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# 1

# Introduction

*This chapter shows how the spreadsheet, the electronic counterpart of the paper ledger, has evolved in Excel, taking advantage of the features of the associated versions of Microsoft Office, and the operating systems - Windows 7 and Windows 8.*

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# The Spreadsheet Concept

Spreadsheets, in the guise of the accountant's ledger sheet, have been in use for many, many years. They consisted of paper forms with a two-dimensional grid of rows and columns, often on extra-large paper, forming two pages of a ledger book for example (hence the term spreadsheet). They were typically used by accountants to prepare budget or financial statements. Each row would represent a different item, with each column showing the value or amount for that item over a given time period. For example, a forecast for a 30% margin and 10% growth might show:

Margin %	30					
Growth %	10					
			Profit Forecast			
		January	February	March	April	May
Cost of Goods		6,000	6,600	7,260	7,986	8,785
Sales		7,800	8,580	9,438	10,382	11,420
Profit		1,800	1,980	2,178	2,396	2,635
Total Profit		1,800	3,780	5,958	8,354	10,989

Any changes to the basic figures would mean that all the values would have to be recalculated and transcribed to another ledger sheet to show the effect, e.g. for a 20% margin and 60% growth:

Margin %	20					
Growth %	60					
			Profit Forecast			
		January	February	March	April	May
Cost of Goods		6,000	9,600	15,360	24,576	39,322
Sales		7,200	11,520	18,432	29,491	47,186
Profit		1,200	1,920	3,072	4,915	7,864
Total Profit		1,200	3,120	6,192	11,107	18,972

To make another change, to show 10% margin and 200% growth, for example, would involve a completely new set of calculations. And, each time, there would be the possibility of a calculation or transcription error creeping in.

With the advent of the personal computer, a new approach became possible. Applications were developed to simulate the operation of the financial ledger sheet, but the boxes (known as cells) that formed the rows and columns could store text, numbers, or a calculation formula based on the contents of other cells. The spreadsheet looked the same, since it was the results that were displayed, rather than the formulas themselves. However, when the contents of a cell were changed in the spreadsheet, all the cells whose values depended on that changed cell were automatically recalculated.

## Don't forget



Ledger sheets predate computers and hand calculators, and have been in use for literally hundreds of years.

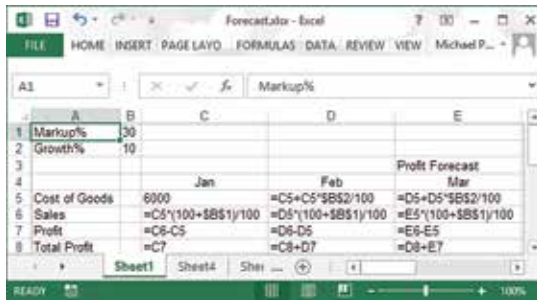
## Don't forget



The first spreadsheet application was VisiCorp's VisiCalc (visible calculator). Numerous competitive programs appeared, but market leadership was taken first by Lotus 123, and now by Microsoft Excel.

## ...cont'd

This new approach allowed a vast improvement in productivity for various activities, such as forecasting. In the second example shown on the previous page, you'd set up the initial spreadsheet using formulas, rather than calculating the individual cell values. Your spreadsheet might contain a set of values and formulas, for example:



The screenshot shows an Excel spreadsheet with the following data and formulas:

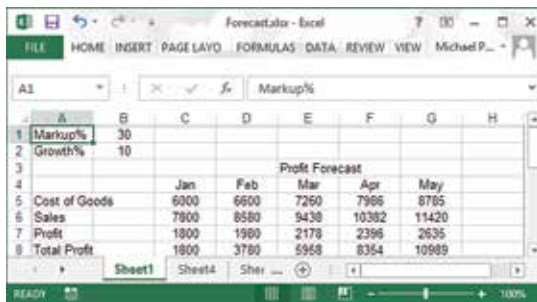
	A	B	C	D	E
1	Markup%	30			
2	Growth%	10			
3					Profit Forecast
4			Jan	Feb	Mar
5	Cost of Goods	6000	=C5+C5*\$B\$2/100	=D5+D5*\$B\$2/100	=E5+E5*\$B\$2/100
6	Sales	=C5*(100+\$B\$1)/100	=D5*(100+\$B\$1)/100	=E5*(100+\$B\$1)/100	
7	Profit	=C6-C5	=D6-D5	=E6-E5	
8	Total Profit	=C7	=D7	=E7	

Don't forget



The = sign signals to Excel that what follows is a formula and must be calculated.

