CONTENTS

Acknowledgments *xv*
Introduction *xvii*

Chapter 1 Formulas in Excel **1**
Calculate production per hour 1
Calculate the age of a person in days 2
Calculate a price reduction 3
Convert currency 4
Convert from hours to minutes 6
Determine fuel consumption 7
Calculate your ideal and recommended weights 7
The quick calendar 9
Design your own to-do list 10
Increment row numbers 11
Convert negative values to positive 12
Calculate sales taxes 13
Combine text and numbers 14
Combine text and date 15
Combine text and time 16
Generate a special ranking list 16
Determine average output 17
Determine stock gains and losses 18
Evaluate profitability 19
Determine percentage of completion 21
Convert miles per hour to kilometers per hour 22
Convert feet per minute to meters per second 23
Convert liters to barrels, gallons, quarts, and pints 24
Convert from Fahrenheit to Celsius 25
Convert from Celsius to Fahrenheit 25
Calculate total with percentage 26
Monitor the daily production plan 27
Calculate the number of hours between two dates 28
Determine the price per pound 30
Determine how many pieces to put in a box 31
Calculate the number of employees required for a project 32
Distribute sales 34
Calculate your net income 35
Calculate the percentage of price reduction 36
Divide and double every three hours 37
Calculate the average speed 38

Chapter 2 Logical Functions 39
Use the AND function to compare two columns 39
Use the AND function to show sales for a specific period of time 40
Use the OR function to check cells for text 41
Use the OR function to check cells for numbers 41
Use the XOR function to check for mutually exclusive conditions 42
Use the IF function to compare columns and return a specific result 43
Use the IF function to check for larger, equivalent, or smaller values 44
Combine IF with AND to check several conditions 45
Use the IF function to determine the quarter of a year 46
Use the IF function to check cells in worksheets and workbooks 47
Use the IF function to calculate with different tax rates 48
Use the IF function to calculate the commissions for individual sales 49
Use the IFS function to calculate the commissions for individual sales (*NEW IN EXCEL 2016*) 50
Use the IF function to compare two cells 51
Use the IFS function to compare two cells (*NEW IN EXCEL 2016*) 52
Use the SWITCH function to compare two cells (*NEW IN EXCEL 2016*) 53
Use the INT function with the IF function 54
Use the TYPE function to check for invalid values 55
Use nested IF functions to cover multiple possibilities 56
Use IFS function to cover multiple possibilities (*NEW IN EXCEL 2016*) 57
Use SWITCH function to cover multiple possibilities (*NEW IN EXCEL 2016*) 58
Use the IF function to check whether a date is in the past or the future 58
Use the IF function to create your own timesheet 59

Chapter 3 Text Functions 61
Use the LEFT and RIGHT functions to separate a text string of numbers 61
Use the LEFT function to convert invalid numbers to valid numbers 62
Use the SEARCH function to separate first name from last name 63
Use the MID function to separate last name from first name 64
Use the MID function to sum the digits of a number 65
Use the EXACT function to compare two columns 66
Use the SUBSTITUTE function to substitute characters 67
Use the SUBSTITUTE function to substitute parts of a cell 68
Use the SUBSTITUTE function to convert numbers to words 69
Use the SUBSTITUTE function to remove word wrapping in cells 70
Use the SUBSTITUTE function to combine and separate columns 71
Use the REPLACE function to replace and calculate 72
Use the FIND function to combine text and date 73
Use the UPPER function to convert text from lowercase to uppercase 75
Use the LOWER function to convert text from uppercase to lowercase 75
Use the PROPER function to convert initial characters from lowercase to uppercase 76

Use the FIXED function to round and convert numbers to text 77
Use the TRIM function to delete spaces 78
Use the TRIM function to convert "text-numbers" to real numbers 79
Use the CLEAN function to remove all non-printable characters 80
Use the REPT function to show data in graphic mode 80
Use the REPT function to show data in a chart 81
Use the CHAR function to check your fonts 82
Use the CHAR function to determine special characters 83
Use the CODE function to determine the numeric code of a character 84
Use the UNICHAR function to determine the Unicode character from a number 85
Use the UNICODE function to determine the numeric Unicode value of a character 86
Use the DOLLAR function to convert numbers to currency in text format 87
Use the T function to check for valid numbers 88
Use the TEXT function to combine and format text 89
Use CONCATENATE function to combine text 90
Use CONCAT function to combine text (*NEW IN EXCEL 2016*) 92
Use TEXTJOIN function to combine text (*NEW IN EXCEL 2016*) 93

