

200+ Excel Formulas and Functions

*The go-to-guide to master
Microsoft Excel's many capabilities*

Prof. Michael McDonald



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Dedicated to

Excel Users Everywhere

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Acknowledgement

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Preface

This book covers over 200 functions in Excel, from basic functions all users need to know, and specialized tools for particular industries, to advanced functions that require some deep technical knowledge. This book also introduces the applications of these function in the industry and will help readers understand some of the practical opportunities to use Excel to make themselves more productive and proficient in their careers.

Chapter 1: Getting Started with Excel – In this short overview chapter, we will cover what the reader can expect to learn in the book, what they should know about Excel before getting started, and how they should use the book to get the most out of it.

Chapter 2: The 10 Most Popular Functions in Excel – In this chapter, we will cover the 10 most popular functions in Excel, including the SUM function, IF function, VLOOKUP function, MATCH function and many more.

Chapter 3: Logical Functions in Excel – Logical functions are used for organizing data and creating formulas in Excel. In this chapter, we will cover the most popular and useful formulas that you need to know to be able to use Excel effectively.

Chapter 4: Lookup and Reference Functions in Excel – Excel is often used as a tool for building complex data driven models especially in business. To do this, look up and reference functions are used to create efficient datasets in Excel. In this chapter, we will cover the most popular and useful formulas that you need to know, to be able to use Excel effectively.

Chapter 5: Math Functions in Excel – Excel is filled with mathematical functions that can make virtually any computation much easier. This is an important task for students and workers alike. In this chapter, we will cover the most popular and useful formulas that you need to know, to be able to use Excel effectively.

Chapter 6: Statistical Functions in Excel – Statistical analysis is a foundational cornerstone of modern business and Excel is a great tool to help with doing that analysis. While Excel Add-ins can add tremendous versatility to the software, even without them, Excel is still very useful in a variety of situations where statistics are called for. In this chapter, we will cover the most popular and useful formulas that you need to know to be able to use Excel effectively.

Chapter 7: Text Functions in Excel – Excel can help us clean up and organize datasets effectively, and this is especially important when dealing with mixed or semi-structured datasets. However, Excel can only help if we can use text functions proficiently. In this chapter, we will cover the most popular and useful formulas that you need to know, to be able to use Excel effectively.

Chapter 8: Information Functions in Excel – Like text functions, information functions can help us to go through a large dataset and quickly clean it up to make it useable for our work. In this chapter, we will cover the most popular and useful formulas that you need to know to be able to use Excel effectively.

Chapter 9: Financial Functions in Excel – In finance, Excel is by far the most important and widely used software package. Part of the reason for that is the software contains numerous functions that let us do financial calculations quickly and accurately. These calculations can then be embedded into more complex financial models. While building models is a subject for another book, the first thing you need to do is start by just understanding the formulas and what they do. In this chapter, we will cover the most popular and useful formulas that you need to know to be able to use Excel effectively.

Chapter 10: Date and Time Functions in Excel – Dates and times are a persistent hassle to deal with in datasets; they look like regular numbers although they actually are not. As a result, it is important to be able to use special Excel functions that let us work with dates and times when building larger models and datasets. In this chapter, we will cover the most popular and useful formulas that you need to know to be able to use Excel effectively.

Chapter 11: Database Functions in Excel – Excel is not the most powerful database software on the market – but it is widely used for database work because it is ubiquitous, simple to learn, and it performs well for a variety of small database tasks. In this role, it is important to understand what the database functions Excel includes. In this chapter, we will cover the most popular and useful formulas that you need to know to be able to use Excel effectively.

Chapter 12: Cube Functions in Excel – Cube functions are an unusual group of functions with some specific niche uses. While you may not be familiar with them, they can be very important in specific settings. In this chapter, we will cover the most popular and useful formulas that you need to know to be able to use Excel effectively.

Chapter 13: Web Functions in Excel – Excel does not have many of the more sophisticated tools of other software packages that interact and pull information from the web, but it does have some specific tools that you should be familiar with. In this chapter, we will cover the most popular and useful formulas that you need to know, to be able to use Excel effectively.

