

# A Guide to Microsoft® Excel 2007 for Scientists and Engineers

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with

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# Contents

<b>Preface</b>	x
<b>1 Welcome to Microsoft Excel® 2007</b>	
The Excel Window	1
Exercise 1: The Ribbon	5
Exercise 2: Quick Access Toolbar	6
Exercise 3: Working with Shortcuts	7
The Worksheet	7
Excel 2007 Specifications	9
Problems	11
<b>2 Basic Operations</b>	
Exercise 1: Simple Arithmetic	12
Exercise 2: The Arithmetic Operators	15
Exercise 3: Formatting (Displayed and Stored Values)	18
Exercise 4: Working with Fractions	19
Exercise 5: A Practical Worksheet	21
Copying Formulas: What Happens to References?	22
What's in a Name?	24
Exercise 6: Another Practical Example	25
Special Symbols, Subscripts, and Superscripts	29
Mathematical Limitations of Excel	31
Play It Again, Sam	32
Problems	33
<b>3 Printing in Excel</b>	
Exercise 1: Quick Print and Print Preview	38
Exercise 2: Print Area	40
The Print Dialog	40
Exercise 3: Some Printing Options	41
<b>4 Using Functions</b>	
Exercise 1: AutoSum Tool	46
The Insert Function Command	48
Exercise 2: Computing a Weighted Average	48
Exercise 3: Entering Formulas by Typing	51
Exercise 4: Trigonometry Functions	52
Exercise 5: Exponential Functions	54

Exercise 6: Rounding Functions	54
Note on Rounding	55
Significant Numbers	56
Some Other Mathematical Functions	56
Array Formulas	57
Exercise 7: The Matrix Functions	57
Volatility: Calculate Mode	58
Exercise 8: Solving Systems of Equations	59
Exercise 9: Sum of Diagonal	61
Financial Functions	62
Problems	64

## **5 Decision Functions**

Logical Comparison Operators	69
Exercise 1: Boolean Functions	70
Exercise 2: Practical Example	70
The IF Function	71
Exercise 3: Resistors Revisited	73
Exercise 4: Quadratic Equation Solver	74
Exercise 5: Protecting a Worksheet	76
Table Lookup Functions	78
Exercise 6: A Simple Lookup	79
Exercise 7: A Two-Valued Lookup	80
Exercise 8: Conditional Summing	81
Exercise 9: Array Formulas	83
Exercise 10: Conditional Formatting	85
Exercise 11: SUMPRODUCT	86
Problems	88

## **6 Data Mining**

Exercise 1: Importing a TXT file	91
Exercise 2: Counting and Summing with Criteria	92
Exercise 3: Frequency Distribution	93
Exercise 4: Pivot Tables	94
Exercise 5: Sorting	95
Exercise 6: Filtering	96
Exercise 7: The Excel Table	97
Problems	98

## **7 Charts**

Types of Charts	101
Line and XY Chart	101
Comments about Charts	102
Chart Terminology	103
Exercise 1: An XY Chart	103

Exercise 2: Smooth Lines	105
Formatting a Chart	106
Exercise 3: Formatting the Data Series	107
Exercise 4: Formatting an Axis	108
Exercise 5: Plotting a Function	109
Exercise 6: More Formatting	110
Finding Roots	110
Exercise 7: A Flexible Domain	110
Exercise 8: Changing Axis Position	112
Exercise 9: XY Chart with Two Y-axes	112
Exercise 10: Control Chart	114
Exercise 11: Too Much Data	116
Exercise 12: Large Numbers and Log Scale	117
Exercise 13: Error Bars	118
Other Chart Types	119
Exercise 14: Surface Chart	119
Exercise 15: Combination Chart	120
Exercise 16: A Bar Chart	121
Exercise 17: A Parametric Chart	122
Exercise 18: Polar Chart	123
Dynamic Charts	124
Printing a Chart	124
URLs for Chart Websites	124
Problems	125
<b>8 Regression Analysis</b>	
Least-Squares Fitting	130
Exercise 1: Trendline, SLOPE, and INTERCEPT	130
Exercise 2: Interpolation and FORECAST	133
Exercise 3: The LINEST Function	134
Exercise 4: Fixed Intercept	135
Exercise 5: A Polynomial Fit	136
Exercise 6: A Logarithmic Fit (LOGEST)	137
The TREND and GROWTH Functions	139
Residuals	139
Exercise 7: Slope and Tangent	140
Exercise 8: The Analysis Toolpak	142
Problems	144
<b>9 VBA User-defined Functions</b>	
Security Note	148
Exercise 1: The Visual Basic Editor	149
Syntax of a Function	150
Exercise 2: A Simple Function	151
Naming Functions and Variables	153
Worksheet and VBA Functions	154