However, what will be displayed in the cells are the actual values that the formulas compute, based on the contents of other cells:



The screenshot shows the same Excel spreadsheet as above, but with the formulas calculated and the resulting values displayed:

	A	B	C	D	E	F	G	H
1	Markup%	30						
2	Growth%	10						
3								
4			Jan	Feb	Mar	Apr	May	
5	Cost of Goods	6000	6600	7260	7966	8785		
6	Sales	7900	8580	9438	10382	11420		
7	Profit	1900	1980	2178	2396	2635		
8	Total Profit	1900	3780	5958	8354	10989		

When you want to see the effect of changes, different values for margin and growth, for example, you change just those items and instantly see the effect, as the values calculated by the formulas are adjusted and redisplayed.

The capabilities of the spreadsheet applications have evolved, and the use of spreadsheets has extended far beyond the original use for financial planning and reporting. They can now handle any activity that involves arrays of values interrelated by formulas, grading examination scores, interpreting experimental data, or keeping track of assets and inventories for example. In fact, the newest spreadsheet applications seem to support just about any requirement you can imagine.

Don't forget



Sets of predefined functions were added, plus support for writing small programs, or macros, to manipulate the data. Further developments incorporated graphs, images, and audio.

**Don't forget**

Microsoft Multiplan, the predecessor of Excel, was an MS-DOS program. There were also Apple Mac versions of Excel, starting with Excel 1.0.

**Hot tip**

There are also versions of Excel and Office designed specifically for the Apple Macintosh computers.

# Microsoft Excel

VisiCalc and Lotus 123 were MS-DOS programs, subject to its command-line interface, but Microsoft Excel was developed for Windows. It was the first spreadsheet program to allow users to control the visual aspects of the spreadsheet (fonts, character attributes, and cell appearance). It introduced intelligent cell recomputation, where only cells dependent on the cell being modified are updated (previous spreadsheet programs recomputed everything all the time, or waited for a specific Recalc command).

Later versions of Excel were shipped as part of the bundled Microsoft Office suite of applications, which included programs like Microsoft Word and Microsoft PowerPoint.

Versions of Excel for Microsoft Windows and Office include:

1987	Excel 2.0	Windows
1990	Excel 3.0	Windows
1992	Excel 4.0	Windows
1993	Excel 5.0	Windows
1995	Excel 95 (v7.0)	Office 95
1997	Excel 97 (v8.0)	Office 97
1999	Excel 2000 (v9.0)	Office 2000
2001	Excel 2002 (v10)	Office XP
2003	Excel 2003 (v11)	Office 2003
2007	Excel 2007 (v12)	Office 2007
2010	Excel 2010 (v14)	Office 2010
2013	Excel 2013 (v15)	Office 2013 / Office 365

The newer versions of Excel provide many enhancements to the user interface, and incorporate connections with Microsoft Office and other applications. The basis of the program, however, remains the same. It still consists of a large array of cells, organized into rows and columns, and containing data values or formulas with relative or absolute references to other cells. This means that many of the techniques and recommendations included in this book will be applicable to whichever version of Excel you may be using, or even if you are using a spreadsheet from another family of products, though, of course, the specifics of the instructions may need to be adjusted.



In this book, the New icon pictured above is used to highlight new or enhanced features in Excel 2013.



# Microsoft Office 2013

Microsoft Office 2013 is the latest version of Microsoft Office, and it is available in a variety of editions, including:

- Office 2013 Home and Student
- Office 2013 Home and Business
- Office 2013 Standard
- Office 2013 Professional
- Office 2013 Professional Plus



There is also a subscription version of Microsoft Office known as Office 365, and this is also available in a number of editions:

- Office 365 Home Premium
- Office 365 University
- Office 365 Small Business
- Office 365 Professional Plus
- Office 365 Enterprise



Excel 2013 is available for purchase as a stand-alone product or as part of an Office 2013 edition, or for annual subscription as part of an Office 365 edition.