Chapter 4 Date and Time Functions 95
Use custom formatting to display the day of the week 95
Use the WEEKDAY function to determine the weekend 96
Use the TODAY function to check for future dates 97
Use the TEXT function to calculate with the TODAY function 98
Use the NOW function to show the current time 99
Use the NOW function to calculate time 100
Use the DATE function to combine columns with date parts 100
Use the LEFT, MID, and RIGHT functions to extract date parts 102
Use the TEXT function to extract date parts 103
Use the DATEVALUE function to recalculate dates formatted as text 104
Use the YEAR function to extract the year part of a date 105
Use the MONTH function to extract the month part of a date 106
Use the DAY function to extract the day part of a date 107
Use the MONTH and DAY functions to sort birthdays by month 108
Use the DATE function to add months to a date 109
Use the EOMONTH function to determine the last day of a month 110
Use the DAYS360 function to calculate with a 360-day year 111
Use the WEEKDAY function to calculate with different hourly pay rates 112
Use the WEEKNUM function to determine the week number 113
Use the EDATE function to calculate months 114
Use the WORKDAY function to calculate workdays 115
Use the NETWORKDAYS function to determine the number of workdays 117
Use the YEARFRAC function to calculate ages of employees 118
Use the DATEDIF function to calculate ages of employees 119

Use the WEEKDAY function to calculate the weeks of Advent 120
Use the TIMEVALUE function to convert text to time 121
Use a custom format to create a time format 122
Use the HOUR function to calculate with 100-minute hours 123
Use the TIME function to combine single time parts 124

Chapter 5 Basic Statistical Functions 125
Use the MAX function to determine the largest value in a range 125
Use the MIN function to discover the lowest sales volume for a month 126
Use the MINIFS function to discover the lowest sales volume for a month based on criteria (*NEW IN EXCEL 2016*) 127
Use the MAXIFS function to discover the highest sales volume for a month based on criteria (*NEW IN EXCEL 2016*) 129
Use the MIN function to detect the smallest value in a column 130
Use the SMALL function to find the smallest values in a list 131
Use the LARGE function to find the highest values 132
Use the INDEX, MATCH, and LARGE functions to determine and locate the best salesperson 133
Use the SMALL function to compare prices and select the cheapest offer 134
Use the AVERAGE function to calculate the average output 135
Use the SUBTOTAL function to sum a filtered list 136
Use the COUNT function to count cells containing numeric data 137
Use the COUNTA function to count cells containing data 138
Use the COUNTA function to count cells containing text 139
Use the COUNTBLANK function to count empty cells 140
Use the COUNTA function to determine the last filled row 141
Use the SUBTOTAL function to count rows in filtered lists 142
Use the RANK function to determine the rank of sales 143
Use the MEDIAN function to calculate the median sales 144
Use the QUARTILE function to calculate the quartiles 145
Use the STDEV function to determine the standard deviation 146
Use the FORECAST.LINEAR function to determine future values 147
Use the FORECAST.ETS function to determine future values 148
Use the FORECAST.ETS.CONFINT function to determine confidence in future values 150
Use the FORECAST.ETS.SEASONALITY function to future value patterns 151

Chapter 6 Mathematical Functions 153
Use the SUM function to sum a range 153
Use the SUM function to sum several ranges 154
Use the SUMIF function to determine sales of a team 155
Use the SUMIF function to sum costs higher than $1,000 156
Use the SUMIF function to sum costs up to a certain date 157
Use the COUNTIF function to count phases that cost more than $1,000 158

Use the COUNTIF function to calculate an attendance list 160
Use the SUMPRODUCT function to calculate the value of the inventory 161
Use the SUMPRODUCT function to sum sales of a team 162
Use the SUMPRODUCT function to multiply and sum at the same time 163
Use the ROUND function to round numbers 164
Use the ROUNDDOWN function to round numbers down 165
Use the ROUNDUP function to round numbers up 166
Use the ROUND function to round time values to whole minutes 167
Use the ROUND function to round time values to whole hours 168
Use the MROUND function to round prices to 5 or 25 cents 169
Use the MROUND function to round values to the nearest multiple of 10 or 50 170
Use the CEILING function to round up prices to the nearest $100 171
Use the FLOOR function to round down prices to the nearest $100 172
Use the PRODUCT function to multiply values 173
Use the PRODUCT function to multiply conditional values 174
Use the QUOTIENT function to return the integer portion of a division 175
Use the POWER function to calculate square and cube roots 176
Use the POWER function to calculate interest 177
Use the MOD function to extract the remainder of a division 178
Modify the MOD function for divisors larger than the number 179
Use the ROW function to mark every other row 180
Use the SUBTOTAL function to perform several operations 181
Use the SUBTOTAL function to count all visible rows in a filtered list 182
Use the RAND function to generate random values 183
Use the RANDBETWEEN function to generate random values in a specified range 184
Use the EVEN and ODD functions to determine the nearest even/odd value 185
Use the ISEVEN and ISODD functions to check if a number is even or odd 186
Use the ISODD and ROW functions to determine odd rows 187
Use the ISODD and COLUMN functions to determine odd columns 188
Use the ROMAN function to convert Arabic numerals to Roman numerals 189
Use the ARABIC function to convert Roman numerals to Arabic numerals 190
Use the BASE function to convert decimal numbers to binary numbers 191
Use the DECIMAL function to convert binary numbers to decimal numbers 192
Use the SIGN function to check for the sign of a number 193
Use the SUMSQ function to determine the square sum 194
Use the GCD function to determine the greatest common divisor 195
Use the LCM function to determine the least common multiple 196
Use the SUMIFS function to determine sales of a team and gender of its members 197
Use the COUNTIF function to count phases that cost more than $1,000 within a certain duration 198