Exercise 3: When Things Go Wrong	155
Programming Structures	156
Exercise 4: The IF Structure	156
Exercise 5: Boolean Operators	156
The SELECT Structure	158
Exercise 6: Select Example	159
The FOR..NEXT Structure	160
Exercise 7: Example Using FOR...NEXT	160
The Excel Object Model: An Introduction	161
Exercise 8: FOR EACH—Resistors Revisited	162
Exercise 9: The DO ... LOOP Structure	163
Variables and Data Types	166
Input-Output of Arrays	166
Exercise 10: An Array Function	167
Using Functions from Other Workbooks	168
Problems	169
<b>10 VBA Subroutines</b>	
Exercise 1: Recording a Macro	173
Computing Subroutines	175
Notes on the VB Editor	176
Exercise 2: A Computing Macro	177
Public or Private?	179
Name That Variable	179
Exercise 3: Bolt Hole Positions	179
Exercise 4: Finding Roots by Bisection	181
Exercise 5: Using Arrays	185
Exercise 6: Adding a Control	187
Exercise 7: User Forms	188
Problems	191
<b>11 Modeling I</b>	
Exercise 1: Population Model	194
Exercise 2: Vapor Pressure of Ammonia	196
Exercise 3: Stress Analysis	198
Exercise 4: Circuit Analysis	200
Exercise 5: Ladder Down the Mine	201
Exercise 6: Adding Waves	203
Exercise 7: Centroid of a Polygon	204
Exercise 8: Finding Roots by Iteration	207
Problems	208
<b>12 Using Solver</b>	
Exercise 1: Goal Seek	211
Exercise 2: Solver as Root Finder	213
Solving Equations with Constraints	214

Exercise 3: Finding Multiple Roots	215
Exercise 4: Saving Solver Models	216
Exercise 5: Systems of Nonlinear Equations	217
Curve Fitting with Solver	218
Exercise 6: Gaussian Curve Fit	220
Exercise 7: A Minimization Problem	221
Exercise 8: An Optimization Problem	222
TK Solver™	224
Problems	225
<b>13 Numerical Integration</b>	
Exercise 1: The Trapezoid Rule	230
Exercise 2: Simpson's $\frac{1}{3}$ Rule	232
Exercise 3: Adding Flexibility	234
Exercise 4: Going Modular	235
Exercise 5: Tabular Data	237
Exercise 6: Gaussian Integration	239
Exercise 7: Monte Carlo Techniques	242
Problems	244
<b>14 Differential Equations</b>	
Exercise 1: Euler's Method	248
Exercise 2: The Runge–Kutta Method	251
Exercise 3: Solving with a User-Defined Function	252
Simultaneous and Second-Order Differential Equations	254
Exercise 4: Solving a Second-Order Equation	255
Exercise 5: The Simple Pendulum	256
Problems	258
<b>15 Modeling II</b>	
Exercise 1: The Four-Bar Crank	261
Exercise 2: Temperature Profile Using Matrix Algebra	264
Exercise 3: Temperature Profile Using Solver	267
Exercise 4: Emptying the Tank	269
Exercise 5: An Improved Tank Emptying Model	271
Problems	274
<b>16 Statistics for Experimenters</b>	
Exercise 1: Descriptive Statistics	275
Exercise 2: Frequency Distribution	277
Exercise 3: Confidence Limits	279
Exercise 4: The Experimental and Expected Mean	281
Exercise 5: Pooled Standard Deviation	284
Exercise 6: Comparing Paired Arrays	285
Exercise 7: Comparing Repeated Measurements	287
Exercise 8: The Calibration Curve Revisited	290