All of these editions include Microsoft Excel 2013 and you can also buy this application as a separate, stand-alone product. Whichever edition you obtain, your copy of Excel 2013 incorporates all the features and uses the Office result-oriented user interface, with the Ribbon, File tab, BackStage, Galleries, and Live Preview, etc.



Excel 2013 also uses the Microsoft Office file format, OpenXML, as the default file format. This is based on XML and uses ZIP compression, so the files will be up to 75% smaller than those in the older Microsoft Office file formats.

Other shared Office features include the Document Theme, which defines colors, fonts, and graphic effects for a spreadsheet or other Office document, and collaboration services for sharing spreadsheets and documents with other users.

## Office Web Apps

Microsoft offers a free, web-based version of Office; this includes online versions of Word, Excel, PowerPoint, and OneNote. These web apps feature user interfaces similar to the full desktop products, and allow you access Office documents, including Excel spreadsheets, via your browser. They also make it easier for you to share documents with users who may not have Office 2013 on their systems. However, the Office Web Apps do not support the full feature set of the desktop products.

**Don't forget**



The Office Web Apps work in conjunction with your SkyDrive, online storage associated with your Microsoft account (or your Office 365 account, if you have a subscription).

**Don't forget**

These are minimum requirements. You may need other components (e.g. a sound card and speakers to handle audio clips) for some of the features in Excel.

**Hot tip**

Office 2013 is available in a 32-bit version, which runs on 32-bit and 64-bit operating systems. There is a 64-bit version of Office, but Microsoft recommends using the 32-bit version except in exceptional cases, for very large spreadsheets for example.

**Beware**

Your computer must also meet the hardware requirements for your chosen operating system. These may exceed the minimum specifications for Office 2013, especially with advanced systems, such as Windows 8 with Multitouch function.

# System Requirements

To install and run Excel 2013, your computer should match or better the minimum hardware and operating system requirements for Office 2013. If you are upgrading to Office 2013, from Office 2007 or Office 2010, the hardware should already meet the requirements, though you may need to upgrade your operating system. For an upgrade from Office 2003, you will need to check that both hardware and operating system meet the minimum specifications for Office 2013. This includes:

Operating system	Windows 7, Windows RT, Windows 8, Windows 8.1 (32-bit or 64-bit) or Windows Server 2008/R2 or 2012 (64-bit)
Processor speed	1GHz or higher (32-bit or 64-bit)
Memory	1GB (32-bit) or 2GB (64-bit)
Devices	DVD drive
Hard disk	3GB available space
Monitor	1024 x 576 resolution or higher
Internet	Broadband connection recommended for download, product activation and SkyDrive



## Additional Software Requirements

If you have another computer still running an older version of Office, and you need to work with Excel files that are in the Office 2013 format, you might download the Microsoft Office Compatibility Pack, from [www.microsoft.com/downloads](http://www.microsoft.com/downloads). This will allow older versions of Excel to read the new file format.

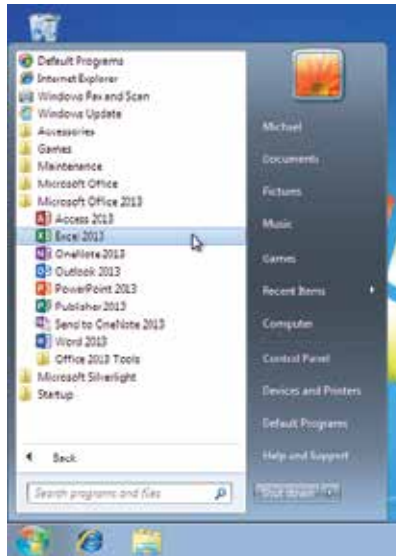
# Excel 2013 under Windows 7

With Excel installed under Windows 7, you normally use the Start menu to begin running Excel 2013.

