sep 02, 2019	201	Jun 11, 2020 Thu	=WORKDAY(A2,B2,\$E\$2:\$E\$6)
3	Sep 04, 2019	160	Apr 17, 2020 Fri	=WORKDAY(A3,B3,\$E\$2:\$E\$6)
4	Sep 02, 2019	79	Dec 24, 2019 Tue	=WORKDAY(A4,B4,\$E\$2:\$E\$6)
5	Sep 07, 2019	244	Aug 17, 2020 Mon	=WORKDAY(A5,B5,\$E\$2:\$E\$6)
6	Sep 01, 2019	184	May 19, 2020 Tue	=WORKDAY(A6,B6,\$E\$2:\$E\$6)
7	Aug 24, 2019	255	Aug 20, 2020 Thu	=WORKDAY(A7,B7,\$E\$2:\$E\$6)
8	Aug 25, 2019	319	Nov 18, 2020 Wed	=WORKDAY(A8,B8,\$E\$2:\$E\$6)
9	Sep 03, 2019	107	Feb 03, 2020 Mon	=WORKDAY(A9,B9,\$E\$2:\$E\$6)
10	Sep 19, 2019	170	May 15, 2020 Fri	=WORKDAY(A10,B10,\$E\$2:\$E\$6)
11	Sep 03, 2019	474	Jun 30, 2021 Wed	=WORKDAY(A11,B11,\$E\$2:\$E\$6)
				List of Holidays
				Sep 02, 2019
				Sep 09, 2019
				Aug 16, 2019
				Sep 23, 2019
				Aug 30, 2019

*List of “Holidays” is an optional entry
NETWORKDAYS and WORKDAY similar
functions*

Functions

DATEVALUE

Converts a date represented as text into a proper Excel date.

Arguments

1. Date Value (Can be a value, formula, Cell reference or a Named range)

TIMEVALUE

Converts a time represented as text into a proper Excel time

Arguments

1. Time Value (Can be a value, formula, Cell reference or a Named range)

Functions			
	A	B	C
1	Date in Text	Date S No.	Formula
2	Dec 31, 2018	43465	=DATEVALUE(A2)
3	Feb 14, 2012	40953	=DATEVALUE(A3)
4	Dec 25, 1974	27388	=DATEVALUE(A4)
5	Mar 31, 2011	40633	=DATEVALUE(A5)
6	Apr 23, 1954	19837	=DATEVALUE(A6)
7	May 14, 7984	2222271	=DATEVALUE(A7)
8	Jan 30, 6455	1663711	=DATEVALUE(A8)
9	Aug 15, 1947	17394	=DATEVALUE(A9)

It will not work if the data is provided in a "Value " format

Functions

DATEDIF

Returns the difference between two date values in years, months or days

Arguments

1. Start date (Can be a value, cell reference or a named range)
2. End date (Can be a value, cell reference or a named range)
3. Unit (Can be a text in quotes, cell reference or a named range)

Functions				
S Date	Date	Unit	Output	Means
Sep 22, 2005	Dec 25, 2024	Y	19	Number of years completed
Apr 07, 2000	Jan 31, 2023	M	273	Number of months completed
Dec 06, 2005	Jun 04, 2031	D	9311	Number of days completed
Feb 07, 2012	Dec 24, 2040	MD	17	Number of days completed (Ignores months and years)
Oct 31, 2001	Jun 26, 2023	YM	7	Number of months completed (Ignores days and years)
Dec 08, 1999	Oct 06, 2016	YD	303	Number of days completed (Ignores years)
		Range	Formula	
		D2	=DATEDIF(A2,B2,C2)	
		D3	=DATEDIF(A3,B3,C3)	
		D4	=DATEDIF(A4,B4,C4)	
		D5	=DATEDIF(A5,B5,C5)	
		D6	=DATEDIF(A6,B6,C6)	
		D7	=DATEDIF(A7,B7,C7)	
S Date	Date	Output		Formula
Dec 28, 2011	Jul 28, 2017	5 (Y) 7 (m) 0 (D)		=DATEDIF(A2,B2,"y")&" (Y) "&DATEDIF(A2,B2,"ym")&" (m) "&DATEDIF(A2,B2,"md")&" (D)"

Excel won't help you fill out the arguments for DATEDIF like other functions, but it will work when configured correctly