Chapter 14: User Defined Functions in Excel – User defined functions are advanced but very powerful functions that can enable Excel to greatly speed up tedious and time-consuming tasks. While these functions are harder to use, they can be a huge time-saver for people doing specific kinds of projects. In this chapter, we will cover the most popular and useful formulas that you need to know to be able to use Excel effectively.

This text will be useful to you in your journey to understand and improve your knowledge in Excel. The goal of this book is to be a desk reference that you can pull out and refer to, when you are unsure about a particular function and how to use it. Throughout this text, we will cover many functions that serve a variety of purposes.

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CHAPTER 1

Getting Started with Excel

Introduction

Welcome to this Excel journey. This book is designed as a reference to help business professionals and students who wish to use Excel to advance their career opportunities and academic studies. The goal of the book is to help you understand over 200 different Excel formulas that can be used for many different applications. In this chapter, we will talk about the structure of the book, how to get the most out of it, and why Excel is valuable for your career.

Structure

In this chapter, we will discuss the following topics:

- Using Excel

Objectives

In this book, we will refer to Excel functions and formulas—the terms may seem interchangeable, but there is a slight difference between them. The function is the larger tool; for instance, the SUM function allows one to sum up a set of numbers. The formula is the specific language that enables the function. The point is largely

academic, but it is included here in the hopes of avoiding any confusion when you are reading and seeing these two terms used.

As we examine each function, we will spell out what the formula is behind the function, what the function is used for, the specific data that is required in Excel to make the function work properly, an example of the function in practice, and finally, images from Excel illustrating the function being used.

It is important to note that different versions of Excel look slightly different, and in a few cases, older versions of Excel may not have some new functions created for more recent versions of Excel. We have tried to pick functions that are the most useful for all users, but some inconsistency between different versions of Excel is unavoidable.

Using Excel

Before we begin examining the functions and formulas of Excel, it is worth taking a moment and reviewing the basics of Excel.

Excel is a spreadsheet program with some database features. It is the most widely used business software tool in the world (assuming one excludes operating systems like Windows from that definition, of course). The reason Excel is so popular is that it is versatile yet simple to use. There are many pieces of software that are more powerful than Excel and many that offer tools and features that Excel does not have. Yet Excel's popularity persists because it is intuitive and powerful enough for most basic business tasks—and this includes everything from basic accounting to mathematical calculations to building small datasets.

Excel starts the user with a spreadsheet with a series of rows and columns. These rows and columns can be used to enter data—either quantitative data like numbers and dates or qualitative data such as names, places, notes, or any sort.

Excel starts with a single page or “sheet” of data, but the user can easily add additional workbook sheets with the + that is displayed to the right of the sheet name. In *figure 1.1*, we can see that there are two workbooks:

