MODULE 6

DATE AND TIME FUNCTIONS

TOPICS

DATE / TIME 101

TODAY(), NOW()

YEAR/MONTH.DAY, HOUR/ MINUTE / SECOND

EOMONTH / YEARFRAC

WEEKDAY, WORKDAY, NETWORKDAYS

DATEDIF

EXERCISES

DATE VALUE

Every date in Excel has an associated date value, which is how Excel calculates the passage of time (using midnight on 1/1/1900 as the starting point)

Excel recognizes most typed dates and automatically applies a common format (i.e. m/d/yyyy), along with an associated date value (cell format → General)

Note: *If you type a date in a format that Excel does NOT recognize, it will be treated as text and there will be no associated date value; however, you can use a* ***DATEVALUE*** *or* ***TIMEVALUE*** *function to convert unformatted dates or times into serial values*

Date	Date Value
1/1/1900	1
1/11/1900	11
2/6/2015	42041
2/6/15 12:00 PM	42041.5
2/6/15 6:00 PM	42041.75

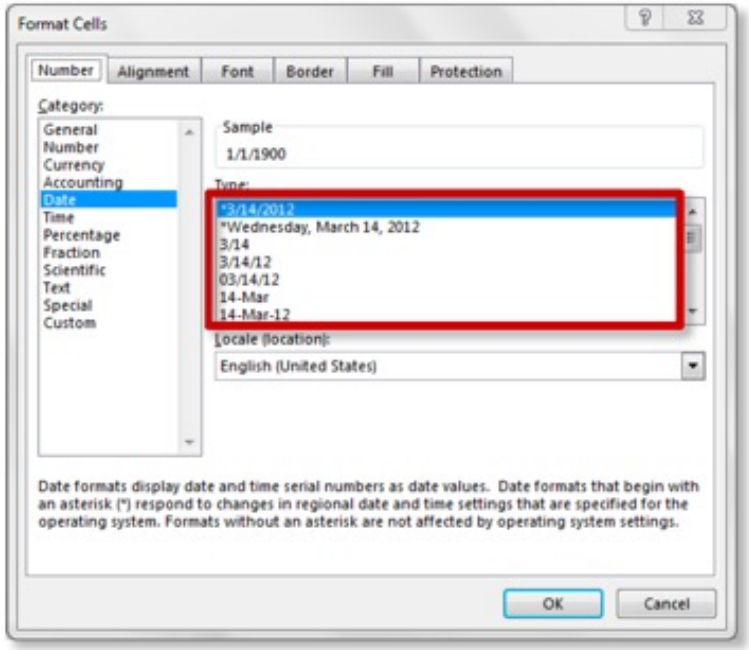
Jan 1,1900 is the first date with an assigned date value (1). Feb 6, 2015 is the 42,041st day since 1/1/1900, so its date value = 42041

Date values can also indicate fractions of days: 42041.5 translates to noon on 2/6/2015 (50% through the day), and 42041.75 translates to 6:00pm on 2/6/2015 (75% through the day)

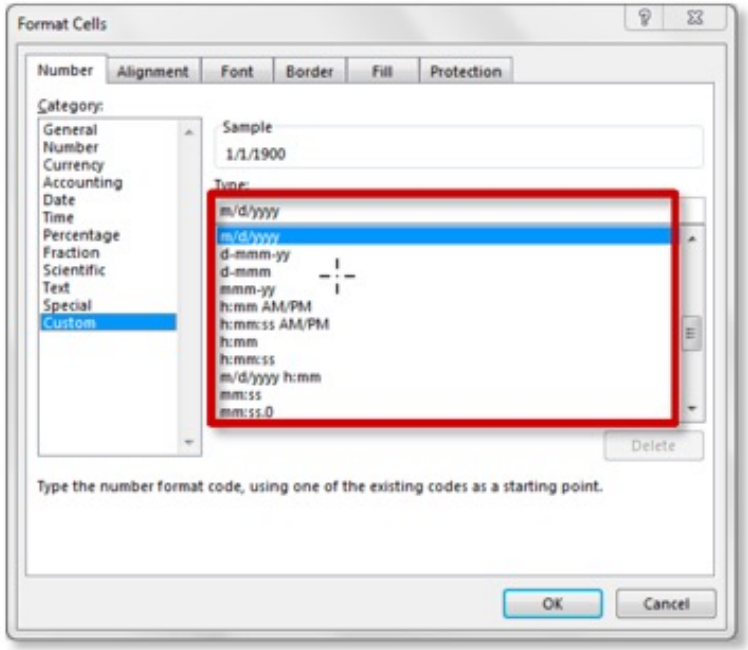
DATE FORMATTING

To format dates in Excel, you can either select a preset option from the "Date" category of the "Format Cells" dialog box, OR create your own custom format