Chapter 7 Basic Financial Functions 201
Use the SYD function to calculate depreciation 201
Use the SLN function to calculate straight-line depreciation 202
Use the PV function to decide an amount to invest 203
Use the PV function to compare investments 205
Use the DDB function to calculate using the double-declining balance method 206
Use the PMT function to determine the payment of a loan 207
Use the FV function to calculate total savings account balance 208
Use the RATE function to calculate interest rate 209

Chapter 8 Database Functions 211
Use the DCOUNT function to count special cells 211
Use the DCOUNT function to count cells in a range between x and y 213
Use the DCOUNTA function to count all cells beginning with the same character 214
Use the DGET function to search for a product by number 215
Use the DMAX function to find the most expensive product in a category 216
Use the DMIN function to find the least expensive product in a category 217
Use the DMIN function to find the oldest person on a team 218
Use the DSUM function to sum sales for a period 219
Use the DSUM function to sum all prices in a category that are above a particular level 221
Use the DAVERAGE function to determine the average price in a category 222

Chapter 9 Lookup and Reference Functions 223
Use the ADDRESS, MATCH, and MAX functions to find the position of the largest number 223
Use the ADDRESS, MATCH, and MIN functions to find the position of the smallest number 225
Use the ADDRESS, MATCH, and TODAY functions to sum sales up to today's date 226
Use the VLOOKUP function to look up and extract data from a database 227
Use the VLOOKUP function to compare offers from different suppliers 229
Use the HLOOKUP function to determine sales and costs for a team 230
Use the HLOOKUP function to determine sales for a particular day 231
Use the HLOOKUP function to generate a list for a specific month 232
Use the LOOKUP function to get the directory of a store 233
Use the LOOKUP function to get the indicator for the current temperature 235
Use the INDEX function to search for data in a sorted list 236
Use the INDIRECT function to play "Battleship" 237
Use the INDIRECT function to copy cell values from different worksheets 239
Use the INDEX function to determine the last number in a column 240
Use the INDEX and COUNTA functions to determine the last number in a row 241
Use the OFFSET function to sum sales for a specified period 242
Use the OFFSET function to consolidate sales for a day 243

Use the OFFSET function to filter every other column 244
Use the OFFSET function to filter every other row 245
Use the HYPERLINK function to jump directly to a cell inside the current worksheet 246
Use the HYPERLINK function to link to the Internet 248

Chapter 10 Conditional Formatting with Formulas 249
Use the WEEKDAY function to determine weekends and shade them 249
Use the TODAY function to show completed sales 250
Use conditional formats to indicate unavailable products 252
Use the TODAY function to shade a specific column 253
Use the WEEKNUM and MOD functions to shade every other Tuesday 254
Use the MOD and ROW functions to shade every third row 255
Use the MOD and COLUMN functions to shade every third column 256
Use the MAX function to find the largest value 257
Use the LARGE function to find the three largest values 258
Use the MIN function to find the month with the worst performance 258
Use the MIN function to search for the lowest nonzero number 260
Use the COUNTIF function to mark duplicate input automatically 261
Use the COUNTIF function to check whether a number exists in a range 262
Use conditional formatting to control font styles in a specific range 263
Use a user-defined function to detect cells with formulas 264
Use a user-defined function to detect cells with valid numeric values 266
Use the EXACT function to perform a case-sensitive search 267
Use the SUBSTITUTE function to search for text 268
Use conditional formatting to shade project steps with missed deadlines 269
Use conditional formatting to create a Gantt chart in Excel 270
Use the OR function to indicate differences higher than 5% and lower than –5% 272
Use the CELL function to detect unlocked cells 273
Use the COUNTIF function to shade matching numbers in column B 274
Use the ISERROR function to mark errors 275
Use the DATEDIF function to determine all friends younger than 30 276
Use the MONTH and TODAY functions to find birthdays in the current month 277
Use conditional formatting to border summed rows 278
Use the LEFT function in a product search 279
Use the AND function to detect empty rows in a range 280