Exercise 9: More on the Calibration Curve	292
Problems	295
<b>17 Report Writing</b>	
Documentation	298
Picture of Worksheet	298
Display Formulas	299
Exercise 1: Creating an Equation	299
Screen Captures	302
MathLook™	302
Copy and Paste or OLE?	304
Exercise 2: Copy and Paste	304
Exercise 3: Object Embedding	306
Microsoft Visio®	307
<b>Answers</b>	308
<b>Index</b>	321



# Preface

This book is for people in technical fields, students and professionals alike. Its aim is to show the usefulness of Microsoft® Excel in solving a wide range of numerical problems. Excel does not compete with the major league symbolic mathematical environments such as Mathematica, Mathcad, Maple, and the like. Rather it complements them. Excel is more readily available and easier to learn.

The examples have been taken from a range of disciplines but require no specialized knowledge, so the reader is invited to try them all. Do not be put off by an exercise that is not in your area of interest. Each exercise is designed to introduce and explain an Excel feature. The two modeling chapters will help you learn how to develop worksheets for a variety of problems.

This is very much a practical book designed to show how to get results. The problem sets at the ends of the chapters are part of the learning process and should be attempted. Many of the questions are answered in the last chapter. The *Guide* is suitable for use as either a textbook in a course on scientific computer applications, a supplementary text in a numerical methods course, or a self-study book. Professionals may find Excel useful to solve one-off problems rather than writing and debugging a program, or for prototyping and debugging complex programs. A few topics are not covered by the *Guide*, such as database functions and making presentation worksheets. These are fully covered in Excel books targeted at the business community, and the techniques are applicable to any field.

I was agreeably surprised by the warm reception given the first and subsequent editions of the *Guide*. I am grateful for the many e-mailed comments and suggestions from readers and academics. The fourth edition has involved a major rewrite, not only because of how different Excel 2007 is from earlier versions but also to include more advanced material. I wish to thank David Ellert for his extensive input to the new chapter on VBA subroutines, John Quinn for his insightful comments on calculus and matrix algebra, and Robert van den Hoogen for kindly sharing his expertise in

statistics. I am honored that Microsoft awarded me the Most Valuable Professional (MVP) in Excel both in 2007 and 2008. My thanks are due to fellow MVPs for generously sharing their knowledge, in particular Jon Peltier and Bob Umlas. My final thanks go to my wife Pauline without whom this book would never have seen the light of day. However, I claim responsibility for all errors and typos.

I welcome e-mailed comments and corrections and will try to respond to them as soon as I can. Please check my web site and the *Guide's* companion website [www.elsevierdirect.com/companions/9780123746238](http://www.elsevierdirect.com/companions/9780123746238) for supplementary material.

I hope you enjoy learning to “excel.”



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### **Conventions Used in this Book**

Generally, in the chapters, the phrase *Excel 2007* is used to imply that a feature is new in this version or is very different from previous versions.

Information sidebars are used to give additional information, give reference, remind the reader of shortcuts, etc..

Information boxes in the left margin are used to convey additional information, tips, shortcuts, and the like.

Data that the user is expected to type is displayed in a distinctive font. This avoids the problems of using quotes. For example: In cell A1 enter the text **Resistor Codes**. Italics are used for new terms, to highlight Excel commands, for emphasis, and to avoid the confusion sometimes associated with quotation marks. Nonprinting keys are shown as graphics. For example, rather than asking the reader to press the Control and Home keys, we use text such as: Press +. When two keys are shown separated by +, the user must hold down the first key while tapping the second.

In the Problems section of each chapter, an asterisk against a problem number indicates that a solution is given at the end of the book. Excel files for answered problems and additional files may be found on the companion website:

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