Preset Formats:



Custom Format:



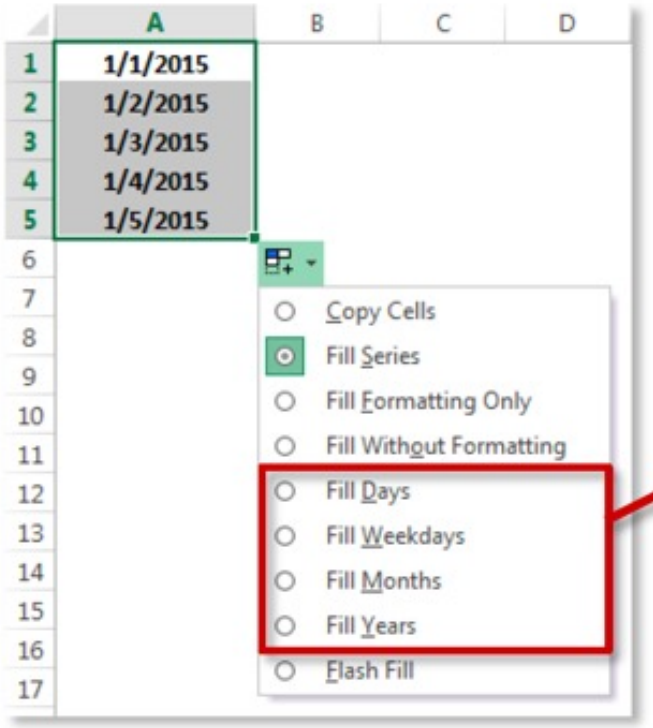
You can build your own custom formats using combinations of date/time codes. For example:

d = *day w/out leading zero (1-31)*
dd = *day w/ leading zero (01-31)*
ddd = *day-of-week (Sat)*
dddd = *day-of-week (Saturday)*
m = *month w/out leading zero (1-15)*
mm = *month w/ leading zero (01-15)*
mmm = *month abbreviation (Jan)*
mmmm = *full month (January)*
yy = *last 2 digits of year (15)*
yyyy = *full year (2015)*

(full list available at support.office.com)

FILL SERIES

When you drag the corner of a cell containing a date, Excel automatically applies subsequent values automatically using Fill Series options:



*Click the **Auto Fill Options** button to determine exactly which values your subsequent cells should take:*

Copy Cells = Repeats the same value in all cells

Fill Days = Increases the date by 1 day per cell

Fill Weekdays = Increases the date by 1 day per cell (excluding weekends)

Fill Months = Increases the date by 1 month per cell

Fill Years = Increases the date by 1 year per cell

TODAY() / NOW()

The TODAY() and NOW() functions return the current date or exact time

***Note:** These are **volatile** functions, meaning that they change with every worksheet calculation*

TODAY()=	2/6/2015
NOW()=	2/6/2015 17:15

*This is what the **TODAY()** and **NOW()** functions return at 5:15pm on February 6, 2015. Note that these values will automatically update with every change made to the workbook*

PRO TIP:

Make sure to enter TODAY() and NOW() functions with both parentheses included – these functions don't refer to other cells

SERIALIZATION FORMULA

Excel will always calculate dates and times based on their *precise* underlying serial values, but what if you need to work with less-specific values, like months instead of days, or hours instead of seconds?

The YEAR, MONTH, DAY, HOUR, MINUTE, and SECOND functions extract individual components of a given date:

	A	B	C	D	E	F	G
1		YEAR	MONTH	DAY	HOUR	MINUTE	SECOND
2	2/6/2015 17:57	2015	2	6	17	57	16
3		=YEAR(A2)	=MONTH(A2)	=DAY(A2)	=HOUR(A2)	=MINUTE(A2)	=SECOND(A2)
4							