Chapter 11 Working with Array Formulas 281
Use the ADDRESS, MAX, and ROW functions to determine the last cell used 281
Use the INDEX, MAX, ISNUMBER, and ROW functions to find the last number in a column 282
Use the INDEX, MAX, ISNUMBER, and COLUMN functions to find the last number in a row 283

Use the MAX, IF, and COLUMN functions to determine the last column used in a range 284
Use the MIN and IF functions to find the lowest nonzero value in a range 285
Use the AVERAGE and IF functions to calculate the average of a range, taking zero values into consideration 287
Use the SUM and IF functions to sum values with several criteria 288
Use the INDEX and MATCH functions to search for a value that matches two criteria 289
Use the SUM function to count values that match two criteria 290
Use the SUM function to count values that match several criteria 291
Use the SUM function to count numbers from *x* to y 292
Use the SUM and DATEVALUE functions to count today's sales of a specific product 293
Use the SUM function to count today's sales of a specific product 294
Use the SUM, OFFSET, MAX, IF, and ROW functions to sum the last row in a dynamic list 295
Use the SUM, MID, and COLUMN functions to count specific characters in a range 296
Use the SUM, LEN, and SUBSTITUTE functions to count the occurrences of a specific word in a range 297
Use the SUM and LEN functions to count all digits in a range 298
Use the MAX, INDIRECT, and COUNT functions to determine the largest gain/loss of shares 298
Use the SUM and COUNTIF functions to count unique records in a list 300
Use the AVERAGE and LARGE functions to calculate the average of the x largest numbers 300
Use the TRANSPOSE and OR functions to determine duplicate numbers in a list 301
Use the MID, MATCH, and ROW functions to extract numeric values from text 302
Use the MAX and COUNTIF functions to determine whether all numbers are unique 303
Use the TRANSPOSE function to copy a range from vertical to horizontal or vice versa 304
Use the FREQUENCY function to calculate the number of products sold for each group 306

Chapter 12 Special Solutions with Formulas 307

Use the COUNTIF function to prevent duplicate input through validation 307
Use the EXACT function to allow only uppercase characters 308
Use validation to allow data input by a specific criterion 309
Use controls with formulas 310
Use Goal Seek as a powerful analysis tool 313
Use a custom function to shade all cells containing formulas 314
Use a custom function to change all formulas in cells to values 316

Use a custom function to document and display all cells containing formulas 317
Use a custom function to delete external links in a worksheet 318
Use a custom function to delete external links in a workbook 319
Use a custom function to enter all formulas into an additional worksheet 320

Chapter 13 User-Defined Functions 323
Use a user-defined function to copy the name of a worksheet into a cell 323
Use a user-defined function to copy the name of a workbook into a cell 324
Use a user-defined function to get the path of a workbook 325
Use a user-defined function to get the full name of a workbook 325
Use a user-defined function to determine the current user of Windows or Excel 326
Use a user-defined function to display formulas of a specific cell 327
Use a user-defined function to check whether a cell contains a formula 328
Use a user-defined function to check whether a cell contains data validation 328
Use a user-defined function to find all comments 330
Use a user-defined function to sum all shaded cells 331
Use a user-defined function to sum all cells with a colored font 332
Use a user-defined function to delete leading zeros for specified cells 333
Use a user-defined function to delete all letters in specified cells 334
Use a user-defined function to delete all numbers in specified cells 335
Use a user-defined function to determine the position of the first number 336
Use a user-defined function to calculate the cross sum of a cell 337
Use a user-defined function to sum each cell's cross sum in a range 338
Use a user-defined function to check whether a worksheet is empty 339
Use a user-defined function to check whether a worksheet is protected 339
Use a user-defined function to create your own AutoText 340

Chapter 14 Examples 343
Calculate average fuel consumption 343
Calculate net and corresponding gross prices 345
Determine the economic value of a product 347
Calculate the final price of a product, taking into account rebates and price reductions 348
Search for data that meets specific criteria 349
Separate cities from zip codes 351
Eliminate specific characters 352
Combine text, dates, and timestamps 353
Determine the last day of a month 354
Determine the number of available workdays 355
Determine a person's exact age 356
Determine the number of values in a specific range 358
Determine the weekly sales for each department 360
Round a value to the nearest 5 cents 362
Determining inventory value 363

Determine the top salesperson for a month 364
Determine the three highest values in a list 366
Determine amount to invest 368
Determine how many items are in various categories 369
Find a specific value in a complex list 370
Dynamically show costs and sales per day 372
Extract every fourth value from a list 374

Appendix Excel Interface Guide 377
Anatomy of Excel 378
Microsoft Excel 2016 379
Microsoft Excel 2011 for Macintosh 382
Microsoft Excel Web App 385

Index 387