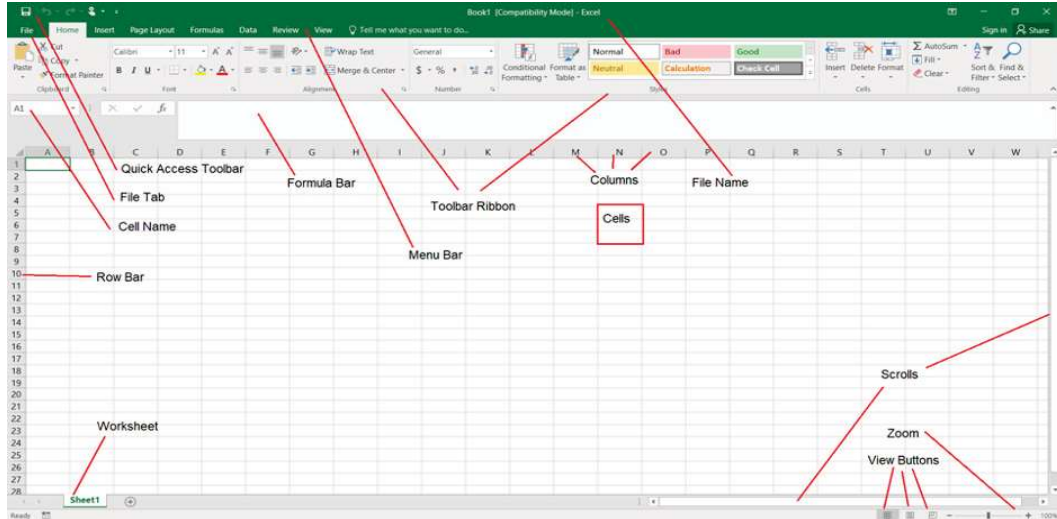


Figure 1.1: The basic Excel Workbook

The formulas in Excel are entered into a particular chosen square or “cell,” and that cell formula then refers to or “references” other cells either in that sheet or in another sheet of data within the workbook.

TIP: In general, where possible, it is a good idea to keep formulas and the cells they reference on the same sheet to make the Excel model more readable.

Excel’s versatility allows you to build many different types of documents, from inventory lists to small datasets to financial statements. When you finish an Excel document or “model,” as they are often called, it could look something like figure 1.2:

Year	2020					2021												
Month	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Starting Cash	53,000	44,783	94,265	22,679	12,844	7,288	5,607	7,768	12,534	21,460	32,693	48,469	68,510	93,571	108,913	131,985	164,223	206,085
REVENUE																		
User Count	0	10	89	173	260	353	448	548	655	767	884	1,007	1,136	1,269	1,575	1,811	2,080	2,320
User Fees	0	0	1,782	4,337	7,076	12,303	17,916	21,962	26,710	30,073	35,454	40,272	45,486	50,993	60,488	72,406	82,983	97,389
EXPENSES																		
Non-Labor																		
Company set-up	100	300	300	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500
Product Development	0	500	500	500	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Server Cost	100	100	100	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Marketing Cost	500	1,500	1,000	1,000	1,000	1,000	1,500	1,500	1,500	3,500	3,500	4,000	4,000	4,000	5,000	5,000	5,000	6,000
Utilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rent	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Supplies	100	200	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
Insurance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank Fees	0	0	54	128	234	369	537	659	786	900	1,061	1,208	1,363	1,620	1,890	2,174	2,471	2,784
Miscellaneous	2,000	500	500	500	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Capital Expenses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Labor																		
Employees	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Base Salaries	3,834	3,834	3,834	3,834	3,834	3,834	3,834	3,834	3,834	3,834	3,834	3,834	3,834	3,834	14,385	14,385	14,385	14,385
Bonuses	0	0	2,000	2,000	2,000	2,000	3,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	10,000	10,000	10,000	10,000
Benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,000	3,000	3,000	3,000
Taxes	583	583	783	783	783	783	883	883	883	883	883	883	883	883	2,459	2,459	2,459	2,459
Contract Labor	1,000	1,000	2,000	2,000	0	0	0	0	0	0	0	0	0	0	1	2	3	4
Total	10,237	10,517	13,371	14,417	13,351	13,887	15,755	17,176	17,359	19,438	19,578	20,226	SUM(IN22)	38,865	39,826	40,220	40,519	41,832
PROFIT/LOSS	(419,919)	(40,517)	(511,506)	(508,835)	(45,504)	(511,881)	(52,161)	(54,786)	(58,906)	(51,511)	(51,578)	(50,044)	(52,065)	(51,565)	(52,022)	(53,938)	(54,862)	(55,967)

Figure 1.2: An example Excel model

In this example, we have built a budget for a company—as we see here, the budget includes time periods in the form of months in each column and specific budget line items in each row. The cells are a combination of numbers inputted into the sheet and formulas derived from other cells, as shown preceding. In Excel, when you click on a formula, you are automatically shown other cells that the formula references.

The end product may look daunting, but once you get started with Excel, you will quickly find that it is not as difficult as it seems. Ready to give it a try on your own? Then let us jump in!

Conclusion

In this chapter, we got an introduction to Excel. We looked at the basic Excel workbook as well as an example Excel model.

In the upcoming chapters, we will dive deeper into functions in Excel that will surely prove to be very helpful to you.

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