1 Click the Start button and move the mouse pointer over the All Programs entry

2 When the program list appears, click Microsoft Office 2013 and select Microsoft Office Excel 2013

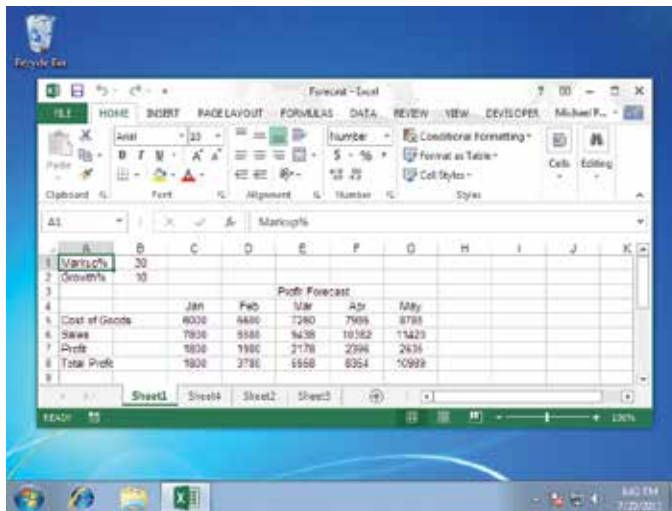
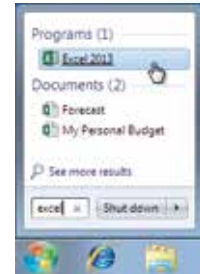
3 Excel 2013 starts ready for you to create or edit your spreadsheets



Don't forget



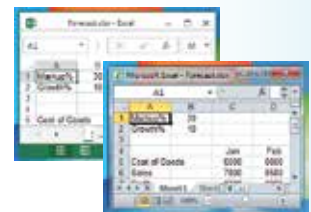
Under Windows 7, you can select Start, type the program name Excel, and select the program entry, listed at the top of the Start menu.



Hot tip



The Excel 2013 window frame does not exhibit the transparency effects that were displayed by previous versions running on Windows 7 PCs with Aero enabled.



4 Right-click the program icon on the taskbar and select Pin this program to taskbar, to provide a quick launch for Excel under Windows 7





Don't forget



These options are available for Windows 8 with Office 2013 and for Windows RT with its built-in Office RT, the Home and Student edition of Office 2013.

# Excel 2013 and Windows 8

With Excel installed under Windows 8, there's no Start menu, but you still have a number of ways to launch Excel 2013:

- 1 Display the Start screen and click the tile for Excel 2013



- 2 If the Excel tile isn't on the Start screen, right-click and select All Apps, then select Excel 2013 from the Microsoft Office 2013 group



- 3 You may also find an icon for Excel 2013 pinned to the taskbar on the Desktop



- 4 Switch to the Start screen and type Excel, then select the Excel 2013 entry that the App Search function locates



Hot tip



Right-click the Excel 2013 entry on the Start screen or the All Apps screen and select Pin to Taskbar, if the Excel icon isn't already there.



## ...cont'd

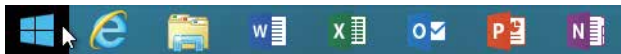
Windows 8.1, the updated version of Windows 8 and Windows RT, provides the same set of options for launching Excel 2013, but there are some differences in appearance and in the ways you access some of the facilities.

- 1 The Start screen tiles for Excel and other Office applications may be Small or Medium in size



- 2 You tap the Down arrow to display the All Apps screen, and the Up arrow to go back to the Start screen

- 3 The Taskbar displays a Start button which toggles between the Start screen and the Desktop



- 4 The enhanced Search facility now searches Everywhere, not just for Apps

You can still right-click entries on the Start screen or the All Apps screen and select Pin to/Unpin from Start or Pin to/Unpin from Taskbar.



Don't forget



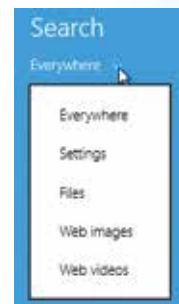
Windows 8.1 offers a variety of tile sizes. For example, the Desktop tile can be Small, Medium, Wide or Large.