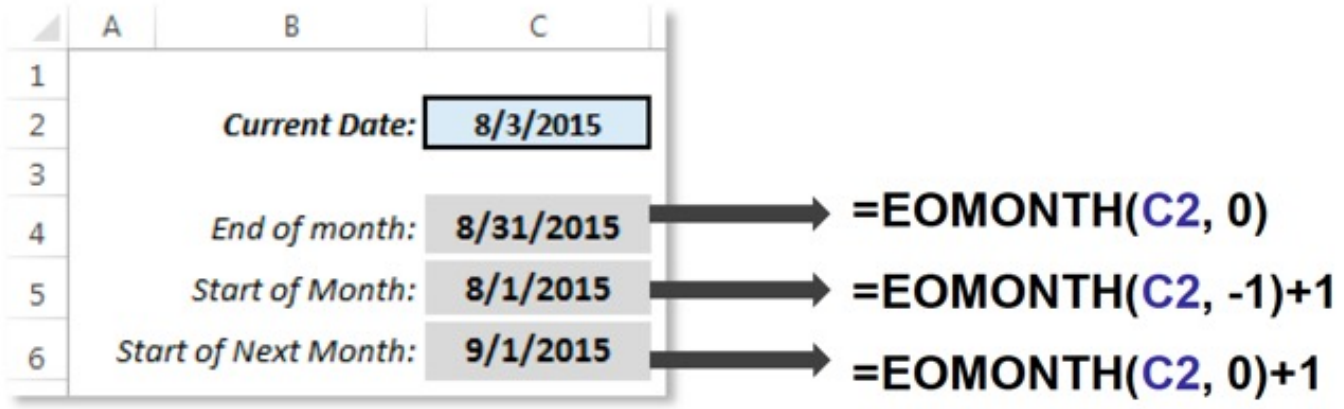
EOMONTH

Use the EOMONTH function to calculate the last day of a given month, or to calculate the start/end dates of previous or future months

=EOMONTH(start_date, months)

Reference to the cell containing the start/current date

Number of months before or after the start/current date (positive number yields a date in the future, negative number yields a date in the past



YEARFRAC

YEARFRAC calculates the fraction of a year represented by the number of whole days between two dates

=YEARFRAC(start_date, end_date, [basis])

Reference to the cell containing the start date

Reference to the cell containing the end date

Option specify the type of day count to use:

- **0 (default)** = *US (NASD) 30/360*
- **1** = *actual/actual* ***(RECOMMENDED)***
- **2** = *actual/360*
- **3** = *actual/365*
- **4** = *European 30/360*

	A	B
1		
2	*Start Date:*	1/1/2015
3	*End Date:*	2/28/2015

=YEARFRAC(B2, B3, 1) = 15.9%

=YEARFRAC(B2, B3, 2) = 16.1%

PRO TIP:

YEARFRAC is a great tool for pacing and projection calculations

WEEKDAY

If you want to know which day of the week a given date falls on, there are two ways to do it:

1) Use a custom cell format of either “ddd” (Sat) or “dddd” (Saturday)

*-Note that this doesn’t change the underlying **value**, only how that value is displayed*

2) Use the **WEEKDAY** function to return a serial value corresponding to a particular day of the week (either 1-7 or 0-6)

=WEEKDAY(serial_number, [return type])

This refers to a cell containing a **date** or **time**

0 (default) = Sunday (1) to Saturday (7)

1 = Monday (1) to Sunday (7)

3 = Monday (0) to Sunday (6)

WORKDAY / NETWORKDAYS

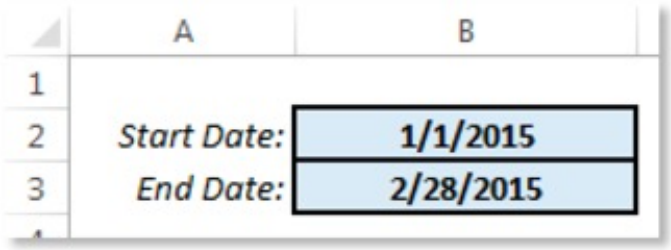
WORKDAY returns a date that is a specified number of days before or after a given start date, excluding weekends and (optionally) holidays; NETWORKDAYS counts the number of workdays between two dates:

=WORKDAY(start_date, days, [holidays])

- This refers to the cell containing the start date
- Number of days before or after start date
- Optional reference to a list of holiday dates

=NETWORKDAY(start_date, end_date, [holidays])

- This refers to the cell containing the start date
- This refers to the cell containing the end date
- Optional reference to a list of holiday dates



	A	B
1		
2	*Start Date:*	1/1/2015
3	*End Date:*	2/28/2015

=WORKDAY(B2, 20) = 1/29/2015

=NETWORKDAYS(B2, B3) = 42

DATEDIF

DATEDIF calculates the number of days, months, or years between two dates

=DATEDIF(start_date, end_date, unit)

- Reference to the cell containing the start date
- Reference to the cell containing the end date
- How do you want to calculate the difference?
  - **"D"** = *# of days between dates*
  - **"M"** = *# of months between dates*
  - **"Y"** = *# of years between dates*
  - **"MD"** = *# of days between dates, ignoring months and years*
  - **"YD"** = *# of days between dates, ignoring years*
  - **"YM"** = *# of months between dates, ignoring days and years*

	A	B
1		
2	*Start Date:*	1/1/2015
3	*End Date:*	2/28/2015

=DATEDIF(B2, B3, "D") = 58

=DATEDIF(B2, B3, "MD") = 27

PRO TIP:

If you only need to calculate the # of days between dates, just use subtraction