Hot tip



You can also choose to restrict Search to specific areas, for example in Settings or for Files.



## Hot tip



The other Office 2013 programs, such as Access, PowerPoint, Word, and Outlook, also use the Ribbon, which displays tabs appropriate to each application.

# The Office 2013 Ribbon

The menus and toolbars used in previous versions of Excel have been replaced by the Ribbon. With this, commands are organized in logical groups, under command tabs – Home, Insert, Page Layout, Formulas, Data, Review and View tabs – arranged in the order in which tasks are normally performed. When you click any of these tabs, the corresponding commands display in the Ribbon.



The Ribbon may also include contextual command tabs, which appear when you perform a specific task. For example, if you select some data and then click Insert Column Chart in the Charts group, chart tool tabs Design, Layout, and Format are displayed.

## Don't forget



The File tab displays the BackStage view, which provides general document file functions, plus Share, Export and the Excel Options.



You can minimize the Ribbon, to make more room on the screen.

1

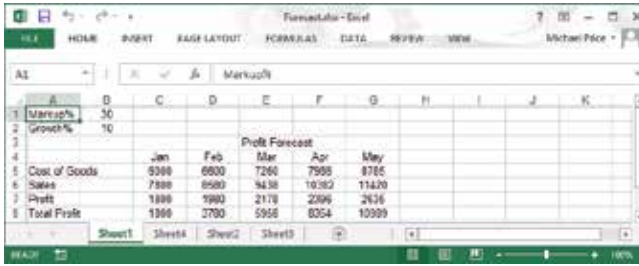
Click the Ribbon Display Options button and select Show Tabs

2

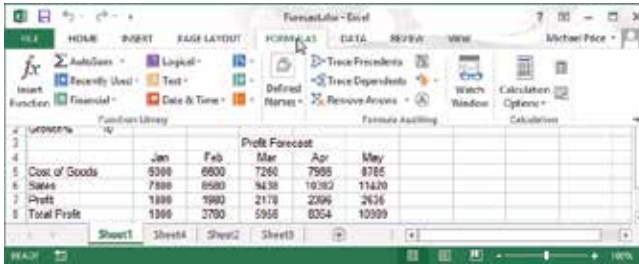
The tabs will still be displayed but the commands will be hidden



...cont'd



- 3 The Ribbon and the commands are redisplayed as a temporary overlay whenever you click a tab, or when you use the Alt key shortcuts (see page 118)



### Touch/Mouse mode

To enable Touch Mode:

- 1 Click the down arrow on the Quick Access toolbar and select Touch mode
- 2 The Ribbon displays with extra spacing between buttons



Don't forget 

You can also choose Auto-hide Ribbon. Excel runs full screen with no tabs or commands visible. Click the top of the application to display the Ribbon.



Office 2013 applications offer two interfaces, Mouse and Touch, where the latter is optimized for operation with touch-enabled devices. To add this option to the Quick Access Toolbar, click the Down arrow and select Touch/Mouse Mode.





Explore the Ribbon tabs and command groups in Excel 2013 to find the features that you need to carry out activities on your worksheets.

## Exploring Excel 2013

If you are used to a previous version of Excel, you may not always know where to find the features you need. The following table lists some of the actions that you may want to carry out, and indicates the Ribbon tabs and groups where the associated commands for these actions these may be found in Excel 2013.

Action	Tab	Groups
Create, open, save, print, share, or export files, or change options	File	Backstage Commands – Info, New, Open, Save, Save As, Print, Share, Export, Close, Account, and Options
Format, insert, delete, edit or find data in cells, columns, and rows	Home	Number, Styles, Cells, and Editing groups
Create tables, charts, sparklines, reports, slicers, and hyperlinks	Insert	Tables, Charts, Sparklines, Filters, and Links groups
Set page margins, page breaks, print areas, or sheet options	Page Layout	Page Setup, Scale to Fit, and Sheet Options groups
Find functions, define names, or troubleshoot formulas	Formulas	Function Library, Defined Names, and Formula Auditing groups
Import or connect to data, sort and filter data, validate data, flash fill values, or perform a what-if analysis	Data	Get External Data, Connections, Sort & Filter, and Data Tools groups
Check spelling, review and revise, and protect a sheet or workbook	Review	Proofing, Comments, and Changes groups
Change workbook views, arrange windows, freeze panes, and record macros	View	Workbook Views, Window, and Macros groups

If you want to locate a particular command, you can search the list of all of the commands that are available in Excel 2013.



## ...cont'd

To display the list:

- 1 Click the down arrow on the Quick Access toolbar to display the Customize menu (see page 17) and select the option for More commands



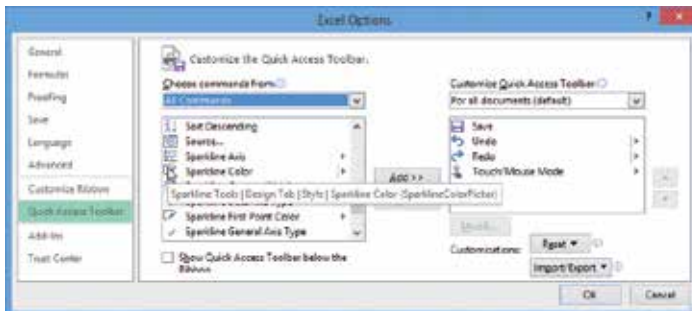
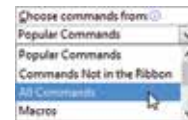
Don't forget



You can also right-click the Ribbon and select Customize the Ribbon to display the list of commands and view the associated tool tips.



- 2 Click the box Choose commands from, and select All commands



- 3 Scroll the list and move the Mouse pointer over a command name, and the tool tip will indicate the tab and group where you will find that command – for example:

Color Scale  
Color Tone  
Fill  
Split Cells

Home Tab | Styles | Color Scales (ConditionalFormattingColorScalesGallery)

Picture Tools | Format Tab | Adjust | Color Tone (PictureColorTemperatureGallery)

Home Tab | Editing | Fill (FillMenu)

Commands Not in the Ribbon | Split Cells.. (SplitCells)

Hot tip



Some of the commands may not currently be included in any group and so are shown as Commands not in Ribbon. You can use Customize to Add any of these commands to the Quick Access toolbar or to the Ribbon.



Office Web Apps are touch-friendly web applications that let you create, edit and share your Excel, Word, PowerPoint and OneNote files from any browser. They can be used with your SkyDrive storage.

### Hot tip



You need to be signed in with your Microsoft account (or your Office 365 account) to use SkyDrive and the Office Web Apps.



### Hot tip

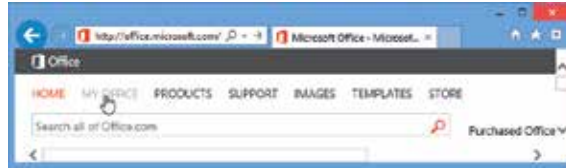


The functions provided in the Office Web App version of Excel are limited and you'll be offered a reduced set of tabs and commands.

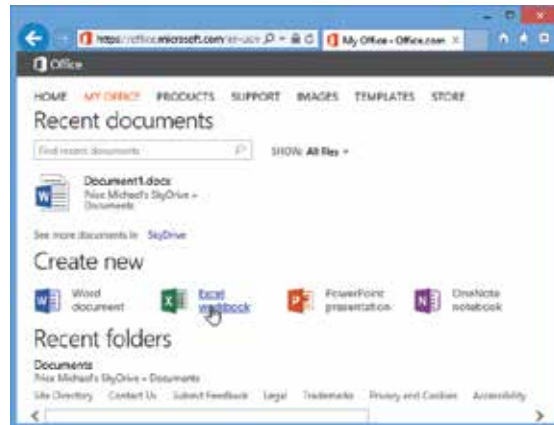
# Excel Office Web App

To use the Excel and other Office Web Apps:

- 1 Open **office.microsoft.com** and select My Office



- 2 Sign in if needed and display links to Office Web Apps



- 3 Select Excel workbook, provide a name (or accept the default) and click Create

